

October 2023

Application For Environmental Clearance (Public Hearing)

Draft Environmental Impact Assessment Report

For

Sekhar Mines, Varavanai Limestone Quarry –
2.24.0 Ha

at

S.F.Nos. 835/3, 836(P), 837/1B 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

Proponent details:

& Laboratory details:

Thiru. S. Sekhar,

Ecotech Labs Pvt Ltd,

Proprietor of Sekhar Mines

No.73, Raja Colony, Collector

Office Road, Cantonment,

Trichy District – 620 001.



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

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 2.24.0 Ha at S.F. Nos. 835/3, 836(P), 837/1B of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu State – Regarding.

Ref: Letter No. SEIAA-TN/F. No. 6556/SEAC/ToR-1035/2021 Dated: 13.10.2021

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 2.24.0 Ha at S.F. Nos. 835/3, 836(P), 837/1B 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

UNDERTAKING

I, S. Sekhar, undertaking that the Draft Environmental Impact Assessment (EIA) Report for 'Sekhar Mines, Varavanai Limestone Quarry' over an extent of 2.24.0 Ha at S.F.Nos. 835/3, 836(P), 837/1B 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.6556/SEAC/TOR-1035/2021 dated 13.10.2021.

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 2.24.0 Ha at S.F.Nos. 835/3, 836(P), 837/1B 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

Project Name	Varavanai Limestone Quarry- 2.24.0 Ha	Draft EIA Report
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

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Project Location	<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 2.24.0 Ha at S.F.No. 835/3, 836(P), 837/1B 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.




Project	Varavanai Limestone Quarry -2.24.0 Ha
Type & Category	1 (a) Mining of Minerals
Project Proponent	Thiru. S. Sekhar, owner of Sekhar Mines
Environment Consultant with their Accreditation Status	M/s. Eco Tech Labs Pvt. Ltd., QCI Accredited
NABET Certificate No.	NABET/ EIA/2124/ SA 0147
EIA Coordinator Name	Dr. A. Dhamodharan (Mining of Minerals)
Signature	 
Period of Involvement	August 2022 to till now
Contact Information	M/s. Eco Tech Labs Pvt. Ltd. No. 48, 2nd Main Road, Ram Nagar South Extension Pallikaranai, Chennai - 600 100 Mobile: +91 9789906200 E-mail: dhama@ecotechlabs.in

Project Name	<i>Varavanai Limestone Quarry- 2.24.0 Ha</i>	Draft EIA Report
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	





Functional Area Experts

S. No.	Functional areas	Name of the experts	Involvement (Period and task)	Signature and date
1	AP	Mrs. K. Vijayalakshmi	1. Selection of Baseline Monitoring stations based on the wind direction 2. Interpretation of Baseline data by comparing it with standards prescribed by CPCB against the type of area 3. Identification of sources of air pollution and suggesting mitigation measures to minimize impact Period: August 2022 - Till now	
2	WP	Dr. A. Dhamodharan	1. Selection of baseline Monitoring Locations for Ground water analysis and also identifying nearest surface water to be studied. 2. Interpretation of baseline data collected 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 4. Preparation of suitable and appropriate mitigation plan. Period: August 2022 - Till now	
3	SHW	Dr. A. Dhamodharan	1. Identification of nature of solid waste generated 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 3. Suggesting suitable mitigation measures by recommending appropriate disposal method for each category of	



Project Name	Varavanai Limestone Quarry- 2.24.0 Ha	Draft EIA Report
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

			waste generated 4. Top soil and refuse management Period: August 2022 - Till now	
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. Period: August 2022 - Till now *Involves Public Hearing	
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. Period: August 2022 - Till now	
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. Period: August 2022 - Till now	
7	GEO	Dr. T. P. Natesan	1. Field survey for assessing regional and local geology, aquifer	

Project Name	Varavanai Limestone Quarry- 2.24.0 Ha	Draft EIA Report
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

			<p>distribution, Determination of groundwater use pattern, development of rainwater harvesting program.</p> <p>Period: August 2022 - Till now</p>	
8	SC	Dr. A. Dhamodharan	<ol style="list-style-type: none"> 1. Interpretation of baseline report 2. Identification of possible impacts on soil, prediction of soil conservation and suggesting suitable mitigation measures. <p>Period: August 2022 - Till now</p>	
9	AQ	Mrs. K. Vijayalakshmi	<ol style="list-style-type: none"> 1. Collection of Meteorological data for the baseline study period 2. Plotting wind rose plot and thereby selecting the monitoring locations based on the wind pattern 3. Estimation of sources of air emissions and air quality modeling is done 4. Interpretation of the results obtained 5. Identification of the impacts and suggesting suitable mitigation measures. <p>Period: August 2022 - Till now</p>	
10	NV	Mrs.K.Vijayalakhmi	<ol style="list-style-type: none"> 1. Selection of monitoring locations 2. Interpretation of baseline data 3. Prediction of impacts due to noise pollution and suggestion of appropriate mitigation measures <p>Period: August 2022 - Till now</p>	

Project Name	Varavanai Limestone Quarry- 2.24.0 Ha	Draft EIA Report
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

11	LU	Dr. T. P. Natesan	<ol style="list-style-type: none"> 1. Collection of Remote sensing satellite data to study the land use pattern. 2. Primary field survey and limited field verification for land categorization in the study area 3. Preparation of Land use map using Satellite data for 10km radius around the project site. <p>Period: August 2022 - Till now</p>	
12	RH	Mrs.K.Vijayalaks hmi	<ol style="list-style-type: none"> 1. Identification of the risk 2. Interpreting consequence contours 3. Suggesting risk mitigation measures <p>Period: August 2022 - Till now</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. 835/3, 836(P), 837/1B 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- 2.24.0 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 2.24.0 Ha at S.F.No.835/3, 836(P), 837/1B of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu for a period of 20 years. The category of the project is B1.

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-545-MDS dated 30.12.1991 before the grant of Mining Lease. The Mining lease was granted for twenty years under G.O.3(D). No. 292 Industries (MMA-2) Department dated 04.10.1995. The lease deed was executed on 18.11.1995 and the mining operation commenced on 29.11.1995. The lease granted for 20 years expired on 17.11.2015. The 1st scheme of mining lease was granted for five years (2005-2006 to 2009-2010) by Indian Bureau of Mines vide LetterNo.TN/KRR/LST/MS-333-MDS, dated 30.06.2005. Further, the 2nd scheme of the mining lease for a period of five years (2010-2011 to 2014-2015) was approved by Indian Bureau of Mines vide letter no. TN/KRR/LST/MS-741-MDS dated 10.10.2012. 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 for a period of 5 years (2015-2016 to 2019-2020).

As per the Mines and Mineral (Development and Regulation) (MMDR) Amendment Act 2015, the validity of the Mining Lease is extended upto 17.11.2045 (effective from 17.11.2015 to 17.11.2045).

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 01.09.2016. 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.6556/SEAC/TOR-1035/2021 dated 13.10.2021.

Project Name	Varavanai Limestone Quarry- 2.24.0 Ha	Executive Summary
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

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 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 21.0 m below ground level. The Total Geological resources are 1,79,605 tonnes and recoverable reserves are estimated as 1,07,763 tonnes. The Mineable Reserves are 8,127 tonnes and recoverable reserves are estimated as 4,876 tonnes to be mined for Four years.

The Review of Mining Plan was approved by the Indian Bureau of Mines vide letter No. TN/KRR/LST/ROMP-1651.MDS dated 23.07.2021. 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 2.24.0 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	: 835/3, 836(P), 837/1B
Extent	: 2.24.0 hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	N 10° 45' 06.35"
2	Longitude	E 78° 13' 50.74"
3	Site Elevation above MSL	≈ 192 m from above MSL

Project Name	Varavanai Limestone Quarry- 2.24.0 Ha	Executive Summary
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Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

4	Topography	Flat terrain
5	Land use of the site	Own patta land and non-agricultural land
6	Extent of lease area	2.24.0 Ha
7	Nearest highway	SH 199 (Vaiyampatty- Karur Road) – 0.51 km SW
8	Nearest railway station	Palaiyam Railway Station - 11.43 km, SW
9	Nearest airport	Tiruchirappalli International Airport - 52.05 km, NE
10	Nearest town / city	Karur – 28.36 km, NW
11	Rivers / Canal	Nil
12	Lakes/Dams	<ul style="list-style-type: none"> • Mamathupatti Kanmai – 0.39 km SE • Varavanai Kanmai – 0.60 km SW • Mariyamman Kulam – 1.89 km NE • KarunamKulam – 2.82 km NW • P. UdayapattiKulam – 3.45 km NE • TharagampattiKulam – 3.70 km S • OttaKulam – 5.27 km NW • Poovaeekulam – 5.67 km NW • Perumaan Kulam–6.06 km NE • MavathurKulam – 6.36 km SE • Panjapatty Lake – 9.26 km NE • VellianaiKulam – 11.71 km NW • KaraiKulam–13.19 km NE • Pothuravuthanpatty Kulam – 14.47 km NE
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 – 12.58 km SW
16	Reserved / Protected Forests	<ul style="list-style-type: none"> • Vaiyamalaippalaiyam RF – 8.30 km SE • MungilKaradu RF – 11.82 km SW • Veeramalai RF – 12.92 km SE
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

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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 Large-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.

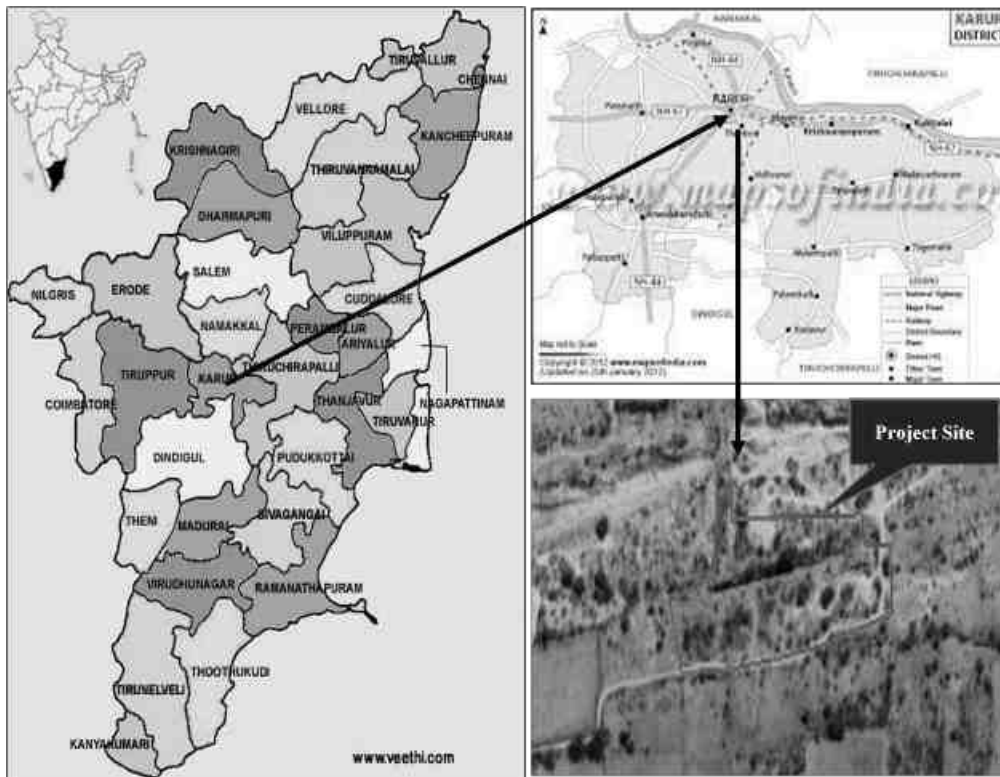


Figure 1: Location Map of the Project Site

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



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	VII	2	1	2.5	5					CEMENT & REFRACTORY	222
		VIII	9	1	2.5	23						
		IX	15	1	2.5	38						
	XY-A2B2	IV	5	2	2.5	25						
		V	11	2	2.5	55						
		VI	16	2	2.5	80	2.6	8109	3244	4865		
		VII	22	8	2.5	440						
		VIII	27	15	2.5	1013						
		IX	32	18	2.5	1440						
					3051							
Mineral locked up in 7.5m boundary barrier			3200sq. (64x50.0) 98sq.m 1.3x7.5		20.0	65960	2.6	171496	68598	102898	CEMENT & REFRACTORY	222
TOTAL								179605	71842	107763		

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Total Resources : 1,79,605 tonnes

Recoverable Resources : 1,07,763 tonnes

Table 3. Reserves Estimation

Section	Bench	L(m)	W(m)	D(m)	Volume CUM	Bulk Density	Over Burden (t)	Side (burden)	Total Reserve (t)	Mineral Reject 40% (t)	Recoverable Reserve 60% (t)	Total waste(t)	UNFC Code
XY-A1B1	I	61	1	1.1	61	2.0							
XY-A2B2	1	68	1	1.0	68		258					258	
SIDE BURDEN													
XY-A1B1	II	48	1	2.5	120								
	III	37	1	2.5	93								
	IV	26	1	2.5	65								
	V	15	1	2.5	38								
	VI	6	1	2.5	15								
	II	38	1	2.5	95								
	III	27	1	2.5	68								
	IV	16	6	2.5	240								
	V	7	16	2.5	280	2.5		2535				2535	
					1014								
LIMESTONE													
XY-A1B1	II	11	1	2.5	28	2.6			73	29	44		
	III	12	1	2.5	30				78	31	47		
	IV	12	1	2.5	30				78	31	47		
	V	13	1	2.5	33				86	34	52		
	VI	13	1	2.5	33				86	34	52		
	VIII	10	1	2.5	25				65	26	39		
	IX	4	1	2.5	10				26	10	16		

1	2	3	4	5	6	7	8	9	10	11	12	13	14
XY-A2B2	II	12	1	2.5	30				78	31	47		111
	III	13	1	2.5	33				86	31	52		
	IV	14	6	2.5	210				546	218	328		
	V	14	16	2.5	560				1456	582	874		
	VI	16	26	2.5	1040				2704	1082	1622		
	VII	13	31	2.5	1008				2620	1048	1572		
	VIII	5	32	2.5	400				1040	416	624		
					3470	2.6	-	-	9022	3609	5413	3609	
TOTAL							258	2535	9022	3609	5413	3609	

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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
2020-21		Lapsed Year of Review of Mining Plan							
2021-22	I	3428	648	-	720	1236	823	2192	1:1.8
2022-23	I	3229	470	-	670	1254	836	1975	1:1.6
2023-24	I	4089	350	-	1750	1193	796	2896	1:2.4
2024-25	I	4149	360	-	1800	1193	796	2956	1:2.5
TOTAL in Tons		14895	1828	-	4940	4876	3251	10019	1:1.20

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

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7. Water Requirement

Total water requirement for the mining project is 1.32 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.

Table 5. Water Balance

Purpose	Quantity	Sources
Drinking Water	0.32 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
Total	1.32 KLD	

8. Man Power

Total manpower required for the project is approximately 7 persons. Workers will be from nearby villages.

Table 6. Man Power Requirement

Supervisory :	No. of Employees
Manager (Foreman)	1 no
Part time mining Engineer	1 no
Clerk	1 no
Labours:	
Highly skilled	-
Skilled	2 no.s
Semi -Skilled	-
Unskilled	2 no.s
Total	7 no.s

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

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9. 500m Radius Cluster Mine

Table 7. 500m Radius Cluster Mine

S. No.	Name of the lessee / Permit Holder	Village & Taluk	S. F. No.	Extent	Lease period
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
Total				11.94.8	

10. Land Requirement

The total extent area of the Existing project is 2.24.0 Ha, Own patta land in Varavanai Village of Kulithalai Taluk (presently Kadavur Taluk), Karur District.

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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)	0.24.0	0.42.0	1.00.5
2.	Waste dump	0.39.0	0.15.0	0.15.0
3.	Office-Infrastructure	0.01.0	-	0.01.0
4.	Mineral Stack/ Processing Yard	-	-	-
5.	Sub-grade Mineral stacks	-	-	-
6.	Mine Roads	0.13.0	0.01.0	0.01.0
7.	Area under Plantation	0.01.0	0.20.0	0.20.0
8.	Unutilized Area	1.46.0	1.46.0	0.86.5
	Total	2.24.0	2.24.0	2.24.0

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

12. Power Requirement

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

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

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 : 32⁰C
- ii) Average Maximum Temperature. : 36⁰C
- 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 (SO₂), Nitrogen Dioxide (NO₂) were monitored and the results are summarized below,

The baseline levels of PM₁₀ (37-64 µg/m³), PM_{2.5} (14-33 µg/m³), SO₂ (5-21 µg/m³), NO₂ (10-38 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from August 2022 to October 2022.

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

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.

15. Greenbelt Development

1. The development of greenbelt in the peripheral buffer zone of the mine area.

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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 at a rate of 51 trees per annum with interval 5m.
- 4.The rate of survival expected to be 70% in this area.

Table 10. Plantation/ Afforestation Program

Name of the Species proposed	Survival	No. of species
Neem, Vilvam, Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila Maram, Poo Marudhu, Panai, Marudha maram, Thandri, Sengondrai, Poovarasu, Thethankottai Maram, Pungam	70%	1200
Total		1200

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.

17.Responsibilities for Environmental Management Cell (EMC)

The responsibilities of the EMC include the following:

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

- 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

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

Environmental Management Cost

- Capital Cost : Rs. 13,44,300/-
- Recurring Cost : Rs. 2,89,180/-
- Total EMP Cost : Rs. 16,33,480/-
- Total EMP Cost for Four Years: Rs. 25,90,702/-

20. Corporate Environmental Responsibility

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

Table 12. CER Cost

S.No.	CER Activity	CER project cost(Rs in Lakhs)
1.	Provision of Solar Powered Smart Class, Infrastructure, basic amenities such as safe Drinking water, Hygienic Toilet facilities, Napkins, Furniture,	2,50,000/-

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

Environmental awareness books for library, Green belt development and maintenance of School Toilets up to the life lease period of the mines in Varavanai Govt. middle School	
Total	2,50,000/-

21.Benefits of the Project

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

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<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/22365/2018 for the total lease area 2.24.0 Ha.

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

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 2.24.0 Ha at S.F.No.835/3, 836(P), 837/1B 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-545-MDS dated 30.12.1991 before the grant of Mining Lease. The Mining lease was granted for twenty years under G.O.3(D). No. 292 Industries (MMA-2) Department dated 04.10.1995. The lease deed was executed on 18.11.1995 and the mining operation commenced on 29.11.1995. The lease granted for 20 years expired on 17.11.2015. The 1st scheme of mining lease was granted for five years (2005-2006 to 2009-2010) by Indian Bureau of Mines vide Letter No.TN/KRR/LST/MS-333-MDS, dated 30.06.2005. Further, the 2nd scheme of the mining lease for a period of five years (2010-2011 to 2014-2015) was approved by Indian Bureau of Mines vide letter no. TN/KRR/LST/MS-741-MDS dated 10.10.2012. 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 for a period of 5 years (2015-2016 to 2019-2020).

As per the Mines and Mineral (Development and Regulation) (MMDR) Amendment Act 2015, the validity of the Mining Lease is extended upto 17.11.2045 (effective from 17.11.2015 to 17.11.2045).

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 01.09.2016. 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.6556/SEAC/TOR-1035/2021 dated 13.10.2021.

Meanwhile, the Scheme of Mining Plan was lapsed on 31.03.2020 and the project proponent applied for Review of Mining Plan from Indian Bureau of Mines for the period of 2020-2021 to 2024-2025. The Review of Mining Plan was approved by the Indian Bureau of Mines vide letter No. TN/KRR/LST/ROMP-1651.MDS dated 23.07.2021.

This EIA report is prepared for Varavanai Limestone Quarry over an extent of 2.24.0ha for the Limestone of 4,876 Tonnes from this Existing mine lease area by open cast manual method of mining.

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</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>	

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 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

Project Name	<i>Varavanai Limestone Quarry- 2.24.0Ha</i>	Chapter 1 Introduction
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

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 2.24.0 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.

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.6556/SEAC/TOR-1035/2021 dated 13.10.2021.

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.6556/SEAC/TOR-1035/2021 dated 13.10.2021. 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.

Project Name	<i>Varavanai Limestone Quarry- 2.24.0Ha</i>	Chapter 1 Introduction
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</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 10km radius from 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

S. No.	Description	Frequency of Monitoring
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.

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</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 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 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.

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</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 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.

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.

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</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 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
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 2.24.0 Ha in S.F.No. 835/3, 836(P), 837/1B 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' 06.35" latitude & E 78° 13' 50.74" 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.

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 1 Introduction
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	



Figure- Site Connectivity

1.8.2 Past Production details

The mining operation was commenced in the year 1995 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 21.0m from ground level. The Planned and Actual Production for last four years is given below.

Table 1-2 Past Production details

Year	Planned (T)	Actual (T)
2016-2017	1183	600 T as per the letter received from The District Collector, Karur vide Roc. No. 438/Mines/2019 dated 14.07.2020.

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 1 Introduction
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

2017-2018	1318	Nil
2018-2019	1331	Nil
2019-2020	1404	Nil
TOTAL	5236	Nil

The mine was not operated during the plan period except 2016. As per the letter received from The District Collector, Karur vide Roc. No. 438/Mines/2019 dated 14.07.2020, the mine was operational for 3 months in the year 2016 (01.06.2016 to 30.06.2016, 01.07.2016 to 31.07.2016 and 01.08.2016 to 31.08.2016) 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 600 T of Limestone was achieved during the entire plan period from 2016 to 31.03.2020.

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</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 2.24.0 Ha at S.F.No. 835/3, 836(P), 837/1B 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-545-MDS dated 30.12.1991 before the grant of Mining Lease. The Mining lease was granted for twenty years under G.O.3(D). No. 292 Industries (MMA-2) Department dated

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

04.10.1995. The lease deed was executed on 18.11.1995 and the mining operation commenced on 29.11.1995. The lease granted for 20 years expired on 17.11.2015. The 1st scheme of mining lease was granted for five years (2005-2006 to 2009-2010) by Indian Bureau of Mines vide Letter No. TN/KRR/LST/MS-333-MDS, dated 30.06.2005. Further, the 2nd scheme of the mining lease for a period of five years (2010-2011 to 2014-2015) was approved by Indian Bureau of Mines vide letter no. TN/KRR/LST/MS-741-MDS dated 10.10.2012. 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 for a period of 5 years (2015-2016 to 2019-2020).

As per the Mines and Mineral (Development and Regulation) (MMDR) Amendment Act 2015, the validity of the Mining Lease is extended upto 17.11.2045 (effective from 17.11.2015 to 17.11.2045).

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 01.09.2016. 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.6556/SEAC/TOR-1035/2021 dated 13.10.2021.

Meanwhile, the Scheme of Mining Plan was lapsed on 31.03.2020 and the project proponent applied for Review of Mining Plan from Indian Bureau of Mines for the period of 2020-2021 to 2024-2025. The Review of Mining Plan was approved by the Indian Bureau of Mines vide letter No. TN/KRR/LST/ROMP-1651.MDS dated 23.07.2021.

Thiru. S. Sekhar, owner, Sekhar Mines, has Mine under operation for the production of Limestone with the capacity of 4,876 Tonnes from this Existing mine lease area 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 15.03.2018. As per MOEF O.M. No. L- 11011/47/2011 -A.II (M) dated 18th May, 2012, for Category B projects appraisal

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</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>	

and approval shall vest with State Expert Appraisal Committee (SEAC). The Project has been considered in the 140th & 227th SEAC meeting held on 10.12.2019 & 21.08.2021 respectively followed by 456th SEIAA meeting held on 01.10.2021. Subsequently, ToR was granted on 13.10.2021.

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

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

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.

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

S. No.	Description	Details
1	Project Name	Varavanai Limestone Quarry of Sekhar Mines
2	Proponent	Thiru. S. Sekhar, owner of Sekhar Mines
3	Mining Lease Area Extent	2.24.0 Ha
4	Location	835/3, 836(P), 837/1B of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu
5	Latitude	N 10° 45' 06.35"
6	Longitude	E 78° 13' 50.74"
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 (For 5 years) ROM : 8,127 Tonnes Limestone @ 60% - 4876 Tonnes Mineral Rejects @ 40% - 3251 Tonnes
12	Ultimate depth of Mining	21 m below ground level (1 m Overburden + 20 m Limestone)
13	Method of Mining	Open cast manual method of mining
14	Water demand	1.32 KLD
15	Source of water	Water will be supplied from nearby villages.
16	Man power	7 Nos.

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

17	Mining Lease	G.O.3(D). No. 292 Industries (MMA-2) Department dated 04.10.1995 for a period of twenty years. MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 17.11.2045 (effective from 17.11.2015). The 1 st scheme of mining lease was granted for five years by Indian Bureau of Mines dated 30.06.2005. Further, the 2 nd scheme of the mining lease for a period of five years (2010-2011 to 2014-2015) approved by Indian Bureau of Mines dated 10.10.2012. 3 rd Scheme of Mining Plan was approved by Indian Bureau of Mines dated 13.06.2016 for a period of 5 years ((2015-2016 to 2019-2020). The Review of Mining Plan was approved by the Indian Bureau of Mines vide letter No. TN/KRR/LST/ROMP-1651.MDS dated 23.07.2021 for a period of 5 years (2020-2021 to 2024-2025)
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 21 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.
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	Water bodies: <ul style="list-style-type: none"> ➤ Mamathupatti Kanmai - 0.39 km SE ➤ Varavanai Kanmai - 0.60 km SW ➤ Mariyamman Kulam - 1.89 km NE ➤ KarunamKulam - 2.82 km NW ➤ P. UdayapattiKulam - 3.45 km NE ➤ TharagampattiKulam - 3.70 km S ➤ OttaKulam - 5.27 km NW ➤ Poovaeekulam - 5.67 km NW ➤ Perumaan Kulam - 6.06 km NE ➤ MavathurKulam - 6.36 km SE

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

		<ul style="list-style-type: none"> ➤ Panjapatty Lake – 9.26 km NE ➤ VellianaiKulam – 11.71 km NW ➤ KaraiKulam-13.19 km NE ➤ PothuravuthanpattyKulam – 14.47 km NE <p>Reserve Forest:</p> <ul style="list-style-type: none"> ➤ Vaiyamalaippalaiyam RF – 8.30 km SE ➤ MungilKaradu RF – 11.82 km SW ➤ Veeramalai RF – 12.92 km SE
23.	National Parks/Wild life Sanctuaries	Kadavur Slender Loris Sanctuary – 12.58 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.

Project Name	<i>Varavanai Limestone Quarry- 2.24.0Ha</i>	Chapter 2 Project Description
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

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 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
Total				11.94.8	

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

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.



Figure 2-2 Site Connectivity

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

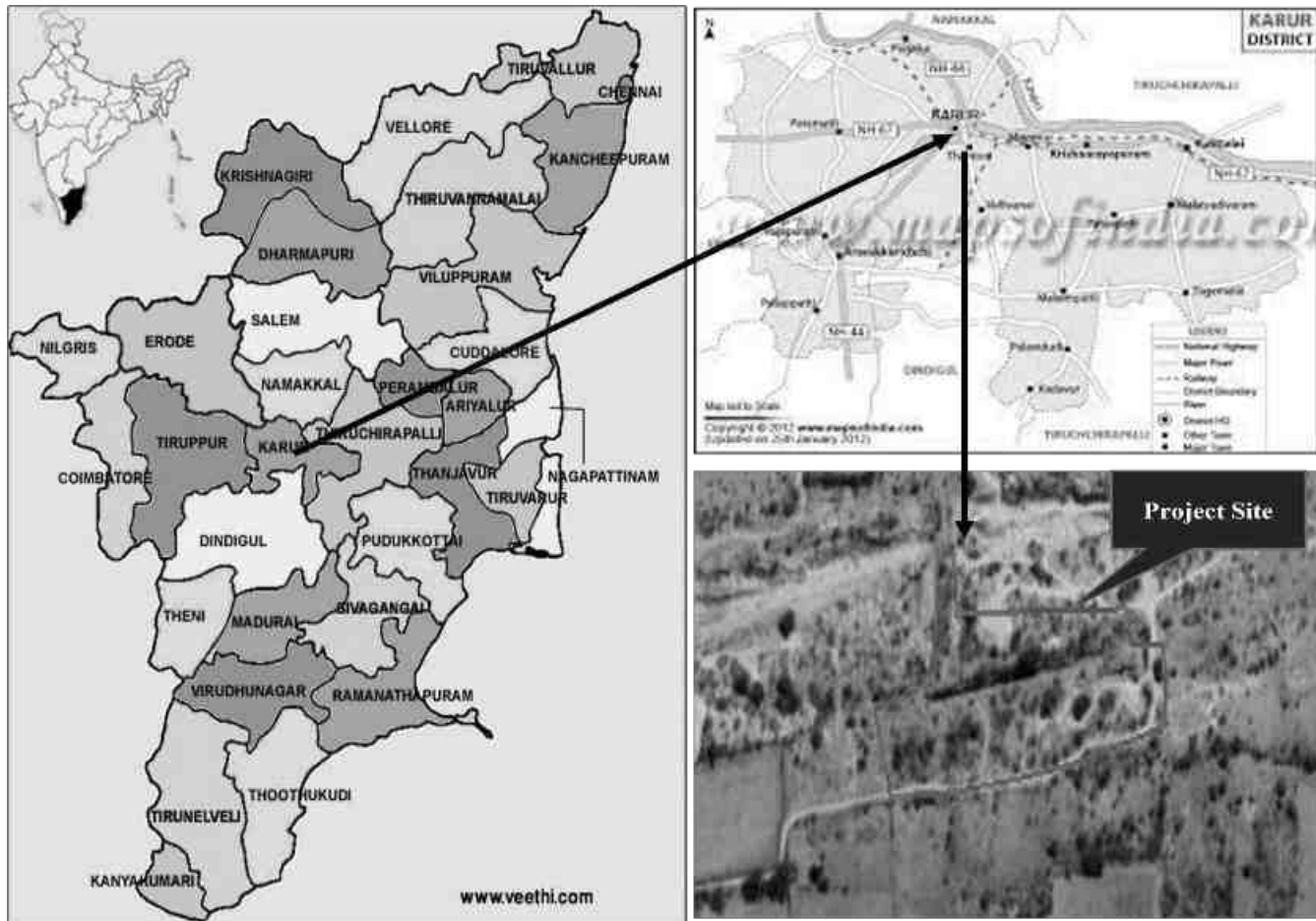


Figure 2-3: Location Map of the Project Site

2.3 Location Details:

Table 2-3: Location Details

S. No	Particulars	Details
1.	Latitude	N 10° 45' 06.35"
2.	Longitude	E 78° 13' 50.74"
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	2.24.0Ha

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

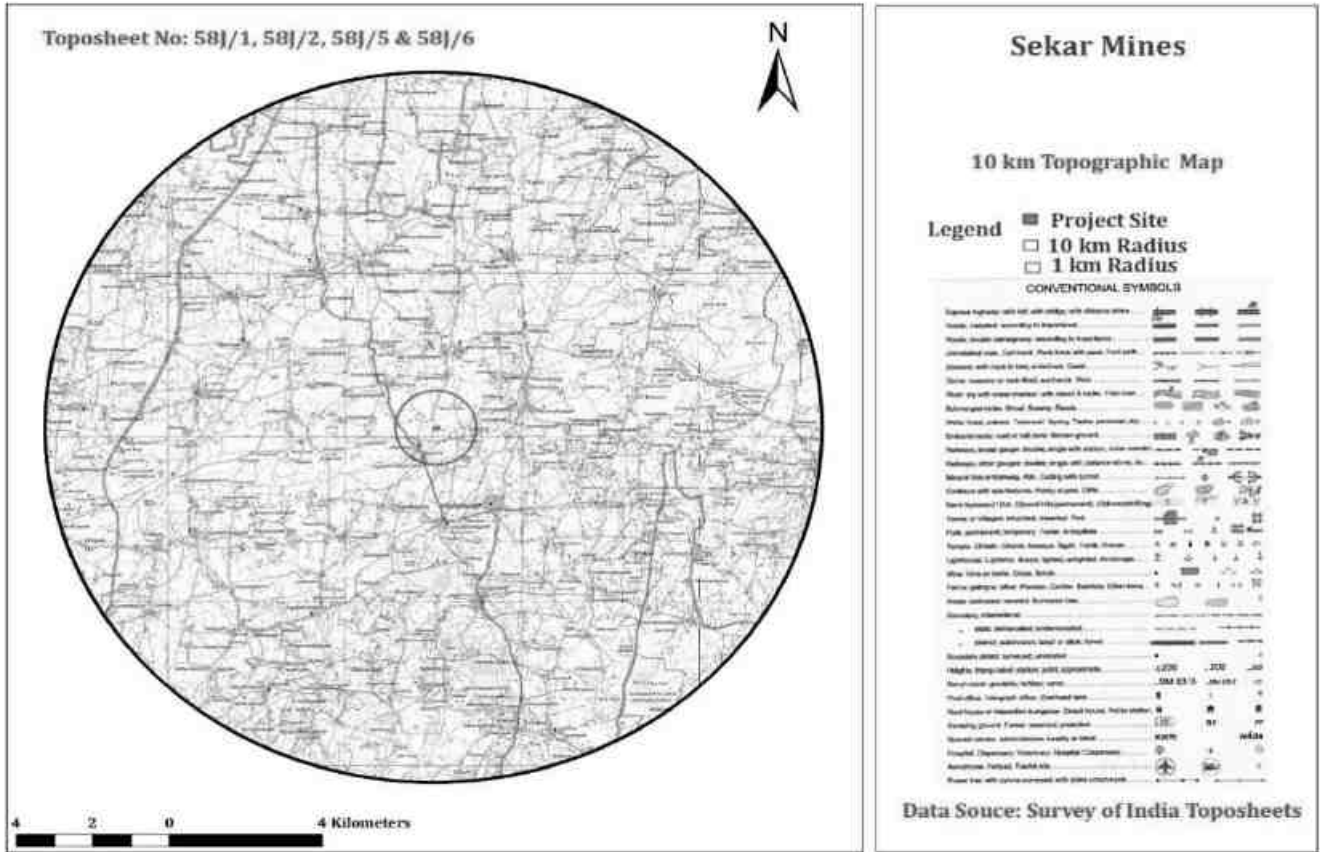


Figure 2-4: Topo Map of the Project Site

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

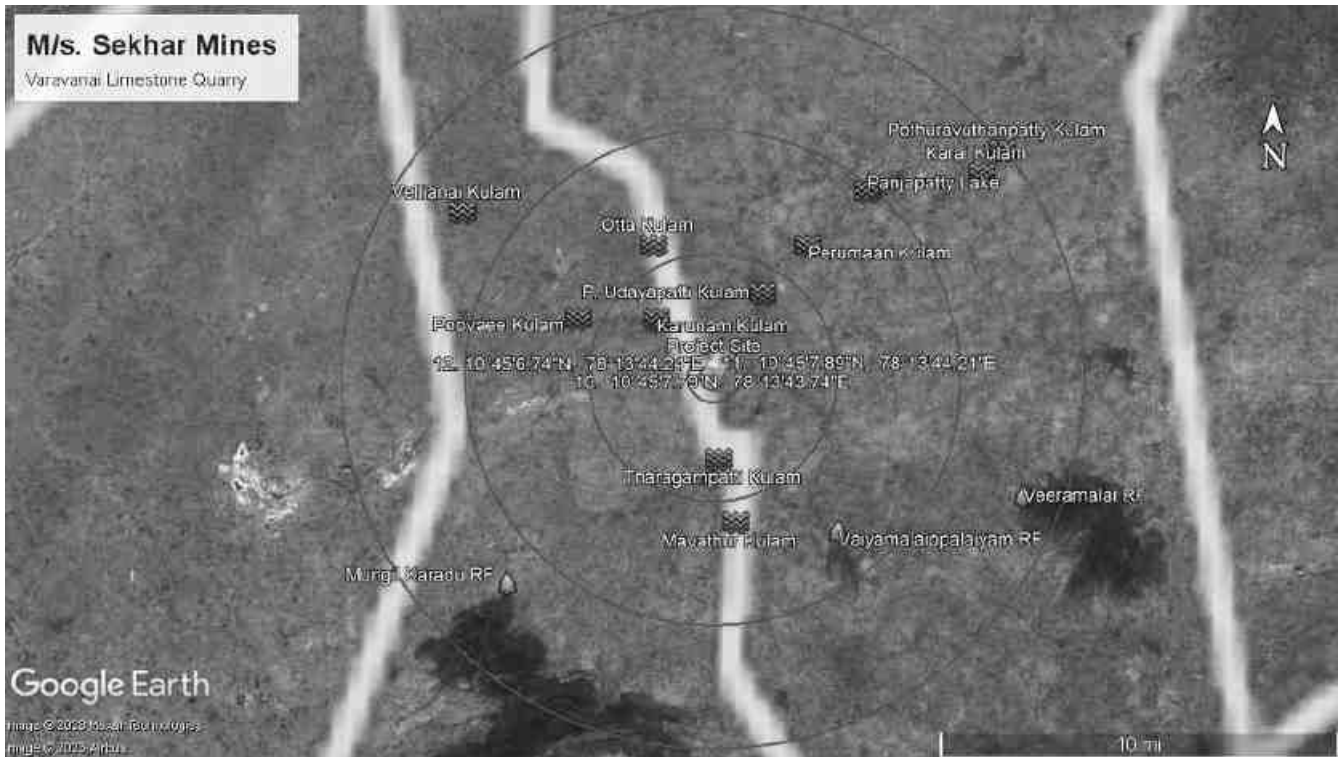


Figure 2-5: Environmental Sensitivity within 15km radius



Figure 2-6: Coordinates of the project site

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

2.3.1 Site Photographs

The site photographs of the project site are as follows:



North



South



West



East

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.

Project Name	<i>Varavanai Limestone Quarry- 2.24.0Ha</i>	Chapter 2 Project Description
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

Table 2-4: Land use pattern

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)	0.24.0	0.42.0	1.00.5
2.	Waste dump	0.39.0	0.15.0	0.15.0
3.	Office-Infrastructure	0.01.0	-	0.01.0
4.	Mineral Stack/ Processing Yard	-	-	-
5.	Sub-grade Mineral stacks	-	-	-
6.	Mine Roads	0.13.0	0.01.0	0.01.0
7.	Area under Plantation	0.01.0	0.20.0	0.20.0
8.	Unutilized Area	1.46.0	1.46.0	0.86.5
	Total	2.24.0	2.24.0	2.24.0

2.3.3 Human Settlement

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

Table 2-5: 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

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
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Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

2.3.4 Village Map

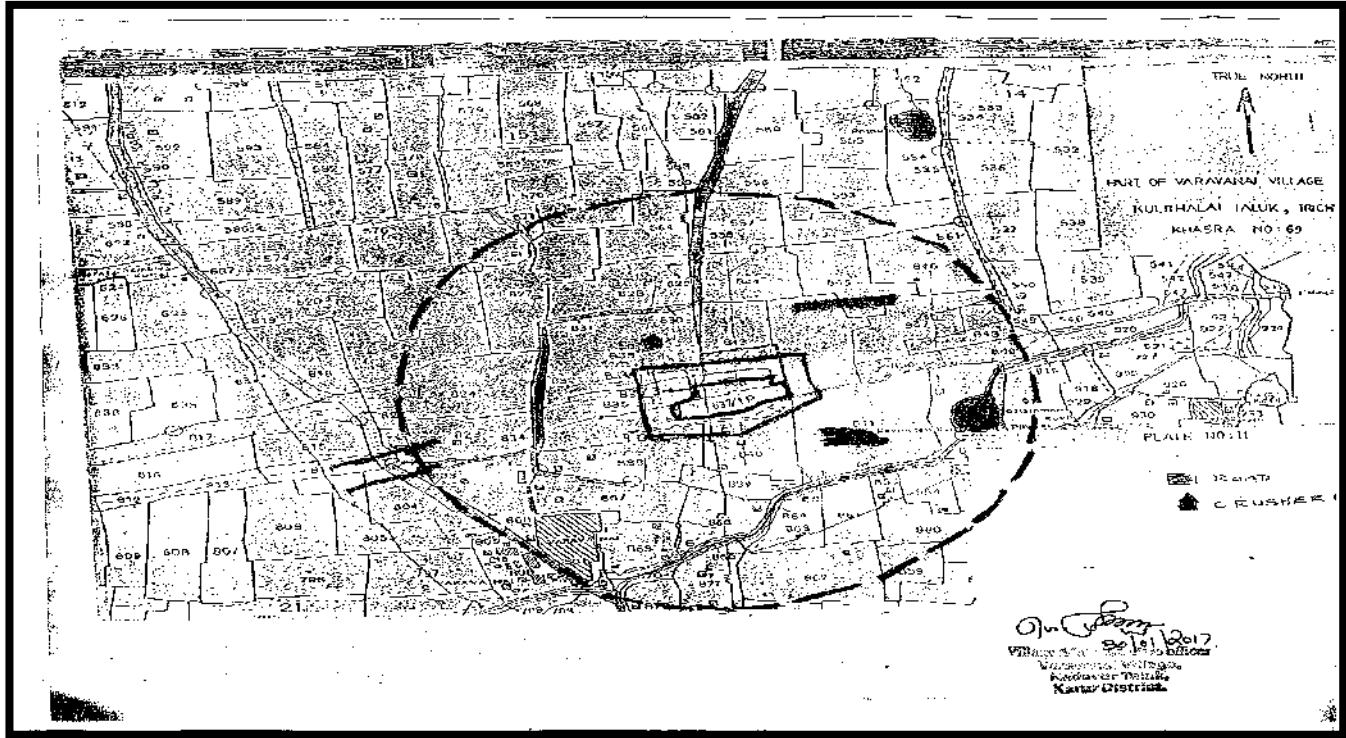


Figure 2-8: Varavanai Village Map

2.3.5 Leasehold Area

Varavanai Limestone Quarry over an extent of 2.24.0 is a Patta Land. The lease area falls in S.F.No.835/3, 836(P), 837/1B 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, intruded by younger granites. The granite-gneisses and crystalline limestone represent ancient

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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 wollstonite, feldspar etc.

