

Draft Environmental Impact Assessment

**Thiru. K. Sakthivel Multi Colour Granite
Quarry
2.51.5 Ha**

At

**S.F.Nos. 351 of Nallur Village, Kulithalai Taluk, Karur
District.**

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

Category of the Project: B1 (Cluster Mining)

Project Proponent:

**K. Sakthivel,
S/O Karuppannan,
Ponnampatti,
Perunthalur Village,
Kulithalai Taluk,
Karur District – 639 104**

Prepared By:

M/s Ecotech Labs Pvt. Ltd.



NABET Accredited EIA Consultant

**48, 2nd Main road, Ram Nagar South Extension,
Pallikaranai, Chennai -600100**

From,

Thiru. K. Sakthivel
S/o. Karuppannan
Ponnampatti, Perunthalur Village,
Kulithalai Taluk,
Karur District.

To,

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

Dear Sir,

Sub: Request to Conduct Public Hearing – Environmental Clearance for Thiru. K. Sakthivel Multicolor Granite Quarry over an extent of 2.51.5 Ha at S.F.No.351 of Nallur Village, Kulithalai Taluk, Karur District, Tamil Nadu - **Reg.**

Ref : 1. Letter No.SEIAA-TN/F.No. 10535/2023, Dated: 15.11.2023.

2. TOR Identification No. TO23B0108TN5594047N Dated: 22.04.2024.

Respected Sir,

Please find enclosed herewith the application of Draft EIA Report along with necessary enclosures towards seeking environmental clearance for the Thiru. K. Sakthivel Multicolor Granite Quarry over a total extent of 2.51.5 Ha at SF. No.351 of Nallur Village, Kulithalai taluk, Karur District, Tamil Nadu. In this regard, we had obtained the Terms of Reference from State Environmental Impact assessment Authority (SEIAA) Tamil Nadu. Vide reference 2 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 Multi colour Granite 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 faithfully,

Enclosures:

1. Draft EIA Report.

K. Sakthivel,
S/o. Karupanna,
Ponnampatti,
Perunthalur Village,
Kulithalai Taluk,
Karur District – 639 104

UNDERTAKING

I, Thiru. K. Sakthivel, undertaking that the Environmental Impact Assessment (EIA) Report for Scheme of Mining for Multi Colour Granite quarry over an extent of 2.51.5 Ha at S.F.No.351 Nallur Village, Kulithalai 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 Letter No. TOR Identification No. T023B0108TN5594047N Dated: 22.04.2024

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 :Karur

Date :

Yours faithfully

Thiru. K. Sakthivel

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 EIA Report of Multi Colour Granite quarry over an extent of 2.51.5 Ha at S.F.No.351 of Nallur Village, Kulithalai Taluk, Karur District, Tamil Nadu State has been prepared at M/s. Ecotech Labs Pvt. Ltd., Chennai.

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

Signature:

Name: Dr. A. Dhamodharan

Designation: Managing Director

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

Chennai. NABET Certificate No: NABET/EIA/22 25/SA 0222

Date: 10.08.2024

Place: Chennai

Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

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Abbreviation

LU –Land use

AP – Air Pollution monitoring, prevention and control

AQ- Meteorology, Air quality modeling and prediction

WP – Water pollution monitoring, prevention and control

EB- Ecology and Biodiversity

NV- Noise & Vibration

SE- Socio-economics

HG- Hydrology, ground water and water conservation

GEO –Geology

RH – Risk assessment and hazards management

SHW –Solid and Hazardous waste management

SC- Soil conservation

Project Name	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	Final EIA Report
Project Proponent	<i>Thiru. K. Sakthivel</i>	
Project Location	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Declaration of Experts contributing to the EIA

Declaration by experts contributing to the EIA report for Proposed Multi Colour Granite Quarry mining project of Thiru. K. Sakthivel Multi Colour Granite Quarry over an extent of 2.51.5 Ha is situated at S.F.No. 351 of Nallur Village, Kulithalai taluk, Karur District, Tamil Nadu State.



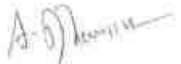
I, hereby certify that I was a part of the EIA team in the following capacity that developed the above EIA.

Project	Thiru. K. Sakthivel Multi Colour Granite Quarry – 2.51.5 Ha
Type & Category	1 (a) Mining of Minerals
Project Proponent	Thiru. K. Sakthivel
Environment Consultant with their Accreditation Status	M/s. Eco Tech Labs Pvt. Ltd., QCI Accredited
NABET Certificate No.	NABET/ EIA/22-25/ SA 0222
EIA Coordinator Name	Dr. A. Dhamodharan (Mining of Minerals)
Signature	 Dr. A. DHAMODHARAN (NABET APPROVED EIA COORDINATOR) NABET/EIA/22-25/SA 0222 Environmental Consultant Eco Tech Labs Pvt. Ltd Plot No.48A, 2nd Main Road, Ram Nagar South Extn. Pallikaranai, Chennai - 600 100.
Period of Involvement	January 2024 – Till date
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: dhamo@ecotechlabs.in





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Functional Area Experts

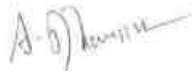

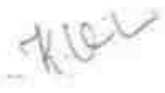

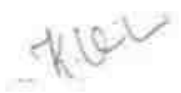
The basic fact division that environment and laboratory are accredited by NABL and Ministry of Environment and Forests, India and by other international bodies, stand testimony to its emphasis.