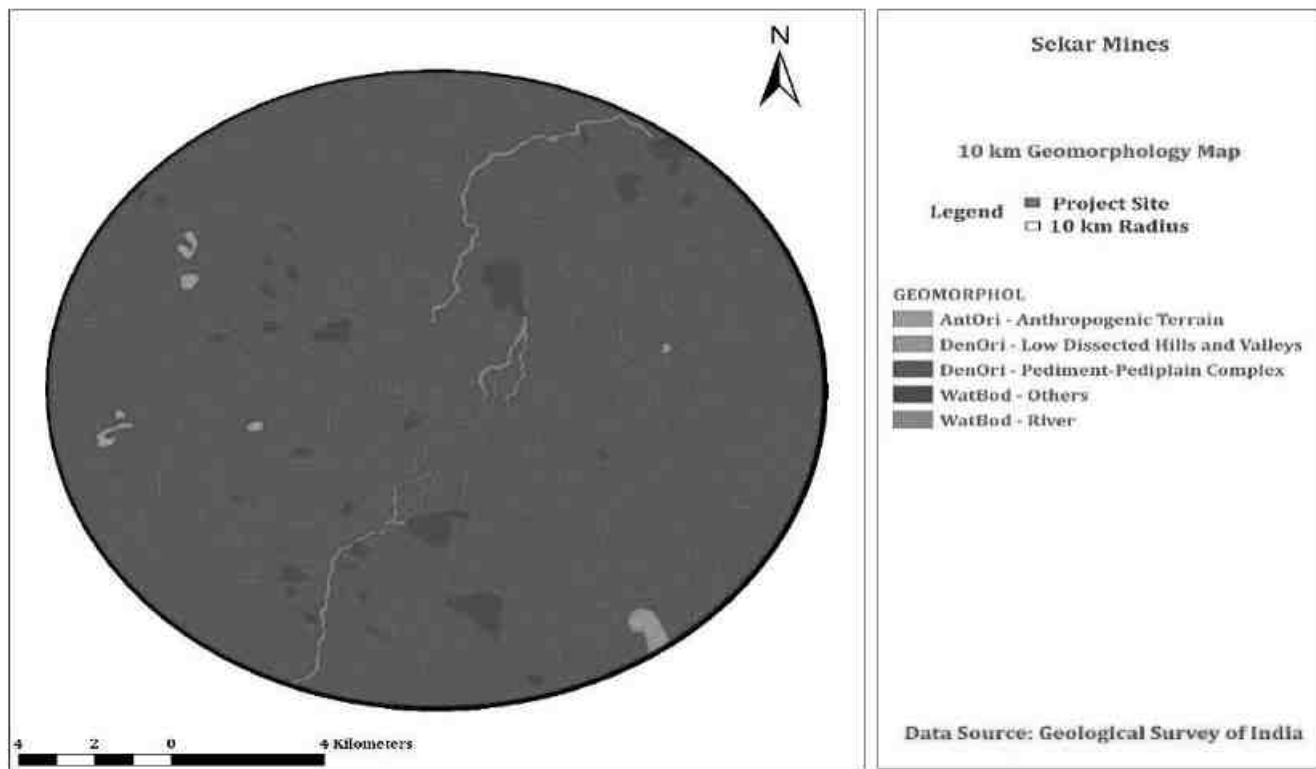


Figure 2-9: Geomorphology around 10 km Radius of the Project Site

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</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>	

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

Project Name	<i>Varavanai Limestone Quarry- 2.24.0Ha</i>	Chapter 2 Project Description
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

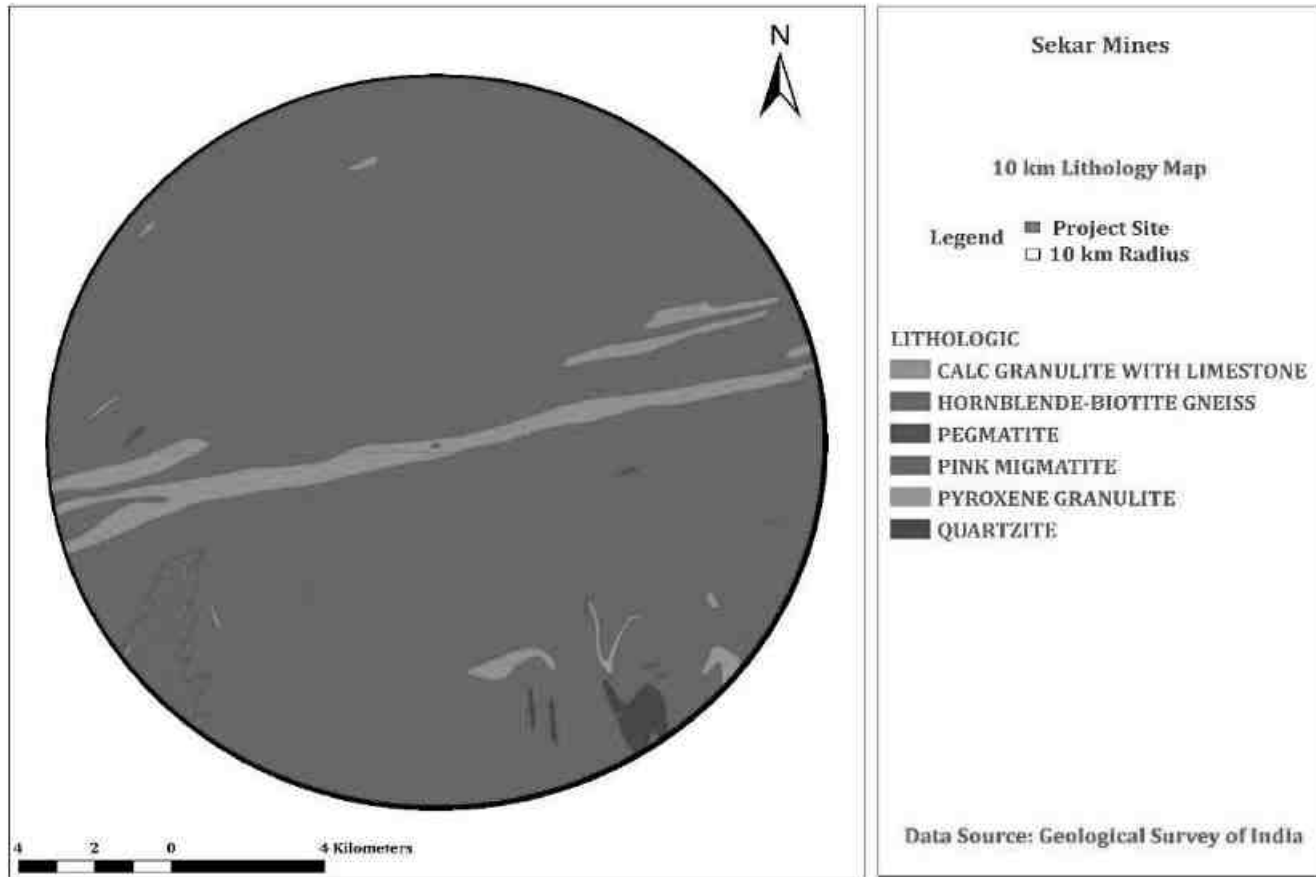


Figure 2-10: Lithology around 10 km Radius of the Project Site

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

Dimensions	Pit I
Length (m) (avg.)	199.0
Width (m) (avg.)	12.0
Depth (m) (max.)	21.0

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</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 Reserves

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

Table 2-7 Parameter of Reserves

Classification	UNFC Code	Quantity in Tonnes	Grade
A. Total Mineral Reserves			
Proved Mineral Reserve on 01.04.2020	111	5,413	Cement & Refractory Grade
Probable Mineral Reserve	121 & 222	-	-
B. Total Remaining Resources		-	-
Feasibility mineral Resource	211	-	-
Prefeasibility mineral resource	221	1,79,605	Cement & Refractory Grade
Measured mineral resource	331		-
Indicated mineral resource	332		-
Inferred mineral resource	333		-
Reconnaissance mineral resource	334		-
Total Reserves + Resources		1,85,018	-

Project Name	<i>Varavanai Limestone Quarry- 2.24.0Ha</i>	Chapter 2 Project Description
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<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 1,79,605 tonnes and recoverable resources are estimated as 1,07,763 tonnes.

Table 2-8 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	VII	2	1	2.5	5	2.6	8109	3244	4865	CEMENT & REFRACTORY	222
		VIII	9	1	2.5	23						
		IX	15	1	2.5	38						
	XY-A2B2	IV	5	2	2.5	25						
		V	11	2	2.5	55						
		VI	16	2	2.5	80						
		VII	22	8	2.5	440						
		VIII	27	15	2.5	1013						
		IX	32	18	2.5	1440						
Mineral locked up in 7.5m boundary barrier		3200sq. (64x50.0) 98sq.m 1 3x7.5		20.0	65960	2.6	171496	68598	102898	CEMENT & REFRACTORY	222	
TOTAL							179605	71842	107763			

Total Resources : 1,79,605 tonnes

Recoverable Resources : 1,07,763 tonnes

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

Table 2-9 Reserves Estimation

Section	Bench	L(m)	W(m)	D(m)	Volume CUM	Bulk Density	Over Burden (t)	Side (burden)	Total Reserve (t)	Mineral Reject 40% (t)	Recoverable Reserve 60% (t)	Total waste(t)	UNFC Code
XY-A1B1	I	61	1	1.1	61	2.0							
XY-A2B2	1	68	1	1.0	68		258					258	
SIDE BURDEN													
XY-A1B1	II	48	1	2.5	120								
	III	37	1	2.5	93								
	IV	26	1	2.5	65								
	V	15	1	2.5	38								
	VI	6	1	2.5	15								
	II	38	1	2.5	95								
	III	27	1	2.5	68								
	IV	16	6	2.5	240								
	V	7	16	2.5	280	2.5		2535				2535	
					1014								
LIMESTONE													
XY-A1B1	II	11	1	2.5	28	2.6			73	29	44		
	III	12	1	2.5	30				78	31	47		
	IV	12	1	2.5	30				78	31	47		
	V	13	1	2.5	33				86	34	52		
	VI	13	1	2.5	33				86	34	52		
	VIII	10	1	2.5	25				65	26	39		
	IX	4	1	2.5	10				26	10	16		

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</i>	<i>Chapter 2</i> <i>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>	

1	2	3	4	5	6	7	8	9	10	11	12	13	14
XY-A2B2	II	12	1	2.5	30				78	31	47		111
	III	13	1	2.5	33				86	31	52		
	IV	14	6	2.5	210				546	218	328		
	V	14	16	2.5	560				1456	582	874		
	VI	16	26	2.5	1040				2704	1082	1622		
	VII	13	31	2.5	1008				2620	1048	1572		
	VIII	5	32	2.5	400				1040	416	624		
						3470	2.6	-	-	9022	3609	5413	
TOTAL							258	2535	9022	3609	5413	6402	

Over burden : 258 tonnes
Side burden : 2,535 tonnes
Mineral Reject : 3,609 tonnes
Total Waste : 6,402 tonnes

Total Reserve : 9,022 tonnes
Recoverable Reserve: 5,413 tonnes
Ore Waste Ratio : 1.1.18

Project Name	Varavanai Limestone Quarry- 2.24.0 Ha	Chapter 2 Project Description
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

2.6.2 Year wise Production Plan

The life of the mine is computed as Four years at a production rate of 8127 Tonnes of Limestone (ROM). From Total ROM the Limestone deposits are categorized with the following percentage Limestone 60% & Mineral Waste 40%.

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
2020-21		Lapsed Year of Review of Mining Plan							
2021-22	I	3428	648	-	720	1236	823	2192	1:1.8
2022-23	I	3229	470	-	670	1254	836	1975	1:1.6
2023-24	I	4089	350	-	1750	1193	796	2896	1:2.4
2024-25	I	4149	360	-	1800	1193	796	2956	1:2.5
TOTAL in Tons		14895	1828	-	4940	4876	3251	10019	1:1.20

Project Name	<i>Varavanai Limestone Quarry-2.24.0Ha</i>	Chapter 2 Project Description
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<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

Dimensions	Pit I
Length (m) (avg.)	199.0
Width (m) (avg.)	12.0
Depth (m) (max.)	21.0

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 four 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 seven benches will be 2.5m height and 2.5m width with 60° slope for next four years only. A bund will be constructed

<i>Project Name</i>	<i>Varavanai Limestone Quarry-2.24.0Ha</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>	

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 four 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 East & Southern side of the lease area. The Average annual production is about 1200tonnes of Limestone with 250 working days in a Year. Per day production will be about 4 – 8 say 5tonnes. 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.

2.7.1.3 Bench design Parameters

In Limestone, totally seven benches from RL 90 m to RL 100 m. The Five benches will be 2.5 m height and 2.5 m width with 60° slope for next four 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 recoverable reserves is estimated 5,413Tonnes and the recoverable resources is 1,07,763Tonnes of Limestone.

The life of the mine is computed as Four Years at a production rate of 1200 Tonnes of Limestone per annum. The waste generated during the mining period is 10,019 Tonnes (Topsoil – 1,828 Tonnes, Side burden – 4,940 Tonnes & Mineral Reject – 3,251 Tonnes). There is adequate space available for dumping the mineral reject will be dumped in the non-mineral bearing area of the North East & Southern side of the lease area.

Project Name	<i>Varavanai Limestone Quarry-2.24.0Ha</i>	Chapter 2 Project Description
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

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. 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.

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	-	-	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.

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

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

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.

Type	Nos.	Size/Capacity	Make	Motive Power	H.P.
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.

Supervisory :	No. of Employees
Manager (Foreman)	1 no
Part time mining Engineer	1 no
Clerk	1 no
Labours:	
Highly skilled	-
Skilled	2 no.s
Semi -Skilled	-
Unskilled	2 no.s
Total	7 no.s

<i>Project Name</i>	<i>Varavanai Limestone Quarry-2.24.0Ha</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>	

2.8.1 Water Requirement

The quantity of water required for the mine lease area of 2.24.0 ha is estimated to be 1.32 kLD. Drinking water is available from nearby villages near the project site and this fulfills the requirement at site.

Table 2-12 Water Requirement

S.No.	Description	Water in KLD
1.	Drinking Water use (For labours)	0.32
2.	Dust suppression (Material Transportation)	0.5
3.	Green belt development	0.5
Total		1.32 kLD

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 four years is about 1828 tonnes.

Sideburden:

The side burden consists of Biotite-schist. The generation of side burden for next Four years is about 4940 tonnes.

Sub-grade Mineral:

Sub-grade Mineral is not produced in the next four 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.

Project Name	<i>Varavanai Limestone Quarry-2.24.0Ha</i>	Chapter 2 Project Description
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

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

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

	Topsoil/Overburden	Side burden	Mineral Reject
Length (m)	30.0	21.0	38.0
Width (m)	12.0	16.0	16.0
Height (m)	1.0	4.0	3.0
Total Quantity (t)	1828	4940	3251

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.

S.No	Description	Cost (Rs)
1.	Land Cost	7,00,000
2.	Operational Cost	3,35,080
Total		10,35,080
3.	EMP Cost	25,90,702 (For 4 Years)

Corporate Social Responsibility

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

Project Name	<i>Varavanai Limestone Quarry-2.24.0Ha</i>	Chapter 2 Project Description
Project Proponent	<i>Sekhar Mines</i>	
Project Location	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

S.No.	CER Activity	CER project cost(Rs in Lakhs)
1.	Provision of Solar Powered Smart Class, Infrastructure, basic amenities such as safe Drinking water, Hygienic Toilet facilities, Napkins, Furniture, Environmental awareness books for library, Green belt development and maintenance of School Toilets up to the life lease period of the mines in Varavanai Govt. middle School	2,50,000/-
Total		2,50,000/-

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 2.24.0Ha</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>	

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.

Project Name	Varavanai Limestone Quarry- 2.24.0Ha	Chapter 3 Description of the Environment
Project Proponent	Sekhar Mines	
Project Location	Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District	

We have obtained Terms of Reference from SEIAA vide Letter No. SEIAA-TN/F.No.6556/SEAC/TOR-1035/2021 dated 13.10.2021. 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

Attributes	Sampling	Frequency
Air environment – Meteorological (wind speed, wind direction, rainfall, humidity, temperature)	Project site	1 hourly continuous
Air environment – Pollutants PM 10 PM 2.5 SO ₂ NO _x 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

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Table 3-2 Study area details

S. No.	Description	Details	Source
1.	Project Location	Survey number: 835/3, 836(P), 837/1B 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	2.24.0Ha	--
Demography in the study area (as per Census 2011)			
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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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.

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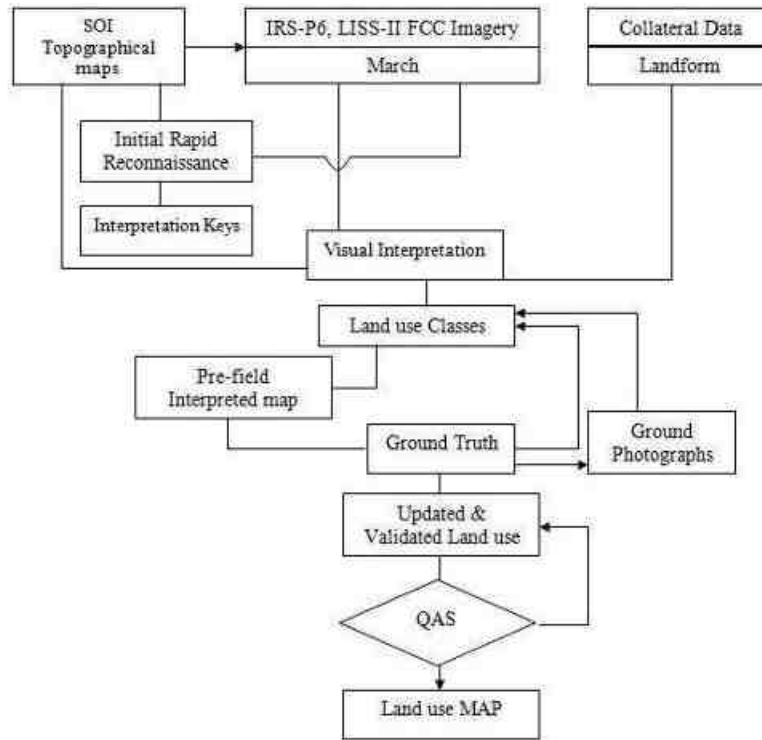


Figure 3-1: Flow Chart showing Methodology of Land use mapping

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.

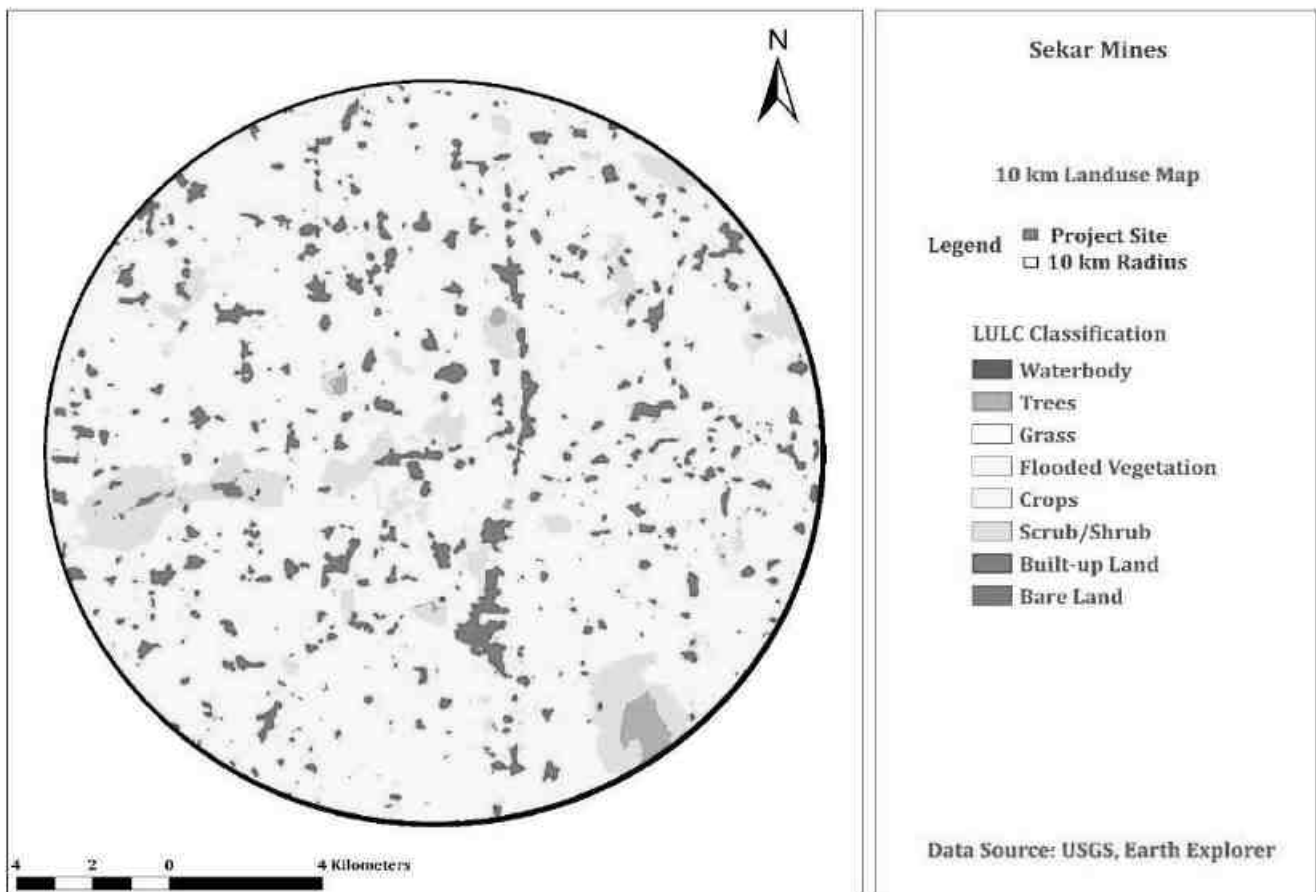


Figure 3-2 Land use classes around 10 km radius from the project site

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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

Classification	Area in Sq.km
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

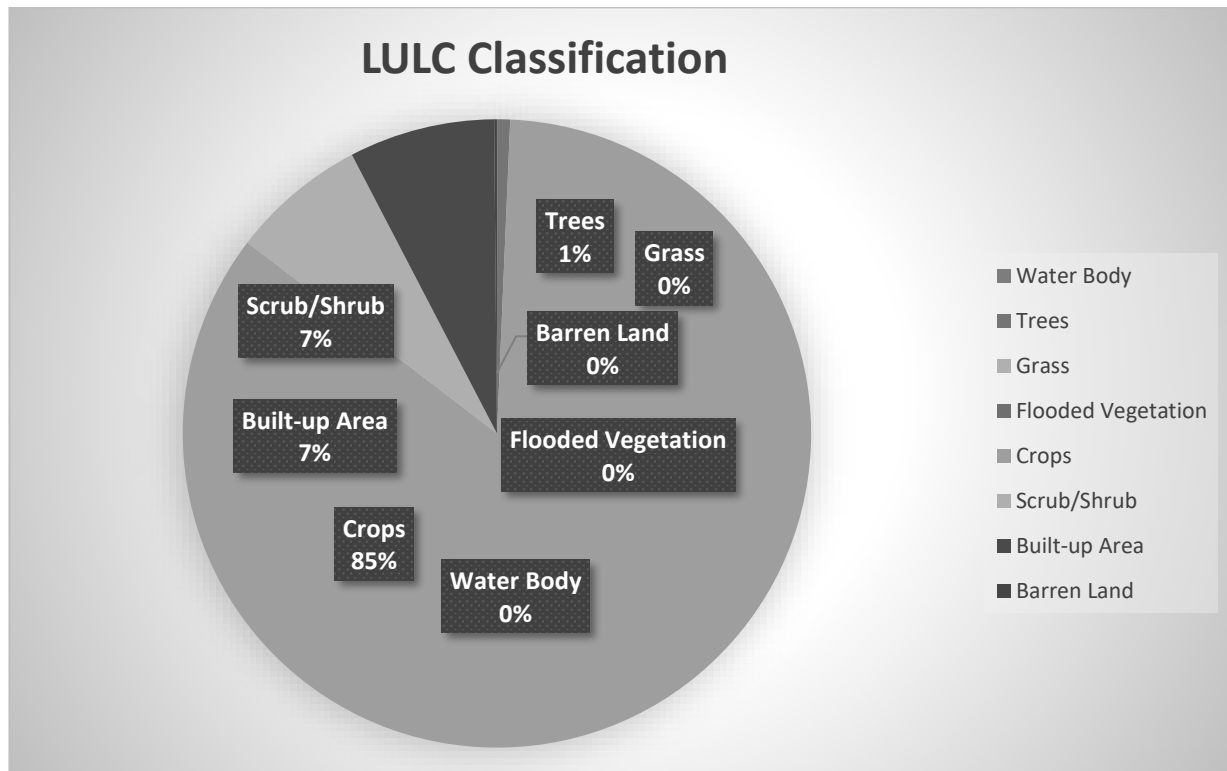


Figure 3-3 Land Use Classification

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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

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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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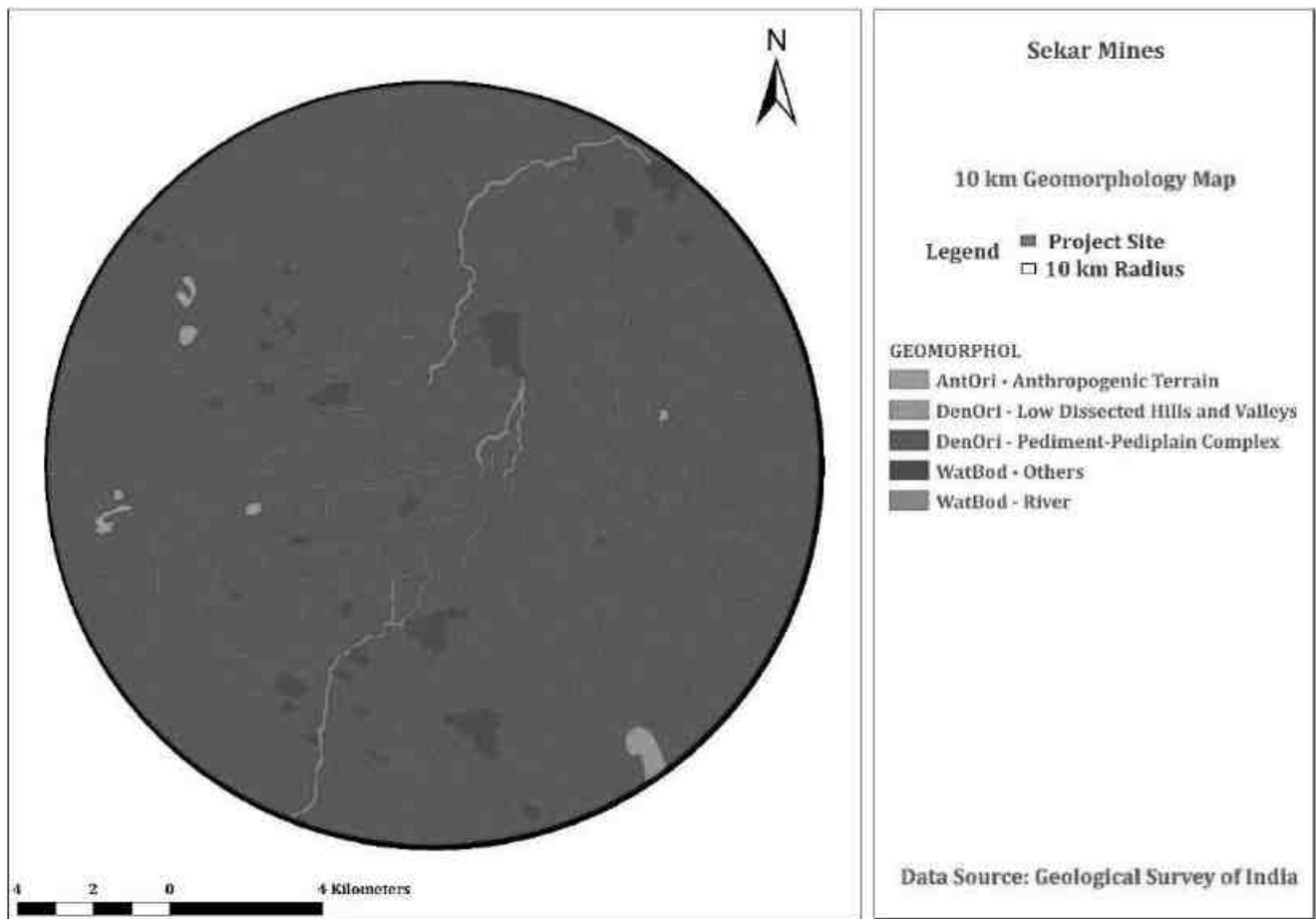


Figure 3-4 Geomorphology within 10km from the project site

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

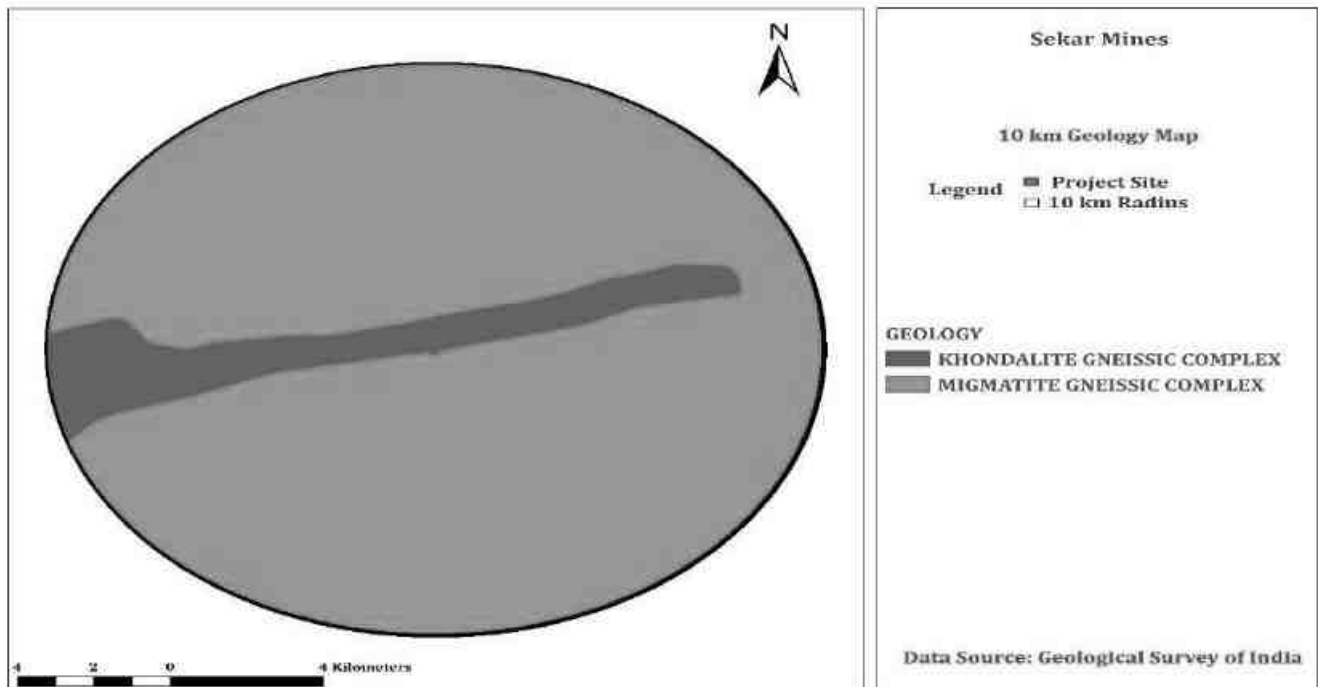


Figure 3-5 Geology Map within 10 km of the Project Site

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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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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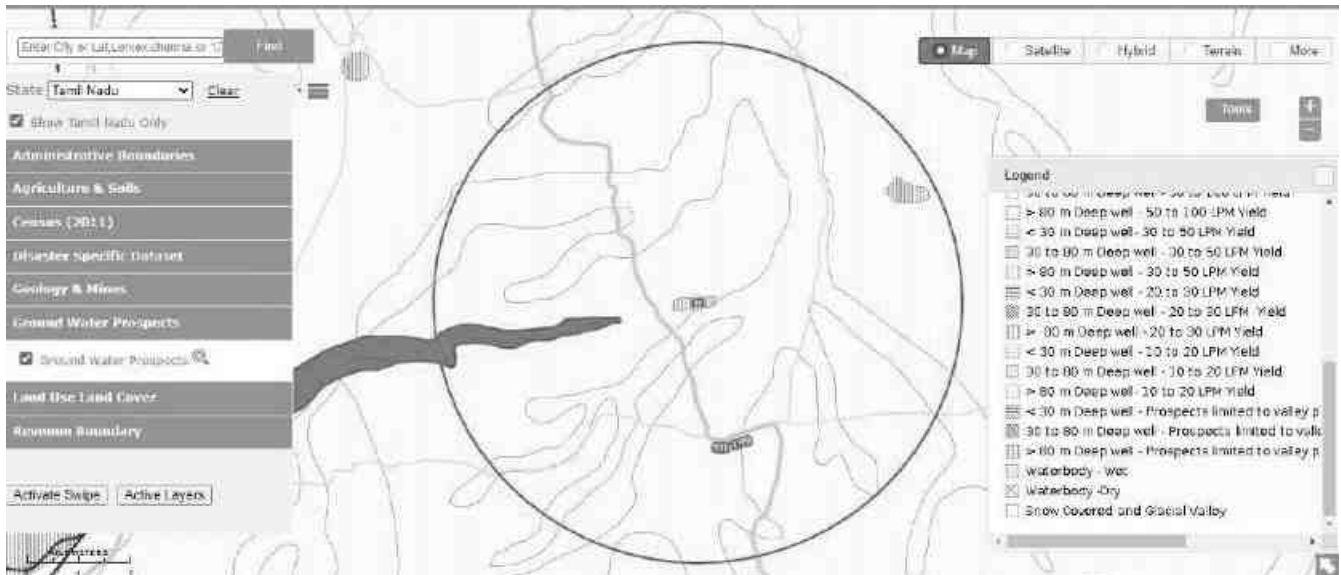


Figure 3-6 Ground water prospects within 5 km radius of the project site

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

Environmental Parameters: Ground water Quality Analysis	
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

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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 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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Table 3-5 Ground water Quality Results

Parameter	Unit	Test Method	GW1	GW2	GW3	GW4	GW5
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 rd 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 ₃	APHA 23 rd Edn.2017-2340-C	mg/L	457	455	554	723	376
Calcium Hardness as CaCO ₃	APHA 23 rd Edn2017.3500 Ca-B	mg/L	283	208	338	368	183
Magnesium Hardness as CaCO ₃	APHA 23 rd Edn.2017-3500 Mg-B	mg/L	174	247	216	355	193
Calcium as Ca	APHA 23 rd Edn2017.3500 Ca-B	mg/L	113	83.3	135	147	73
Magnesium as Mg	APHA 23 rd 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 ₄	APHA 23 rd Edn.2017-4500 SO ₄ -E	mg/L	123	232	308	622	16.9
Total Alkalinity as CaCO ₃	APHA 23 nd 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 ₂	IS:3025(P -35)1988 RA: 2014	mg/L	27.4	58.6	11.2	53.8	38.7
Fluoride as F	APHA 23 rd 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 ₃	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

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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

S.No.	Parameter	Unit	Karunam Kulam (Lake Water)
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 ₃	mg/l	332
8.	Total Hardness as CaCO ₃	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 ₄	mg/l	286
13.	Nitrate as NO ₃	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 ₂	mg/L	82.1
19.	Nitrate as NO ₃	mg/L	6.82
20.	Sulphate as SO ₄	mg/L	286

3.5 Climatology & Meteorology:

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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 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.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F

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2017	17.2	0	49	10.2	68.6	9.8	18.6	132.4	175.3	87.2	54	93.1
2018	1.2	14.5	12.3	3.3	125.6	11.4	24.2	20.9	107.9	63.9	82.1	1.4
2019	0	0	0.5	7.9	30.3	33.4	11.7	20.7	144	122	69	85.1
2020	0.1	0	1.4	27.7	7.6	78.4	77.9	87.1	144	58.1	124.1	78.1
2021	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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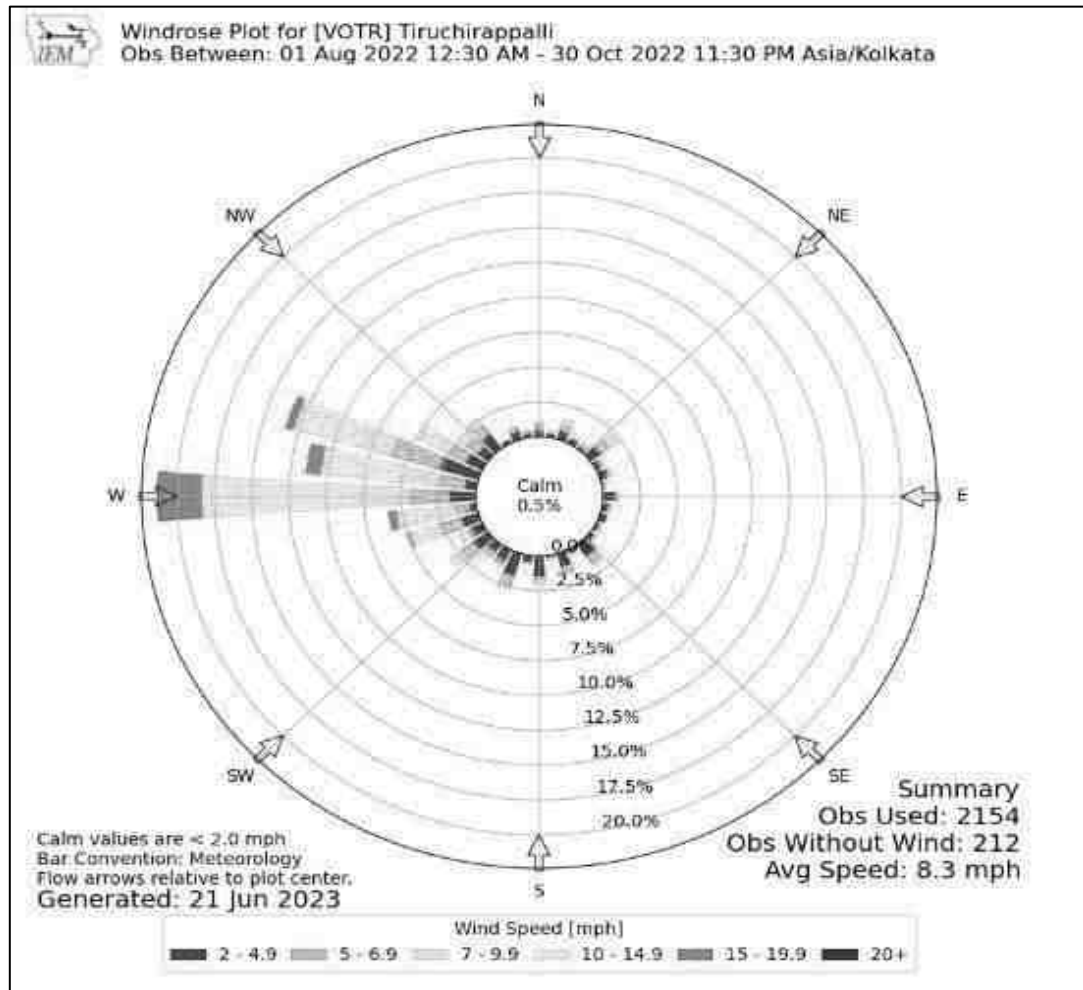


Figure 3-7 Windrose Diagram (August - October 2022)

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

Environmental Parameters: Ambient Air	
Monitoring Period	August - October 2022
Design Criteria	The monitoring stations are selected based on factors like

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	Topography/terrain, prevailing meteorological conditions 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	Location & Code	Distance (km)	Direction
	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 ($\mu\text{g}/\text{m}^3$)			SO ₂ ($\mu\text{g}/\text{m}^3$)			NO _x ($\mu\text{g}/\text{m}^3$)		
		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
NAAQ Standards - Residential Area		100 ($\mu\text{g}/\text{m}^3$)			60($\mu\text{g}/\text{m}^3$)			80 ($\mu\text{g}/\text{m}^3$)			80 ($\mu\text{g}/\text{m}^3$)		

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Observations of Results

The concentrations of PM₁₀, PM_{2.5}, SO₂ and NO₂ 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

Environmental Parameters: Noise Analysis	
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))

Code	Locations	Day (db(A))	Night (db(A))
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.

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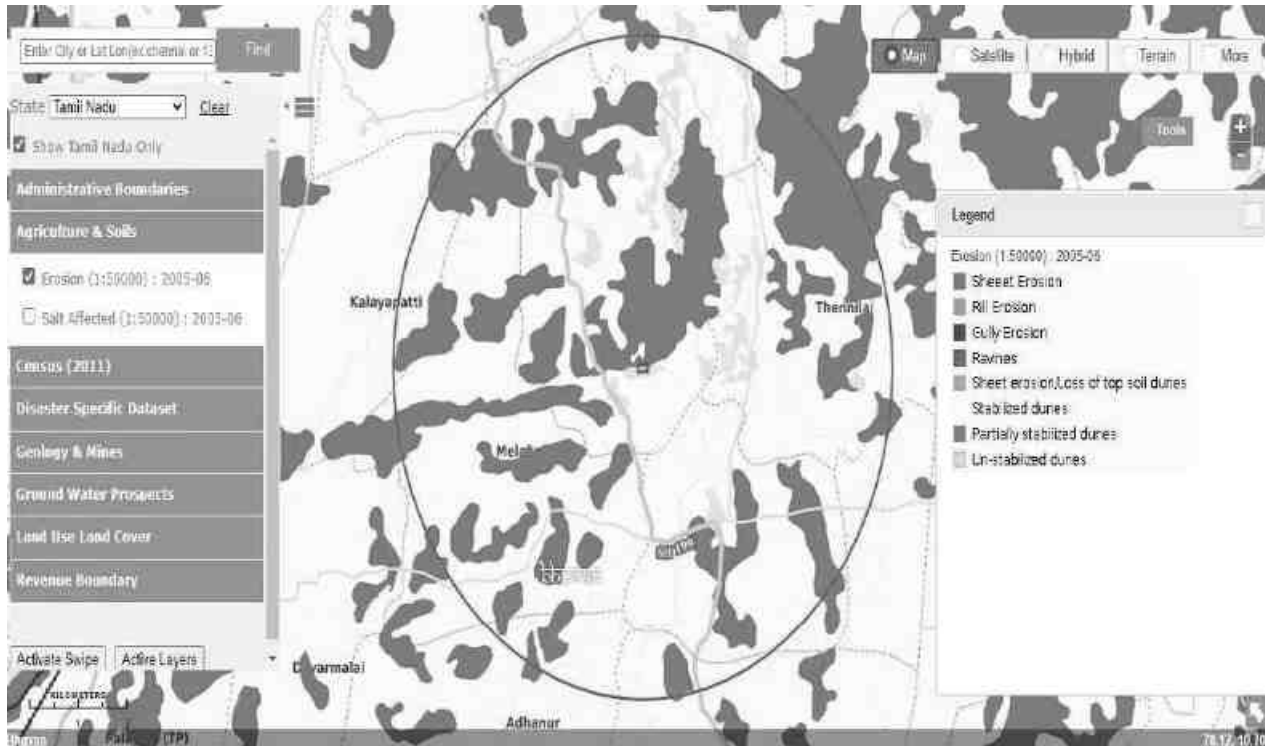


Figure 3-8 Soil within 5 km radius of the project site

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.

Environmental Parameters: Soil Quality Analysis	
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 –

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	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 ³	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

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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.

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3.9.2 Tools Used

1. Nails,
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

S. No.	Location	No of Quadrates		
		Trees (10m x 10m)	Shrubs (5m x 5m)	Herbs & grasses (1m x 1m)
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

Parameters	Formula
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

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants with	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IUCN Conservati on Status
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	Woodfordiafruiticosa	Velakkai	3	3	24	0.13	0.13	1	1.55	3.03	Least Concern
14	Morindapubescens	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

Description	Formula
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

Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
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
Couroupitaguianensis	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

Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
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

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Catharanthus roseus	Nithyakalyani	3	0.015464	-4.16925	-0.06447
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	Vishapoondur	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_{max}	Evenness	Species Richness (Margalef)
Trees	3.22	3.5	0.9	7

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Shrubs	2.36	2.77	0.85	2.84
Herbs	2.56	2.83	0.9	2.89

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

Class	Frequency (%)	Normal Value in the class
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

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

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4.	Bambusa vulgaris	Moongil	66.67	D
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	Gemmayir-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

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29.	Tectona grandis	Thekku	50.00	C
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

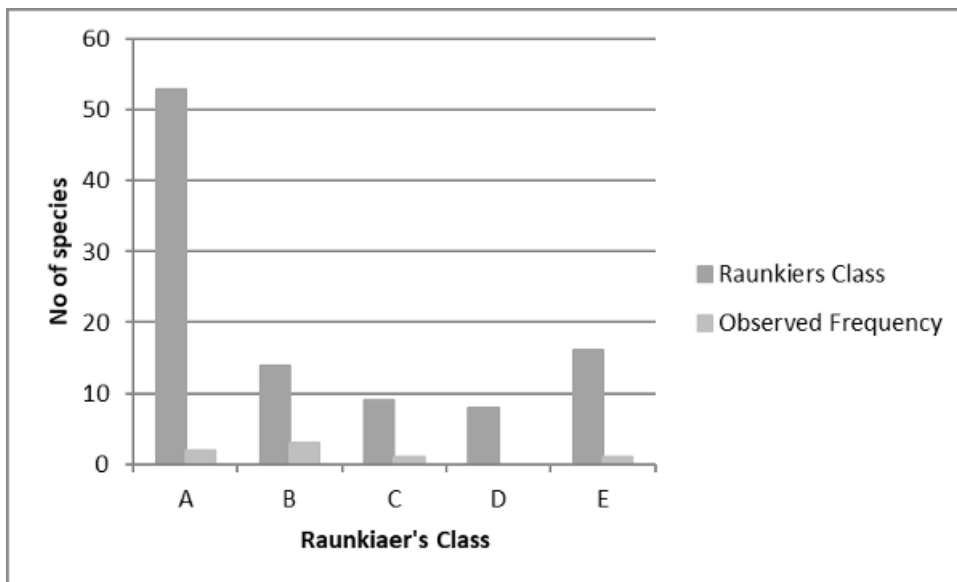


Figure 3-9 Raunkiaer's class for the observed species

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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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:

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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

Scientific Name	Common Name	Schedule of wild life protection act	IUCN conservation status
Mammals			
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
Canis lupus familiaris	Indian dog	Not listed	Not listed

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Bos Indicus	Indian Cow	Not listed	Not listed
Bubalus bubalis	Buffalo	I	Not listed
Sus scrofa domesticus	Domestic pig	Not listed	Not listed
Reptiles & Amphibians			
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
Butterflies			
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

Scientific Name	Common Name	Schedule of wild life protection act	IUCN conservation status	Timing	Observed Month
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
Microfusaffinis	House swift	-	Common	Morning	May
Coracias benghalensis	Indian Roller	IV	Least Concern	Evening	March
Meropsorinetali	Common bee eater	IV	Least Concern	Evening	March
Psittaculakrameri	Rose Ringed Parakeet	IV	Least Concern	Seen in morning & evening multiple	3 months

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				times	
Eudynamis scolopaceus	Koel	IV	Common, Resident	Seen in morning & evening multiple times	3 months
Aredeolagrayii	Indian Pond Heron	IV	Least Concern	Evening	April
Acridotheres ginginianus	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
Pycnonotus cafer	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
Acridotheres tristis	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 asiaticus	Common Indian jar	IV	Common	Evening	May
Cinnyris asiatica	Purple sunbird	IV	Least Concern	Morning	March
Columbus livibus	Pigeon	IV	Common	Seen in morning & evening multiple times	3 months
Copsychus saularis	Magpie robin	IV	Common	Evening	March
Cuculus varius	Common-Hawk Cuckoo	IV	Common, Resident	Evening	March

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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
Dissemurusparadiseus	Rackete tailed drongo	IV	Resident	Morning	March
Francolinuspondicerianus	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
Mirafraerythroptera	Red winged Bushlark	IV	Common, Resident	Morning	April
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
Temenuchuspago darum	Brahmny myna	IV	Common	Seen in morning & evening multiple times	3 months
Tephrodornispon diceraianus	Common wood shrike	IV	Common	Evening	March
Uroloncha striata	Spotted munia	IV	Common	Morning	April

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3.10 Demography and Socio Economics

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

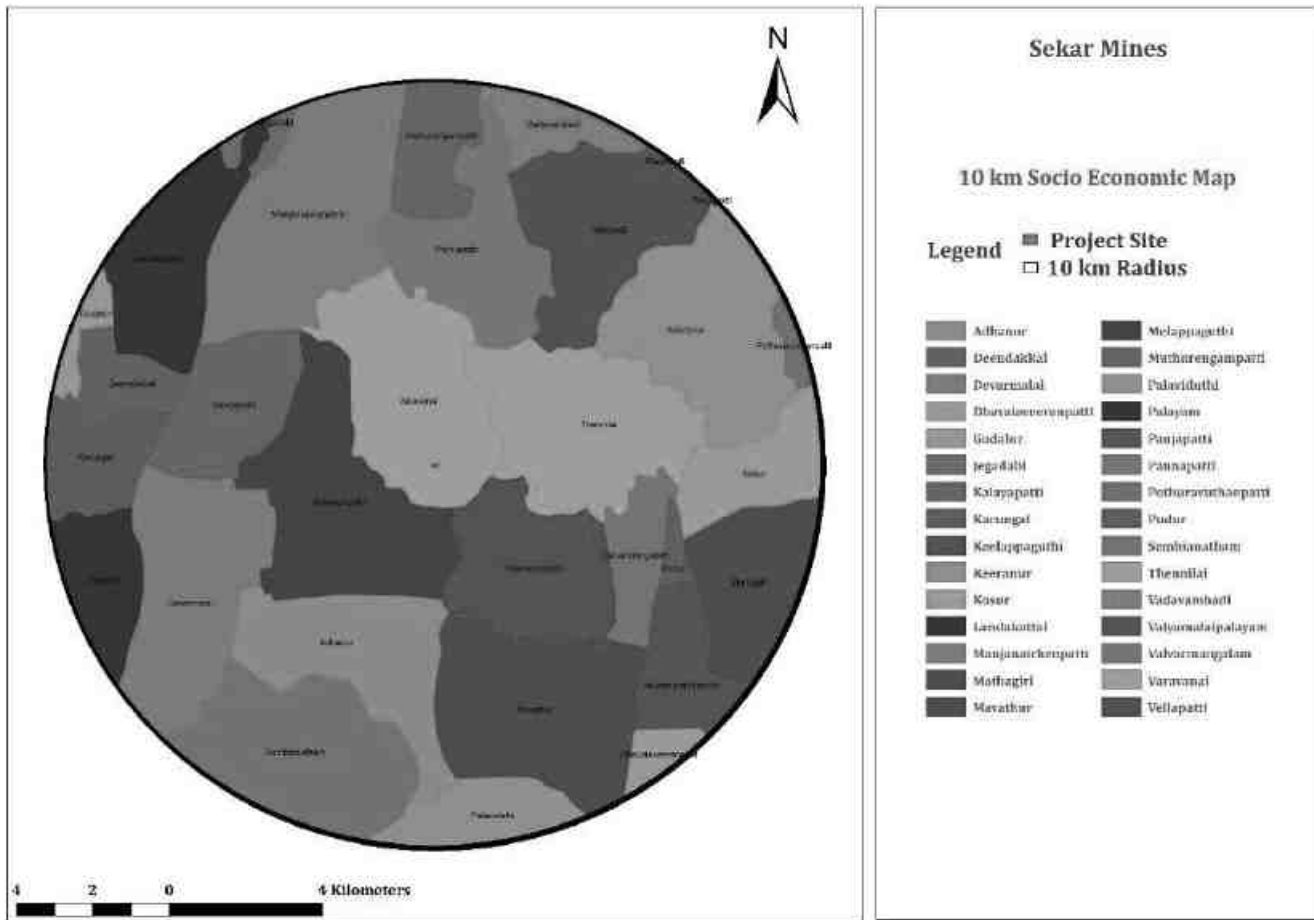


Figure 3-10 Socio Economics Map Surrounding the Project Site

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

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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
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

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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.



Figure 3-11 Site Connectivity

Table 3-20: Number of Vehicles Per Day

Sl. No.	Vehicles Distribution	Number of Vehicles Distribution/Day	Passenger Car Unit (PCU)	Total Number of Vehicle in PCU
		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

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5.	Three wheelers	173	1.5	259.5
	Total	1330		1872

Table 3-21: Existing Traffic Scenario and LOS

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

Note; The existing level may be 'Very Good' for SH 40

V/C	LOS	Performance
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

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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

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"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:

Aspect	Impact	Mitigation Measures								
<i>Mining of Limestone</i>	<p>The proposed 2.24.0 Ha mine in Varavanai, proposed to mines Limestone of 4876 Tones for next 4 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 4 years, 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;">Dimensions</th> <th style="text-align: center;">Ultimate pit dimension (m)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Length (m)</td> <td style="text-align: center;">70</td> </tr> <tr> <td style="text-align: center;">Width (m)</td> <td style="text-align: center;">60</td> </tr> <tr> <td style="text-align: center;">Depth (m)</td> <td style="text-align: center;">21</td> </tr> </tbody> </table> <p>This may lead to soil erosion, degradation and resource loss.</p>	Dimensions	Ultimate pit dimension (m)	Length (m)	70	Width (m)	60	Depth (m)	21	<p>The proposed project site is prone to stabilized dunes and sheet erosion and gully erosion (Source: Bhuvan). 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"> - 3 Tier plantation will be done. - Herbs and shrubs will be planted alternatively between two thick canopy trees. - 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. - In addition, garland drainage of 1m x 1m will
Dimensions	Ultimate pit dimension (m)									
Length (m)	70									
Width (m)	60									
Depth (m)	21									

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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"> - 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. <p>The overburden present upto a depth of 1m BGL (Quantity 1828 MT) will be dumped 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.</p> <p>The source of dust generation is majorly due to loading & 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</p>
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		<p>the safety distance.</p> <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 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.</p>
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4.3 Water Environment:

Aspect	Impact	Mitigation Measures
<i>Loading and unloading, Transportation of the excavated mineral.</i>	<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 21.0 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</p>

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	<p>Improper management of Domestic wastewater in the Mine lease may create unhygienic conditions in the site thereby causing health impacts to the labors</p>	<p>drinking) after proper treatment and after confirming to best designated usage stipulated by CPCB.</p> <p>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</p>
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4.4 Air Environment:

Aspect	Impact	Mitigation Measures
<p><i>Loading and unloading, Transportation of the excavated mineral.</i></p>	<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"> ➤ The pollutants released into the atmosphere would disperse in the down wind direction and finally reach the ground at farther distance from the source. ➤ The concentrations at ground level mainly depends upon the strength of the emission source and 	<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 (SO₃), oxides of Nitrogen (NO_x) 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 1200Tonnes of Limestone per annum on air environment predictions will be carried out using ISC - AERMOD MODEL.</p> <p>Proposed air pollution control</p>

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	<p>micrometeorology of the study area.</p> <p>➤ Water tankers with 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 unburnt hydrocarbons.</p> <p><u>Effect on Human</u></p> <ul style="list-style-type: none"> • 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. • Dust generation due to loading and unloading of mineral and due to transportation can also affect the workers as well as nearby villagers. <p><u>Effect on Plants</u></p> <p>➤ Stomatal index may be minimized due to dust deposit on leaf.</p>	<p>measures</p> <ul style="list-style-type: none"> ➤ Regular sprinkling of water at the active mine faces and also on the haul roads. ➤ Regular maintenance of transport vehicles. ➤ Provision of dust masks to the workers ➤ Avoiding overloading of tippers and covering of loaded tippers with tarpaulins during mineral transportation. ➤ Limiting the speed of transport vehicles ➤ Regular maintenance of transportation road outside the mine lease area ➤ Maintenance of 7.5m barrier zone all along the mine lease boundary and greenbelt in the barrier zone. ➤ Periodical monitoring of air quality to take steps to control the pollutants. <p>Proposed control measures for traffic density</p> <ul style="list-style-type: none"> ➤ Batch transport system has been adopted, thereby providing sufficient space for normal traffic. ➤ Silencers of the transportation vehicles are maintained in good conditions to avoid high noise generators ➤ Speed breakers, traffic signals, foot paths, etc has
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		<p>been provided at strategic locations for the safety of the pedestrians.</p> <ul style="list-style-type: none"> ➤ Only trained drivers are employed and all traffic rules are being strictly followed. ➤ Regular cleaning / sweeping of mineral transportation roads nearby habitations outside the mine lease area.
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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.

Table 4-1 Emissions Factors for Uncontrolled mining

Activity	Emission Factor		References	
Topsoil handling	Scraper	0.029 Kg TSPM/ average time between spray	USEPA (2008)	Jose I. Huertas & Dumar A. Camacho & Maria E. Huertas, Standardized

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		application		emissions inventory methodology for open-pit mining areas, Environmental Science Pollution Research, 2012.
	Bulldozing	15.048 kg PM10/ Hr excavation	USEPA (2008)	
	Loading	2.3237E-04 kg PM10/ average time between spray application	USEPA (2006a)	
	Haulage	0.69718 kg PM10/VKT	USEPA (2006a) Cowherd (1988)	
Rough stone mining	Wet drilling	8.00E-5 lbs PM10/ Ton produce	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.	
	Loading	1.00E-4 lbs PM10/ Ton produce		

4.5 Noise Environment:

Aspect	Impact	Mitigation Measures
<i>Loading and unloading, Transportation of the excavated mineral.</i>	Usage of Equipment and trucks used for transportation will generate noise. Noise from the machinery can cause hypertension, high stress level, hearing loss, sleep disturbance etc due to prolonged exposure.	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 reduced to minimum possible level. • Awareness will be imparted to the workers once in six months about the permissible

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	<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>noise level and effect of maximum exposure to those levels. Adequate silencers will be provided in all the diesel engines of vehicles.</p> <ul style="list-style-type: none"> • It will be ensured that all transportation vehicles carry a valid PUC Certificates. • Speed of trucks entering or leaving the mine will be limited to moderate speed (20km/hr) to prevent undue noise from empty vehicles. • It is proposed to plant 1200 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. • The trucks will be diverted on two roads and a District road to avoid traffic congestion. • Health checkup camps will be organized once in six month. • Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas. • Provision of quiet areas, where employees can get relief from workplace noise.
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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 mined out mineral	The mining activities may cause dust emission, noise pollution thereby causing disturbance to the local habitat	No human activity is envisaged near the project site. The nearest human settlement is observed in, which is $\approx 0.3\text{km}$ away from the project site.

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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 Solar Powered Smart Class, Infrastructure, basic amenities such as safe Drinking water, Hygienic Toilet facilities, Napkins, Furniture, Environmental awareness books for library, Green belt development and maintenance of School Toilets up to the life

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

		lease period of the mines in Varavanai Government middle School,
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4.8 Other Impacts:

S. No.	Aspect	Impact	Mitigation measure
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

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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.6556/SEAC/TOR-1035/2021 dated 13.10.2021. 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

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

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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.

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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

Parameters	Sampling	Frequency	Location
Air environment – Pollutants PM 10 PM 2.5 SO ₂ NO _x 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

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		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"> • pH • Temperature • Turbidity • Magnesium Hardness • Total Alkalinity • Chloride • Sulphate • Fluoride • Nitrate • Sodium • Potassium • Salinity • Total nitrogen • Total Coliforms • Fecal Coliforms 	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"> • pH • Temperature • Turbidity • Magnesium Hardness • Total Alkalinity • Chloride • Sulphate • Fluoride • Nitrate • Sodium 	Sample from nearby lakes/river	One time Sampling	

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<ul style="list-style-type: none"> • Potassium • Salinity • Total nitrogen • Total Coliforms • Fecal Coliforms 			
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

S. No.	Attributes	Parameters	Frequency	Location
1.	Ambient Air Quality at Mine Site & Fugitive Dust Sampling	PM 10 PM 2.5 SO ₂ NO _x	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.

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STEP 3: RISK CONTROL:

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.

Co-ordination with Local Authorities:

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

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- 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.

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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 1200 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 Solar Powered Smart Class, Infrastructure, basic amenities such as safe Drinking

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water, Hygienic Toilet facilities, Napkins, Furniture, Environmental awareness books for library, Green belt development and maintenance of School Toilets up to the life lease period of the mines in in Varavanai Govt. middle 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
Total		10,35,080

Total Project Cost: Rs. 10,35,080/- (Ten Lakhs Thirty-Five Thousand and Eighty 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	22400	22400
	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

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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	44800
	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

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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	22400	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

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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	4800
	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	448000	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	112000	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 - 1200 trees for 2.24.0 hectare (480 Inside Lease Area & 720 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplanted of saplings @ 200 per plant (capital) for	96000	14400

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Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
		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)	216000	21600
Total			13,44,300	2,89,180
Total Cost			16,33,480	

Year	Cost (@ 5% per year inflation adjustment) in Rs.
1 st Year	16,33,480
2 nd Year	3,03,639
3 rd Year	3,18,821
4 th Year	3,34,762
Total	25,90,702

The total EMP Costing for 4 years- 25,90,702/-

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9 Environmental Cost Benefit Analysis

Environmental Cost Benefit Analysis is not recommended.

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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

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It is an existing mining area for Mining Lease. It is proposed to carry out the mining operations to a depth of about only 21 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): 21m

Average Depth proposed during the mining plan period:21 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

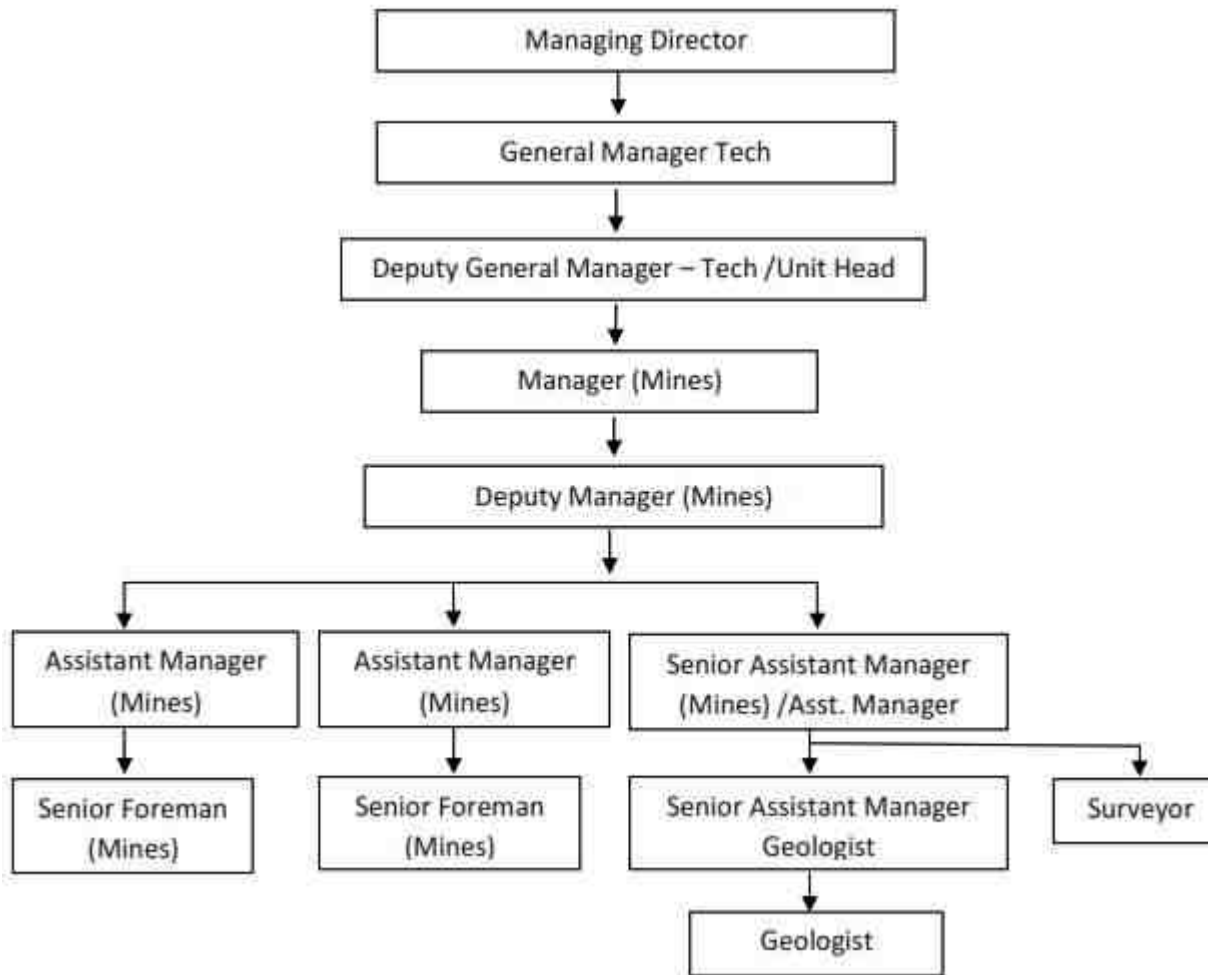
The rain water flow towards catchment area is not flowing through the area applied for mining lease as garland drains are proposed to be constructed around the area applied for mining lease. Hence, solid wash off will not occur.

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.

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Table 10-1 :Impacts and mitigation measures

S. No.	Impacts on Environment	Activity /Aspect	Anticipated impacts	Mitigation measures
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"> • Planting of trees along the safety distance of the Mine Lease Area • Water will be sprinkled in the site as dust suppression measure.
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"> • 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
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"> • Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas
4.	Land	Improper management of Storm water Runoff	Storm water Runoff may result in Soil Erosion	<ul style="list-style-type: none"> • Garland drainage of 1m x 1m will be provided to avoid storm water run-off.
4.	Social Responsibility	Mining workers	Unhygienic site sanitation facilities may cause health damage to workers.	<p>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 done in the site</p> <ul style="list-style-type: none"> ✓ By complying with the

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				<p>safety procedures, norms and guidelines (as applicable) as outlined in the National Building Code of India, Bureau of Indian Standards.</p> <ul style="list-style-type: none"> ✓ Provide adequate number of decentralized latrines and urinals ✓ Providing Septic tank along with Soak pit arrangement ✓ Providing First Aid room, conducting frequent health checkups to labor and conducting free medical camps ✓ Providing safety helmet, Gloves, Jacket & Boots ✓ Providing measures to prevent fires. Fire fighting extinguishers and buckets of sand will be provided in the construction site
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"> • Use of locally available construction materials.

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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 2.24.0 Ha of Varavanai Limestone Quarry located at S.F. No. 835/3, 836(P), 837/1Bof Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu. The area lies in the latitude of N 10° 45' 06.35" and longitude of E 78° 13' 50.74". The area is marked in the survey of India Topo sheet No. 58 J/2.

11.2 Project Overview

Table 11-1 : Project Overview

S. No.	Description	Details
1	Project Name	Varavanai Limestone Quarry of Sekhar Mines
2	Proponent	Thiru. S. Sekhar, owner of Sekhar Mines
3	Mining Lease Area Extent	2.24.0 Ha
4	Location	835/3, 836(P), 837/1Bof Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu
5	Latitude	N 10° 45' 06.35"
6	Longitude	E 78° 13' 50.74"
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: Total 5 year production : 4,876 Tonnes
12	Ultimate depth of Mining	21 m below ground level (1 m Overburden + 20 m Limestone)
13	Method of Mining	Open cast manual method of mining
14	Water demand	1.32 KLD
15	Source of water	Water will be supplied from nearby villages.
16	Man power	7 Nos.

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17	Mining Lease	G.O.3(D). No. 292 Industries (MMA-2) Department dated 04.10.1995 for a period of twenty years. MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 17.11.2045 (effective from 17.11.2015). The 1 st scheme of mining lease was granted for five years by Indian Bureau of Mines dated 30.06.2005. Further, the 2 nd scheme of the mining lease for a period of five years (2010-2011 to 2014-2015) approved by Indian Bureau of Mines dated 10.10.2012. 3 rd Scheme of Mining Plan was approved by Indian Bureau of Mines dated 13.06.2016 for a period of 5 years ((2015-2016 to 2019-2020. The Review of Mining Plan was approved by the Indian Bureau of Mines vide letter No. TN/KRR/LST/ROMP-1651.MDS dated 23.07.2021 for a period of 5 years (2020-2021 to 2024-2025)
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 21 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.
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	Water bodies: <ul style="list-style-type: none"> ➤ Mamathupatti Kanmai – 0.39 km SE ➤ Varavanai Kanmai – 0.60 km SW ➤ Mariyamman Kulam – 1.89 km NE ➤ KarunamKulam – 2.82 km NW ➤ P. UdayapattiKulam – 3.45 km NE ➤ TharagampattiKulam – 3.70 km S ➤ OttaKulam – 5.27 km NW ➤ Poovaeekulam – 5.67 km NW ➤ Perumaan Kulam – 6.06 km NE

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		<ul style="list-style-type: none"> ➤ MavathurKulam – 6.36 km SE ➤ Panjapatty Lake – 9.26 km NE ➤ VellianaiKulam – 11.71 km NW ➤ KaraiKulam – 13.19 km NE ➤ PothuravuthanpattyKulam – 14.47 km NE <p>Reserve Forest:</p> <ul style="list-style-type: none"> ➤ Vaiyamalaippalaiyam RF – 8.30 km SE ➤ MungilKaradu RF – 11.82 km SW ➤ Veeramalai RF – 12.92 km SE
23.	National Parks/Wild life Sanctuaries	➤ Kadavur Slender Loris Sanctuary – 12.58 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

S. No.	Potential Impact	Mitigation Measure
1	The main impact in the air environment is dust emission during various mining activities such drilling, blasting,	Proper mitigation measures like water sprinkling on haul roads will be adopted to control dust emissions.

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	excavation, loading and transportation. The dust emission may affect the quality of ambient air in the and around the mine area. The increased emission may cause respiratory & Cardiovascular problems in human health	To control the emissions regular preventive maintenance of equipments 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

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		also arrest dust.
4	Solid waste will be generated from the mining activity as there will be refuse after 95% recovery and also generation of domestic waste	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 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 01.06.2016 to 31.08.2016 and produced 600 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 manual 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 01.06.2016 to 31.08.2016, the Lessee has operated the Varavanai Limestone Quarry for a Production of 600 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.)
Methodology 1:				
	CPCB Methodology for Environmental Compensation	EC = PI x N x R x S x LF	PI = Pollution Index N = Number of days of violation took place R = Rupee factor for EC S = Scale of Operation factor LF = Location Factor	1,68,750
Methodology 2:				
European Environmental Agency's Methodology				
	Environmental Components	Particulars	Remarks	Damage Cost (Rs.)
A)	Air Environment	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.	70,275
		Fugitive emissions from mining equipment/ machineries, trucks and DG		

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		sets		
B)	Water Environment <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.	1,500
		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 0.5 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.			

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	Pumping of ground water while basement excavation /construction	No pumping of ground water. The water requirement was met through authorized vendors.	
	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 21 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	

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	<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. 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.	No damage cost
		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.		
	<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

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C)	Noise and Vibration	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 60,000 is allocated for greenbelt in the neighborhood of the site.	65,000
D)	Land Environment	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.	30,000
E)	Solid Waste Management	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

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F)	Greenbelt	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 60,000 is allocated for greenbelt in the neighborhood of the site.	No damage cost
G)	Wildlife Conservation Plan	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-provision will be levied for urban infrastructure projects, and upto maximum 20% for mining and industry projects.	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
H)	Energy Conservation	The cost of compliance under different conditions shall be assessed as following: - If the project is under operation where it is partially complied except building envelope, there impact of excess energy	This is a Limestone mining project, hence no provision for conservation of energy.	No damage cost

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		<p>consumption will be assessed on prorata basis and cost of damage will be levied.</p> <ul style="list-style-type: none"> - 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. - The cost of impact or damage will be applicable in operating projects where ECBC is partially complied excepting the building 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. - The committee will 		
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		<p>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 / remediation during violation period.</p> <ul style="list-style-type: none"> - In case of commercial buildings, 20% of water heating by solar system and non provision will attract the cost of impact. 		
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I)	RH/OHS	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 60,000 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 assessed and levied.	No impact on local infrastructure like roads, buildings, sanitation and transportation and water	

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		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.	
J)	Economic Benefits out of Violation	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. 56,820/-. Remediation Cost will be limited to 3% of Nett Profit.	1,705
Total Damage Cost				1,68,480

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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. 1.69 Lakhs.

13.4 Ecological Damage Remediation Plan

The total Ecological/Environmental Damage Cost Rs. 1.69 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. 1.69 Lakhs toward Remediation Plan and Natural & Community Resource Augmentation Plans is allotted for approval which will be spent within 3 Months. 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 100 Trees in the neighboring Mine lease area @ Rs.500 per Tree including its maintenance	0.50
2	Water Environment	Provision of Rain water harvesting wells adjacent to the mining area for recharge of ground water	0.30

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3	Socio-economics & Public Health	Community/Public Buildings Maintenance and Conducting Medical Camps	0.30
Total			1.10

Table 13-3 Natural Resource Augmentation Plan

Sl. No.	Activity Proposed	Total (Rs. Lakhs)
1	Providing Solar Street Lights to nearby Village @ Rs.20,000/- per Light, 1 Village	0.20
Total		0.20

Table 13-4 Community Resource Augmentation Plan

Sl. No.	Activity Proposed	Total, Rs. Lakhs
1	Soft skill Development Work: <ul style="list-style-type: none"> • Organize skill development program for sustainable income generation & livelihood for the community like training on scientific agricultural practices, tailoring, embroidery, etc. • Awareness program for reduction of plastic waste reduction / solid waste Management • Imparting entrepreneurship development training to local people 	0.37
Total		0.37

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

Sl. No.	Activity Proposed	Total, Rs. Lakhs
1	Providing school essentials to economically backward students	0.02
Total		0.02

2

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

Sl. No.	Activity Proposed	Total, Rs. Lakhs
1	Cost of Damage Remediation Plan	1.10
2	Natural Resource Augmentation Plan	0.20
3	Community Resource Augmentation Plan	0.37
4	Community Welfare Plan	0.02
Total		1.69

13.5 Conclusion

Total budgetary provision with respect to Remediation Plan and Natural & Community Resource Augmentation Plan is Rs. 1.69 Lakhs. The Lessee shall be required to submit a Bank Guarantee of an amount of Rs. 1.69 Lakhs towards Remediation Plan and Natural & Community Resource Augmentation Plan in favour of TNPCB prior to the grant of EC.

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The Remediation Plan will be completed in 3 months 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.6556/SEAC/TOR- 1035/2021 Dated: 13.10.2021

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** with Public Hearing under violation for the existing Varavanai Lime Stone quarry over an Extent of 2.24.0 Ha in SF.No.835/3, 836(P) &837/1B, of Varavanai Village, Kulithalai Taluk, Karur District, Tamil Nadu under project category – B and Schedule S.No. 1(a) – TOR issued with public hearing for the preparation of EIA report, EMP report, ecological damage assessment, remediation plan, natural resource augmentation and community resource augmentation –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/22365/2018, dated: 15.03.2018.
transferred from MoEF&CC (Under Violation)
 4. Your request letter dated: 13.04.2018.
 5. Minutes of the 140th Meeting of SEAC held on 10.12.2019.
 6. Minutes of the 227th Meeting of SEAC held on 21.08.2021.
 7. Minutes of the 456th Meeting of SEIAA held on 01.10.2021




MEMBER SECRETARY
SEIAA-TN

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 with Public Hearing (Under Violation) on 07.06.2019, in Form-I, Pre- Feasibility report for the existing Varavanai Lime Stone quarry over an Extent of 2.24.0 Ha in SF.No. 835/3, 836(P) & 837/1B of Varavanai Village, Kulithalai Taluk, Karur District, Tamil Nadu seeking TOR under the MoEF & CC Notification cited under reference 1st & 2nd.

Discussion by SEAC and the Remarks:-

The proposal was placed in the 140th SEAC Meeting held on 10.12.2019. However, the EIA Co-ordinator of NABET Accredited consultant revealed that site inspection was not carried out by the EIA Co-ordinator for the project. Hence the SEAC directed the EIA Co-ordinator and the consultant to conduct the field inspection and to come for representation. Also, the SEAC warned the NABET Accredited consultant and the EIA Coordinator of project not to come for presentation without making site visit by him in future as the practice has been repeated many time.

The proposal was placed for appraisal in the 227th meeting of SEAC held on 21.08.2021. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

SEAC noted the following:

The project proponent, M/s. Sekhar Mines, has applied for **Terms of Reference (Under Violation)** for the proposed Limestone quarry lease area over an extent of 2.24.0Ha at S.F.Nos. 835/3, 836(P) & 837/1B, Varavanai Village, Kulithalai Taluk, Karur District, Tamil Nadu.

1. The project/activity is covered under Category "B2" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006.
2. The production for the four years states that the total quantity of recoverable as 4876 cu.m of Limestone and the ultimate depth of mining is 21m below ground level.

Based on the presentation and documents furnished by the project proponent, SEAC decided to recommend the proposal for the **grant of Terms of Reference (ToR) with Public Hearing**, subject to the following ToR 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:

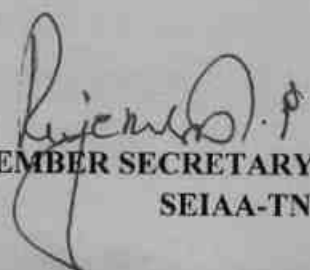
1. The project proponent shall furnish assessment of Ecological damage, remediation plan and natural & community resource augmentation plan to be prepared by the Accredited



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- consultant and also with collection and analysis of data for the assessment of ecological damage, preparation of remediation plan and natural & community resource augmentation plan to be done by an Environmental laboratory duly notified under the Environment (Protection) Act,1986, accredited by NABET or a laboratory of Council of Scientific and Industrial Research Institutions working in the field of Environment.
2. A detailed study of the lithology of the mining lease area shall be furnished.
 3. The proponent shall form proper benches as per the approved mining plan during the operation of the quarry considering the hydro-geological regime of the surrounding area as well as for safe mining.
 4. 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.
 5. The Project Proponent shall conduct the hydro-geological study to assess the impact considering the contour map of the ground 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 water levels for both monsoon and non-monsoon seasons from the PWD / TWAD.
 6. The Proponent shall carry out the Cumulative impact study due to mining from all the mines on the environment in terms of air pollution, water pollution, & health impacts, accordingly the Environment Management plan should be prepared.
 7. The Socio-economic studies should be carried out within a 10 km buffer zone from the mines.
 8. 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.
 9. 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 to assess the cumulative impact of the proposed project on the environment and in order to propose Environment management plan including CER activities proposed with implementation and cost estimation details, considering the requirement raised during public hearing by the local habitants in regard to as per Office Memorandum of MoEF& CC accordingly.




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10. Fugitive emission measurements should be carried out during the mining operation and the report on the same may be submitted to SEIAA once in six months.
11. The proponent shall submit waste/reject handling and management /mode of disposal for the proposed mining activity.
12. A detailed mining closure plan for the proposed project shall be submitted.
13. A detail report on the safety and health aspects of the workers and for the surrounding habitations during operation of mining for drilling and blasting shall be submitted.
14. The Ambient silica analysis w.r.t to occupational health studies needs to be carried out once in six months and report the same to SEIAA.
15. 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).
16. The project proponent shall furnish the details of the existing Green belt area earmarked with GPS coordinates and list of trees planted/to be planted with a copy of photos/documents of the existing green belt, and be included in the EIA Report.
17. The project proponent should provide a detailed plan regarding the green belt area surrounding the mining area at least with a width of 3m.

Discussion by SEIAA and the Remarks:-

The subject was placed before the Authority in its 465th meeting held on 01.10.2021.

The Authority noted the following:

1. The project proponent, M/s. Sekhar Mines, has applied for **Terms of Reference (Under Violation)** for the proposed Limestone quarry lease area over an extent of 2.24.0Ha at S.F.Nos. 835/3, 836(P) & 837/1B, Varavanai 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.

After detailed discussions, the Authority accepted the recommendation of SEAC and decided to **grant Terms of Reference (ToR) with Public Hearing under violation category** to the Project as recommended by SEAC and to request the Member Secretary, SEIAA to write to the



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Government of Tamil Nadu for initiating credible action under Section 19 of the Environmental (Protection) Act, 1986 against the Proponent.

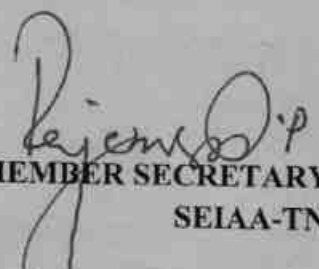
Additional TOR specified by the SEAC to deal with the violation aspects of the mining projects

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.
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."




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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.

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:




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- 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

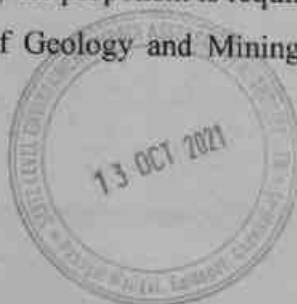
- a) After the appraisal of the EIA / EMP report submitted by the proponent, the SEAC will make a judgement of the quality of the content in the EIA / EMP report specifically with reference to the chapter covering the ecological damage assessment, remediation plan, natural resource augmentation and community resource augmentation.
- 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: 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



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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.

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).




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- 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 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



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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 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



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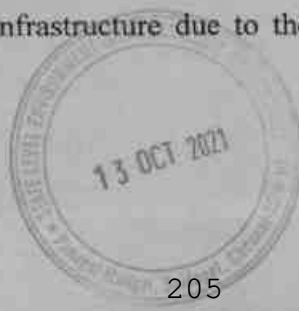
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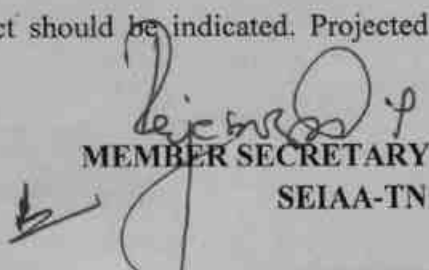
- to the effect that the proposed mining activities could be considered.
- 20) Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (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 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 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




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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.
- 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) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 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.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.



- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 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.
- 44) Besides the above, the below mentioned general points are also to be followed:-
- Executive Summary of the EIA/EMP Report
 - All documents to be properly referenced with index and continuous page numbering.
 - Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - 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.
 - Where the documents provided are in a language other than English, an English translation should be provided.
 - The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - 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.
 - 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.
 - 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.
 - 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.
- 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 is 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.




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- 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 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 29th August, 2017.

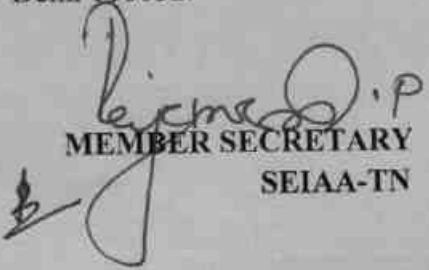
The receipt of this letter may be acknowledged.

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Copy to:

1. The Principal 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.




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3. The Member Secretary, Tamil Nadu Pollution Control Board,
76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, Ministry of Environment Forest & CC (SZ),
34, HEPC Building, 1st& 2nd 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. The EO/BDO, Varavanai Village, Kulithalai Taluk, Karur District
8. Stock File.



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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																																			
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/g 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/g granite blocks (tonnes)							Waste (tonnes/cu.m)							* year of mining operation							
Year and quantity	2010-11*		2011-12*		2012-13*																															
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Waste (tonnes/cu.m)																																				
* year of mining operation																																				



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9)	Quantity mined out during the violation period & if, yes indicate the violated quantity, in term of % of consented quantity.						
	Year and quantity mined out during the violation period	2010-11		2011-12		2012-13	
		Planned	Actual	Planned	Actual	Planned	Actual
	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 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)	Mechanized / Semi – Mechanized Method of Mining						
	(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 (m³)</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 ³)	Numbers	Excavator			Trucks		
	Capacity (m ³)	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)	Method of Rock Breaking/Material preparation for the excavation:									
	(i) Methodology adopted –									
	a) Drilling and blasting									
	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									

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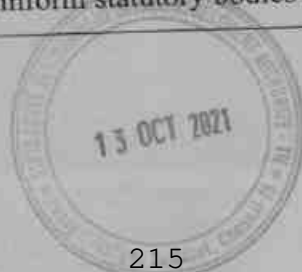
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	(d) Dust pollution
	(e) Noise level (dB(A))
	(f) Ground vibration studies and Fly rock projection
	(iii) Impact of preparation of Ore and waste on environment-
	a) Air Pollution
	b) Noise Pollution
	c) Water Pollution
	d) Safety standards
	e) Traffic 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.
	(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

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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).	
	(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	



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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.	
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 2.24.0 Ha

COMPLIANCE OF TOR CONDITIONS

Point wise compliance of ToR points issued by SEIAA, TN vide letter No. SEIAA-TN/F. No. 6556/SEAC/ToR-1035/2021 Dated: 13.10.2021 for Mining of Major Minerals in the Mine of “Varavanai Limestone Quarry Over an Extent of 2.24.0 Ha at S.F.No. 835/3, 836(P), 837/1B 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-545-MDS dated 30.12.1991 before the grant of Mining Lease. The Mining lease was granted for twenty years under G.O.3(D). No. 292 Industries (MMA-2) Department dated 04.10.1995. The lease deed was executed on 18.11.1995 and the mining operation commenced on 29.11.1995. 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 Review of Mining Plan for mine lease area of 2.24.0 hectare in Varavanai Village for Limestone quarry was approved by the Indian Bureau of Mines vide letter No. TN/KRR/LST/ROMP-1651.MDS dated 23.07.2021.	Annexure-III

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 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 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 Review of Mining Plan for mine lease area of 2.24.0 hectare in Varavanai Village for Limestone quarry was approved by the Indian Bureau of Mines vide letter No. TN/KRR/LST/ROMP-1651.MDS dated 23.07.2021.	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 proposed mining lease area have been incorporated in mining plan and Chapter 2 of EIA/ EMP Report.	Chapter-2, Figure 2.1 and 2.6
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 2.24.0 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 proposed 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 2.24.0 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.	<p>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. The proposed depth of mining is 21 m BGL.</p> <p>The method of mining is detailed in Chapter 2 of the EIA Report.</p>	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	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	Chapter-3, Figure 3.2 and 3.3 Table 3.3

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 Ha

	<p>fauna, water bodies, human 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>prepared and incorporated in Chapter-3 of 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&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 North 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</p>	<p>The proposed mining lease area is not falling under forest land.</p>	

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 Ha

	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.	The proposed mining lease area is not falling under forest land.	
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	Not Applicable. There is no involvement of forest land in the project area.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be	Details of flora have been discussed in Chapter-3 of the EIA/EMP Report.	Chapter-3

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 Ha

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 2.24.0 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 & 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 & 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 proposed mining lease area is not falling under critically polluted area.</p>	

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 Ha

	<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&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</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 2.24.0 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&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 2.24.0 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 & Impact of Air quality is furnished in Final EIA report</p> <p>Transportation of mineral during operation of mines will be done by road & SH 199 through dumpers and the impact of movement of vehicles are incorporated in EIA/EMP report.</p> <p>Air quality modelling & 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 2.24.0 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: 1.32 KLD Dust Suppression: 0.5 KLD Domestic Purpose: 0.32 KLD Plantation :0.5 KLD Domestic Water will be sourced from nearby Villages.	Chapter-2 Table 2.13
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 2.24.0 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: 21 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 proposed quarry	

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 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: 21 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 2.24.0 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 proposed 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 2.24.0 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

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 Ha

	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.	

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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>Fixed Asset 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>Total</td> <td style="text-align: right;">10,35,080/-</td> </tr> </tbody> </table>		S. No	Description	Cost	1	Fixed Asset Cost	7,00,000/-	2	Operational Cost	3,35,080/-		Total	10,35,080/-	Chapter-8 Table 8.1 and 8.2
		S. No	Description	Cost												
		1	Fixed Asset Cost	7,00,000/-												
		2	Operational Cost	3,35,080/-												
	Total	10,35,080/-														
EMP Cost: 25,90,702/-																
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														

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	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	

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	<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 & 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 2.24.0 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 2.24.0 Ha

Additional TOR by SEAC

S.No.	Condition	Compliance
1.	The proponent shall furnish assessment of Ecological damage, remediation plan and natural & community resource augmentation plan to be by the Accredited consultant and also with collection and analysis of data for the assessment of ecological damage, preparation of remediation plan and natural & community resource augmentation plan to be done by an Environmental laboratory duly notified under the Environment (Protection) Act,1986, accredited by NABET or a laboratory of council of Scientific and Industrial Research Institutions working in the field of Environment.	The assessment of ecological damage, remediation plan and natural & community resource augmentation plan has been done by Accredited consultant and the details are furnished in Chapter 13 of the EIA Report.
2.	A detailed study of the lithology of the mining lease area shall be furnished	The detailed study of the lithology of the mine lease area is incorporated in Chapter 3 of the EIA Report.
3.	The proponent shall form proper benches as per the approved mining plan during the operation of the quarry considering the hydro-geological regime of the surrounding area as well as for safe mining.	The quarry operation is proposed up to a depth of 21 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.

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4.	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.	Photographs of Green belt and fencing 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.
5.	The Project Proponent shall conduct the hydro-geological study to assess the impact considering the contour map of the ground 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 water levels for both monsoon and non-monsoon seasons from the PWD / TWAD	The quarry operation is proposed up to a depth of 21 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.
6.	The Proponent shall carry out the cumulative impact study due to mining from all the mines on the environment in terms of air pollution, water pollution, & health impacts, accordingly the Environment Management plan should be prepared.	The cumulative impact study and mitigation measures due to the mining is detailed Chapter 4 of the EIA Report. EMP along with the budget allocation is detailed in Chapter 10 of the EIA Report.
7.	The Socio-economic studies should be carried out within a 10 km buffer zone from the mines	The socio economic studies within 10 km buffer zone of the mine are incorporated in Chapter 3 of the EIA Report.
8.	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

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		the protection of environment due to the mining activities are detailed in Chapter 9 of EIA Report.
9.	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 to assess the cumulative impact of the proposed project on the environment and in order to propose Environment management plan including CER activities proposed with implementation and cost estimation details, considering the requirement raised during public hearing by the local habitants in regard to as per Office Memorandum of MoEF& CC accordingly.	<p>Complied.</p> <p>The baseline monitoring results and traffic assessment study details are incorporated in chapter 3 of EIA Report.</p> <p>The proposed CER activities are mentioned in Chapter 8 of the EIA Report along with the budget allocation.</p> <p>The proceedings of the public hearing will be incorporated in the final EIA Report.</p>
10.	Fugitive emission measurements should be carried out during the mining operation and the report on the same may be submitted to SEIAA once in six months.	Noted and agreed to comply.
11.	The proponent shall submit waste/reject handling and management /mode of disposal for the proposed mining activity	The overburden and the mineral will be dumped in the non-mineral bearing area of the North East and Southern side of the lease area, which is having an adequate space for dumping the waste during the entire life of mine.
12.	A detailed mining closure plan for the proposed project shall be submitted	The mine closure plan for the proposed project is attached as plate no. 12 of the Mining Plan which is

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 Ha

		enclosed as Annexure V.
13.	A detail report on the safety and health aspects of the workers and for the surrounding habitations during operation of mining for drilling and blasting shall be submitted	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. No heavy earth moving machineries are proposed for limestone mining. No secondary blasting is proposed for the mining activities. The method of mining is detailed in Chapter 2 of the EIA Report.
14.	The Ambient silica analysis w.r.t to occupational health studies needs to be carried out once in six months and report the same to SEIAA.	Noted and agree to comply.
15.	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.i12212016, M.A.No.1212017 & M.A. No. 84312017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No.981/2016, M.A.No.982 12016 & M.A.No.384/2017).	Noted
16.	The project proponent shall furnish the details of the existing Green belt area earmarked with GPS	Native species will be planted at the site with a count of 1200 trees (480

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 Ha

	coordinates and list of trees planted/to be planted with a copy of photos/documents of the existing green belt, and be included in the EIA Report.	trees inside the mine lease area and 720 trees outside the mine lease area.
17.	The project proponent should provide a detailed plan regarding the green belt area surrounding the mining area at least with a width of 3m.	A total of 1200 trees are proposed to be planted, in which 480 trees will be planted inside the mine lease area and 720 trees will be planted outside the mine lease area. Native species will be planted as green belt.

Additional TOR Specified by the SEAC to deal with the violation aspects of the mining projects

Section A		
Step 1: Enumerate the aspects of Violation:		
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 300 Tonnes during 01.06.2016 to 30.06.2016, 150 Tonnes during 01.07.2016 to 31.07.2016 and 150 Tonnes during 01.08.2016 to 31.08.2016 thus, total 600 Tonnes of

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 Ha

		Limestone.
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
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.	The total Ecological/Environmental Damage Cost is 1.69 Lakhs
b)	Furnish a description of the environmental damages with quantitative and qualitative data.	Air Quality & Ecology : Rs.50,000/- Water Environment : Rs.30,000/- Socio-economics & Public Health : Rs.30,000/-
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.	An amount of Rs.1.69 Lakhs toward Remediation Plan and Natural & Community Resource Augmentation Plans is allotted for approval which will be spent within in three months.
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	Additional Green Belt : Rs.0. 50 Lakhs Provision of Rain water harvesting wells: Rs.0.30 Lakhs Community/Public Buildings

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	used. time schedule and remediation cost (direct and indirect cost, capital as well as O&M costs).	Maintenance and Conducting Medical Camp : Rs. 0.30 Lakhs Total : Rs.1.10 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 Villages @ Rs.20,000/- per Light, 1 per village, 1 village : Rs.0.20 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 project.	Soft Skill Development Works : Rs.0.37 Lakhs Providing school essentials to economically backward students: 0.02 Lakhs
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,	Complied. Discussed in Chapter 13

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	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.	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 finalizing the cost aspects or the SEAC may use its own expertise and experience in finalizing the cost	Noted
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

TOR Reply of Existing Limestone Quarry Over an Extent of 2.24.0 Ha

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 600 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 of the Mine. Present ROMP is valid till. 2025.
d)	Without Forest Clearance	No Forest Land involved.
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	<ul style="list-style-type: none"> • Vaiyamalaippalaiyam RF – 8.30 km SE • Mungil Karadu RF – 11.82 km SW

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	of distance between the project site and Reserve Forests/Wildlife Sanctuary	<ul style="list-style-type: none">• Veeramalai RF – 12.92 km SE
3)	Whether the project site attracts the HACA Clearance? If so, also furnish the HACA Clearance for the mining from the competent authority	No
4)	The EIA study report shall provide the details of the proposed and actual quantity of mine during the entire mining period	The detailed quantity of mining is given in Chapter 2 of the EIA Report.

ANNEXURE 3
MINING PLAN APPROVAL LETTER

**GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES
OFFICE OF THE REGIONAL CONTROLLER OF MINES**

Telephone no. 044-24914461/1570
Telefax no. 044-24911295
Email ID: ro.chennai@ibm.gov.in

C-4-A Rajaji Bhavan
CGO complex, Besant Nagar
Chennai – 600 090.

No. TN/KRR/LST/ROMP-1651.MDS

Dated: 23/07/2021

✓ To
Shri S. Sekhar
No.73, Raja Colony
Collector Office Road
Contonment, Trichy – 620 001
Tamilnadu.

Sub. : Approval of Review of mining plan along with PMCP of Varavanai Limestone mine over an area of 2.24.0 hect in Varavanai Village, Kulithalai Taluk, Karur District, submitted by Shri S. Sekhar under Rule 17(1) of MCR, 2016.

Ref. : 1) Your letter No.Sekhar/Varavanai/2.2.4.0 Ha/ROMP dated 20.02.2021.
2) This office letter of even number dated 24.05.2021.
3) This office Provisions approval letter No.TN/DGL/LST/ROMP-1651.MDS dated 15.06.2021.
4) Your letter No.Sekhar/Varavanai/2.24.0Ha.ROMP/Final dated 07.06.2021.

Sir,

In exercise of the powers delegated to me under Rule 16 of Minerals (Other than Atomic & Hydro Carbon Energy Minerals) Concession Rules, 2016 vide Gazette Notification No. S.O. 1857(E) dated 18.5.2016, I hereby accord approval for the above said Review of Mining Plan for Limestone mineral only. This approval is subject to the following conditions.

- 1) That the Review of Mining Plan (including Progressive Mine Closure Plan) is approved without prejudice to any other law applicable to the mine/area from time to time whether made by the Central Government, State Government or any other authority.
- 2) That this approval of the Review of Mining Plan (including Progressive Mine Closure Plan) does not in any way imply the approval of the Government in terms of any other provision of the Mines & Mineral (Development & Regulation) Act, 2015 or the Mineral Concession Rules, 2016 or any other law including Forest (Conservation) Act, 1980, Environment Protection Act, 1986 and the rules made there under.
- 3) That this Review of Mining Plan (including Progressive Mine Closure Plan) is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- 4) Provisions of the Mines Act, 1952 and Rules & Regulations made thereunder including submission of notice of opening, appointment of manager and other statutory officials as required by the Mines Act, 1952 shall be complied with.
- 5) The Provisions made under MM(D&R) Act, 2015 (Amended) and Rules made thereunder shall be complied with.
- 6) The contents of circular No. 2/2010 issued by the Chief Controller of Mines, IBM, Nagpur vide his letter No. 11013/3/MP/90-CCOM Vol. VII dated 06.04.2010 shall be complied with.
- 7) The execution of Mining Plan / Review of Mining Plan shall be subjected to vacation of prohibitory orders / notices, if any.
- 8) 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 32 of Mineral Conservation and Development Rules, 2017, by the lessee. Indian Bureau of Mines does not take any responsibility regarding correctness of the boundaries of the lease shown on the ground with reference to the lease map and other plans furnished by the lessee.

- 9) The Environmental Monitoring Cell of the Company shall continue monitoring ambient air quality, dust fall rate, water quality, soil sample analysis and noise level measurements on various stations established for the purpose both in the core zone and buffer zone, as per Department of Environment guidelines and keeping in view IBM's Circular No.3/92, season-wise every year or by engaging preferably the services of an Environmental laboratory approved by MOEF/CPCB. The data so generated shall be maintained in a bound paged register kept for the purpose and the same shall be made available to the inspecting officer on demand.
- 10) If anything is found to be concealed as required by the Mines Act in the contents of Review of Mining Plan and proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.
- 11) Yearly report as required under Rule 26(2) of MCDR,2017 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 1st July of every year to the regional office, IBM , Chennai.
- 12) The Review of Mining Plan is approved for the proposals contained therein and as applicable from the date of approval for the mining activities to be carried out within the mining leasehold. The earlier instances of irregular mining/illegal mining, if any, shall not be regularized through the approval of this document.
- 13) In case mining lease falls within a radius of 10 kms. of National Park/Sanctuary, recommendations of NBWL have to be obtained as per the orders of the Hon'ble Supreme Court in I.A. No. 460/2004.
- 14) This approval is subject to the mining operations as per the proposals shall be carried out only after obtaining necessary clearances from MOEF, Pollution Control Board, Forest Department etc
- 15) This approval is subject to submission of DGPS Plan duly authenticated by the State Government and submission of modifications in the approved Mining Plan if, consequent to the authentication of DGPS Survey Plan, any change in mining lease area is accepted by the State Government.
- 16) This approval is subject to the conditions as per the directions given in W.P.(c) No. 114/2014 given by the Hon'ble Supreme Court of India should be taken care while implementing the proposals given in the PMCP part of the documents.
- 17) This approval is subject to submission of DGPS Plan duly authenticated by the State Government and submission of modifications in the approved Mining Plan if, consequent to the authentication of DGPS Survey Plan, any change in mining lease area is accepted by the State Government.
- 18) This approval is subject to the conditions as per the directions given in WP(c)No.114/2014 given by the Hon'ble Supreme Court of India should be taken care while implementing the proposals given in the PMCP part of the documents.
- 19) **The provisional approval accorded vide letter No. TN/DGL/LST/ROMP-1651.MDS dated 15.06.2021 is stands withdrawn.**

Encl. Copy of the approved Review of Mining Plan with PMCP.

Yours faithfully,

(G.C. Sethi)

Regional Controller of Mines

Copy for information to:-

1. Shri B. Gangadharan, Qualified person, Sai Geo Consultant, No.10-A, Palayam Bazaar, Woraiyur(PO), Trichy – 620 003.
2. The Commissioner of Geology & Mining, Government of Tamilnadu, Guindy, Chennai – 600 032 along with copy of the approved Review of Mining Plan.

Encl : As above.

(G.C. Sethi)

Regional Controller of Mines

ANNEXURE 4
500 M RADIUS LETTER

உ.தமிழகப் புவியியல் அலுவலகம்
 புதியியல் மற்றும் கண்காணிப்பு
 அலுவலகம்
 தள. 02.2017

உ.எண்.141/என்/2017-2

அறிவிப்பு

காரண: காலியும் கரங்கரம் - கரூர் மாவட்டம் - கடலூர் வட்டம்
 வரலாறு கிராமம் - புது எண்.கர. 835/3, 836 (P), 837/1B
 ஆகியவற்றில் - 500 மீட்டர் சுற்றளவிற்குள் குவாரிகளின்
 விபரங்கள் கோரியது - தொடர்பாக.

- பரம்பரை 1) அரசாணை Ms.No.292 தென்நில (ம.எ.எ.2) துறை,
 தள.04.10.1995.
 2) திரு.எஸ்.கே.சி, வரலாறு கிராமம், கடலூர் வட்டம், கரூர்
 மாவட்டம் என்பவரது கடித தள.02.02.2017.

கரூர் மாவட்டம், கடலூர் வட்டம், வரலாறு கிராமம், புது எண்.கர. 835/3, 836 (P),
 837/1B ஆகியவற்றில் மொத்தம் 2.25.0 ஹெக்டேர் பரப்பில் கண்ணாங்குளம் காலியம்
 மெய்டுமெட்டுகளை திரு.எஸ்.கே.சி என்பவருக்கு பரம்பரை-1ல் கண்ட அரசாணையின்படி
 வழங்கப்பட்ட காலியம் குத்தகம் உரிமை 10.8.1994 முதல் 09.8.2014 உடன்
 முடிவடைந்தது. Deemed Extension அடிப்படையில் குவாரி பணி நடைபெற்று
 வருகிறது. மேற்படி குவாரியிலிருந்து 500 மீட்டர் சுற்றளவிற்குள் இக்குவாரியினால் தவிர
 /வரலாறு கிராமம் / கண்ணாங்குளம் குவாரிகளின் விபரங்கள் கீழ்க்கண்டவாறு
 அளிக்கப்படுகிறது.

உ.எண்.	காலியம்	குத்தகத்திற்கான பெயர்	காலியம் & கிராமம்	புது எண்.கர.	பரப்பு (ஹெக்டே. சீமீ)	அரசாணை எண்.	குத்தகம் காலம்
1	கண்ணாங்குளம் (காலியம்)	திரு.எஸ்.கே.சி, பெ.73, கரூர் காவலர், கமேலூர் ஆயில் ரெகுலே, திருச்சி.	கடலூர் வட்டம், வரலாறு கிராமம்	833/4B 836 (P) 843/2	1.50.5	அரசாணை எண்.3(D) பெ.162 தென்நில (ம.எ.எ.2) துறை, தள.14.6.94	10.08.1994- 09.08.2014 (Deemed Extension)
2		திரு.எஸ்.கே.சி, பெ.73, கரூர் காவலர், கமேலூர் ஆயில் ரெகுலே, திருச்சி.		835/3 836 (P) 837/1B	2.25.0	அரசாணை எண்.3(D) பெ.292 தென்நில (ம.எ.எ.2) துறை, தள.04.10.95.	18.11.1995- 17.11.2015 (Deemed Extension)
3		தி.எ.கே.சி.கே.சி.கே.சி, பெ.14/22, அச்சுறுப்பு, கேள்வியெ.எ.எ., கேள்வியெ.002		833/1B2 833/4A2	2.34.5	அரசாணை எண். 3(D) பெ.138 தென்நில (ம.எ.எ.2) துறை, தள.07.8.1997.	05.02.1998 04.02.2018
4		திரு.எஸ்.கிராமநாதன், பெ.159/138, திரு.எஸ்.என். துறை, கேள்வியெ.		824/1B (Part), 824/2 (Part), 824/3 (Part), 825/1B (Part), 825/2B, 825/3B	4.15.8	புவியியல், புதியியல் மற்றும் கண்காணிப்பு, கேள்வியெ. அரசாணை கேள்வியெ.எ.எ.எ. எண்.14384/ம.எ.எ.4/ 1995, தள.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		
			Total	1.29.0		
மொத்தம்			11.948			

சென்னை மாநகராட்சி
மாநகராட்சி நிர்வாக அலுவலர்
சென்னை

சென்னை
திரு.வி.சே.சி.
மாநகராட்சி நிர்வாக அலுவலர்,
சென்னை மாநகராட்சி

Dr.
சென்னை

ANNEXURE 5
MINING PLAN REPORT AND PLATES

**REVIEW OF MINING PLAN
ALONG WITH
PROGRESSIVE MINE CLOSURE PLAN**

(Under Rule 17(2) OF MCR, 2016 & 23 of MCDR 2017)

For

**VARAVANAI LIMESTONE MINE
(G.O.3(D) No.292 Industries (MMA2) Department dated 04.10.1995,
LEASE GRANTED ON 17.04.2015)**

*(Lease period validity from 18.11.1995 to 17.11.2015, as per MMDR Amendment Act 2015
The lease period is extended up to 17.11.2045)*

**Over an extent –2.24.0 Hectares
IN
VARAVANAI VILLAGE
OF
KULITHALAI TALUK & KARUR DISTRICT**



MINERAL: LIMESTONE

**CATEGORY "B" - SEMI MECHANISED
(Non-Forest / Patta Land / Non-captive use)**

**IBM REGISTRATION NO: IBM/10612/2012
MINE CODE: 38TMN28017**

PERIOD: 2020-21 TO 2024-25

**SHRI.S.SEKHAR
NO.73, RAJA COLONY,
COLLECTOR OFFICE ROAD,
CONTONEMENT, TRICHY -620001
TAMILNADU**

**Prepared By
B.GANGATHARAN, M.Sc.
QUALIFIED PERSON**

**Proprietor,
Sai Geo Survey Consultant
No.10-A,Palayam Bazaar, Woraiyur (PO)
Trichy-620 003
Ph: 94431 01165
Mail: bgn.saigeo@yahoo.com**

REVIEW OF MINING PLAN INCLUDING PROGRESSIVE MINE CLOSURE PLAN FOR VARAVANAI LIMESTONE MINE OF Shri.S.SEKHAR, No.73, RAJA COLONY, Collector office Road, Cantonment, Trichy-620 001. Over an Extent of 2.24.0 Ha in Varavanai Village, Kulithalai Taluk, Karur District, TAMILNADU STATE.

(G.O.3(D).No.292 Industries (MMA-2) Department, Dated:04.10.1995,

(Mine Code -38TMN28017)

“OPENCAST SEMI MECHANISED MINE” “B”- CATEGORY

For the Period 2020-21 to 2024-25

Mh
23-07-2021

REGIONAL CONTROLLER OF MINES
INDIAN BUREAU OF MINES
CHENNAI

Submitted under **Rule 17(2) of MCR 2016 & Rule 23 of MCDR, 2017.**

INTRODUCTION:

The applicant M/s. SEKHAR MINES, Proprietor concern, office address at Trichy, Tamilnadu has already obtained for grant of Mining lease to Limestone Mine over an extent of 2.24.0 Ha in S.F. No. 835/3,836(part) & 837/1B, in Varavanai Village, Kulithalai (Presently at Kadavur Taluk), Karur District, Tamil Nadu for 20 years.

M/s. SEKHAR MINES is a Proprietor concern office address at Trichy, Tamilnadu. Sekhar mines have 20 years of experience in Mining. M/s. SEKHAR MINES has mine lease area for the production of limestone in an area of 2.24.0 Ha in S.F. No. 835/3,836(part) & 837/1B in Varavanai Village, Kulithalai (Presently at Kadavur Taluk), Karur District, Tamil Nadu.

The mining lease was granted in G.O.3 (D) No.292 Industries (MMA2) Department, dated 04.10.1995 for a period of Twenty Years. The lease deed was executed on 18.11.1995. Mining Operation commenced on 19.11.1995. The lease will expire on 17.11.2015. However as per the recent MMDR Amendment Act 2015, the validity of the Mining Lease is extended up to 17.11.2045.

The Limestone Mine grant lease over an extent of 2.24.0 Ha in S.F. No. 835/3,836(part) & 837/1B in Varavanai Village, Kulithalai (Presently at Kadavur Taluk), Karur District, Tamil Nadu and requested **M/s. Sekhar mines**, to submit the approved Scheme of Mining to the Department of Geology and Mining, Karur and also obtain Environmental Clearance from SEIAA.

The Scheme of Mining was also approved by the Indian Bureau of Mines vide letter No. TN/DGL/ LST/ MS-1372 MDS dated 13.06.2016. The Scheme of Mining over an extent of 2.24.0

G.O.3(D).No.292 Industries (MMA-2) Department, Dated:04.10.1995

ROMP
1
TN/KRA/LST/ROMP-1651-MDS
Dt. 23-07-2021

Ha in S.F. No. 835/3,836(part) & 837/1B in Varavanai Village, Kulithalai (Presently at Kadavur Taluk), Karur District, Tamil Nadu. (Copy of Scheme of Mining approval letter enclosed as annexure no.4).

M/s. Sekhar mines, propose to Mine Limestone for 1200 Tons / year from this existing mine lease area by open cast category – B as per MCDR 2017 rule 55(2). This feasibility report is prepared towards obtaining the Environmental Clearance.

As per MOEF O.M. No. L - 11011/ 47/ 2011–A.II (M) dated 18th May 2012, leases of minor minerals also require environmental clearance. For getting environmental clearance, depending on the nature magnitude and capacity, the projects are categorized as “A” Category & “B” Category. “A” Category projects have to be cleared by MOEF while “B” Category by the State Environmental Impact Assessment Agency (SEIAA). This being a small mine of just 2.24.0 Ha (< 25 Ha) it can be treated as Category-B.

History of Mining Lease :

Details of Mining lease :

- M/s S.Sekhar has applied for grant of mining leases for Limestone over an extent of 2.24.0 Ha of patta lands owned by him in Varavanai Village, Kulithalai Taluk & Karur District.
- The Mining Lease was granted in G.O.3(D).No.292 Industries (MMA-2) Department dated 04.10.1995 for the period of twenty years. Annexure-1
- The lease deed was executed on 18.11.1995. Mining operation commenced on 29.11.1995. The lease will expire on 17.11.2015. The copy of Lease deed is enclosed as Annexure -2
- 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 28th July 2014. Please refer Annexure-3, for Renewal Application. However as per the recent MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 17.11.2045. Hence, the Review of Mining Plan under Rule 17(2) of MCDR, 2016 has been prepared and submitted.

Details of Mining plan /Scheme of Mining:

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-545-MDS dated 30.12.1991 before the grant of Mining Lease.

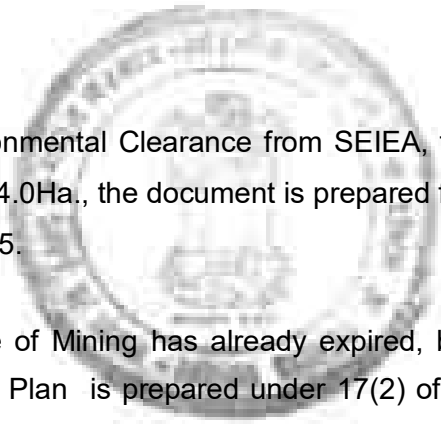
The 1st Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KRR/LST/MS-333-MDS dated 30.06.2005.

The 2nd Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KRR/LST/MS-741-MDS dated 10.10.2012.

The 3rd Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/DGL/LST/MS-1372-MDS dated 13.06.2016. The copy of approval letter is enclosed as annexure no.4.

Environmental Clearance from SEIAA:

- As the lessee have the intension to get the Environmental Clearance from SEIEA, for his Varavanai Limestone Mines having an extent of 2.24.0Ha., the document is prepared for the approval of ROMP for the period 2020-21 to 2024-25.



Since the mining proposals in the approved Scheme of Mining has already expired, by 31st March 2020. The present Review of Review of Mining Plan is prepared under 17(2) of MCR-2016, for the period from 2020-21 to 2024-25.

Table No. 0.1 List of valid ML of the company in the state of Tamilnadu

The lessee is having a number of mining leases for different minerals other than this lease 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	G.O.Ms.No.162 dated 14.06.1994	extent of 1.90.5 Ha. in S.F.Nos.8833/4B, 836(PART) & 843/2 in Varavanai Village, Kulithalai Taluk, Karur District.	Thiru. S. Sekhar, No.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001	Limestone	Working

B.Gangatharan
Qualified Person

1.0 GENERAL:

a) Name of lessee/Rule 45 Registration no:

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 : Trichy
State : Tamil Nadu
Pin code : 620 001
Mobile No : 93451-41471, 93846-25726
Email id. : sekhardeiveegan@gmail.com

b) Status of Lessee:

The lessee is a Private and Individual. The lessee intends to mine limestone and sell it.

Photo Id & address proof of the authorized owner is also enclosed as **Annexure No – 5.**

c) Mineral(s) which are included in the prospecting license:

Not Applicable as the Mining lease is already granted for Limestone.

d) Mineral(s) which is included in lease deed

Limestone

e) Mineral(s) which the lessee intends to mine

Limestone

f) Name of Qualified Person (QP) Preparing the Review of Mining plan:

Mr.B.Gangatharan.
Address : 10A, Palayam Bazaar
: Woriyur
: Trichy - 620003
Phone : 0431 2765071
Mobile : 9443101165
E-mail : bgn.saigeo91@gmail.com

Experience Certificate of Qualified Person (QP) is enclosed Vide **Annexure No – 6.**

2.0 LOCATION AND ACCESSIBILITY

a) Lease Details (Existing Mine)

Name of mine : Varavanai Limestone Mine
(G.O.3(D).No.292 Industries (MMA-2) Department dated 04.10.1995)

Lat/long : N 10° 45" 06.35" & E 78° 13" 50.74

Date of grant of lease : Varavanai Limestone Mine
(G.O.3(D).No.292 Industries (MMA-2) Department dated 04.10.1995)over an extent of 2.24.0 ha and valid for 20 years from the date execution of the lease i.e. from 18.11.1995 to 17.11.2015. However as per MMDR act 2015, the lease validity will be extended up to 2045.

Period/Expiry Date : This lease period is valid for 50 years i.e. from 18.11.1995 to 17.11.2045.

Postal Address : Shri.S.Sekhar, Owner,
Address : No.73, Raja Colony
Collector office Road, Contonment
Trichy-1

State : Tamil Nadu
Pin code : 620001.
Phone : 93451-41471, 93846-25726
Fax : Nil
Email id. : sekahrdeiveegan@gmail.com

Table No.2.1 Details of lease are with location map

Forest area		Non Forest	
Forest (specify)	Area (Ha)	Type of Land	Area (Ha)
Nil	Nil	(i) Waste land,	--
		(ii) Grazing land,	--
		(iii) Agriculture land,	--
		(iv) others(Government Land	--
		Patta land	2.24.0
Total lease area			2.24.0

District & State : Karur district, Tamil Nadu
Taluk : Kulithalai
Village : Varavanai

• **Table No 2.2 Details of the land in mining lease area**

District & State	Taluk	Village	Extent (in Ha)	Classification
Karur & Tamil Nadu	Kulithalai	Varavanai	2.24.0	Patta lands owned by Shri.S.Sekhar
		Total	2.24.0	

The details of the S.F.Nos. are shown on the authenticated lease sketch and is enclosed as **Plate No -2.**

Whether the area falls under Coastal Regulation Zone (CRZ)? if yes, details Thereof

- No, the lease does not fall in CRZ.

Existence of public road/railway line, if any nearby and approximate

- 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).

Railway station: 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
Airport: Trichy Airport – 72 kms from mine/
Nearest Port : Tuticorin port – 200 kms
Nearest village: Varavanai – 1.0 kms.

Toposheet No. with latitude &-
 Longitude of the area

Survey of India Topo sheet No.58J/2.
 N 10° 45" 06.35" & E 78° 13" 50.74

The area for Mining Lease for Limestone Mine is located in S.F.Nos. 835/3, 836(PART) & 837/1B over an extent of 2.24.0 Ha. in Varavanai Village, Kulithalai Taluk, Karur District, Tamilnadu State.

Table 2.3 latitude and longitude of the Boundary pillars

Toposheet No	58 J/2
Latitude	: N 10° 45" 06.35"
Longitude	: E 78° 13" 50.74"

Boundary Pillar No.	Lattitude	Longitude
A	N 10° 45" 4.87"	E 78° 13" 50.85"
B	N 10° 45" 4.07"	E 78° 13" 48.13"
C	N 10° 45" 3.75"	E 78° 13" 46.38"
D	N 10° 45" 3.43"	E 78° 13" 44.37"
E	N 10° 45" 3.12"	E 78° 13" 42.36"
F	N 10° 45" 4.87"	E 78° 13" 41.89"
G	N 10° 45" 5.14"	E 78° 13" 42.86"
H	N 10° 45" 5.28"	E 78° 13" 42.89"
I	N 10° 45" 5.36"	E 78° 13" 43.67"
J	N 10° 45" 7.79"	E 78° 13" 43.74"
K	N 10° 45" 7.89"	E 78° 13" 44.21"
L	N 10° 45" 6.74"	E 78° 13" 44.24"
M	N 10° 45" 7.01"	E 78° 13" 49.63"
N	N 10° 45" 6.34"	E 78° 13" 49.72"
O	N 10° 45" 6.35"	E 78° 13" 50.74"



Photos of Lease area and Ground control points are enclosed as annexure no.8.

- b) **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.**

General location map showing the area and access route is given in the Key Plan is enclosed vide **Plate No – 1**.

3.0 DETAILS OF APPROVED MINING PLAN / MODIFIED MINE PLAN (if any)

3.1 Date and reference of earlier approved MP/SOM.

Sl No.	Mining plan / Scheme of Mining / Review of Mining plan	Under MCR or MCDR	Period	No.of Yrs	Approval letter No. Date
1	Mining Plan	Under Rule 24(A) of MCR 1960	Upto the lease period / 20 Yrs	20	TN/TCR/MP/LST-545-MDS dated 30.12.1991
2	1 st Scheme of Mining	Under rule 12 of MCDR 1988	2005-2006 to 2009-2010	5	TN/KRR/LST/MS-333-MDS dated 30.06.2005
3	2 nd Scheme of Mining	Under rule 12 of MCDR 1988	2010-2011 to 2014-2015	5	TN/KRR/LST/MS-741-MDS dated 10.10.2012
4	3 rd Scheme of Mining	Under rule 12 of MCDR 1988	2015-16 to 2019-2020	5	TN/DGL/LST/MS-1372-MDS dated 13.06.2016

The copy of last approved scheme of mining is enclosed as annexure no.4.

3.2 Details of last modifications if any (for the previous approved period) of approved 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..

i) Exploration

The approved Scheme of Mining, it is mentioned that six 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 and due to want of EC for workings..

Present mine working has been reached a depth of about 21.0m from general ground level. There is only one existing working pit, the dimensions of which are given below:

Table No.3.1

	PIT
Length (m) (aver.)	199.0
Width (m) (aver.)	12.0
Depth (m)	21.0

The attitude of the bands like width and length are clearly known. Depth persistence of Limestone in this area is already proved upto 21.0m.

ii) Mine Development, Exploitation, Mine Reclamation and Rehabilitation:

Mine Development:

The present workings have reached a maximum depth of nearly 21.0m. 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 during the period of Review 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 21.0m. There is only one existing working pit, the dimension of which is given below:

Table No.3.2

	PIT
Length (m) (aver.)	199.0
Width (m) (aver.)	12.0
Depth (m)	21.0

- A development quantity of 7270 tons was envisaged during the plan period. However since the mine was not operated during the plan period, no development work was carried out during the plan period up to 31.03.2020.

Table 3.3 Development proposed & Achieved

Table No.3.3

Year	Proposed Development	Actual achieved
	Tones	Tones
2016-17	3918	Nil
2017 - 18	1529	Nil
2018 -19	887	Nil
2019 – 20	936	Nil
Total	7270	Nil

Reason for deviation:

Due to Covid19 lock down of entire state and also due to critical financial; crisis of the lessee, and want of EC, no developmental work has been carried out during the entire plan period.

iii). **Exploitation:**

- A production quantity of 5236 tons of limestone was envisaged during the plan period. However since the mine was not operated during the plan period and achieved no limestone during the entire plan period up to 31.03.2020.
- **Table 3.4 Production proposed & Achieved**
- Table No.3.4

	Proposal	Achieved
Year	Limestone (Tones)	Limestone (Tones')
2016-17	1183	Nil
2017-18	1318	Nil
2018-19	1331	Nil
2019-20	1404	Nil
Total	5236	Nil

Reason for deviation:

Due to Covid19 lock down of entire state and also due to critical financial; crisis of the lessee, and want of EC, no developmental work has been carried out during the entire plan period. The Planned and Actual Production for last five years figures are given as follows:

Waste Management:

In the approved Scheme of Mining, the proposal of the waste dumps in the North west & South Western side of the lease area. But, presently, the top soil is mixed with boulders, side burden and mineral waste are taken away by local villagers for road low laying adjacent areas, afforestation and also building purposes. There are two Existing dumps, in the lease area.

There are two present dumps, the dimensions of which are given below:

Table No.3.5

	Dump-I	Dump-II
Length (m) (aver.)	101.0	101.0
Width (m) (aver.)	40.0	40.0
Height (m) (max.)	7.0	7.0
Quantity (t)	62216	62216

Please refer Plate Nos.III & IV.

Afforestation and Reclamation:

In the approved Scheme of Mining, afforestation programme is clearly stated to plant 40 Nos. casurina trees in the lease area to cover total area of 0.18Ha.

Due to non working of the mine no afforestation work has been carried out throughout the entire scheme period.

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 recharge the nearby agricultural wells.

3.4 Give status of compliance of violations pointed out by IBM:

In Letter No.TN/KRR/LST-31.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- 7.

3.5 Indicate and give details of any suspension /closure/ prohibitory order issued by any Government agency under any rule or Court of law:

Nil

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) Topography :

The Mining Lease area is approximately at N 10° 45" 06.35" latitude and at E 78° 13" 50.74" 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

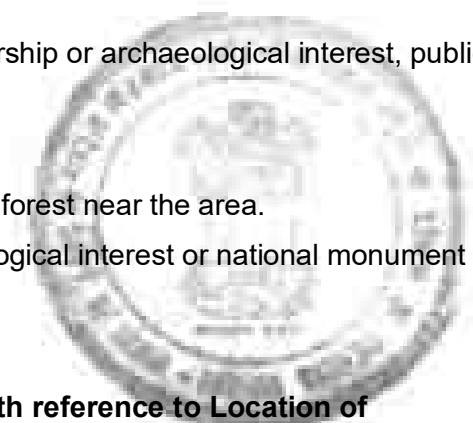
Rainfall Data:

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 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 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 verical. 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 QP 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 21.0m from general ground level.

There is only one existing working pit, the dimensions of which are given below: Table No.7

Table No.1.1

	PIT
Length (m) (aver.)	199.0
Width (m) (aver.)	12.0
Depth (m)	21.0

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 21.0m from general ground level, the dimensions of which are given below: Table No.8

Table No.1.2

	PIT
Length (m) (aver.)	199.0
Width (m) (aver.)	12.0
Depth (m)	21.0

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 CaCo3 78.04%, SiO2 10.12% and MgCo3 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.1.3

Parameters	Results %
Calcium carbonate (CaCo ₃)	78.04
Magnesium carbonate (MgCo ₃)	1.03
Silica as SiO ₂	10.12
Aluminium Oxide (Al ₂ O ₃)	Nil
Ferric Oxide (Fe ₂ O ₃)	Nil
Sodium as Na ₂ O	Nil
Potassium as k ₂ O	Nil
Loss on Ignition	10.81

The test report analysis by NABL Laboratory is enclosed as Annexure no.10.

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.

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 21.0m from the general ground level.

The occurrence of Limestone is proved to be at upto 21.0m 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 21.0m (1.0m top soil + 20.0m 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.4. This Plan is drawn on scale of 1: 1000. Please refer Plate No.4.

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.5.

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 Four 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 Five bore holes are proposed for future programme.

In this Review of Mining Plan, lessee proposed five nos. wagon / 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 core bore hole will be made in First year & Second year (2021-22 & 2022-23) in this Review of Mining Plan period. Please refer Plate No.3 & 4

The details of the proposed exploration are given below : Table-1.4

Year	No. of wagon / Diamond core	Total Metreage	Location
2021-22	2 (100mm dia.)	20(d) x 2 = 40M (depth)	North - PBH-1 (Virgin area) North– PBH-2 (Virgin area)
2022-23	3 (100 mm dia.)	20(d) x 3 = 60M (depth)	North East– PBH-3 (Virgin area) West– PBH-4 (Virgin area) Middle – PBH -5 (Virgin area)

The expenditure of proposed drilling core bore hole cost is intimate to IBM at the time. However the tentative cost of proposed drilling work will be around Rs.50000/.

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 tons. 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 21.0m (max.) depth from general ground level. Hence, reserve is calculated upto a depth of 21.0m (1.0m top soil + 20.0m Limestone). The reserve estimation is based on the UNFC Code 111 and 222.

The parameter of the Reserves are described as follows : Table No.1.5

Classification	Total Quantity (t)	Recoverable Reserve 60% (t)	UNFC Code	Grade
A. Mineral Reserves				
1. Mineral Reserve	9022	5413	111	CEMENT & REFRACTORY
B. Remaining Resources				
Mineral locked up in benches	8109	4865	222	CEMENT & REFRACTORY
Mineral locked up in boundary barrier 7.5m	171496	102898	222	CEMENT & REFRACTORY
TOTAL	188627	113176		

A major portion of mineral is locked up in benches and boundary barrier. Please refer Plate No.4 & 5.

Recoverable Reserve and Grade:

Systematic mining will be done upto 21.0m (1.0m top soil + 20.0m Limestone) depth. There is no change in the grade of Limestone. The balance recoverable reserve at 60% recovery and upto 21.0m depth is about 5,413 tonnes. Please refer Table No.1.2 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 cement & refractory Grade. Analysis Report is enclosed as Annexure-10.

k)Detailed Calculation of Reserve/Resources section Vise:



RESERVE ESTIMATION

(Please refer Plate Nos.4&5)

Thiru.S.Sekhar

Table No.1.6

Section	Bench	L(m)	W(m)	D(m)	Volume CUM	Bulk Density	Over Burden (t)	Side (burden)	Total Reserve (t)	Mineral Reject 40% (t)	Recoverable Reserve 60% (t)	Total waste(t)	UNFC Code
XY-A1B1	I	61	1	1.1	61	2.0		-	-	-	-		
XY-A2B2	1	68	1	1.0	68		258					258	
SIDE BURDEN													
XY-A1B1	II	48	1	2.5	120								
	III	37	1	2.5	93								
	IV	26	1	2.5	65								
	V	15	1	2.5	38								
	VI	6	1	2.5	15								
	II	38	1	2.5	95								
	III	27	1	2.5	68								
	IV	16	6	2.5	240								
	V	7	16	2.5	280	2.5		2535				2535	
					1014								
LIMESTONE													
XY-A1B1	II	11	1	2.5	28	2.6			73	29	44		
	III	12	1	2.5	30				78	31	47		
	IV	12	1	2.5	30				78	31	47		
	V	13	1	2.5	33				86	34	52		
	VI	13	1	2.5	33				86	34	52		
	VIII	10	1	2.5	25				65	26	39		
	IX	4	1	2.5	10				26	10	16		

Review of Mining Plan of Varavanai Limestone mine

1	2	3	4	5	6	7	8	9	10	11	12	13	14
XY-A2B2	II	12	1	2.5	30				78	31	47		111
	III	13	1	2.5	33				86	31	52		
	IV	14	6	2.5	210				546	218	328		
	V	14	16	2.5	560				1456	582	874		
	VI	16	26	2.5	1040				2704	1082	1622		
	VII	13	31	2.5	1008				2620	1048	1572		
	VIII	5	32	2.5	400				1040	416	624		
						3470	2.6	-	-	9022	3609	5413	
TOTAL							258	2535	9022	3609	5413	6402	

Over burden : 258 tonnes

Side burden : 2,535 tonnes

Mineral Reject : 3,609 tonnes

Tota Waste : 6,402 tonnes

Total Reserve : 9,022 tonnes

Recoverable Reserve : 5,413 tonnes

ore:Waste ratio : 1.1.18



RESOURCES ESTIMATION
(Please Refer Plate Nos.4&5)

Thiru. S. Sekhar
Trichy-620 001.

TABLE NO.1.7

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	VII	2	1	2.5	5	2.6	8109	3244	4865	CEMENT & REFRACTORY	222
		VIII	9	1	2.5	23						
		IX	15	1	2.5	38						
	XY-A2B2	IV	5	2	2.5	25						
		V	11	2	2.5	55						
		VI	16	2	2.5	80						
		VII	22	8	2.5	440						
		VIII	27	15	2.5	1013						
		IX	32	18	2.5	1440						
Mineral locked up in 7.5m boundary barrier			3200sq. (64x50.0) 98sq.m 1 3x7.5		20.0	65960	2.6	171496	68598	102898	CEMENT & REFRACTORY	222
TOTAL								179605	71842	107763		

Total Resources : 1,79,605 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 21.0m (max.) depth from general ground level. Hence, reserve is calculated upto a depth of 21.0m (1.0m top soil + 20.0m Limestone). The reserve estimation is based on the UNFC Code 111 and 222.

The parameter of the Reserves are described as follows : (as on 01.04.2016)

Table No.1.8

Level of Exploration	Reserves/Resources in million tons	Grade
G1 – Detailed Exploration	0.0054 (5413Tons)	-
G2 – General Exploration	0.1796 (1,79,605Tons)	CEMENT & REFRACTORY
G3 – Prospecting	-	-
G4 - Reconnaissance	-	-

Please refer Table No.1.2 & 1.3. A major portion of mineral is locked up in benches and boundary barrier as the lease area. Please refer Plate No.4

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 21.0m (1.0m Overburden + 20.0m Limestone).

Depletion of reserves:

As there is no production and development for the last Scheme period, there will not be any depletion of reserves.

b) 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.

c) **Reserves and Resources as on 01.04.2020.**Table No.1.9

Classification	UNFC Code	Quantity in tons	Grade
A. Total Mineral Reserves			
Proved Mineral Reserve on 01.04.2016	111	5,413	Cement & Refractory Grade
Probable Mineral Reserve	121 & 222	-	-
B. Total Remaining Resources			
Feasibility mineral Resource	211	-	-
Prefeasibility mineral resource	221 & 222	1,79,605	Cement & Refractory Grade
Measured mineral resource	331	-	-
Indicated mineral resource	332	-	-
Inferred mineral resource	333	-	-
Reconnaissance mineral resource	334	-	-
Total Reserves + Resources		1,85,018	-



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 .2.1

	PIT
Length (m) (aver.)	199.0
Width (m) (aver.)	12.0
Depth (m)	21.0

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 Four 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 Seven benches will be 2.5m height and 2.5m width with 60° slope for next Four years only. Please refer Plate No.6 to 9.

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 Four 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 East & Southern side of the lease area.

Average annual production is about 1200 tons of Limestone with 250 working days in a Year. Per day production will be about 4.8-say 5 tons. 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.

c) Indicate year-wise tentative Excavation in CuM and Tons indicating development, ROM, pit wise as in table below. I. Insitu Tentative Excavation:

In this Review of Mining Plan period from 2020-2021 to 2024-2025, Since the first proposal year 2020-21 almost expired (Lapsed year of ROMP), the year wise proposal are given for the remaining periods.

Table No.2.2 Insitu tentative excavation in Cum.

YEAR	PIT NO.	TOTAL Tentative Excavation	TOP Soil (Cum)	OB (Cum)	Side burden (Cum)	Rom (cum)		Total Waste	ROM/Waste ratio
						Ore (Limestone @60% of ROM)	Mineral Reject (@ 40% of ROM) (Cum)		
1	2	3	4	5	6	7	8	9	10
2020-21		LAPSED YEAR OF ROMP							
2021-22	I	1404	324	-	288	475	317	929	1:1.8
2022-23	I	1307	235	-	268	482	322	825	1:1.6
2023-24	I	1640	175	-	700	459	306	1181	1:2.4
2024-25	I	1665	180	-	7200	459	306	1206	1:2.5
TOTAL in Cum		6016	914	-	1976	1876	1250	4141	1:1.20

Table No.2.3 Insitu tentative excavation in Tons.

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
2020-21		LAPSED YEAR OF ROMP							
2021-22	I	3428	648	-	720	1236	823	2192	1:1.8
2022-23	I	3229	470	-	670	1254	836	1975	1:1.6
2023-24	I	4089	350	-	1750	1193	796	2896	1:2.4
2024-25	I	4149	360	-	1800	1193	796	2956	1:2.5
TOTAL in Tons		14895	1828	-	4940	4876	3251	10019	1:1.20

The detailed working of the year wise development and production table is enclosed as annexure no.9

The average production of Limestone per year will be about 1200 tonnes). Please refer Plate No.6 to 9. 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 this plan period is about 4877 tons.
The rate of annual production of Limestone is about 1200 tons.

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)	:1200 <u>tons</u>
Production/day	: 5

Total production (expected) per year (Limestone) :5 tonnes

Output/manshift including waste handling	:5 tonnes
No.of face workers /day	:4.0 tonnes
For absenteeism 20%	:1(5 ÷4=12)
Total No of labour (on contract basis of production of mineral)	: 2 Nos
Pay per day for labour	:Rs.200/-
Pay per tone for Labour (one Labour)	: Rs.200/-(rs.200 =50)
	4.2 (OMS)
	Say :Rs.50/-

The drilling parameters	: 32 mm
Dia. of hole	: 0.9m
Spacing	: 0.6 m
Burden	: 1.5 m
Depth	: 0.42 kg
Charge per hole	: <u>0.9x0.6x1.5x2.6</u>
Material that will be dislodged	0.42
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.120/-(Rs.15000/25 days= Rs.600 per day/5 tonnes = 120) :		
	Rs.80/- (Rs.10000/ 25 days=Rs.400 Per day/5 tonnes= 80) :		
Water man (per tone)	: Rs.30/- (150 per day/5 tonnes = 30) :		
Miscellaneous	: Rs.100/-:		
Salary and Miscellaneous per tonne	: Rs.330/-(120+ 80 +30 + 100) :		
	: Labour cost + Blasting cost + Salary and Miscellaneous		
	: 50 + 40 + 330		
Total cost of Production per tonne	: Rs.420/-		

The cost of Production is Rs.420/- 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.

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.420/- 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.420/-

Net Profit (per tonne) : Rs.30/-

II. Dump re -handling (for the purpose of recovery of mineral):

At present no re handling of dump materials.

c). Yearwise development plans showing pit layouts, dumps, stacks of mineral reject, if any, etc. and year wise sections in case of 'B' category mines:

The yearwise development and production Plan and Sections are shown in Plate Nos.6 to 9. The details are furnished in above table. The average annual production of Limestone per year will be about 1,200 tons.

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 2.3

Type	Nos.	Dia. of hole	Compressor capacity	Make	Motive Power	H.P.
Jack Hammer	Two	32 mm	140 cfm	Atlas	Diesel	45
Tractor	One	-	-	Atlas	Diesel	75
Compressor						

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 statue. Table – 2.4

Type	Nos.	Size/Capacity	Make	Motive power	H.P.
Comet Tipper	Two	10 tons	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 No.2.5

Type	Nos.	Size/Capacity	Make	Motive Power	H.P.
Leyland Trucks	One	10 tons	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 40 Casurina trees will be planted in this area and the same will be planted in demarcated area in yearwise plans and the same will be dewatered and

mannered by person appointed for this purpose. An extent of area 0.2Ha. will be afforested in five years of the review of mining plan period, with an interval between trees – 5m, survival rate : 80%.

A retaining wall will be constructed around the dumping yard.

The afforestation programme for the next Five years are described as follows :

Table No.2.6

Year	Name of the species	No. Of species	Interval	Area in Ha.	Survival rate
2020-21	Lapsed year				
2021-22	Casurina	40	5m	0.05.0	80%
2022-23	Casurina	40	5m	0.05.0	80%
2023-24	Casurina	40	5m	0.05.0	80%
2024-25	Casurina	40	5m	0.05.0	80%
TOTAL		160		0.20.0	

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 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 five years, starting from existing working pit from North to Southern direction towards Eastern side of the Mining lease area. Please refer Plate No.4.

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 six benches will be 2.5m height and 2.5m width with 60° slope for next Five years only. Please refer Plate No.6 to 9

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 Five 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 East & Southern side of the lease area.

Average annual production is about 1200 tons of Limestone with 250 working days in a Year. Per day production will be about 5 tons. 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 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	:	70.0
Width (m)	:	60.0
Depth (m)	:	21.0(1.0m Top Soil + 20.0m 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 21.0m (1.0m top soil + 20.0m 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 Four 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 2.24.0 Ha.

07. Nature of ore body :

There is only one band of Limestone band, Biotite-schist and without much of geological disturbances.

ii)The ultimate pit limits will be :

Ultimate pit limits have been marked in the Conceptual Mining Plan.

BAND

Length	:	150.0
Width (m)	:	67.0
Depth (m)	:	21.0(1.0m Top Soil + 20.0m Limestone)

1. The outline of the area to be worked out in the next Five years : 1.00.5 Ha

Plate No. 4

2. The area to be worked upto life of the mine-Plate No.VIII. :1.00.5 Ha
3. Year wise area to be planted for next Four years-Plate No.V. :0.20.0 Ha
4. Subsequent blocks to be afforested in future-Plate No.VIII :0.20.0 Ha
5. Extent of areas occupied by dumps, roads, site services, :0.15.0 Ha etc., - Plate No.VIII.

Table No.2.7

Sl. No.	Description	Present Area (Ha.)	Area to be reclaimed & rehabilitated at the end of present MP/MS period	Area to be reclaimed & rehabilitated at the end of life of mine (Ha.)
01.	Mining (Quarry)	0.24.0	0.42.0	1.00.5
02.	Waste dump	0.39.0	0.15.0	0.15.0
03.	Office-Infrastructure	0.01.0	-	0.01.0
04.	Mineral Stackl/ Processing	-	-	-
05.	Sub-grade Mineral stacks	-	-	-
06.	Mine Roads	0.13.0	0.01.0	0.01.0
07.	Area under Plantation	0.01.0	0.20.0	0.20.0
08.	Unutilised Area	1.46.0	1.46.0	0.86.5
	TOTAL	2.24.0	2.24.0	2.24.0

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 five years are furnished below :

<u>Nature of Waste</u>	<u>Quantity in tonnes</u>
Top soil	1827
Sideburden	4940
Mineral reject	3252
Total waste	10,018

Please refer Plate No.6 to 9.

The suitable 40 of Casurina trees to be afforested over these dumps to prevent wash off or erosion. When the ultimate pit limit is drawn for 21.0m depth, the wastes are dumped together in the non-mineral bearing area of the North East & Southern side of the lease area.

The dumping details are furnished below:

Table No.2.8

	TOP SOIL DUMP	MINERAL REJECT DUMP	WASTE DUMP			
2020-21				NIL		
2021-22	30M X 12M X 1M	30M X 12M X 1M	30M X 12M X 1M	Fresh area		
2022-23	30M X 12M X 1M	30M X 12M X 1M	30M X 12M X 1M	over lap		
2023-24	30M X 12M X 0.5M	30M X 12M X 1M	30M X 12M X 2M	over lap(wate dump new area)		
2024-25	30M X 12M X 0.5M	30M X 12M X 1M	30M X 24M X 1M	over lap		

In the next Five years nearly 10018 tonnes of waste will be generated. The stabilization measures, to be made for Year wise (future) dumps. Please refer Plate No.5.

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 01.04.2016 is around 5,413 tonnes. The limestone blocked in the 7.5m safety barrier and locked up 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 1,200 tons per annum of limestone in the next Four years. On this basis, the expected life of the mine is around four Years only ($5,413 \div 1200 = 4.51$). Lessee will be given renewal application for one year before of expiry of lease period. The copy of application is enclosed as annexure no.3. To increase the 111 reserve for the forthcoming years of the plan period the lessee will propose to drill DTH borehole of 5 nos before the end of the review of mining plan period (2020-21- 2024-25).

BLASTING:

a. Broad blasting parameters

Dia. of hole (mm)	: 32
Depth (m) Spacing	: 1.5
(m) Burden (m)	: 0.9
Charge per hole	: 0.6
Yield/kg. Of	: 3 cartridge of 140 gm each 0.42 kg.
Explosives	: $\frac{0.9 \times 0.6 \times 1.5 \times 2.6}{0.42}$
	: 5 tons 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 tons/kg. Of Explosives
Top soil	: Will be handled manually
Waste rock	: 5 tons/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 21.0m (1.0m top soil + 20.0m Limestone) in the next Four 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 Five years is about 1827 tonnes.

Sideburden:

The sideburden consists of Biotite-schist. The generation of sideburden for next Four years is about 4940 tonnes.

Sub-grade Mineral:

Sub-grade Mineral is not produced in the next Five 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.4.1

	Top soil/Overburden	Sideburden	Mineral Reject
Length (m)	30.0	21.0	38.0
Width (m)	12.0	16.0	16.0
Height (m)	1.0	4.0	3.0
Total Quantity (t)	1827	4940	3252

The size of the dumps for next Four years is marked in Plate Nos.6 to 9.

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 Five years will be dumped in the non-mineral bearing area of the North 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 North 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 prevents 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 Fiver years are furnished as follows:

Table No.4.2

	Topsoil/Overburden	Sideburden	Mineral Reject
Length (m)	30.0	21.0	38.0
Width (m)	12.0	16.0	16.0
Height (m)	1.0	4.0	3.0
Total Quantity (t)	1827	4940	3252

Please refer Plate Nos. 6 to 9.

The yearwise dumping details are furnished below: Table No.4.3

	TOP SOIL DUMP	MINERAL REJECT DUMP	WASTE DUMP			
2020-21			NIL			
2021-22	30M X 12M X 1M	30M X 12M X 1M	30M X 12M X 1M	Fresh area		
2022-23	30M X 12M X 1M	30M X 12M X 1M	30M X 12M X 1M	over lap		
2023-24	30M X 12M X 0.5M	30M X 12M X 1M	30M X 12M X 2M	over lap(wate dump new area)		
2024-25	30M X 12M X 0.5M	30M X 12M X 1M	30M X 24M X 1M	over lap		

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	1827
Sideburden	4940
Mineral reject	3252
Total waste	10018

There is adequate space available for dumping overburden soil, Side burden and mineral reject (life of the mine) will be dumped in the non-mineral bearing area of the North 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 No.4.4

	Overburden	Sideburden	Mineral Reject
Length (m)	30.0	21.0	38.0
Width (m)	12.0	16.0	16.0
Height (m)	1.0	3.0	3.0
Total Quantity (t)	1827	4940	3252

Please refer Plate No.10.

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 CaCo₃ 78.04%, SiO₂ 10.12% and MgCo₃ 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.5.1

Parameters	Results %
Calcium carbonate (CaCo ₃)	78.04
Magnesium carbonate (MgCo ₃)	1.03
Silica as SiO ₂	10.12
Aluminium Oxide (Al ₂ O ₃)	Nil
Ferric Oxide (Fe ₂ O ₃)	Nil
Sodium as Na ₂ O	Nil
Potassium as k ₂ O	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 CaCO_3 is mixed with higher SiO_2 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.3 & 4.

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	
Total no. of working days in a year	: 250
Production (Expected) per year (Limestone)	: 1,200 tonnes
Production/day	: 5 ie. $(\frac{1200}{250} = 4.8)$
Say	: 5 tonnes
Output/manshift including waste handling	: 4.0 tonnes
No. of face workers/day	: $1(5 \div 4 = 1.2)$
For absenteeism 20%	: 1
Total no. of Labour (on contract basis of production of	: 2 Nos.
Total this small mine, a "Mine Foreman" is proposed to be appointed as Manager authorization from DGMS.	

The details of proposed employment are given below:

Supervisory:

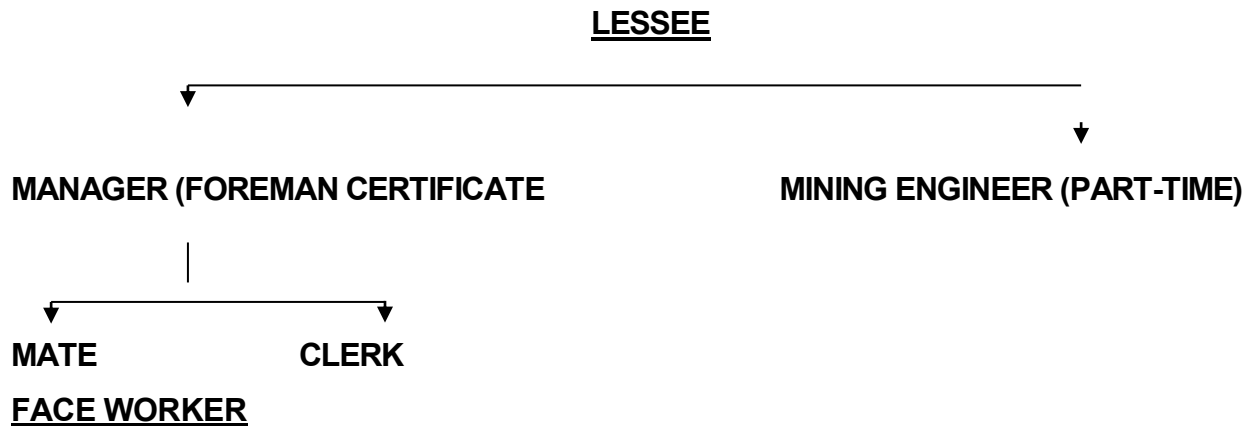
Manager (Foreman)	: 1
Part-time Mining Engineer	: 1
Clerk	: 1
Total	: 3 Nos.

Labour:

Highly skilled, Skilled, a Semi-skilled and Unskilled:

Highly Skilled	: -
Skilled	: 2
Semi-skilled	: -
Unskilled	: 2

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'2017

INTRODUCTION

Name of the Mine	: Varavanai Limestone Mine
Lessee	: Thiru.S.Sekhar,
Address	Owner. : No.73, 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	: Lessee is the Executive Authority person and Address are given above

Location :

Extent	: 2.24.0 Ha.
S.F.Nos.	: 835/3, 836(PART) & 837/1B
Village	: Varavanai
Taluk	: Kulithalai
District	: Karur

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	:	1.00.5 Ha.
Area occupied by dumping	:	0.13.0 Ha.
Area occupied by boundary barrier/roads/Planets	:	:1.10.5 Ha.

Total	:	2.24.0 Ha.

Existing Land Use Pattern: Table No.8.1

I. No	Head	Area put on use at start of plan period (Ha)
1	Area of excavation	0.24.0
2	Storage of top soil	Nil
3	Waste Dump	0.39.0
4	Mineral Storage	Nil
5	Infrastructure	0.01.0
6	Roads	0.13.0
7	Railways	Nil
8	Tailing pond	Nil
9	Effluent treatment plant	Nil
10	Mineral Separation plant	Nil
11	Town ship area	Nil
12	Others (Green belt & Safety zone)	0.01.0
TOTAL		0.78.0
Unused area		1.46.0
Grand Total		2.24.0

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:8.2

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: -

1. Land
2. Air Quality

3. Water Quality
4. Noise Levels
5. Vibration Levels
6. Water Regime
7. Socio-Economics
8. 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 2.24.0 Ha.

Conceptual position of the mining details:

The area covered by pits	:	1.00.5 Ha.
The area covered by waste dumps	:	0.54.0 Ha.
The area covered by afforestation	:	0.20.0 Ha.
The area covered by mine roads	:	0.01.0 Ha.
Virgin area	:	0.48.5 Ha

There is adequate space available for dumping the waste materials with in the lease area for next Four 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:8.3

Duration per day (Hrs)	Sound level dBa)
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 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 40 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 Four years are described as follows :Table – 8.4

Year	Name of the	No. Of species	Interval	Area in Ha.	Survival rate
2020-21	Lapsed year.				
2021-22	Casurina	40	5m	0.05.0	80%
2022-23	Casurina	40	5m	0.05.0	80%
2023-24	Casurina	40	5m	0.05.0	80%
2024-25	Casurina	40	5m	0.05.0	80%
TOTAL		160		0.20.0	

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.

- 1. The area covered by pits : 1.00.50 Ha.
- 2. The area covered by waste dumps : 0.15.0 Ha.
- 3. The area covered by afforestation : 0.20.0 Ha.
- 4. The area covered by roads, infrastructure : 0.01.0 Ha.
- 5. Virgin area : 0.48.5 Ha.

Table No.8.5

Table No.8.7 Proposed Land Use

I. No	Head	Area put on use at start of plan period (Ha)	Additional requirement during plan period (Ha)	Total (Ha)
		A	B	C=A+B
1	Area of excavation	0.24.0	0.42.0	0.66.0
2	Storage of top soil	-	-	-
3	Waste Dump	0.39.0	0.15.0	0.54.0
4	Mineral Storage	Nil	Nil	Nil
5	Infrastructure	0.01.0	Nil	0.01.0
6	Roads	0.13.0	0.00.0	0.13.0
7	Railways	Nil	Nil	Nil
8	Tailing pond	Nil	Nil	Nil
9	Effluent treatment plant	Nil	Nil	Nil
10	Mineral Separation plant	Nil	Nil	Nil
11	Town ship area	Nil	Nil	Nil
12	Others (Green belt & Safety zone)	0.01.0	0.20.0	0.21.0
GRAND TOTAL		0.78.0	0.77.0	1.55.0
Unused area / Reclaimed area		1.46.0		
Grand Total		2.24.0		

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 2021-2022.

Table No.8.6

ITEMS		DETAILS		AREA (Ha)	QUANTITY	EXPENDITURE (Rs.)	
				Proposal	Proposal	Proposal	
A)	Reclamation &	i)	Backfilling	Nil	Nil	Nil	
			Afforestation on the backfilled area	Nil	Nil	Nil	
			Others (Please specify) ie, afforestation on exhausted benches	Nil	Nil	Nil	
			Pisciculture	Nil	Nil	Nil	
			Converting in water reservoir	Nil	Nil	Nil	
			Picnic spot	Nil	Nil	Nil	
	Stabilisation &		Terracing	Nil	Nil	Nil	
			Pitching	Nil	Nil	Nil	
			Construction of parapet walls/ retaining wall at toe of dumps	Nil	Nil	Nil	
			Construction of check dams along slopes	Nil	Nil	Nil	
			Construction of settling pond	Nil	Nil	Nil	
			Details of settling pond/ channels	Nil	Nil	Nil	
			Afforestation on dumps	Nil	Nil	Nil	
			Others (Please specify)	Nil	Nil	Nil	
			Rehabilitation of barren area	Afforestation (Green land building)	0.05.0	40 saplings	Rs.1000
				Others (Please specify)	Nil	Nil	Nil

D)Environmental monitoring (core zone & buffer zone)

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 2022-2023.

Table No.8.7

ITEMS		DETAILS	AREA (Ha)	QUANTITY	EXPENDITURE (Rs.)
			Proposal	Proposal	Proposal
A) B) C)	Reclamation & Rehabilitation of mined out area	Backfilling	Nil	Nil	Nil
		Afforestation on the backfilled area	Nil	Nil	Nil
		Others (Please specify) ie, afforestation on exhausted benches	Nil	Nil	Nil
Pisciculture		Nil	Nil	Nil	
Converting in water reservoir		Nil	Nil	Nil	
Picnic spot		Nil	Nil	Nil	
Terracing		Nil	Nil	Nil	
Stabilisation & Rehabilitation of dumps	Pitching	Nil	Nil	Nil	
	Construction of parapet walls/ retaining wall at toe of dumps	Nil	Nil	Nil	
	Construction of check dams along slopes	Nil	Nil	Nil	
	Construction of settling pond	Nil	Nil	Nil	
	Details of settling pond/ channels	Nil	Nil	Nil	
	Afforestation on dumps	Nil	Nil	Nil	
	Others (Please specify)	Nil	Nil	Nil	
Rehabilitation of barren area within lease	Afforestation (Green land building)	0.05.0	40 saplings	Rs.1000	
	Others (Please specify)	Nil	Nil	Nil	

D)Environmental monitoring (core zone & buffer zone)

Air quality (Rs. / sample)	Water quality (Rs. / sample)	Noise (Rs. /)	Ground vibration (Rs.)
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 2023-2024.

Table No.8.8

ITEMS		DETAILS		AREA (Ha)	QUANTITY	EXPENDITURE (Rs.)
				Proposal	Proposal	Proposal
A) B) C)	Reclamation & Rehabilitation of mined out area	Backfilling		Nil	Nil	Nil
		Afforestation on the backfilled area		Nil	Nil	Nil
		Others (Please specify) ie, afforestation on exhausted benches		Nil	Nil	Nil
	Stabilisation & Rehabilitation of dumps	Pisciculture		Nil	Nil	Nil
		Converting in water reservoir		Nil	Nil	Nil
		Picnic spot		Nil	Nil	Nil
		Terracing		Nil	Nil	Nil
		Pitching		Nil	Nil	Nil
		Construction of parapet walls/ retaining wall at toe of dumps		Nil	Nil	Nil
		Construction of check dams along slopes		Nil	Nil	Nil
		Construction of settling pond		Nil	Nil	Nil
		Details of settling pond/ channels		Nil	Nil	Nil
		Afforestation on dumps		Nil	Nil	Nil
	Rehabilitation of barren area within lease	Others (Please specify)		Nil	Nil	Nil
		Afforestation (Green land building)		0.05.0	40 saplings	Rs.1000
		Others (Please specify)		Nil	Nil	Nil

D)Environmental monitoring (core zone & buffer zone

Air quality (Rs. / sample)	Water quality (Rs. / sample)	Noise (Rs. /	Ground vibration (Rs.
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 2024-2025.

Table No.8.9

ITEMS		DETAILS		AREA (Ha)	QUANTITY	EXPENDITURE (Rs.)
				Proposal	Proposal	Proposal
A) B) C)	Reclamation & Rehabilitation of mined out area	Backfilling		Nil	Nil	Nil
		Afforestation on the backfilled area		Nil	Nil	Nil
		Others (Please specify) ie, afforestation on exhausted benches		Nil	Nil	Nil
Pisciculture			Nil	Nil	Nil	
Converting in water reservoir			Nil	Nil	Nil	
Picnic spot			Nil	Nil	Nil	
Stabilisation & Rehabilitation of dumps	Terracing		Nil	Nil	Nil	
	Pitching		Nil	Nil	Nil	
	Construction of parapet walls/ retaining wall at toe of dumps		Nil	Nil	Nil	
	Construction of check dams along slopes		Nil	Nil	Nil	
	Construction of settling pond		Nil	Nil	Nil	
	Details of settling pond/ channels		Nil	Nil	Nil	
	Afforestation on dumps		Nil	Nil	Nil	
	Others (Please specify)		Nil	Nil	Nil	
	Afforestation (Green land building)	0.05.0		40 saplings	Rs.1000	
Rehabilitation of barren area within lease	Others (Please specify)		Nil	Nil	Nil	

D) Environmental monitoring (core zone & buffer zone)

Air quality (Rs. / sample)	Water quality (Rs. / sample)	Noise (Rs. /)	Ground vibration (Rs.)
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 2020-2025.

Table No.8.10

ITEMS	DETAILS	AREA	QUANTITY	EXPENDITURE (Rs.)		
		(Ha) Proposal	Proposal	Proposal		
A)	Reclamation &	Nil				
B)	Rehabilitation of	Nil				
C)	mined out area	Nil				
	Stabilisation &	Nil				
	Rehabilitation of	Nil				
	dumps	Nil				
	Rehabilitation of	i)	Afforestation	0.20.0	160	Rs.4,000/-
	barren area within		(Green land	Ha.	saplings	
	lease		building on			
			boundary barrier)			
		ii)	Others	nil		
			Watchman			

DEnvironmental monitoring (core zone & buffer zone Table No.8.11

Air quality (Rs. / sample)	Water quality (Rs. / sample)	Noise (Rs. / area)	Ground vibration (Rs./ area)
6000 x 2 (Core+ buffer zone)	3400 x 2 (Core+ buffer zone)	3600 x 2 (Core+ buffer zone)	3000x2 (core +buffer zone)

Budget Provision for the present scheme period

Afforestation cost outside the mining lease area	=Rs.4,000/-
Air Quality Sampling	=Rs.12,000/-
Water Quality Sampling	=Rs.6,800/-
Noise Monitoring	=Rs.7,200/-
Ground vibration test	=Rs.6,000/-
Total Abandonment Cost	=Rs.36,000/-

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 is 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. The entire 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:

Indicating the Breakup of areas in the Mining lease for calculation of Financial assurance. (as per circular 4/2006)

Table No:8.12

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	0.24.0	0.42.0	0.66.0	-	0.66.0
2	Storage for top soil	-	-	-	-	-
3	Overburden/dump	0.39.0	0.15.0	0.54.0	-	0.54.0
4	Mineral storage	-	-	-	-	-
5	Infrastructure	0.01.0	-	0.01.0	-	0.01.0
6	Roads	0.13.0	0.00.0	0.13.0	-	0.13.0
7	Railways	-	-	-	-	-
8	Green Belt	0.01.0	0.20.0	0.21.0	-	0.21.0
9	Tailing pond	-	-	-	-	-
10	Effluent Treatment Plant	-	-	-	-	-
11	Mineral Separation Plant	-	-	-	-	-
12	Township area	-	-	-	-	-
13	Others to specify	-	-	-	-	-
	GRAND TOTAL	0.78.0	0.77.0	1.55.0		1.55.0

The total area put to use for mining and allied activities is about 1.55.0 Ha.

As per Mineral Conservation and Development Rules – 2017 under Rule 23 (1), the lessee will have to provide financial assurance of Rs.2,00,000/ha for the area utilized since the area falls in B- Category mine. The financial assurance for 1.55.0 Ha considered for calculation and works out to Rs. 310000/- However the minimum financial assurance for the category-“B” mines will be of Rs.5,00,000/-(Rupees Five lakhs only) submitted in the form of Bank Guarantee. The financial assurance in the form of Bank Guarantee is enclosed as annexure no.11.

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.

(B.Gangatharan)
Qualified Person.



ANNEXURES

ANNEXURE-1

MEMORANDUM

Mines and Minerals - Mining Lease - Limestone - Tiruchirapalli District - Kulithalai Taluk - Varavanai Village - Over an extent of 5.33 acres in S.F.No.835/3, 836 (Part) and 837/1 - Mining Lease application of Thiru. S. Sekhar, Thiruchirapalli - Grant of Mining Lease - Sanctioned.

INDUSTRIES (MMA2) DEPARTMENT

G.O. J(D) Np.292

Dated: 4.10.1995.

Read:

- 1) From Thiru. S. Sekhar, Thiruchirapalli, Mining Lease application dated 22.7.91 and letter dated 25.4.94.
- 2) From District Collector, Thiruchirapalli, Letter No.Rc.A.1340/91, dated 24.10.91.
- 3) From Director of Geology and Mining, Letter Rc. NO.14430/83/91, dated 14.1.92, 25.1.93 and 16.5.94.
- 4) From Government of India, Ministry of Mines, Letter No.4(293)/94, M.IV, dated 15.9.95.

-0-

ORDER:-

Thiru. S. Sekhar, Tiruchirapalli in his Mining Lease application dated 22.7.91 has applied for grant of fresh mining lease for Limestone over an extent of 5.33 acres in S.F.No.835/3 (0.32 Acre), 836 (Part) (1.41 acres) and 837/1B (3.80 acres) of Varavanai Village, Kulithalai Taluk, Thiruchirapalli District for a period of 20 years.

2. The District Collector, Thiruchirapalli has certified that the lands applied for Mining Lease are patta lands owned by the applicant and he has got the surface rights over the lands. The area has not been reserved for State exploitation. The District Collector has recommended for grant of Mining Lease in favour of applicant.

3. The Director of Geology and Mining has reported that the area applied for, satisfies Section 6(1) (c) of Mines and Minerals (Regulation and Development) Act, 1957, and also has recommended for grant of Mining Lease in favour applicant subject to the following conditions:-

- 1) No Mining should be carried out within a distance of 50 metres on either side from the power Line passing through the area in Western side of S.F. No.836. Otherwise, the electric Line should be shifted with the concurrence of Tamil Nadu Electricity Board and other pattadars at the cost of the applicant.
- ii) that the applicant should establish a pulverising unit within one year from the date of sanction of lease.

11) That the applicant should utilise Cement plus grade Limestone in the proposed industry of the applicant for stabilised mud blocks manufacture.

iv) Cement grade limestone should be supplied to cement industries, and

v) Only less than cement grade below 42% CaO or High Silica/High Magnesia should be supplied to heavy industries as filler.

4. The Government have accepted the recommendations of the District Collector, Thiruchirappalli and Director of Geology and Mining for grant of mining lease in favour of Thiru. S. Sekhar, Thiruchirappalli and addressed the Government of India for their concurrence to grant mining lease in favour of applicant firm. The Government of India in their letter fourth read above have conveyed their approval under Section 5(1) of Mines and Minerals (Regulation and Development) Act, 1957 and under Rule 27(3) of Mineral Concession Rules, 1960 to grant Mining Lease over an extent of 5.53 acres to Thiru. S. Sekhar, Thiruchirappalli for a period of 20 years.

5. In exercise of the powers conferred under Section 10(3) of Mines and Minerals (Regulation and Development) Act 1957 (Central Act 67 of 1957), the Governor of Tamil Nadu, hereby sanctions the grant of Mining Lease in favour of Thiru. S. Sekhar, Thiruchirappalli for mining Limestone over an extent of 5.53 acres in S.F. Nos. 835/3 (0.32 acre) 836 (Part) (1.41 acres) and 837/1B (3.80 acres) of Varavanai Village, Kulithalai Taluk, Thiruchirappalli District for a period of 20 (twenty) years subject to the special conditions mentioned in para 3 above and also other conditions specified in the appendix to this order.

6. The rate of royalty, dead rent and shall be as follows:-

Royalty:- Limestone (including Lime Kankar)

(a) L.E. Grade : Rs. 50/- (Rupees Fifty)
(Less than 1.5% Silica Content) : per tonne.

(b) Others : Rs. 25/- (Rupees Twenty five) per tonne.

Dead Rent:-

First year of the lease : Nil

Second year to fifth year of the lease : Rs. 30/- (Rupees Thirty) per hectare per annum

Sixth to tenth year of the lease : Rs. 60/- (Rupees Sixty) per hectare per annum

Eleventh year of the lease onwards : Rs. 90/- (Rupees Ninety) per hectare per annum

Surface rent and water rates:-

At such rate as the land revenue and other cesses assessable in the land are paid.

7. The applicant should pay a deposit of Rs. 2,000/- (Rupees Two Thousand only) as prescribed in rule 12 of Mines and Concessions Rules, 1960 before the lease deed is actually executed.

8. The terms and conditions mentioned in this order are subject to such further modifications, additions and alterations as may be included in the lease deed when finalised.

9. The District Collector, Thiruchirapalli is requested to take necessary further action for execution of the lease deed in the prescribed form. As soon as the deed is executed, it should be reported to the Government and Commissioner of Geology and Mining. The Collector is also requested to ensure compliance by the applicant firm of the amended provisions of Mines and Minerals (Regulation and Development) Act, 1957 and Minerals 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.

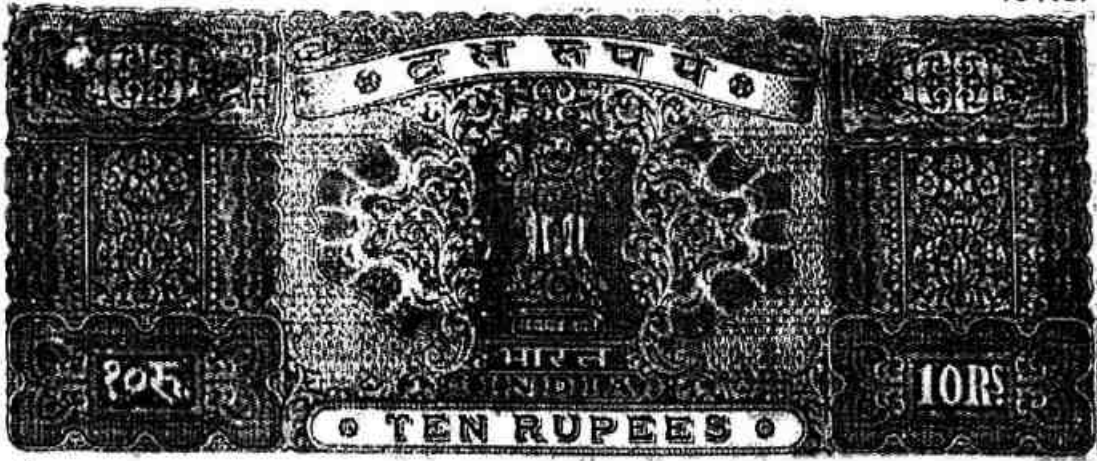
- To
 - The Director of Geology and Mining, Guindy, Madras-32.
 - The District Collector, Thiruchirapalli District (w.e.) (BY ROAD).
 - Thiru. S. Sekhar, 73, Raja Colony Contonment, Thiruchirapalli-620 001.
 - The Secretary to Government of India, Ministry of Mines, New Delhi 110 001.
 - The Controller General, Indian Bureau of Mines, New Secretariat Building, Nagpur.
 - The Regional Controller of Mines, Indian Bureau of Mines, No. 29, Vijayaragava Road, T. Nagar, Madras-17.
 - The Industries (OP, II) Department, Madras-9.
- SF/SC.

//Forwarded/By order//

[Signature]
SECTION OFFICER.
[Signature]
5-15-95

[Signature]
R. Rajasekar, M.Sc.,
Recognised Qualified Person

ANNEXURE-2



27 -
10-1-22

0007

Thiru S. Sekhar,
73, Raja Colony,
Cantonment,
Tiruchirappalli-1.



FORM - I

**RULE 31 OF MINERAL CONCESSION RULES, 1960
MINING LEASE DEED**

**MINING LEASE SANCTIONED IN G.O.S(D) No.292, INDUSTRIES (MMA,2)
DEPARTMENT, DATED: 4.10.1995**

...

THIS INSTRUMENT made this 18th day of ~~April~~,
1995 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, Cantonment, Tiruchirappalli-620 001
(hereinafter referred to as "the lessee" which expression
shall where the context so admits be deemed to include
his successors and permitted assigns) of the other part.

[Signature]
LESSEE

[Signature]
DISTRICT COLLECTOR
LEASOR

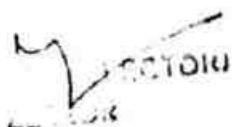
Chiru S. Sekhar,
Tiruchirappalli-1.

- 2 -

WHEREAS the lessee has 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 have deposited with the State Government the sum of Rs.2,000/- as Security Deposit and a sum of Rs.1,000/- for meeting out the Preliminary Expenses for a mining 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 grants and demises unto lessee.


LESSOR

(DISTRICT)

DIRECTOR

- 3 -

Shiru S. Sekhar, Tiruchi-1.

- 3 -

All those the mines bed/veins seams of LIMESTONE (hereinafter and in the Schedule referred to as 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 or 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 EXCEPT and reserving out of this 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 from the 15th day of November, 1995 for a term of 20 (twenty) years thence next ensuing YIELDING AND PAYING THEREFOR unto the State Government the several


LEASER

(DIS) 
2000

Thiru S.Sekhar, Tiruchi-1.

- 4 -

rents rates and royalties mentioned in Part-V of the said Schedule at the respective times therein specified subject to the provisions contained in 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.


LESSEE

51
12.

(DISTRICT COLLECTOR)
LESSOR

- 5 -

Thiru S. Sekhar, Tiruchi-1.

- 5 -

The Schedule above referred to

PART - I

THE AREA OF THIS LEASE
LOCATIONS AND AREA OF THE LEASE

...

All that track of land situate at VARAVANAI village of Kulithalai Taluk, Tiruchirappalli District in the registration district of Karur and in the Sub District of Tharagampatty, bearing cadastral survey number/containing the area of 5.53 Acres of thereabout delineated on the plan hereto annexed and thereon coloured RED and bounded as follows:-


S. S. S.

(DISTRICT COLLECTOR)
LEASER

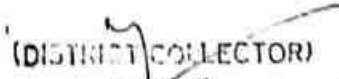
- 6 -

Shiru S. Sekhar, Tiruchirappalli-1.

- 6 -

S.No.	Extent in Acres.	BOUNDARIES			
		NORTH	SOUTH	EAST	WEST
835/3	0.32	835	837	836	835/2
836 (Part)	1.41	836 Part	837/1B	843/2	835/3
837/1B	3.80	843 836	837/3	842	837/1A
Total :	5.53	835 Part			


NESSEE


(DISTRICT COLLECTOR)
LEASOR

- 7 -

Thiru J. Sekhar, Tiruchi-1.

- 7 -

PART - II

LIBERTIES, POWERS AND PRIVILEGES TO BE EXERCISED AND ENJOYED
BY THIS 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 dig drill for win work dress process convert, carry away and dispose of the said mineral.

TO SINK DRIVE AND MAKE PITS SHAFTS AND INCLINES ETC.

2. Liberty and power for or in connection with any of the purposes mentioned in this part to sink, drive, make, maintain and use in the said lands and pits, shafts, inclines drifts levels waterways, airways and other works (and to use, maintain, deepen or extend any existing works of the like nature in the said lands).



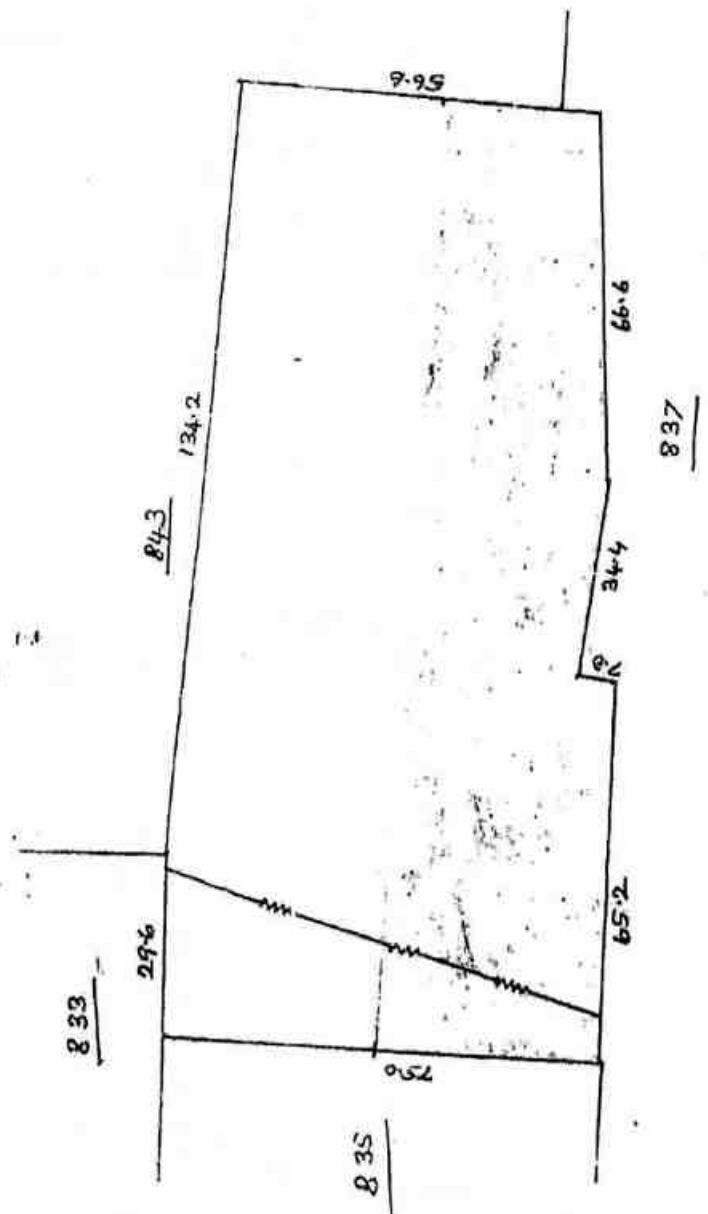
(DIRECTOR)

- 8 -

475.60 சதுர அடிகள்
 0.212 ஹெக்டேர்

475.60 சதுர அடிகள்
 0.212 ஹெக்டேர்
 836

பி.என்.எஸ். { டீர்: 69
 ரெவின்யூ: ரெவின்யூ
 கட்டிடம்: 1.14.0



1: 1000 மம்: True Copy

(Signature)
 5/93

மேலே குறிப்பாக எழுப்பலி
 69, வரலாறு மெய்யம்,
 அளித்தல் வட்டம்,
 மெய்யம் மெய்யம்

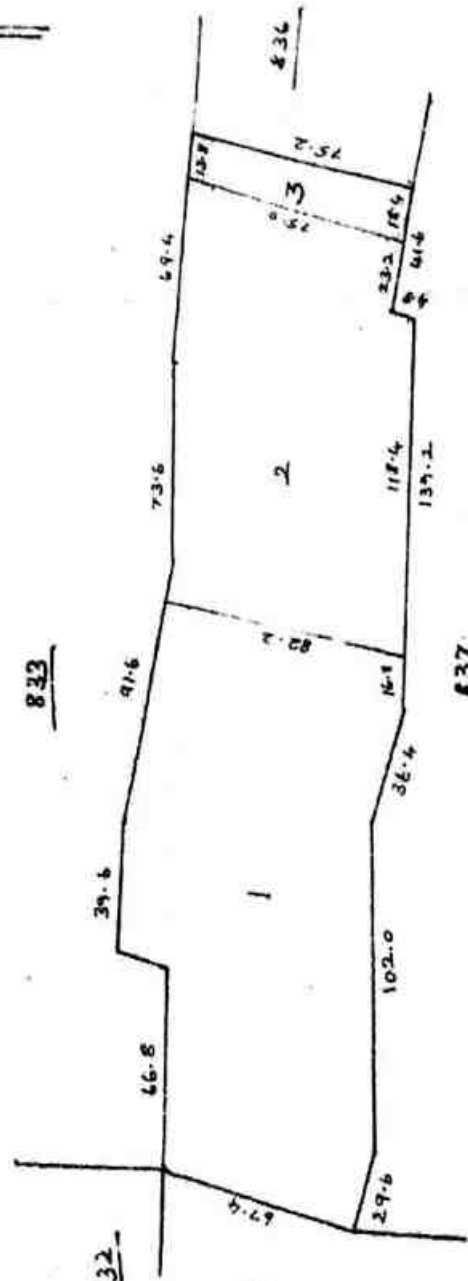
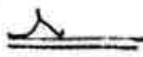
~~LESSEE~~

DISTRICT COLLECTOR
 LESSOR

பெண்: 2325
 வி: 34334

4 மீட்டர்: 835

பெண்: 69
 வி: 27227
 மீட்டர்: 2.64.0



833

832

834

837

1 True Copy

[Handwritten signature]

8/1/93

சிராம நிர்வாக அலுவலர்,
 69, வரலாறு சிராமம்,
 குளித்தலை வட்டம்,
 திருச்சி மாவட்டம்.

SEE

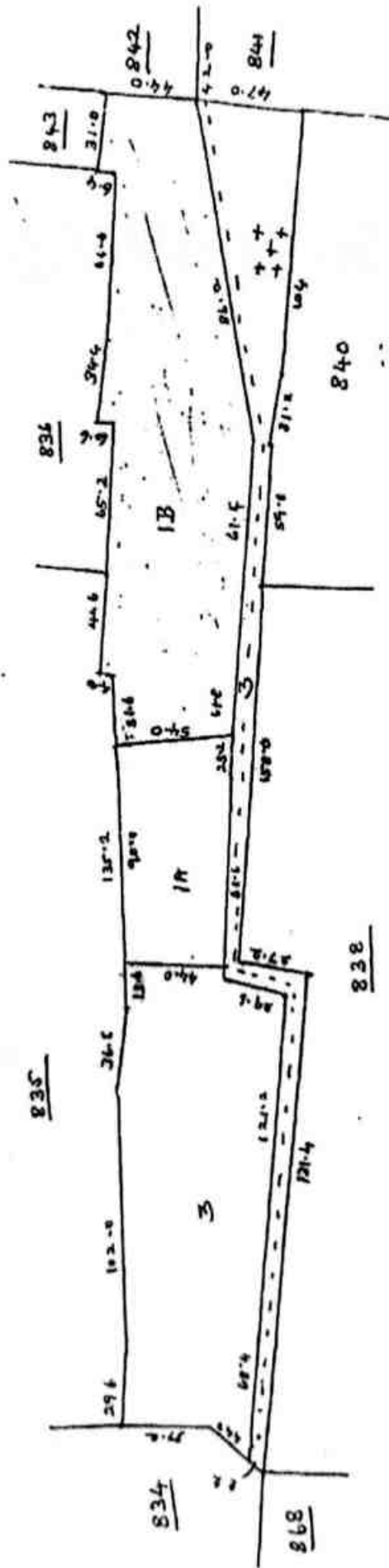
DISTRICT COLLECTOR
 LESSOR

Location: P. 101
District: P. 101

4th Term: 837

Area: {
Total: 69
District: P. 101

Area: 4.00.00



1 True Copy /

[Signature]
2/1/93

Scale: 1 : 2000 mm.

[Signature]
R. Rajasekar, M.Sc.,
Recognized Qualified Person
No. RQP / CNN / 264 / 2015/A

Office: P. 101
69, P. 101
P. 101

ANNEXURE-3

FORM - J

Received
at.....(Place) GOVERNMENT OF
on.....(Date) MODEL FORM
Initial of Receiving

Officer

[See rule 24A]

Dated day of 20 -----

APPLICATION FOR RENEWAL OF MINING LEASE

To

District
Collector Karur
Tamil Nadu.

Through : The Asst. Director of Geology and Mining
Collectorate Karur

Sir,

I request for renewal of my mining lease under the Mineral Concession Rules, 1960. A sum of (Rs. 2500) 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.	
(d) a firm or association, the nationality of all the partners of the firm or members of the association.	Not applicable

(iv) Profession or nature of business of applicant.	Mining Industry
(v) (Omitted)	
(vi) (Omitted)	
(via) No. and date of the valid clearance certificate of payment of mining dues (copy enclosed).	R.C.No.378/Mines/2013 Dtd. 14.06.2013 No dues certificate enclosed. Upto March 31 st 2013 . No dues up to 31 st March 2013 N.D.C applied and will be submitted early
(vii) an affidavit, that up-to-date Income Tax returns, as prescribed under the Income Tax Act, 1961, have been filed, and the tax due, including the tax on account of self-assessment has been paid.	Paid Affidavit enclosed
(viii) (a) Particulars of the mining lease of which renewal is desired.	G.O.Ms.No.292 Industries (MMA-2) Dept. Dtd.4.10.1995 S.F.Nos.836(P), 835/3,837/1b Total Extent: 2.24 HA \$ • HA Tharagampatty Tk. (Formerly Kulithalai Tk.) Karur District.
(b) Details of previous renewal granted, if any.	First Renewal Application
(ix) Period for which renewal of mining lease is required.	20 years
(x) Whether renewal is applied for the whole or part of the leasehold.	Whole area applied as in G.O.Ms.No. 292 Industries (MMA-2) Dept. Dtd. 4.10.1995 S.F.Nos. 836(P), 835/3,837/1b Total Extent: 2.24 HA Tharagampatty TK. (Formerly Kulithalai Tk.) Karur District.
(xA) (a) Does the applicant continue to have surface rights over the area of the land for which he requires renewal of the mining lease.	Yes, continuously having the surface right, patta Land, copy of the present village records duly certified is enclosed.
(b) If not, has he obtained the consent of the owner and occupier for undertaking mining operations. If so, the consent of the owner and occupier of the land obtained in writing be filed.	Not applicable
(xB) Particulars of the areas mineral-wise in each State duly supported by affidavit for which the applicant or any person joint in interest with him.	No, other Mining Lease or pending Application for Mining Lease other than this area anywhere in Indian Domain.
(a) already holds under mining lease;	Lime Stone G.O. 3(D) No.162 - Industries (MMA2) Dept. Dtd. 4.10.95 for a period of 20 years, in S.F. Nos. , 836 (part) 833/1b ,843/2 & of Varavanai Village, Tharagampatty Tk. (Formerly Kulithalai) Karur District. Tamil Nadu an affidavit enclosed.

(b) has already applied for but not granted; or	No
(c) being applied for simultaneously.	No
(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;	Plan will be prepared accurately and submitted incorporating all these details. Present validity of Mining scheme approval No. TN/KRR/LST/MS-716-MDS for the period 2011-2012 to 2015-2016.
(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 preparation
(c) annual programme and plan for excavation for five years; and	Will be incorporated in the mining plan preparation
(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	Will be incorporated in the mining plan preparation
(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 ready to furnish any other details, including accurate plans as required by you before the grant of renewal of the lease.

Place : Trichirappalli
Date : 28/7/2014 July - 2014

Yours faithfully,

(S. SEKHAR)
Lessee

End: 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.



TNTC9
CHALAN

SAVING CREATE PROSPERITY
REMITTER COPY

No. 28 JUL 2014

DATE 28.07.2014

For payment of money at _____

SBI Tranthrom

Paid into the credit of _____

By whom paid: Name and Address

For (Reason/Authority) Krishnadas Taluk, Channarayana village, SFNO: 835/3
Limestone Renewal Application

S. Sekar
73, Raja colony
collector's office
Road, Cantonment
Trichy -

Head of Account*
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

A sum of Rs. 2500/-

Rupees Two thousand
Five hundred only

Amount	
Rs.	Ps.
<u>2500</u>	<u>00</u>
<u>2500</u>	<u>00</u>

~~STATE~~
~~ASSISTANT DIRECTOR~~
~~DESIGNATION~~
~~GEOLOGY AND MINING~~
~~REVENUE~~
~~SUB~~

Signature of the Remitter

For Use of State Treasury
Rupees 2500/-

Cashier

Manager / Account
Sub - Treasury Officer

* Head of Account should be filled in by the Departmental Officer.

04/07/14

R. Rajasekar
R. Rajasekar, M.Sc.,
Recognised Qualified Person
Reg. No. RQP / CNN / 264 / 2015/A

ANNEXURE-4

Speed post

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES
O/O THE REGIONAL CONTROLLER OF MINES

Ph.No.24911295/4461/1570
Fax No.044-24911295
Email ID:ro.chennai@ibm.gov.in/
rcomchennai@yahoo.co.in

C-4-A, Rajaji Bhawan
CGO complex, Besant Nagar
Chennai - 600 090.

No.TN/DGL/LST/MS-1372 MDS

Date : 13/06/2016

✓ **To:**
Sri.S.Sekhar,
No.73, raja Colony,
Collector office Road,
Contonment, Trichy-620001.

Sub : Approval of Scheme of Mining including PMCP for Varavanai Limestone Mine over 2.24 hectares in S.F.nos. 835/3,836(p),837/1B in Varavanai Village, kulithalai Taluk, Karur District, Tamilnadu submitted under rule 12 of MCDR, 1988 .

Ref : RQP letter No.Nil dated 06.06.2016..

Sir,

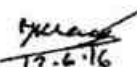
In exercise of the power conferred by sub-rule (4) of rule 12 of Mineral Conservation and Development Rules, 1988, I hereby approve the aforesaid Scheme of Mining including Progressive Mine Closure Plan for Limestone mineral only. This approval is subjected to the following conditions.

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.

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 1st 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)


13.6.16
(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 -600 032, along with a copy of the approved scheme of mining.

Encl : as above.


(T.K.Rath)
Regional Controller of Mines

ANNEXURE-5



**ELECTION COMMISSION OF INDIA
IDENTITY CARD**

இந்தியத் தேர்தல் ஆணையம்
அமைச்சு அட்டை

TN/27/167/0045401



Doctor's Name : Sekar
 மாக்களரின் பெயர் : சேகர்
 Father / Mother / Husband's Name : Sonasalam
 தந்தை/தாய்/கணவர் பெயர் : சோனாசலம்
 Sex / பாலினம் : Male / ஆண்
 Age as on 1.1.1995 : 39
 1.1.1995 ஆன்ற வயது :

Address / முகவரி :
 73 Collector Office Road
 Tiruchirappalli (C)
 Tiruchirappalli (Tk)
 Tiruchirappalli (Dt)

73 கலெக்டர் ஆபிஸ் ரோடு
 திருச்சிராப்பள்ளி (மா)
 திருச்சிராப்பள்ளி (வ)
 திருச்சிராப்பள்ளி (மா)

Facsimile Signature of the Electoral Registration Officer
 for 167 - Tiruchirappalli-II Assembly Constituency

167 - திருச்சிராப்பள்ளி-2
 சட்டமன்றத் தொகுதிகளை வரக்காளர் பதிவு
 அதிகாரியின் கையொப்ப 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 அமைச்சு அட்டை வாகப் பயன்படுத்தலாம்.

ANNEXURE-6

UNIVERSITY OF ROORKEE



GANGATHARAN B.

*having completed the course of study approved by the University and
passed the prescribed examinations has been
admitted to the degree of*

Master of Science


of this University in the field of


Applied Geology

and has been placed in

FIRST DIVISION

*Witness my hand this twenty-eighth day of October
One Thousand Nine Hundred and Eighty-nine*


Registrar


Vice Chancellor

T. GST
01/1/496538/27-82
GST.
119673/26-9-91

Balaji Mineral Enterprises

A34 Kumarasamy Street • Thirunagar (P.O.) • MADURAI 625 006


Manufacturers of • Colam Powder • Dolomite • Calcite • Fertilizer Powder

DATE: 07-03-98

EXPERIENCE CERTIFICATE

This is to Certify that Shri. B.Gangatharan, S/O. Shri. P. Balakumar residing at No. 10A, Palayam Bazaar, Woriyur, Tiruchirappalli - 620 003, is working as a Geologist from 1st November '89 in a Supervisory capacity dealing with Exploratory works, Geological mapping and engaged in mine planning and execution of mining operation to get desired output.

FOR BALAJI MINERAL ENTERPRISES,


(A. SUBRAMANIAM)
Managing Partner.

ANNEXURE-7

BY REGISTERED A/D
ORDER OF SUSPENSION OF MINING OPERATIONS

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES
OFFICE OF THE REGIONAL CONTROLLER OF MINES

No. TN/KRR/LST/31.MDS

Mine Code : 38TMN28017

C4A Rajaji Bhavan
Besant Nagar
Chennai - 600 090.

Dated: 10.09.2019
TL

✓ To:

Sri S. Sekhar
No.73 Raja Colony
Collector Office Road
Cantonment
Trichy - 620 001.

Sub. : Order of Suspension of mining operations under Rule 11(2) of Mineral Conservation & Development Rules, 2017, in respect of your Varavanai Limestone Mine over an area of 2.24.0 hectares in Varavanai Village, Kulithalai Taluk, Karur District, Tamilnadu State.

Ref. : (1) This office letter of even number dated 29.07.2019.
(2) Your letter no. nil dated 22.8.2019.

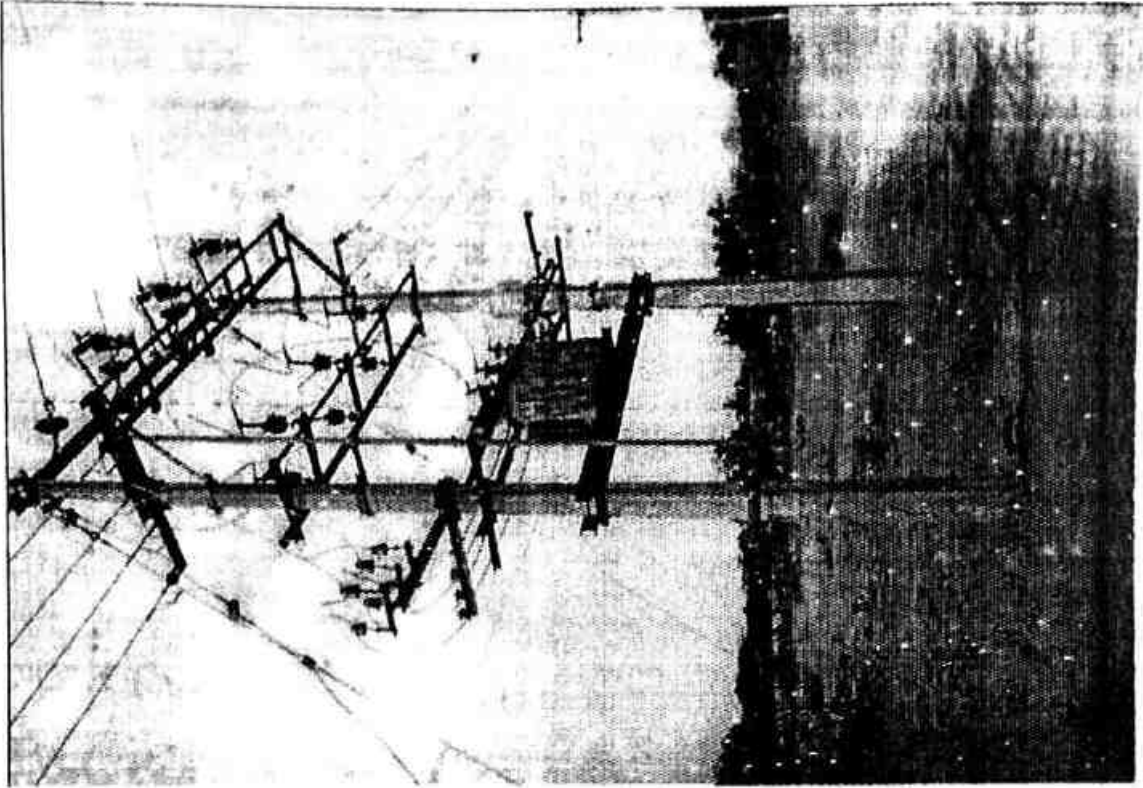
Sir,

The following provisions of MCDR, 2017 were found violation in your above mentioned mine based on verification of this office records.

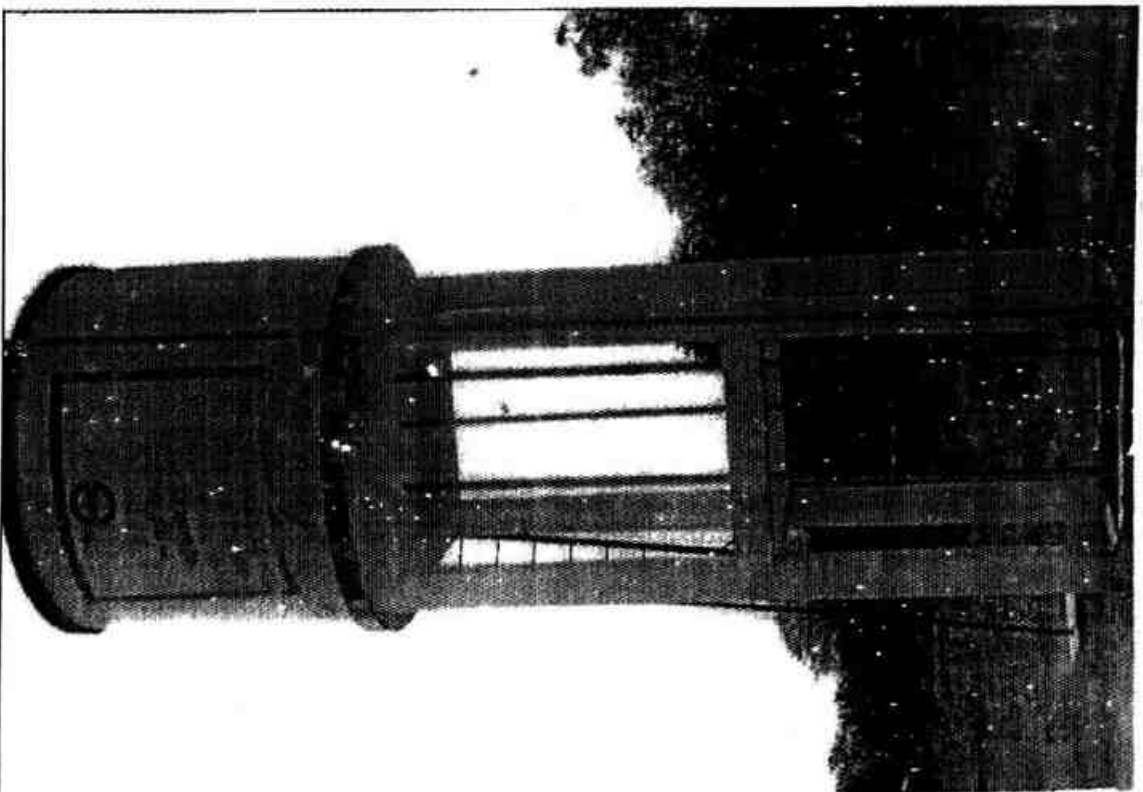
Rule No.	Nature of violation observed
11(1)	<p>Mining operations under mining lease: No holder of a mining lease shall commence or carry out mining operations in any area except in accordance with the mining plan approved, modified or reviewed by the Indian Bureau of Mines or prepared and certified in accordance with the system established by the State Government pursuant to the proviso to clause (b) of sub-section (2) of section 5 or approved by the competent authority.</p> <p>Similarly, as per Rule 27(1) of MCDR, 2017, Financial Assurance shall be furnished by the holder of the mining lease for due and proper implementation of the Progressive Mine Closure Plan contained in the Mining Plan and or the Final Mine Closure Plan, as the case may be, which shall be an amount of Rs.3,00,000/- (Rupees Three lakh) for category 'A' mines, and Rs.2,00,000/- (Rupees Two lakh) for category 'B' mines, per hectare of mining lease area put to use for mining and allied activities. Provided that the minimum amount of Financial Assurance to be furnished under sub-rule (1) shall be Rs.10,00,000/- (Rupees Ten lakh) for category 'A' mines and Rs.5,00,000/- (Rupees Five lakh) for 'B' mines.</p> <p>Provided that where financial assurance has already been furnished before the commencement of these rules, an amount equal to the difference between the financial assurance due as on the date of notification of these rules and the financial assurance already furnished, shall be furnished to the authorized officer, as the case may be, within a period of ninety days from the date of notification of these rules.</p>

ANNEXURE-8

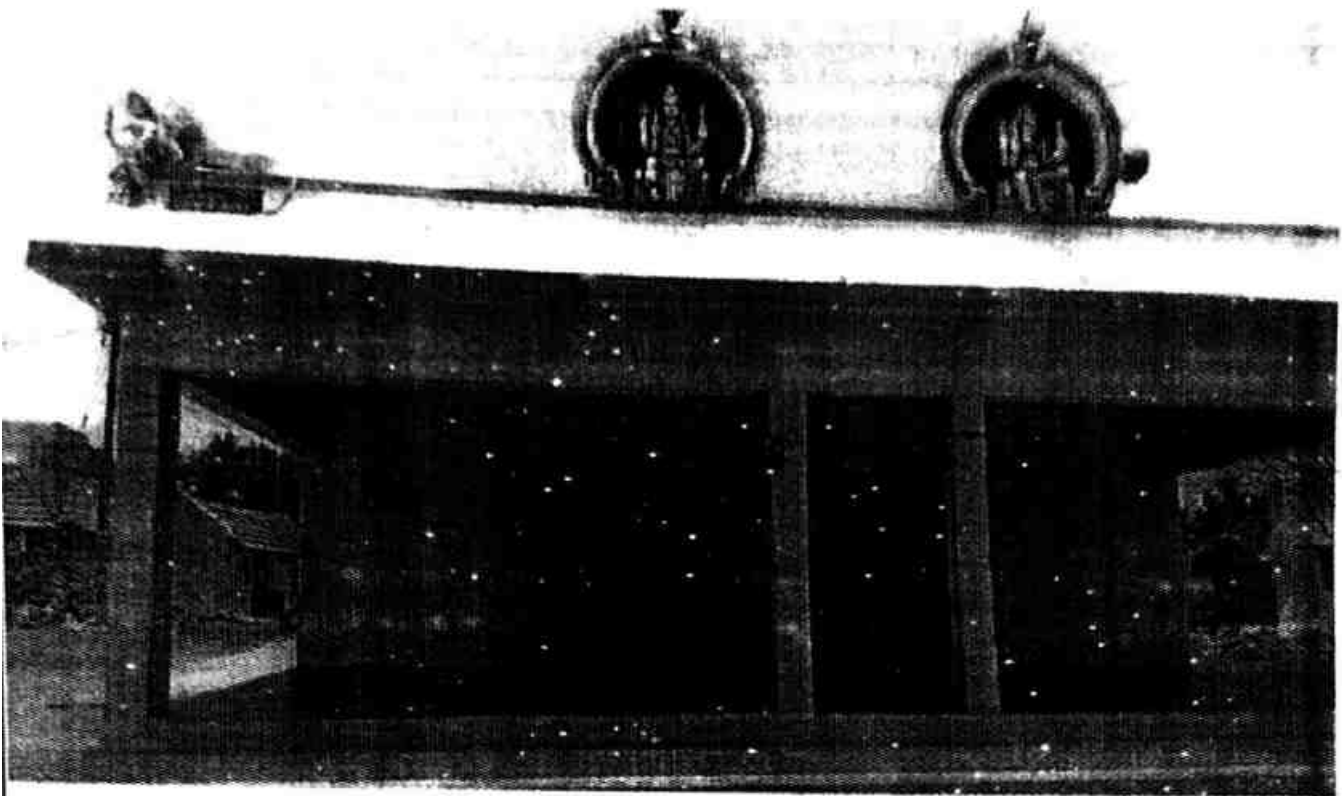
GROUND CONTROL POINT-1



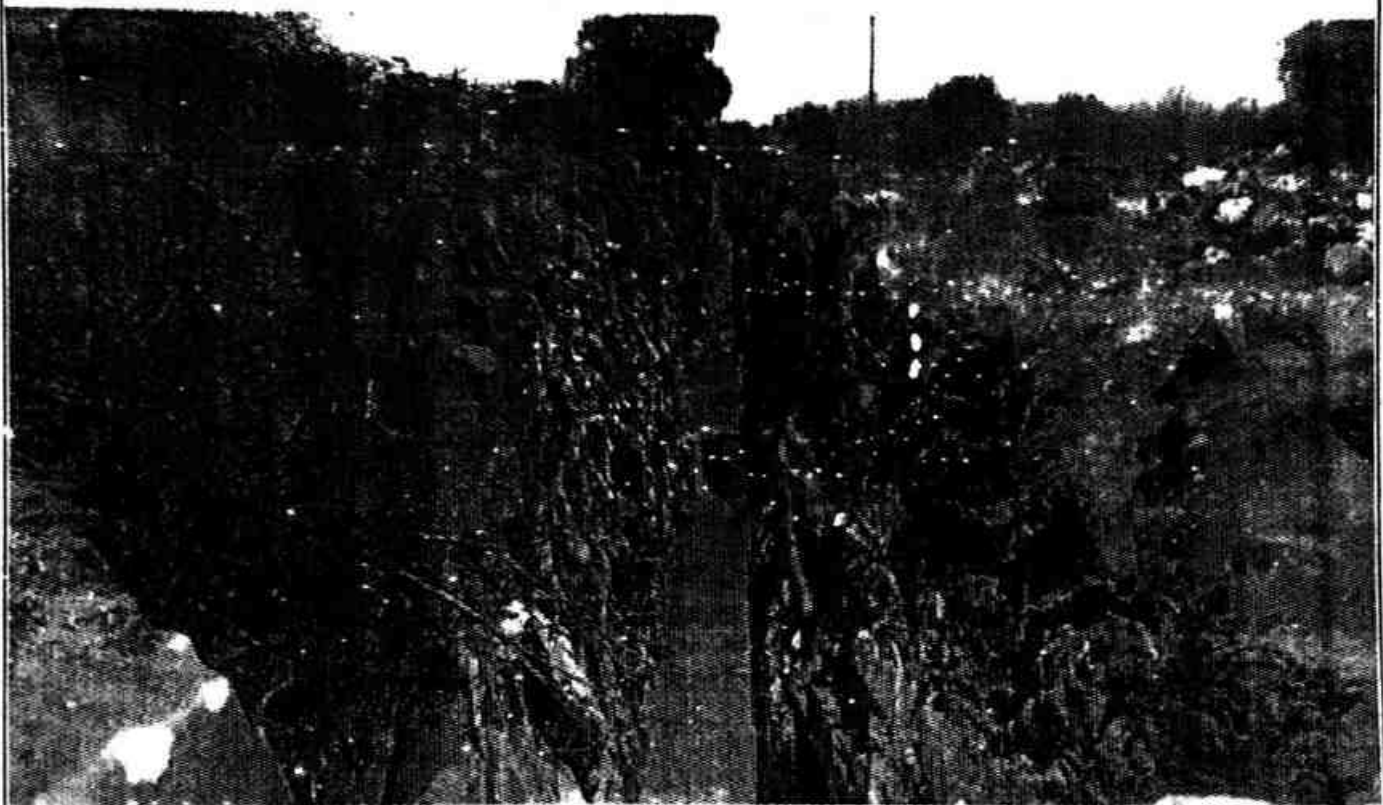
GROUND CONTROL POINT-2



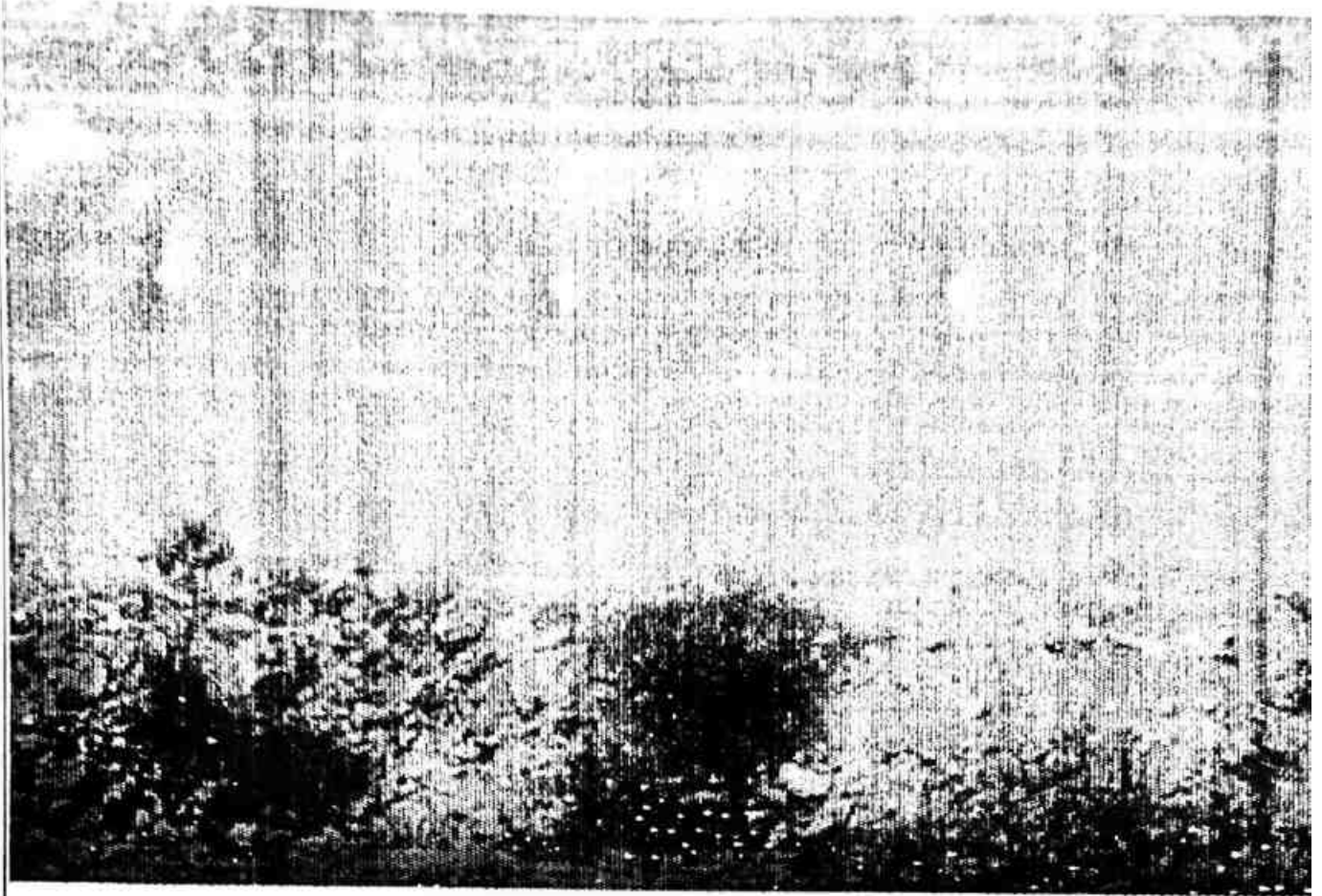
GROUND CONTROL POINT-3



WORKING PIT VIEW - 1



EXISTING DUMP VIEW



STOCKYARD VIEW



ANNEXURE-9

Varavanal limestone mine YEAR WISE PRODUCTION SCHUDLE

YEAR	MINERAL	RL in Mtrs		Length in Mtrs	Width in Mtrs	Height in Mtrs	Total Excavation in Cum	Top Soil (Cum)	ROM Lime stone (Cum) 60%	Mineral Reject Cum (40%)	Side Burden (Cum)	SG Ts/Cu.m	Total Excavation in Tons (Tonnes)	ROM Limestone (Tonnes)	Total Waste (Tonnes)	ORE : OB	
		From	To														
2020-21	Top soil	Nil	Nil											Nil			
	Limestone	Nil	Nil											Nil			
	Side Burden	Nil	Nil											Nil			
	SUB TOTAL 2020-21	Nil	Nil												Nil		
2021-22	Top soil	100	99	36	9	1	324	324	475	317	288	2	648	1236	648		
	Limestone	99	95	36	5.5	4	792					2.5	2059.2		824		
	Side Burden	99	95	36	2	4	288					2.5	720		720		
	SUB TOTAL 2021-22						1404	324	475	317	288		3427.2	1236	2192		1:1.8
2022-23	Top soil	100	99	33.5	7	1	234.5	235	482	322	268	2	469	1254	469		
	Limestone	99	95	33.5	6	4	804					2.6	2090		836		
	Side Burden	99	95	33.5	2	4	268					2.5	670		670		
	SUB TOTAL - 2022-23						1307	235	482	322	268		3229	1254	1975		1:1.6
2023-24	Top soil	100	99	35	5	1	175	175	459	306	700	2	350	1193	350		
	Limestone	95	90	25.5	6	5	765					2.6	1989		796		
	Side Burden	99	95	35	5	4	700					2.5	1750		1750		
	SUB TOTAL - 2023-24						1640	175	459	306	700		4089	1193	2896		1:2.4
2024-25	Top soil	100	99	36	5	1	180	180	459	306	720	2	360	1193	360		
	Limestone	95	90	25.5	6	5	765					2.6	1989		796		
	Side Burden	99	95	36	5	4	720					2.5	1800		1800		
	SUB TOTAL - 2024-25						1665	180	459	306	720	7.1	4149	1193.4	2956		1:2.5
Grand Total						6016	914	1876	1250	1976	7	14895	4877	10018		1:2.0	

ANNEXURE-10



EKDANT ENVIRO SERVICES (P) LIMITED

ISI Reg. No. 11 001 21 00223
Dt: 28-07-2007



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 : ekdantiab@gmail.com / info@ekdantiab.co.in
Web : www.ekdantiab.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	Sample Drawn BY : Courier/16.02.16	Received On : 16.02.16 Commenced On : 16.02.16 Completed On : 22.02.16	
Customer Reference : Letter dated on 16.02.16			
Sl. No.	PARAMETERS	RESULTS (%)	Procedure
1	Silica as SiO ₂ (w/w %)	10.12	IS 9749 : 2007
2	Ferric Oxide as Fe ₂ O ₃ (w/w %)	Nil	IS 9749 : 2007
3	Aluminum oxide as Al ₂ O ₃ (w/w %)	Nil	IS 9749 : 2007
4	Calcium Carbonate as CaCO ₃ (w/w %)	78.04	IS 9749 : 2007
5	Magnesium Carbonate as MgCO ₃ (w/w %)	1.03	IS 9749 : 2007
6	Sodium as Na ₂ O (w/w %)	Nil	IS 9749 : 2007
7	Potassium as K ₂ 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

Verified By

[Signature]
S. Prasad Dev
Deputy Technical Manager

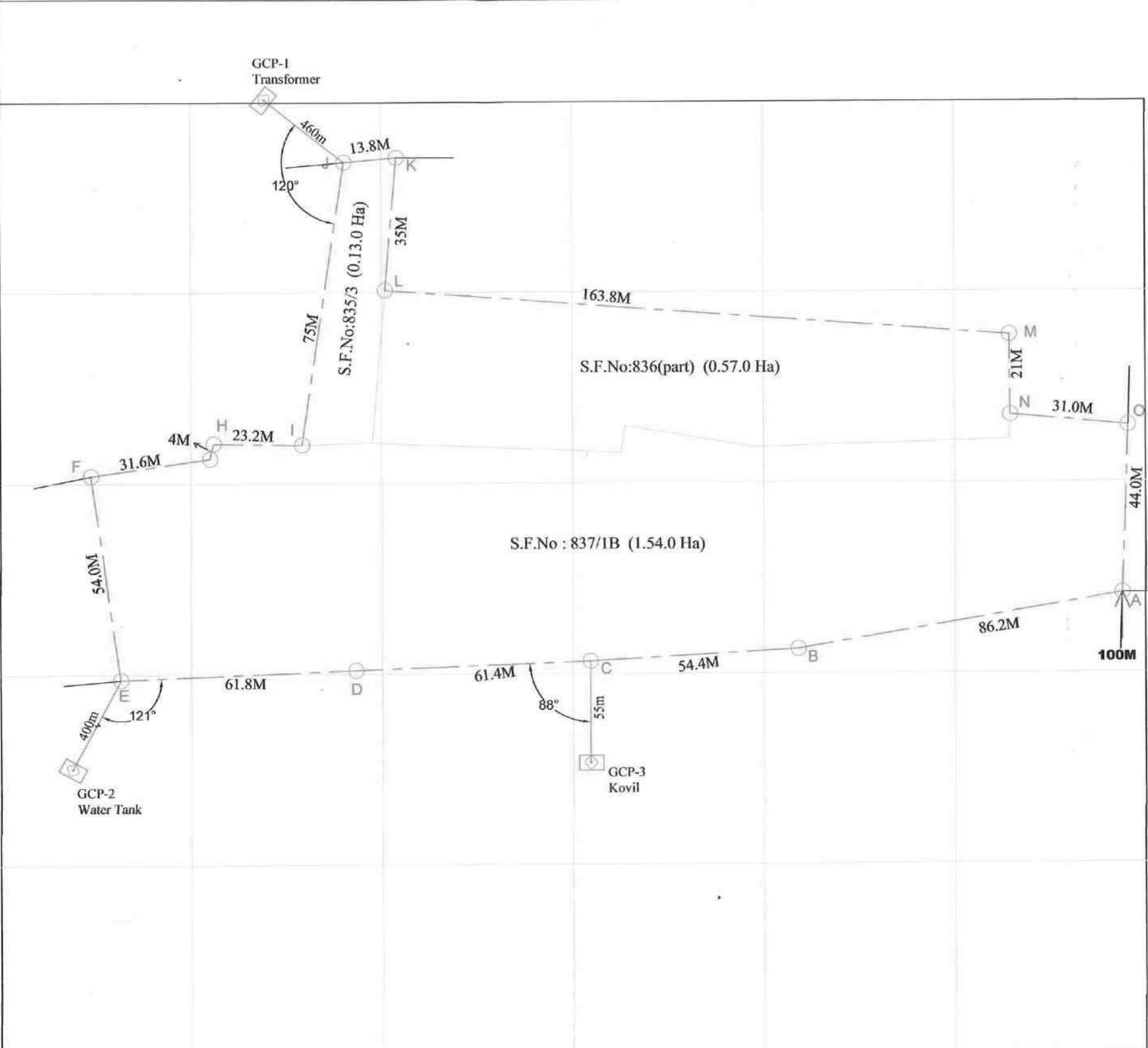


for EKDANT ENVIRO SERVICES (P) LTD
Laboratory Services Division

[Signature]
Authorized Signatory
M. Mani Frank Omer - Quality Cum. Tech Manager

- 1. The 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. These test reports 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).

ANNEXURE-11



Boundary Pillar Coordinates

B.No	Latitude	Longitude
A	10°45'4.87"	78°13'50.85"
B	10°45'4.07"	78°13'48.13"
C	10°45'3.75"	78°13'46.38"
D	10°45'3.43"	78°13'44.37"
E	10°45'3.12"	78°13'42.36"
F	10°45'4.87"	78°13'41.89"
G	10°45'5.14"	78°13'42.86"
H	10°45'5.28"	78°13'42.89"
I	10°45'5.36"	78°13'43.67"
J	10°45'7.79"	78°13'43.74"
K	10°45'7.89"	78°13'44.21"
L	10°45'6.74"	78°13'44.24"
M	10°45'7.01"	78°13'49.63"
N	10°45'6.34"	78°13'49.22"
O	10°45'6.35"	78°13'50.74"



INDEX











- M.L.BOUNDARY**
- BOUNDARY PILLAR**
- BENCH MARK**

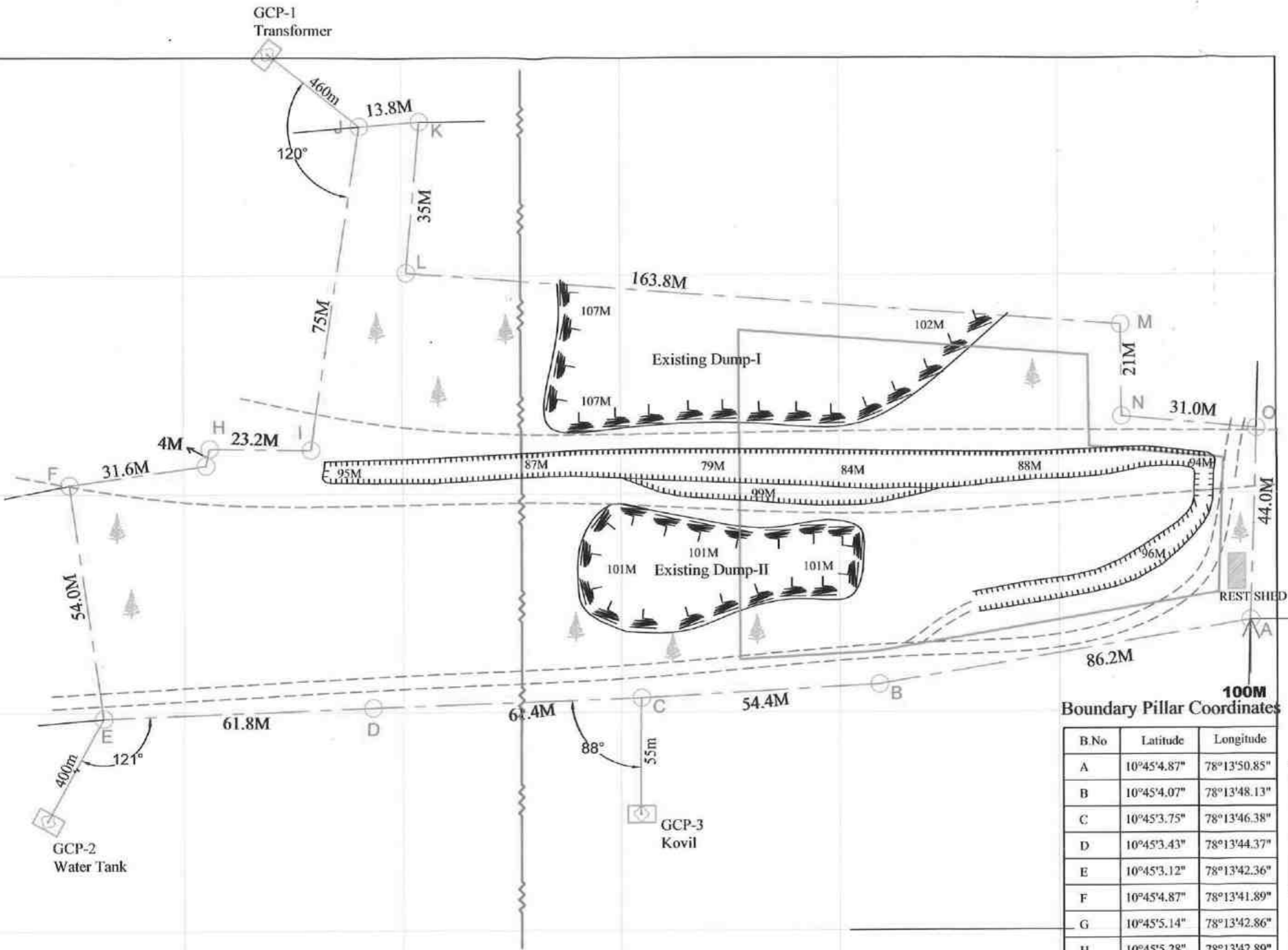
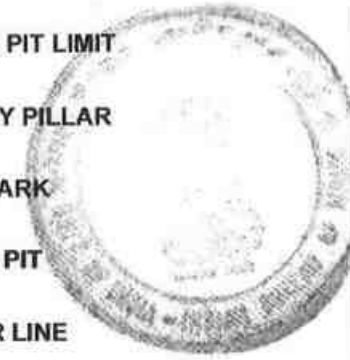
[Plate No : 2]

VARAVANAI LIMESTONE MINE OF SHRI S.SEKHAR 73, RAJA COLONY COLLECTOR OFFICE ROAD CANTONMENT TRICHY- 620001	
G.O.3(D) No.292 Extent : 2.24.0Hectares	
LOCATION OF MINE	
S.F.Nos : 835/3, 836(P) & 837/1B	VILLAGE : VARAVANAI
TALUK : KULITHALAI	DISTRICT : KARUR
MINE LEASE PLAN	
Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"	
B.GANGATHARAN Qualified Person	
Scale :- 1:1000	PLATE No : 2



INDEX

-  M.L.BOUNDARY
-  ULTIMATE PIT LIMIT
-  BOUNDARY PILLAR
-  BENCH MARK
-  WORKING PIT
-  LT POWER LINE
-  EXISTING DUMP
-  MINERAL CONTACT LINE
-  APPROACH ROAD
-  EXISTING TREES



Boundary Pillar Coordinates

B.No	Latitude	Longitude
A	10°45'4.87"	78°13'50.85"
B	10°45'4.07"	78°13'48.13"
C	10°45'3.75"	78°13'46.38"
D	10°45'3.43"	78°13'44.37"
E	10°45'3.12"	78°13'42.36"
F	10°45'4.87"	78°13'41.89"
G	10°45'5.14"	78°13'42.86"
H	10°45'5.28"	78°13'42.89"
I	10°45'5.36"	78°13'43.67"
J	10°45'7.79"	78°13'43.74"
K	10°45'7.89"	78°13'44.21"
L	10°45'6.74"	78°13'44.24"
M	10°45'7.01"	78°13'49.63"
N	10°45'6.34"	78°13'49.72"
O	10°45'6.35"	78°13'50.74"

Plate No : 3

VARAVANAI LIMESTONE MINE
OF
SHRI S.SEKHAR
73, RAJA COLONY
COLLECTOR OFFICE ROAD
CANTONMENT TRICHY- 620001

G.O.3(D) No.292 Extent : 2.24.0Hectares

SURFACE PLAN

Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"

B. Gangatharan
B.GANGATHARAN
Qualified Person

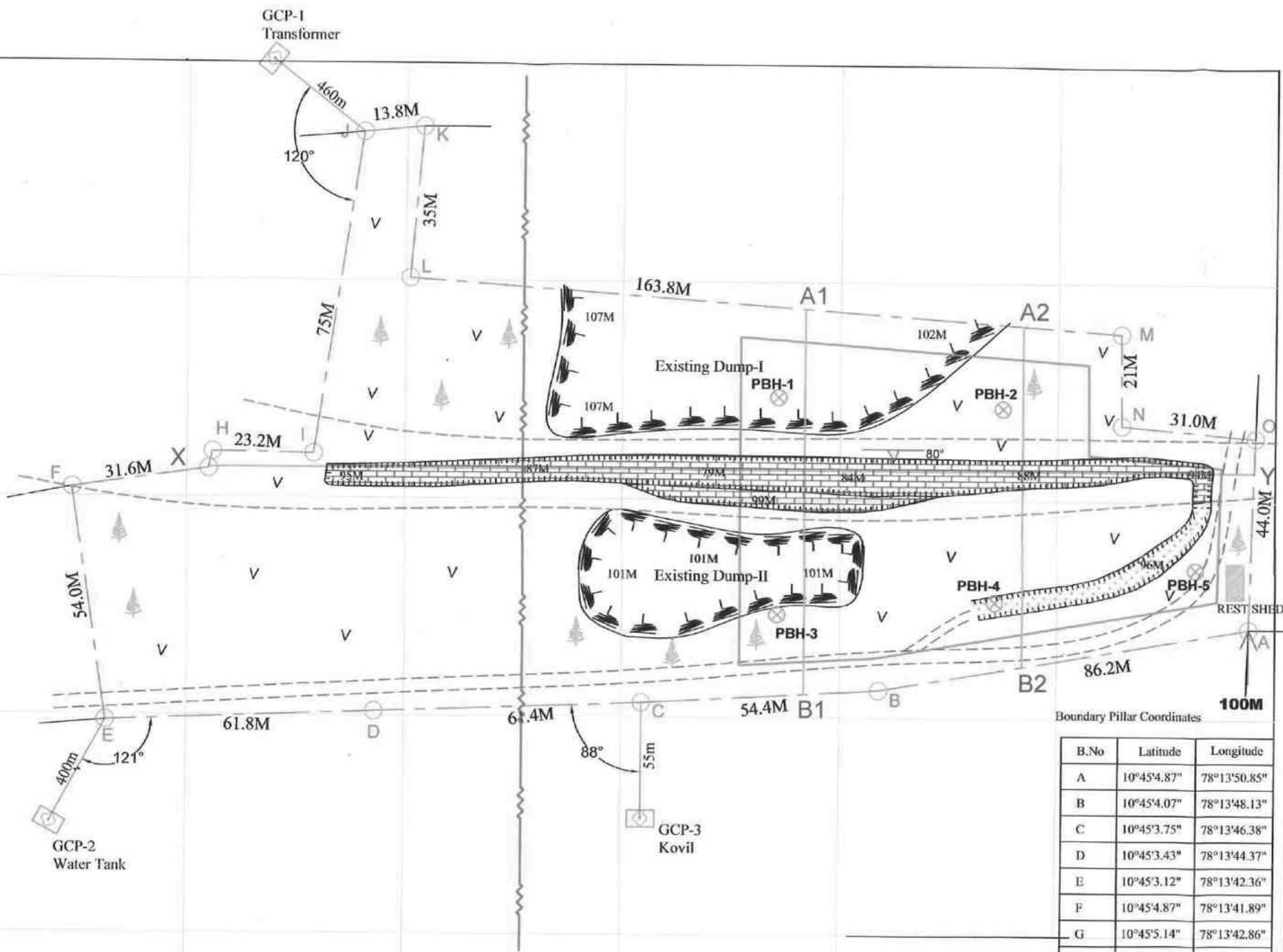
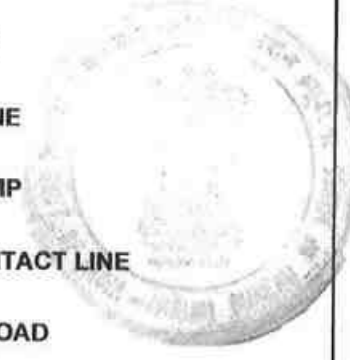
Scale :- 1:1000

PLATE No : 3



INDEX

- M.L.BOUNDARY
- ULTIMATE PIT LIMIT
- BOUNDARY PILLAR
- BENCH MARK
- WORKING PIT
- LT POWER LINE
- EXISTING DUMP
- MINERAL CONTACT LINE
- APPROACH ROAD
- TOP SOIL
- LIMESTONE
- GRANITE GNEISS
- PROPOSED BORE HOLES
- EXISTING TREES



Boundary Pillar Coordinates

B.No	Latitude	Longitude
A	10°45'4.87"	78°13'50.85"
B	10°45'4.07"	78°13'48.13"
C	10°45'3.75"	78°13'46.38"
D	10°45'3.43"	78°13'44.37"
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K	10°45'7.89"	78°13'44.21"
L	10°45'6.74"	78°13'44.24"
M	10°45'7.01"	78°13'49.63"
N	10°45'6.34"	78°13'49.72"
O	10°45'6.35"	78°13'50.74"

[Plate No : 4]

VARAVANAI LIMESTONE MINE
OF
SHRI S.SEKHAR
73, RAJA COLONY
COLLECTOR OFFICE ROAD
CANTONMENT TRICHY- 620001

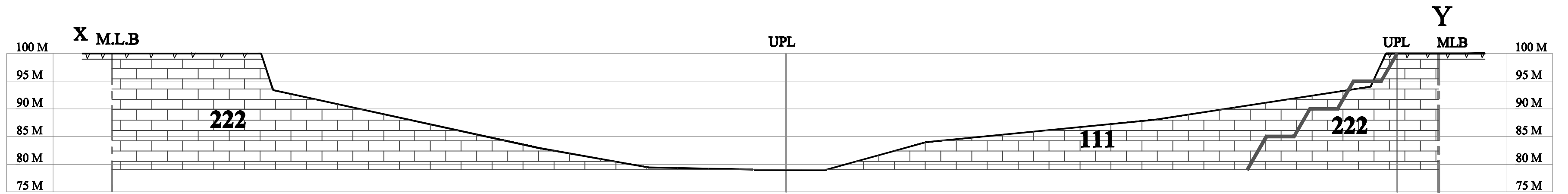
G.O.3(D) No.292 Extent : 2.24.0Hectares

GEOLOGICAL PLAN

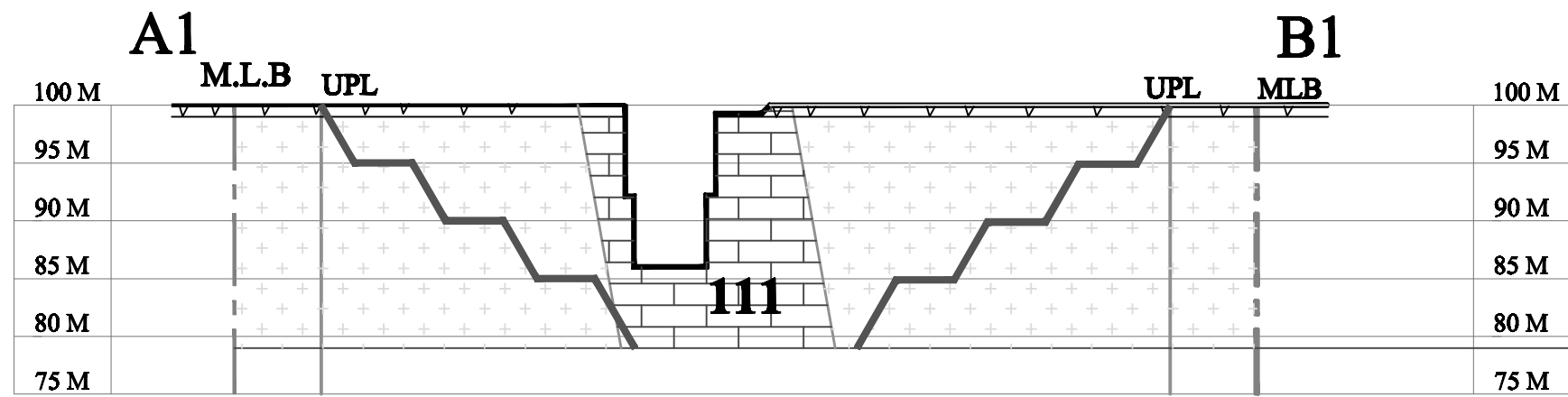
Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"

B. Gangaharan
B.GANGAHARAN
Qualified Person

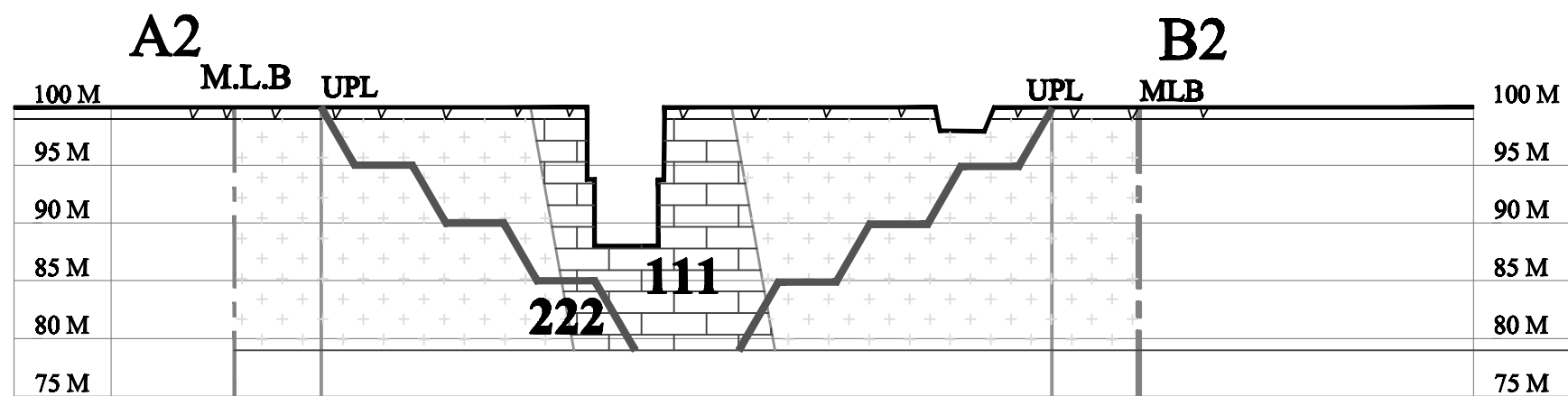
Scale :- 1:1000 **PLATE No : 4**



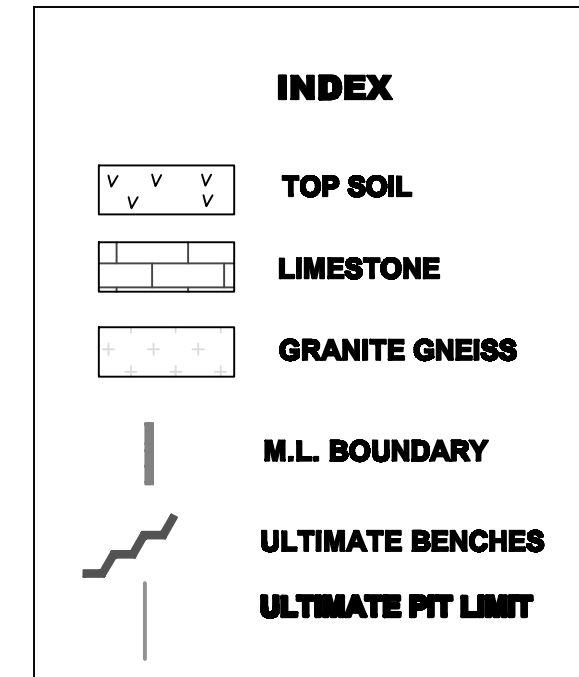
LONGITUDINAL SECTION ON - X - Y



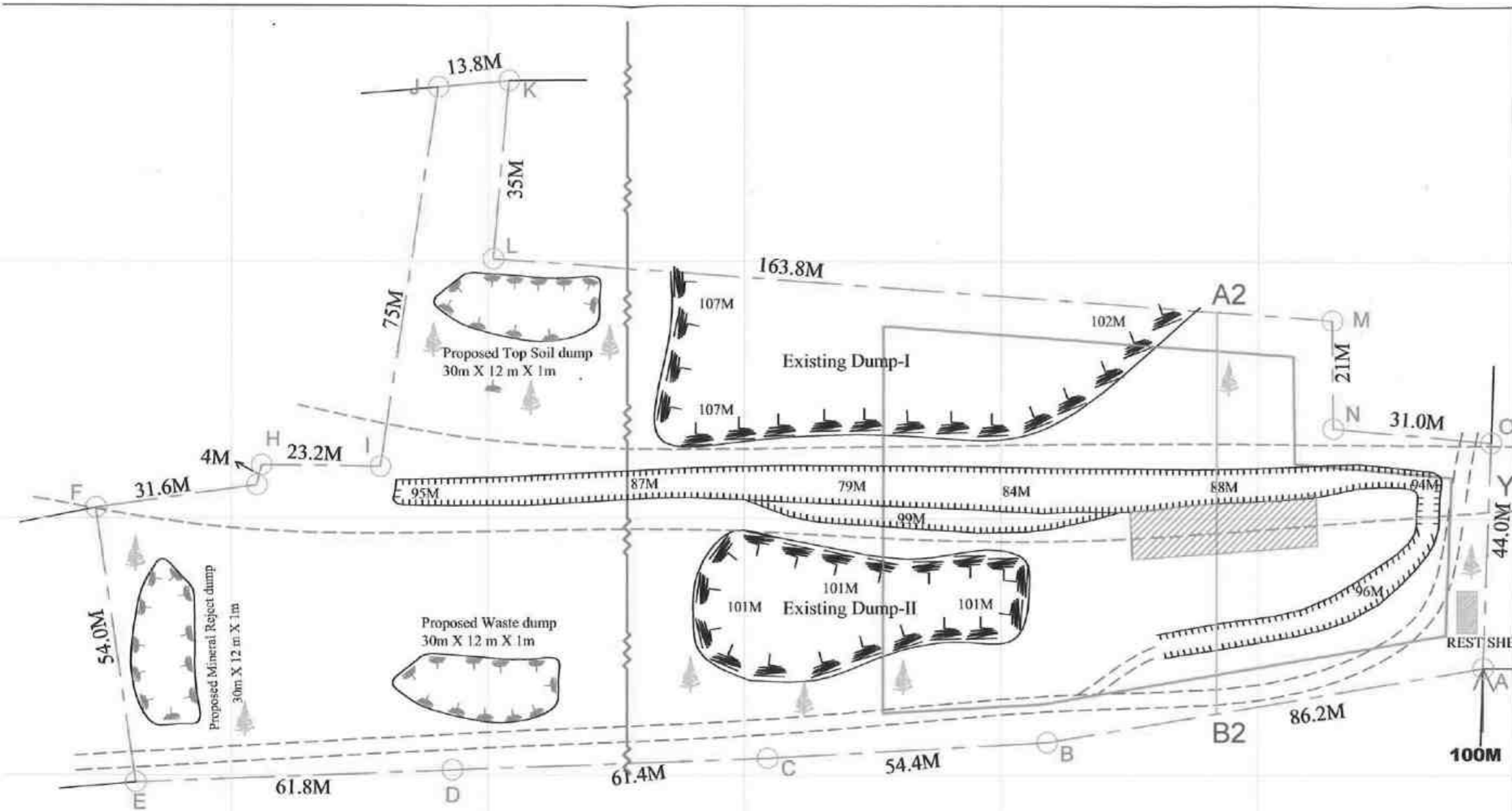
SECTION ON - A1 - B1



SECTION ON - A2 - B2



[Plate No : 5]	
VARAVANAI LIMESTONE MINE OF SHRI S.SEKHAR 73, RAJA COLONY COLLECTOR OFFICE ROAD CANTONMENT TRICHY- 620001	
G.O.3(D) No.292 Extent : 2.24.0Hectares	
GEOLOGICAL SECTIONS	
<small>Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"</small>	
B.GANGATHARAN Qualified Person	
Scale :- 1:500	PLATE No : 5



- M.L. BOUNDARY
- ULTIMATE PIT LIMIT
- BOUNDARY PILLAR
- BENCH MARK
- WORKING PIT
- LT POWER LINE
- EXISTING DUMP
- MINERAL CONTACT LINE
- APPROACH ROAD
- TOP SOIL
- LIMESTONE
- GRANITE GNEISS
- EXISTING TREES
- 2021-2022 YEAR EXCAVATION



[Plate No : 6]

VARAVANAI LIMESTONE MINE
OF
SHRI S.SEKHAR
73, RAJA COLONY
COLLECTOR OFFICE ROAD
CANTONMENT TRICHY- 620001

G.O.3(D) No.292 Extent : 2.24.0Hectares

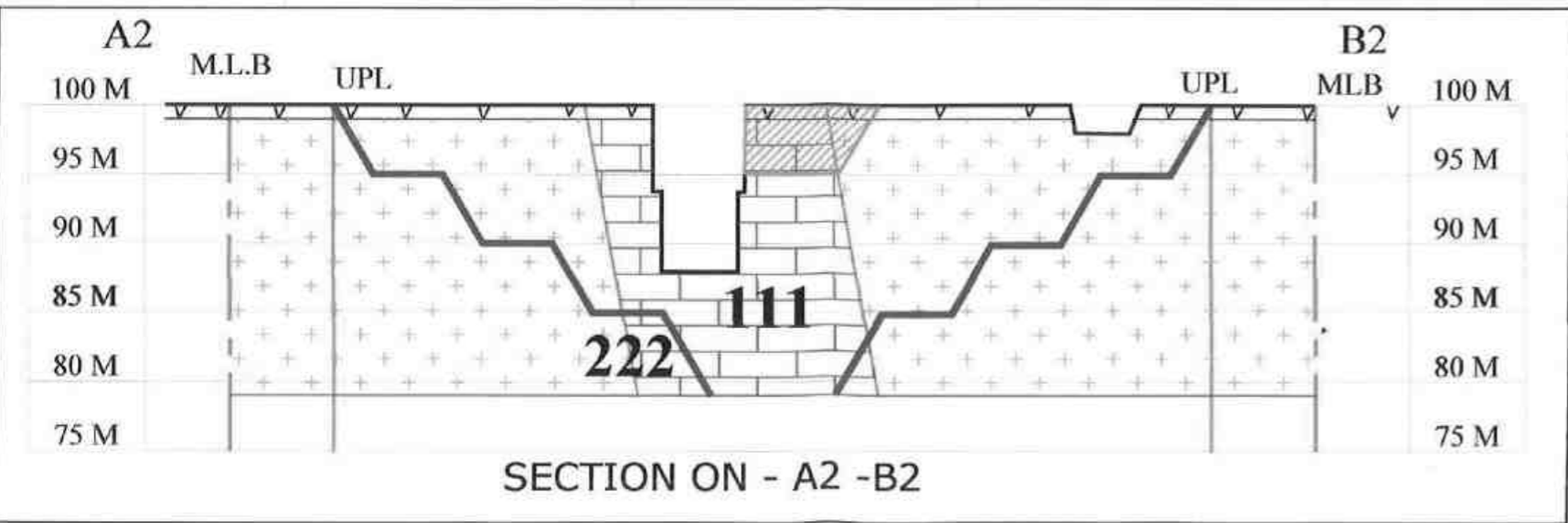
**YEAR WISE DEVELOPMENT & PRODUCTION
PLAN & SECTION FOR THE YEAR (2021-22)**

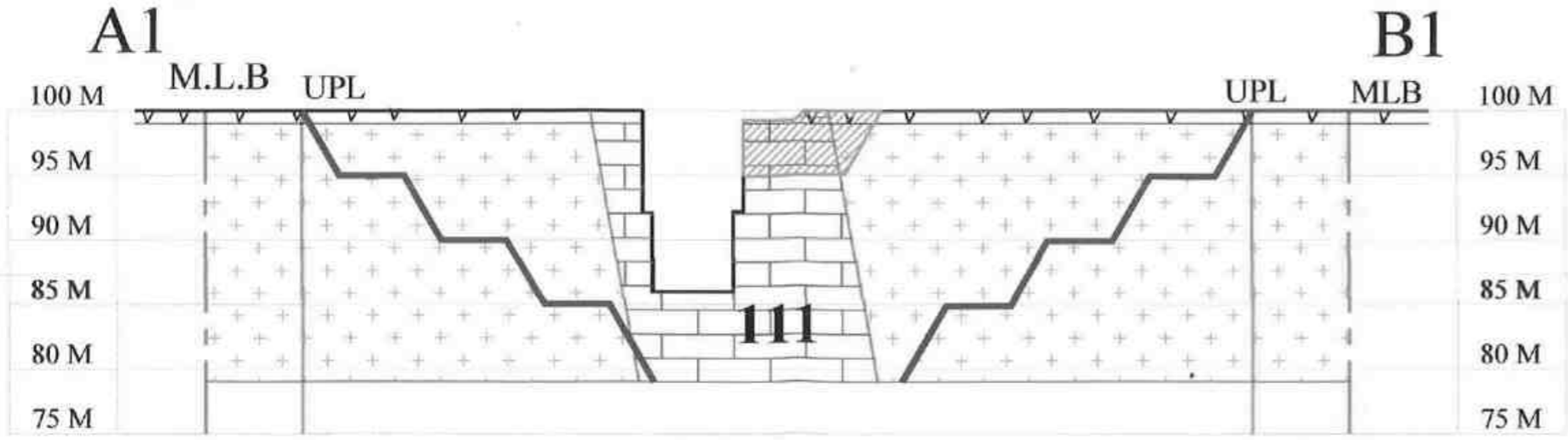
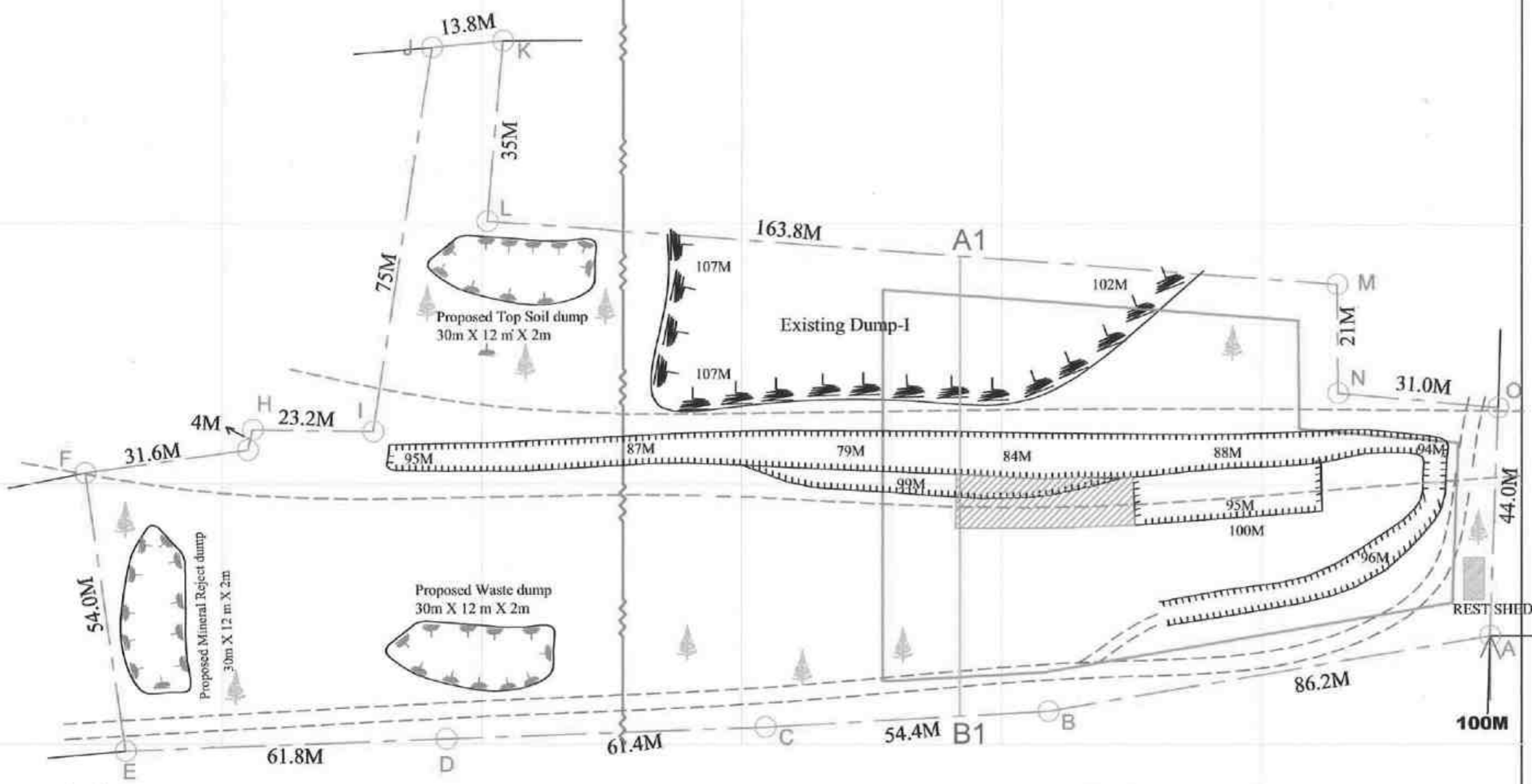
Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"

B. Gangatharan
B.GANGATHARAN
Qualified Person

Scale :- Plan - 1:1000
Section - 1:500

PLATE No : 6





[Plate No : 7]

VARAVANAI LIMESTONE MINE
 OF
SHRI S.SEKHAR
 73, RAJA COLONY
 COLLECTOR OFFICE ROAD
 CANTONMENT TRICHY- 620001

G.O.3(D) No.292 Extent : 2.24.0Hectares

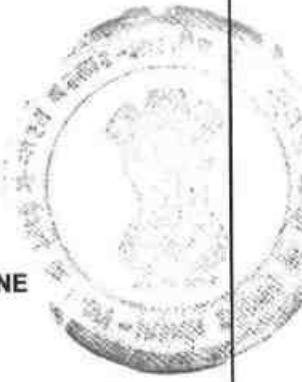
**YEAR WISE DEVELOPMENT & PRODUCTION
 PLAN & SECTION FOR THE YEAR (2022-23)**

Certified that the "The plans and sections are prepared based
 on the lease map authenticated by the State Government"


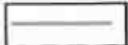

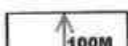






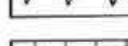
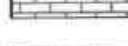


B.GANGATHARAN
 Qualified Person

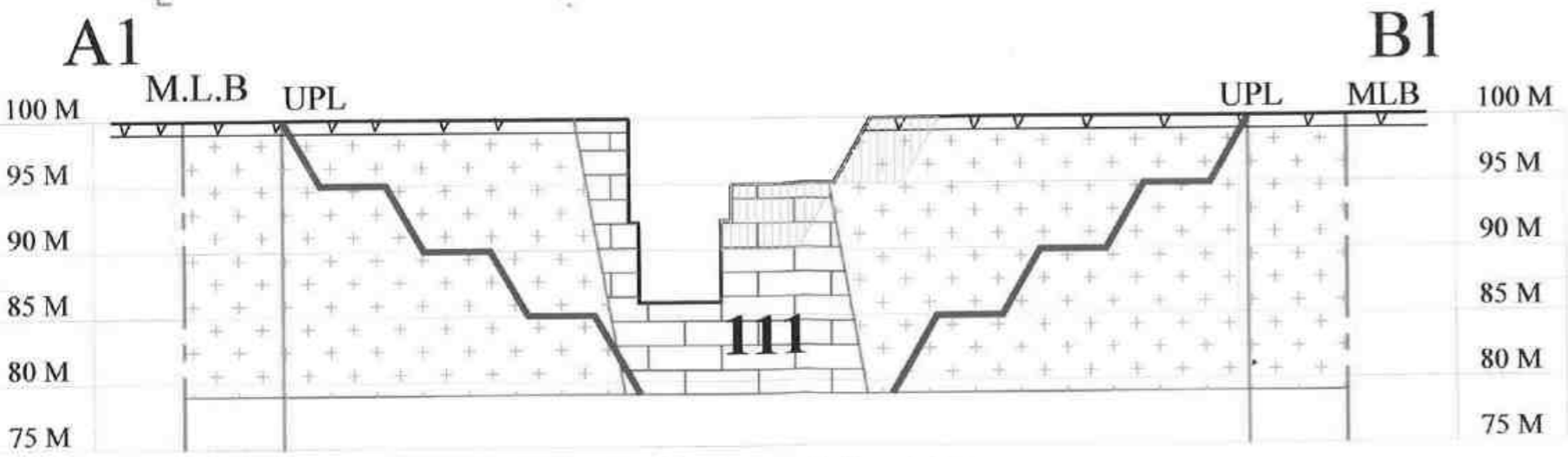
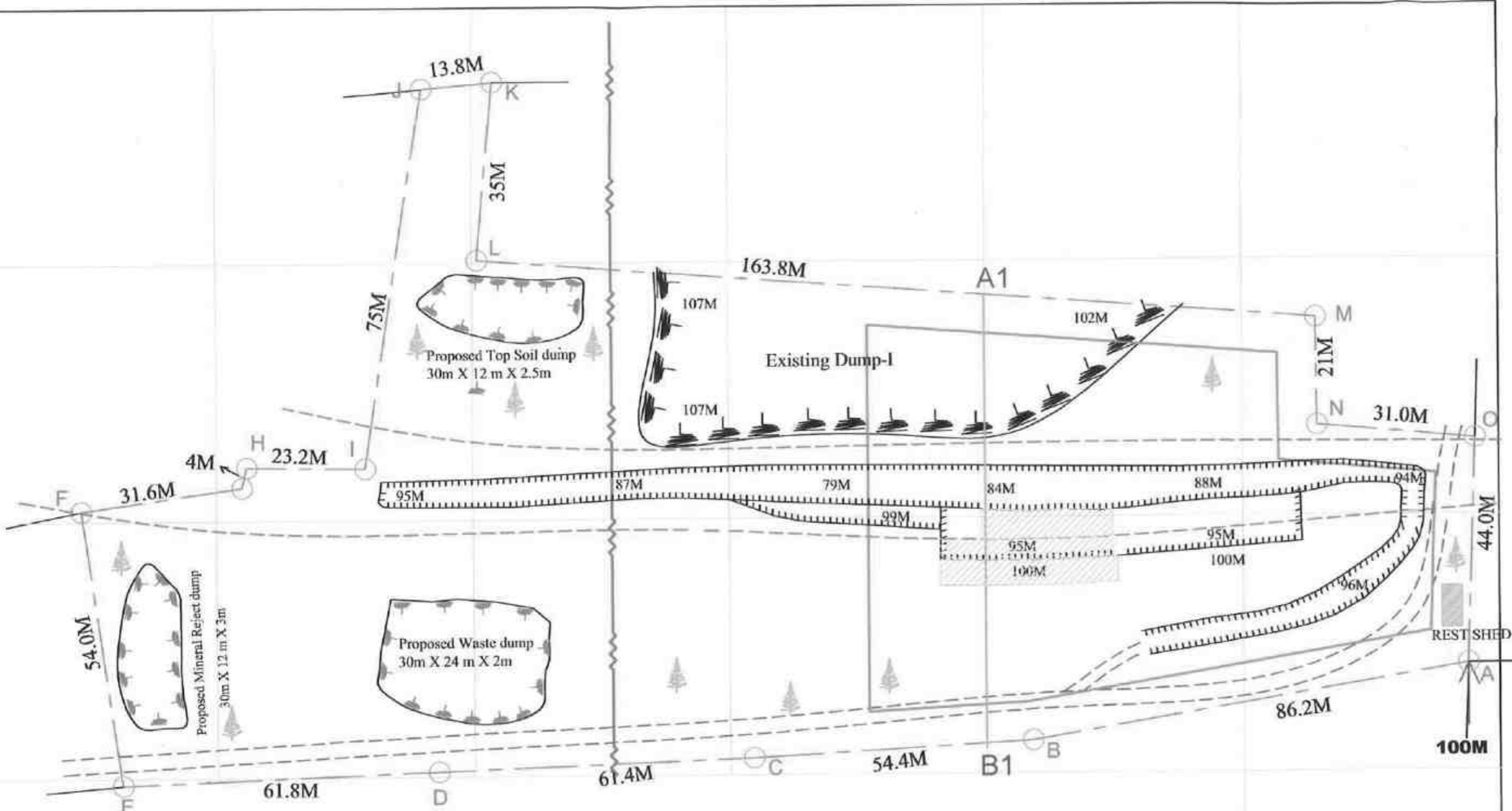
Scale :- Plan - 1:1000
 Section - 1:500

PLATE No : 7



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-  M.L.BOUNDARY
-  ULTIMATE PIT LIMIT
-  BOUNDARY PILLAR
-  BENCH MARK
-  WORKING PIT
-  LT POWER LINE
-  EXISTING DUMP
-  MINERAL CONTACT LINE
-  APPROACH ROAD
-  TOP SOIL
-  LIMESTONE
-  GRANITE GNEISS
-  EXISTING TREES
-  2023-2024 YEAR EXCAVATION



SECTION ON - A1 -B1


Plate No : 8

VARAVANAI LIMESTONE MINE
OF
SHRI S.SEKHAR
 73, RAJA COLONY
 COLLECTOR OFFICE ROAD
 CANTONMENT TRICHY- 620001

G.O.3(D) No.292 Extent : 2.24.0Hectares

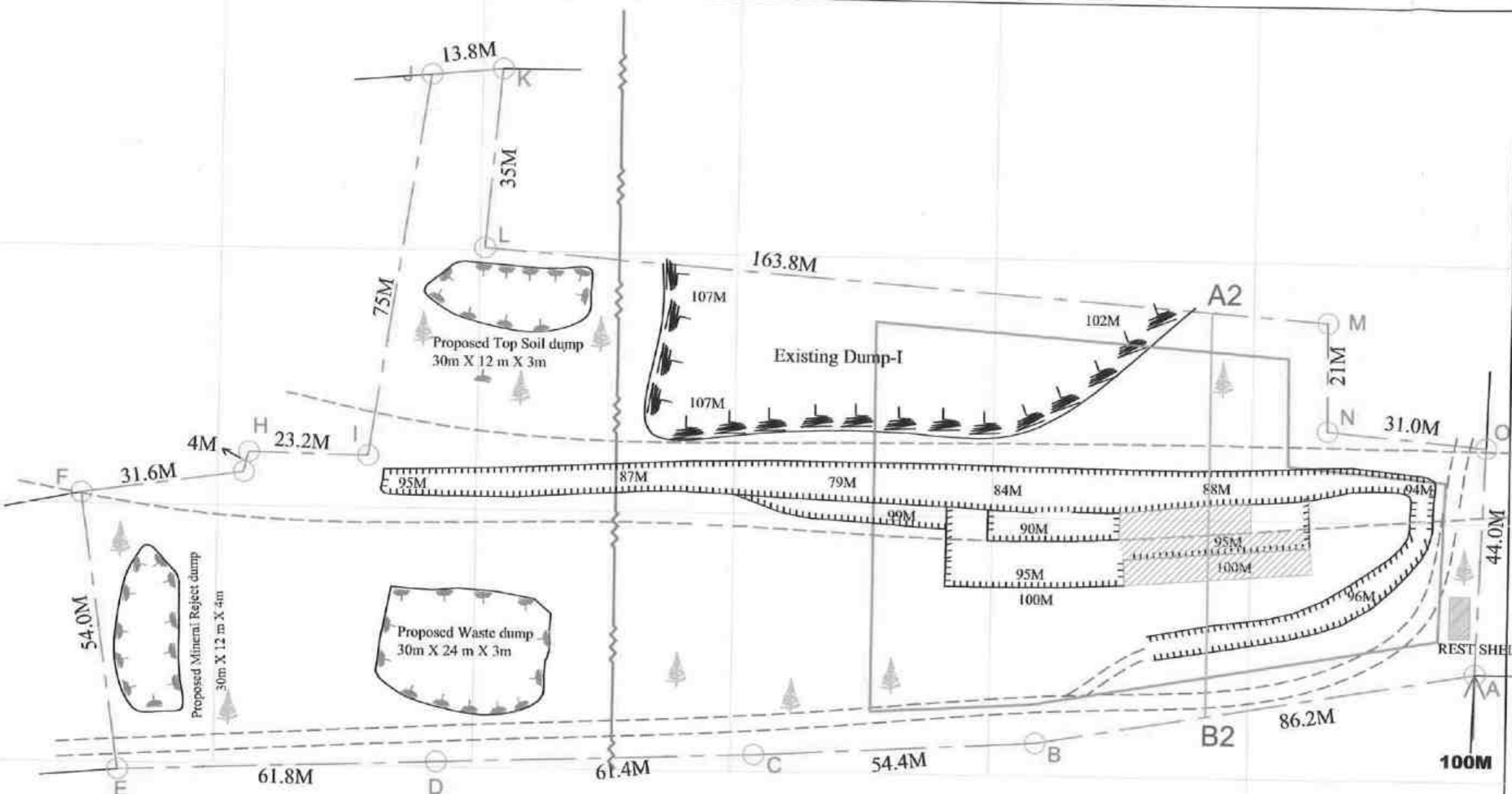
YEAR WISE DEVELOPMENT & PRODUCTION PLAN & SECTION FOR THE YEAR (2023-24)

Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"




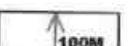
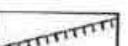





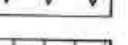
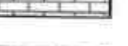



B.GANGATHARAN
 Qualified Person

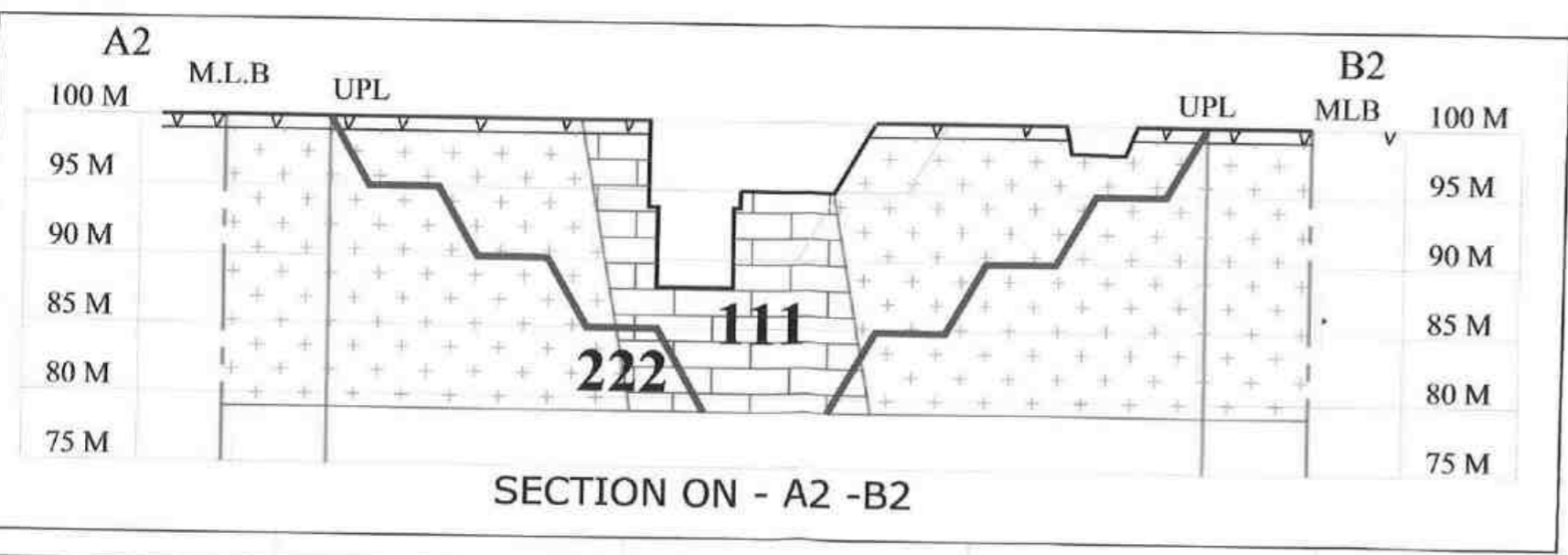
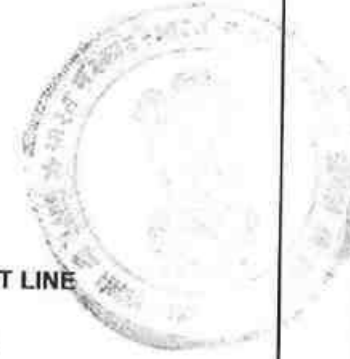
Scale :- Plan - 1:1000
 Section - 1:500

PLATE No : 8



INDEX

-  M.L. BOUNDARY
-  ULTIMATE PIT LIMIT
-  BOUNDARY PILLAR
-  BENCH MARK
-  WORKING PIT
-  LT POWER LINE
-  EXISTING DUMP
-  MINERAL CONTACT LINE
-  APPROACH ROAD
-  TOP SOIL
-  LIMESTONE
-  GRANITE GNEISS
-  EXISTING TREES
-  2024-2025 YEAR EXCAVATION



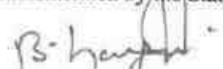
[Plate No : 9]

VARAVANAI LIMESTONE MINE
 OF
SHRI S.SEKHAR
 73, RAJA COLONY
 COLLECTOR OFFICE ROAD
 CANTONMENT TRICHY-620001

G.O.3(D) No.292 Extent : 2.24.0Hectares

YEAR WISE DEVELOPMENT & PRODUCTION PLAN & SECTION FOR THE YEAR (2024-25)

Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"


B.GANGATHARAN
 Qualified Person

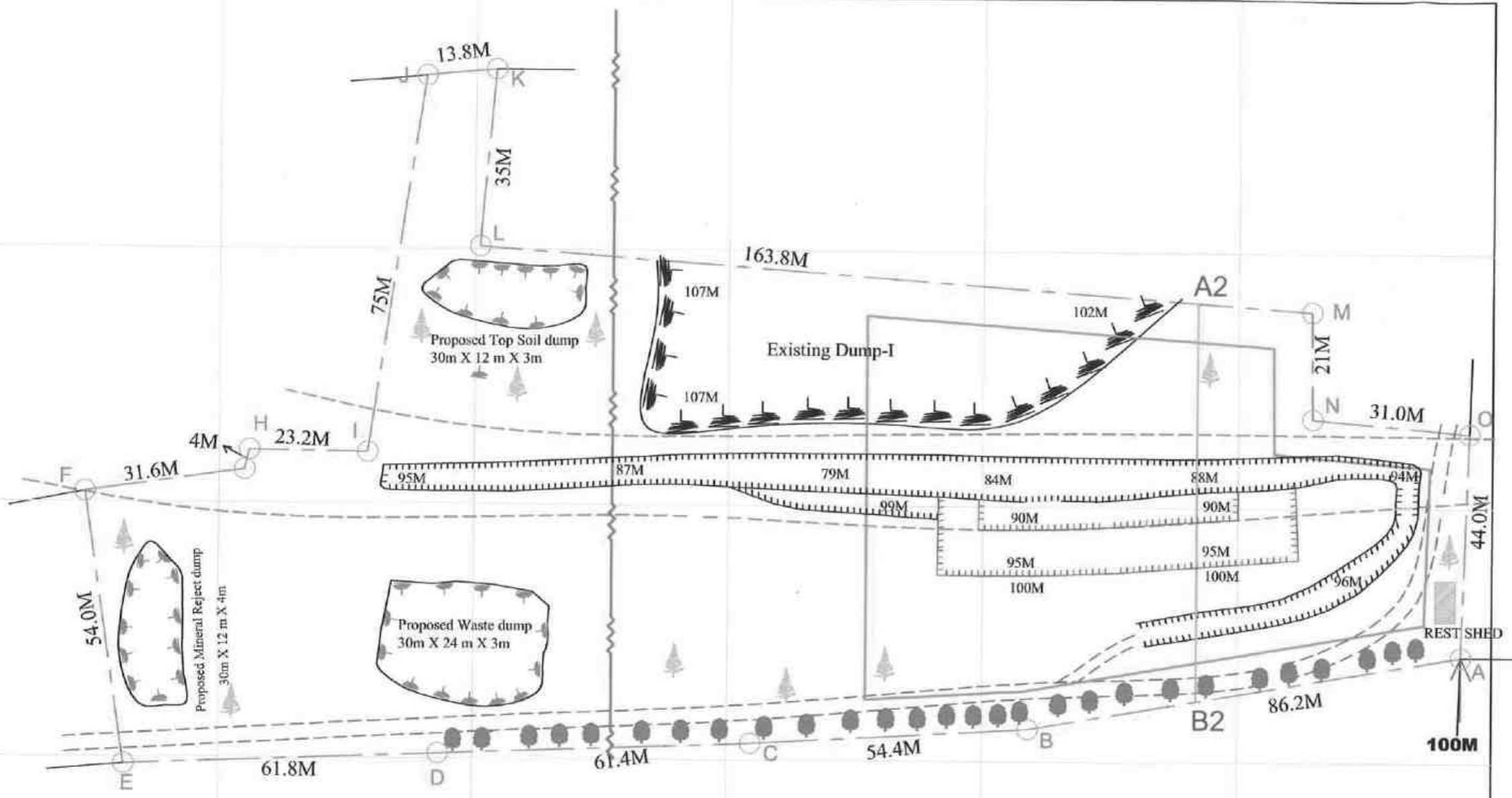
Scale :- Plan - 1:1000
 Section - 1:500

PLATE No : 9



INDEX

- M.L.BOUNDARY
- ULTIMATE PIT LIMIT
- BOUNDARY PILLAR
- BENCH MARK
- WORKING PIT
- LT POWER LINE
- EXISTING DUMP
- MINERAL CONTACT LINE
- APPROACH ROAD
- TOP SOIL
- LIMESTONE
- GRANITE GNEISS
- EXISTING TREES
- PIT LIMIT AT THE END OF 2024-2025 YEAR
- PROPOSED AFFORESTATION



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.)	Not Area considered for calculation (In Ha.)
1	Area under mining	0.24.0	0.42.0	0.66.0	-	0.66.0
2	Storage for top soil	-	-	-	-	-
3	Overburden/dump	0.39.0	0.15.0	0.54.0	-	0.54.0
4	Mineral storage	-	-	-	-	-
5	Infrastructure	0.01.0	-	0.01.0	-	0.01.0
6	Roads	0.13.0	0.00.0	0.13.0	-	0.13.0
7	Railways	-	-	-	-	-
8	Green Belt	0.01.0	0.20.0	0.21.0	-	0.21.0
9	Tailing pond	-	-	-	-	-
10	Effluent Treatment Plant	-	-	-	-	-
11	Mineral Separation Plant	-	-	-	-	-
12	Township area	-	-	-	-	-
13	Others to specify	-	-	-	-	-
	GRAND TOTAL	0.78.0	0.77.0	1.55.0		1.55.0

Plate No : 10

VARAVANAI LIMESTONE MINE
OF
SHRI S.SEKHAR
73, RAJA COLONY
COLLECTOR OFFICE ROAD
CANTONMENT TRICHY- 620001

G.O.3(D) No.292 Extent : 2.24.0Hectares

FINANCIAL AREA ASSURANCE PLAN

Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"

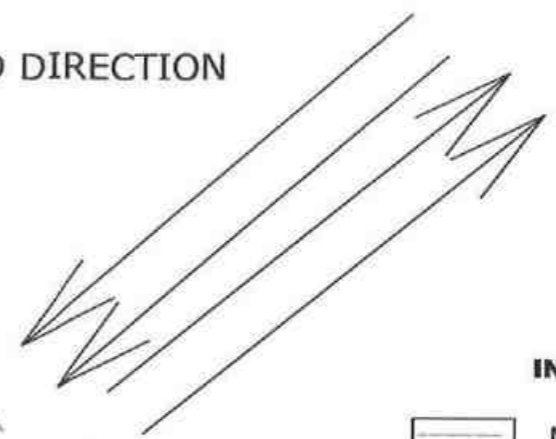
B. Ganatharan
B.GANATHARAN
Qualified Person

Scale :- Plan - 1:1000
Section - 1:500

PLATE No : 10

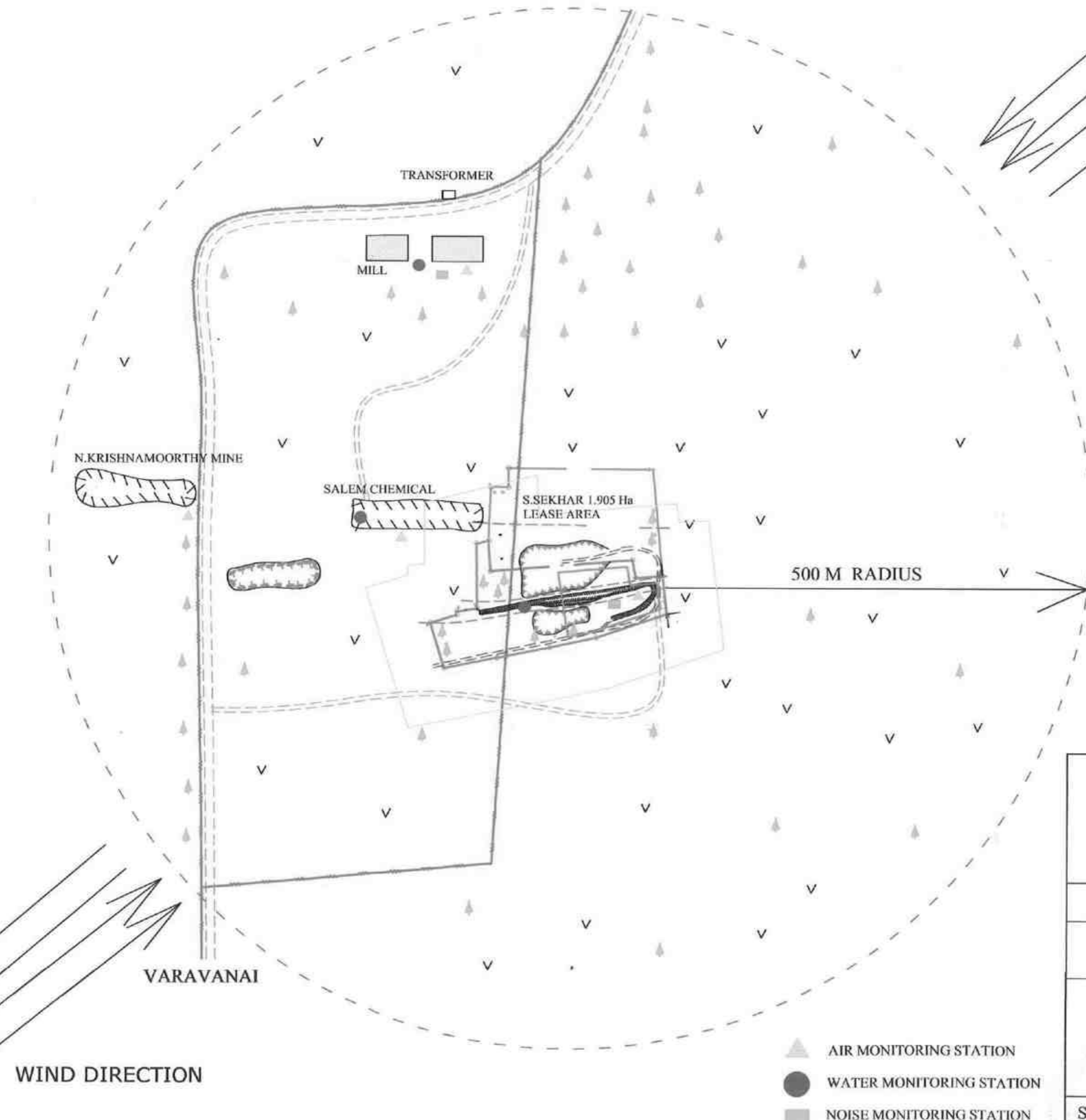


WIND DIRECTION



INDEX

- M.L. BOUNDARY
- ULTIMATE PIT LIMIT
- BOUNDARY PILLAR
- BENCH MARK
- WORKING PIT
- LT POWER LINE
- EXISTING DUMP
- MINERAL CONTACT LINE
- APPROACH ROAD
- EXISTING TREES
- 60M RADIUS LINE
- 500M RADIUS LINE
- DRY AGRICULTURE LAND
- EXISTING TREES



WIND DIRECTION



- AIR MONITORING STATION
- WATER MONITORING STATION
- NOISE MONITORING STATION

Plate No :11

VARAVANAI LIMESTONE MINE
OF
SHRI S.SEKHAR
73, RAJA COLONY
COLLECTOR OFFICE ROAD
CANTONMENT TRICHY- 620001

G.O.3(D) No.292 Extent : 2.24.0Hectares

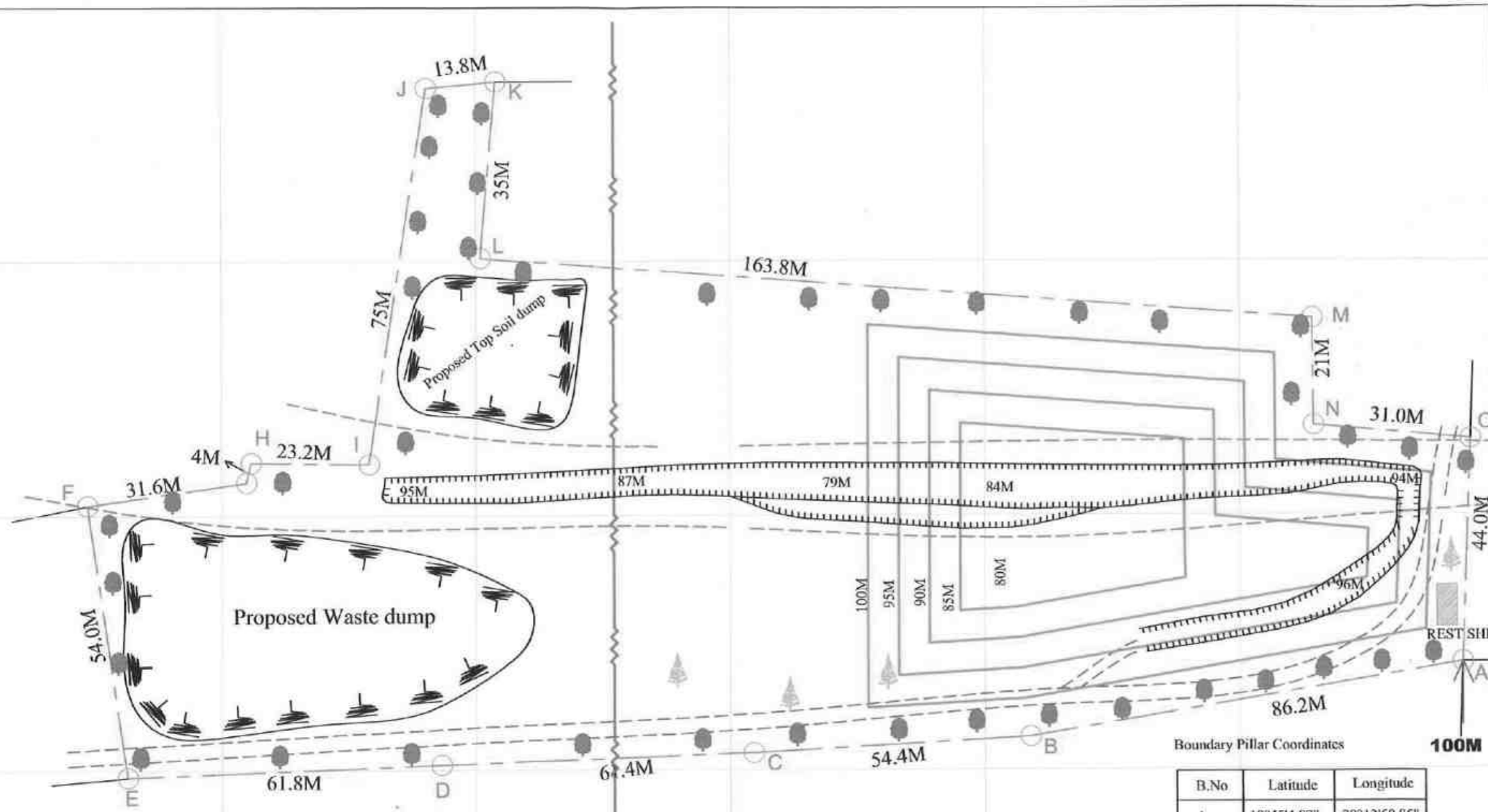
ENVIRONMENT PLAN

Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"




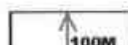
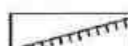




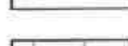

B. Gangatharan
B.GANGATHARAN
Qualified Person

Scale :- 1:5000

PLATE No : 11



INDEX

-  M.L.BOUNDARY
-  ULTIMATE BENCHES
-  BOUNDARY PILLAR
-  BENCH MARK
-  WORKING PIT
-  LT POWER LINE
-  PROPOSED DUMP
-  MINERAL CONTACT LINE
-  APPROACH ROAD
-  EXISTING TREES
-  PROPOSED AFFORESTATION

Boundary Pillar Coordinates **100M**

B.No	Latitude	Longitude
A	10°45'4.87"	78°13'50.85"
B	10°45'4.07"	78°13'48.13"
C	10°45'3.75"	78°13'46.38"
D	10°45'3.43"	78°13'44.37"
E	10°45'3.12"	78°13'42.36"
F	10°45'4.87"	78°13'41.89"
G	10°45'5.14"	78°13'42.86"
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K	10°45'7.89"	78°13'44.21"
L	10°45'6.74"	78°13'44.24"
M	10°45'7.01"	78°13'49.63"
N	10°45'6.34"	78°13'49.72"
O	10°45'6.35"	78°13'50.74"

Plate No : 12

VARAVANAI LIMESTONE MINE
OF
SHRI S.SEKHAR
73, RAJA COLONY
COLLECTOR OFFICE ROAD
CANTONMENT TRICHY- 620001

G.O.3(D) No.292 Extent : 2.24.0Hectares

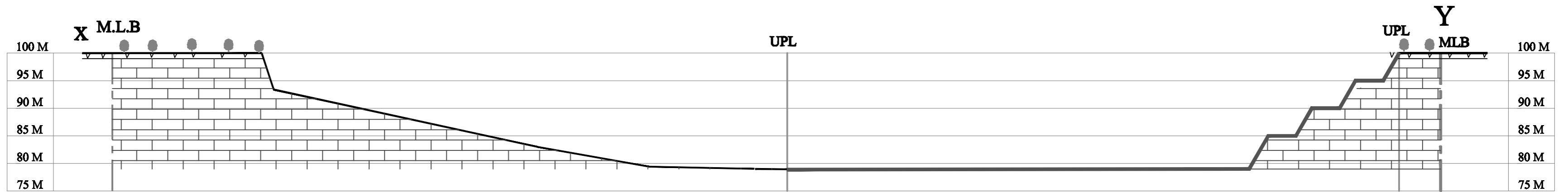
CONCEPTUAL PLAN

Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"

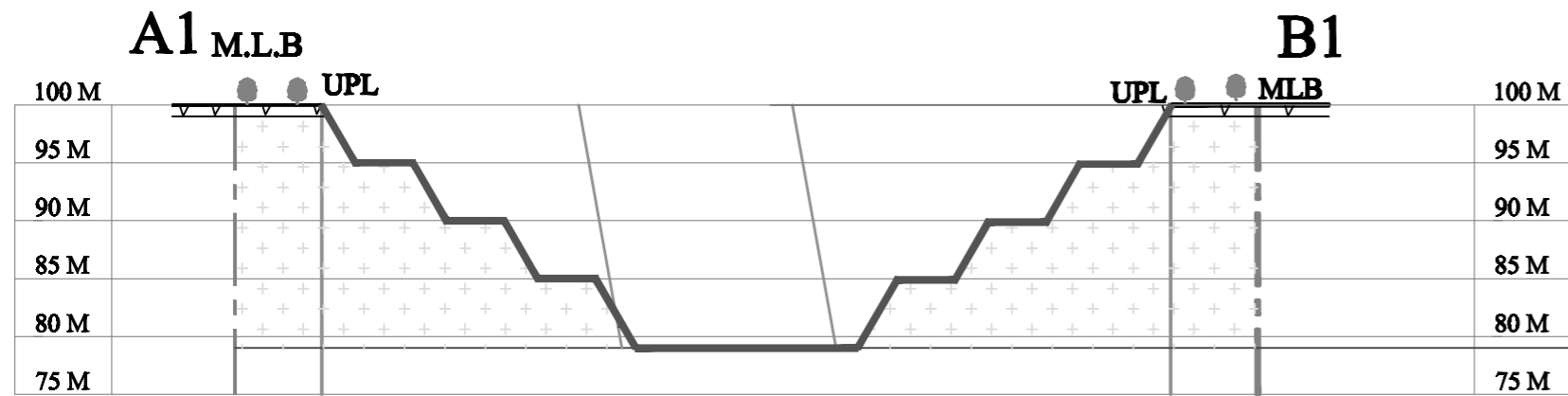
B. Gangatharan
B.GANGATHARAN
Qualified Person

Scale :- 1:1000

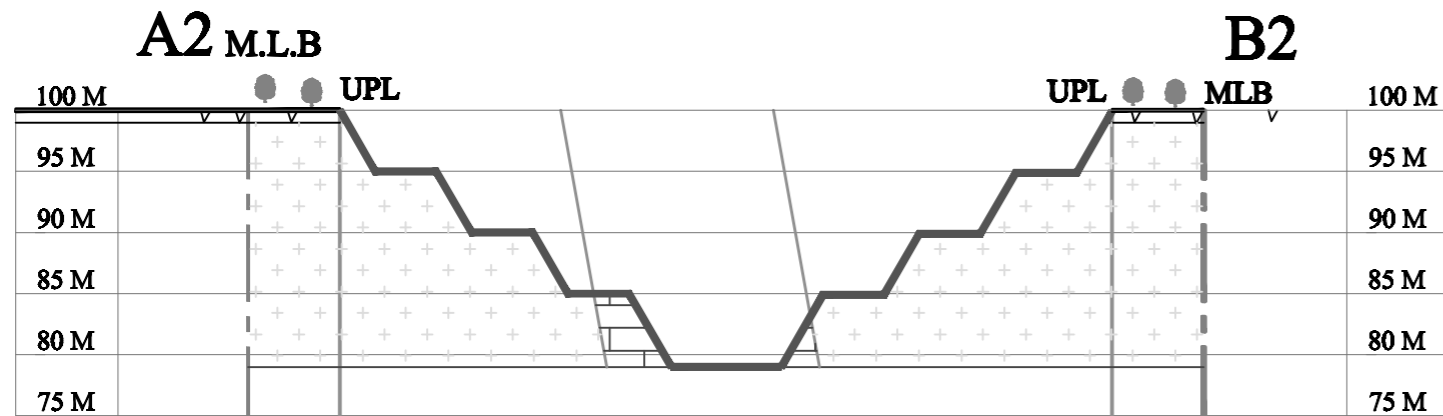
PLATE No : 12



LONGITUDINAL SECTION ON - X - Y



SECTION ON - A1 -B1



SECTION ON - A2 -B2

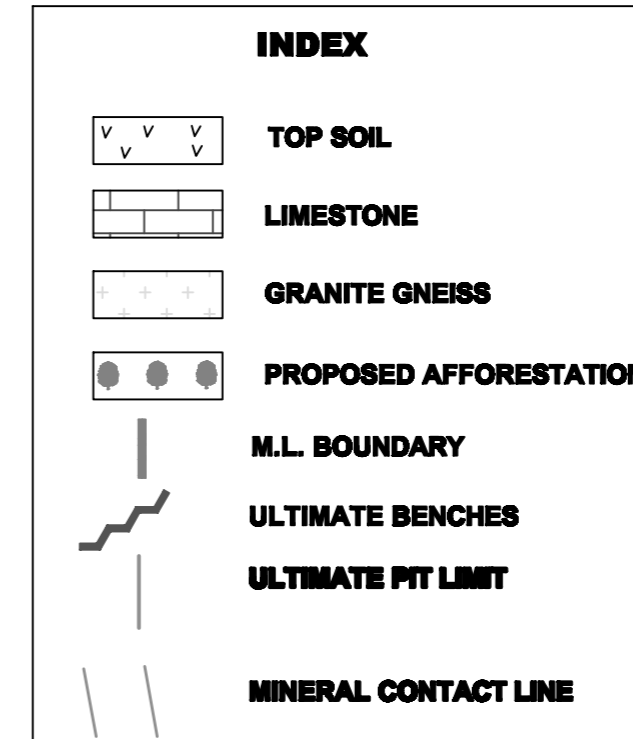


Plate No : 13	
VARAVANAI LIMESTONE MINE OF SHRI S.SEKHAR 73, RAJA COLONY COLLECTOR OFFICE ROAD CANTONMENT TRICHY- 620001	
G.O.3(D) No.292 Extent : 2.24.0Hectares	
CONCEPTUAL SECTIONS	
Certified that the "The plans and sections are prepared based on the lease map authenticated by the State Government"	
B.GANGATHARAN Qualified Person	
Scale :- 1:500	PLATE No : 13

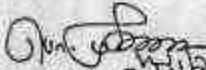
ANNEXURE 6
VAO LETTER

சான்று

கனூர் மாவட்டம், வரவண்ண 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.கோணசலம் 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 : வரவண்ண

தேதி : 20-01-2017


M. S. Srinivasan
30/01/2017
கிராம நிர்வாக அலுவலர்,
வரவண்ண கிராமம்,
கடலூர் வட்டம், கனூர் மாவட்டம்.

ANNEXURE 7
LETTER FROM DISTRICT COLLECTOR

நாள்: .07.2020

அறிவிப்பு

பொருள்: கனிமம் மற்றும் சுரங்கம் - கரூர் மாவட்டம் - முந்தைய குளித்தலை வட்டம், தற்போதைய கடலூர் வட்டம் - வரவணை கிராமம் - பட்டா புல எண்.835/3, 836 (P) மற்றும் 837/1B ன் விஸ்தீரணம் - 2.24.0 ஹெக்டேர் பரப்பளவில் சுண்ணாம்புகல் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் வழங்கப்பட்டது - சுற்றுச்சூழல் இசைவு சமர்ப்பிக்காமல் குவாரிப்பணி மேற்கொண்டது - கனிமத்தொகை செலுத்தக்கோருவது - தொடர்பாக.

- பார்வை:**
1. அரசாணை எண்.3(D).No.292 Industries (MMA2) Department Dt.04.10.1995.
 2. அரசாணை எண்.(எம்.எஸ்) எண்.79 தொழில் (எம்.எம்.சி) குறை 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, முந்தைய குளித்தலை வட்டம், தற்போதைய கடலூர் வட்டம் - வரவணை கிராமம் - பட்டா புல எண்.835/3, (0.32.0) 836 (P),(1.4.1.0) மற்றும் 837/1B,(3.80.0) ன் விஸ்தீரணம் 2.24.0 ஹெக்டேர் பரப்பளவில் சுண்ணாம்புகல் வெட்டியெடுக்க பார்வை 1-ல் காணும் அரசாணையின்படி 18.11.1995 முதல் 17.11.2015 வரை 20 வருட காலத்திற்கு குவாரி குத்தகை உரிமம் வழங்கப்பட்டுள்ளது.

பார்வை 3-ல் காணும் 15.01.2016 நாள்ிட்ட 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 அரசினர் கற்றுச்சூழல் இசைவு இன்றி குவாரி பணி மேற்கொண்டு எடுத்துச்சென்ற சுண்ணாம்புகல் கனிமத்திற்கான கனிமத்தொகை கீழ்க்காணும் பட்டியலில் கணக்கிடப்பட்டவாறு ரூ.2,84,100/- (ரூபாய் இரண்டு இலட்சத்து எண்பத்து நான்காயிரத்து நூறு மட்டும்)-ஐ கீழ்க்குறிப்பிடப்பட்டுள்ள கணக்குத்தலைப்பில் அரசுக்கருவூலம் அல்லது பாரத ஸ்டேட் வங்கி, கரூர் கிளையில் செலுத்தி அசல் சலானை இவ்வலுவலகத்தில் சமர்ப்பிக்குமாறு கேட்டுக்கொள்ளப்படுகிறது. தவறும்பட்சத்தில் தமிழ்நாடு வருவாய் வசூல் சட்டம் 1864-ன் கீழ் உரிய மேல் நடவடிக்கை எடுக்கப்படும் எனவும் தெரிவிக்கப்படுகிறது.

வ.எண்.	கனிமம்	கனிமம் எடுத்துச் சென்ற காலம்	எடுத்துச் செல்லப்பட்ட கனிமத்தின் அளவு (மெட்ரிக் டன்னில்)	கனிமத் தொகை (1 மெட்.க்கு)	மொத்தம் செலுத்த வேண்டிய கனிமத்தொகை (ரூ)
1.	சுண்ணாம்பு கல்	01.06.2016 முதல் 30.06.2016 வரை	300	469	140700
2.	சுண்ணாம்பு கல்	01.07.2016 முதல் 31.07.2016 வரை	150	478	71700
3.	சுண்ணாம்பு கல்	01.08.2016 முதல் 31.08.2016 வரை	150	478	71700
மொத்தம்			600		284100

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.

பெறுநர்

Thiru. S.Sekar,
 73, Raja colony,
 Collector's Office Road,
 Contonment,
 Tiruchirapalli.

2/2

14.07.20

மாவட்ட ஆட்சித்தலைவர்,
 கரூர்.

9/2

14/7/20

14/7/20

ANNEXURE 8
AFFIDAVIT TO SEIAA



कलश चण्ड तमिलनाडु TAMILNADU

BG 669852

005001
30 JAN 2017

S. Sekhar
Durg - Encland
Kali Kundam Rd
Chennai

M^{rs} 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 is situated.

- a) Protected area as notified under the wild life (protection) act, 1972
- b) Critically polluted area as notified by the central pollution control board constituted under water (prevention and control of pollution Act 1974.
- c) Eco-Sensitive areas as notified.
- d) Interstate boundaries and international boundaries within 5 KM radius from the boundary of the proposed site.

2. There are few mines 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 disturbance to the people living in enroute / 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 - Mining Lease - Limestone - Tiruchirapalli District - Kulithalai Taluk - Varavanai Village - Over an extent of 5.33 acres in S.F.No.835/3, 836 (Part) and 837/1 - Mining Lease application of Thiru. S.Sekhar, Thiruchirapalli - Grant of Mining Lease - Sanctioned.

INDUSTRIES (MMA2) DEPARTMENT

G.O. J(D) Np.292

Dated: 4.10.1995.

Read:

- 1) From Thiru. S. Sekhar, Thiruchirapalli, Mining Lease application dated 22.7.91 and letter dated 25.4.94.
- 2) From District Collector, Thiruchirapalli, Letter No.Rc.A.1340/91, dated 24.10.91.
- 3) From Director of Geology and Mining, Letter Rc. NO.14430/83/91, dated 14.1.92, 25.1.93 and 16.5.94.
- 4) From Government of India, Ministry of Mines, Letter No.4(293)/94, M.IV, dated 15.9.95.

-0-

ORDER:-

Thiru. S. Sekhar, Tiruchirapalli in his Mining Lease application dated 22.7.91 has applied for grant of fresh mining lease for Limestone over an extent of 5.33 acres in S.F.No.835/3 (0.32 Acre), 836 (Part) (1.41 acres) and 837/1B (3.80 acres) of Varavanai Village, Kulithalai Taluk, Thiruchirapalli District for a period of 20 years.

2. The District Collector, Thiruchirapalli has certified that the lands applied for Mining Lease are patta lands owned by the applicant and he has got the surface rights over the lands. The area has not been reserved for State exploitation. The District Collector has recommended for grant of Mining Lease in favour of applicant.

3. The Director of Geology and Mining has reported that the area applied for, satisfies Section 6(1) (c) of Mines and Minerals (Regulation and Development) Act, 1957, and also has recommended for grant of Mining Lease in favour applicant subject to the following conditions:-

- 1) No Mining should be carried out within a distance of 50 metres on either side from the power Line passing through the area in Western side of S.F. No.836. Otherwise, the electric Line should be shifted with the concurrence of Tamil Nadu Electricity Board and other pattadars at the cost of the applicant.
- ii) that the applicant should establish a pulverising unit within one year from the date of sanction of lease.

11) That the applicant should utilise Cement plus grade Limestone in the proposed industry of the applicant for stabilised mud blocks manufacture.

iv) Cement grade limestone should be supplied to cement industries, and

v) only less than cement grade below 42% CaO or High Silica/High Magnesia should be supplied to heavy industries as filler.

4. The Government have accepted the recommendations of the District Collector, Thiruchirappalli and Director of Geology and Mining for grant of mining lease in favour of Thiru. S. Sekhar, Thiruchirappalli and addressed the Government of India for their concurrence to grant mining lease in favour of applicant firm. The Government of India in their letter fourth read above have conveyed their approval under Section 5(1) of Mines and Minerals (Regulation and Development) Act, 1957 and under Rule 27(3) of Mineral Concession Rules, 1960 to grant Mining Lease over an extent of 5.53 acres to Thiru. S. Sekhar, Thiruchirappalli for a period of 20 years.

5. In exercise of the powers conferred under Section 10(3) of Mines and Minerals (Regulation and Development) Act 1957 (Central Act 67 of 1957), the Governor of Tamil Nadu, hereby sanctions the grant of Mining Lease in favour of Thiru. S. Sekhar, Thiruchirappalli for mining Limestone over an extent of 5.53 acres in S.F. Nos. 835/3 (0.32 acre) 836 (Part) (1.41 acres) and 837/1B (3.80 acres) of Varavanai Village, Kulithalai Taluk Thiruchirappalli District for a period of 20 (twenty) years subject to the special conditions mentioned in para 3 above and also other conditions specified in the appendix to this order.

6. The rate of royalty, dead rent and shall be as follows:-

Royalty:- Limestone (including Lime Kankar)

(a) L.E. Grade : Rs. 50/- (Rupees Fifty)
(Less than 1.5% Silica Content) : per tonne.

(b) Others : Rs. 25/- (Rupees Twenty five) per tonne.

Dead Rent:-

First year of the lease : Nil

Second year to fifth year of the lease : Rs. 30/- (Rupees Thirty) per hectare per annum

Sixth to tenth year of the lease : Rs. 60/- (Rupees Sixty) per hectare per annum

Eleventh year of the lease onwards : Rs. 90/- (Rupees Ninety) per hectare per annum

Surface rent and water rates:-

At such rate as the land revenue and other cesses assessable in the land are paid.

7. The applicant should pay a deposit of Rs. 2,000/- (Rupees Two Thousand only) as prescribed in rule 32 of Mines and Concessions Rules, 1960 before the lease deed is actually executed.

8. The terms and conditions mentioned in this order are subject to such further modifications, additions and alterations as may be included in the lease deed when finalised.

9. The District Collector, Thiruchirapalli is requested to take necessary further action for execution of the lease deed in the prescribed form. As soon as the deed is executed, it should be reported to the Government and Commissioner of Geology and Mining. The Collector is also requested to ensure compliance by the applicant firm of the amended provisions of Mines and Minerals (Regulation and Development) Act, 1957 and Minerals 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 Director of Geology and Mining, Guindy, Madras-32.
- The District Collector, Thiruchirapalli District (w.e.) (BY ROAD).
- Thiru. S. Sekhar, 73, Raja Colony Contonment, Thiruchirapalli-620 001.
- The Secretary to Government of India, Ministry of Mines, New Delhi 110 001.
- The Controller General, Indian Bureau of Mines, New Secretariat Building, Nagpur.
- The Regional Controller of Mines, Indian Bureau of Mines, No. 29, Vijayaragava Road, T. Nagar, Madras-17.
- The Industries (OP, II) Department, Madras-9.
- SF/SC.

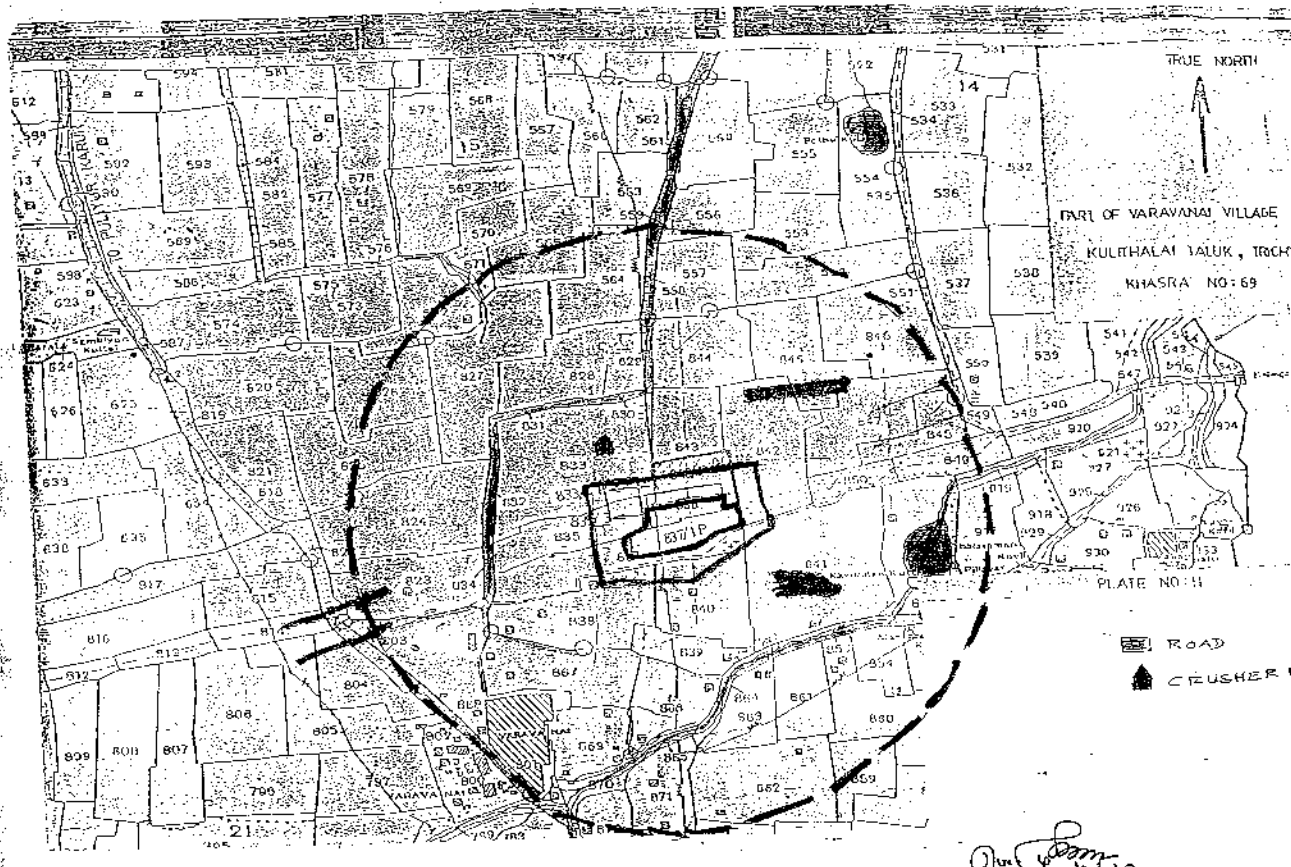
//Forwarded/By order//

[Signature]
SECTION OFFICER.
[Signature]
5-15-95

[Signature]
R. Rajasekar, M.Sc.,
Recognised Qualified Person

ANNEXURE 10
VILLAGE MAP

VILLAGE MAP



[Signature]
20/11/2017
Village & Taluk 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