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: July 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: July 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 waste generated 4. Top soil and refuse management Period: July 2022 - Till now	

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

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Project Location	Nallur Village, Kulithalai taluk, Karur District.	

8	SC	Dr. A. Dhamodharan	1. Interpretation of baseline report 2. Identification of possible impacts on soil, prediction of soil conservation and suggesting suitable mitigation measures. Period: July 2022 – Till now	
9	AQ	Mrs. K. Vijayalakshmi	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. Period: July 2022 – Till now	
10	NV	Mrs. K. Vijayalakshmi	1. Selection of monitoring locations 2. Interpretation of baseline data 3. Prediction of impacts due to noise pollution and suggestion of appropriate mitigation measures Period: July 2022 – Till now	
11	LU	Dr. T. P. Natesan	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. Period: July 2022 – Till now	
12	RH	Mrs. K. Vijayalakshmi	1. Identification of the risk 2. Interpreting consequence contours 3. Suggesting risk mitigation measures Period: July 2022 – Till now	

Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
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Project Location	Nallur Village, Kulithalai taluk, Karur District.	

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 of mining project at Survey number S.F.No. 351 of Nallur Village, Kulithalai taluk, Karur District, 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/22-25/SA 0222.

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

EXECUTIVE SUMMARY

1. Project Background:

Proposed proposal pertains to Multi Colour Granite mining project by open cast semi mechanized method on allotted mine lease area at Nallur Village, Kulithalai taluk of Karur District, Tamil Nadu. It is a Undulated terrain.

Proposed quarry was existing quarry and lease was granted in favour of K. Sakthivel, the Lessee had obtained lease for quarrying granite vide Government Order.(3D) No. 12, Industries (MMB.2) Department dated 11.08.2017 for a period of twenty years and the lease deed was executed on 05.09.2017 and the lease will expire on 04.09.2037.

The Proposed Multi Colour Granite Quarry over an extent of 2.51.5 Ha at S.F.No. 351 of Nallur Village, Kulithalai taluk, Karur District, Tamilnadu. Based on the 500m radius letter obtained from Deputy Director, Dept. of Geology and Mining, Karur vide letter no Rc.No.67/Mines/2022 dated 27.07.2023 proposal coming under Cluster of mine exceedingly more than 5 Ha and the total cluster area is 8.29.0 Ha. We have submitted our fresh application for ToR to SEIAA vide Proposal No: SIA/TN/MIN/451778/2023 on 09.11.2023.

The category of the project is B1(cluster), the lease area exhibits Plain terrain and sloping towards south-west side covered with Multi Colour Granite. The quarry operation is proposed to be carried out with conventional open cast semi mechanized mining with 5.0-meter vertical bench with a bench width of 5.0 meter. In addition to the above the Quarry operation involves Diamond wire saw cutting, loading and transportation.

The quarry operation is proposed up to depth for 23 m (2.0 m Top Soil + 1.0 m Weathered granite + 20 m Multi colour Granite) below ground level. The total Geological Reserves is 4,67,326 m³ and Mineable Reserves is 2,33,664 m³. The Geological reserve in ROM is about 4,67,326 m³ and reserve at 50% reserves is about 2,33,662 m³. The Mineable Reserves in ROM is about 2,35,138 m³ and reserve at 50% reserves is about 1,17,570 m³ and Proposed Yearwise production is carried out as 26,142 m³ at 50% reserves to be mined for (Sixty months) Five years only.

Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
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The 1st Scheme of Mining Plan was approved by Commissioner, Commissionerate of Geology and Mining, Guindy, Chennai - 32 vide letter Rc. No. 4088/MM2/2022, Dated: 21.01.2023. The lessee has obtained Environmental clearance from DEIAA-DIA/TN/MIN/5852/2017-KRR Ec.No.17/2017/Mines, Dated: 02.08.2017.

The 1st scheme of mining plan for the period from 2022 - 2023 to 2026 - 2027 is now being prepared and submitted under rule 18(2) of GCDR 1999 for approval on 21.01.2023.

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 proposed Multi Colour Granite Quarry over an extent of 2.51.5 Hectares land is located at Nallur Village of Kulithalai taluk, Karur District.

Mineral intends to quarry	: Multi Colour Granite
District	: Kulithalai
Taluk	: Karur
Village	: Nallur
S. F. Nos.	: 351
Extent	: 2.51.5 Hectares

Table 1: Brief Description of the Project

S. No.	Particulars	Details
1	Latitude	10° 47' 40.9465" N to 10° 47' 35.0079" N
2	Longitude	78° 27' 6.0451" E to 78° 27' 0.2310" E
3	Site Elevation above MSL	124 m from MSL
4	Topography	Undulated Topography
5	Land use of the site	Patta land

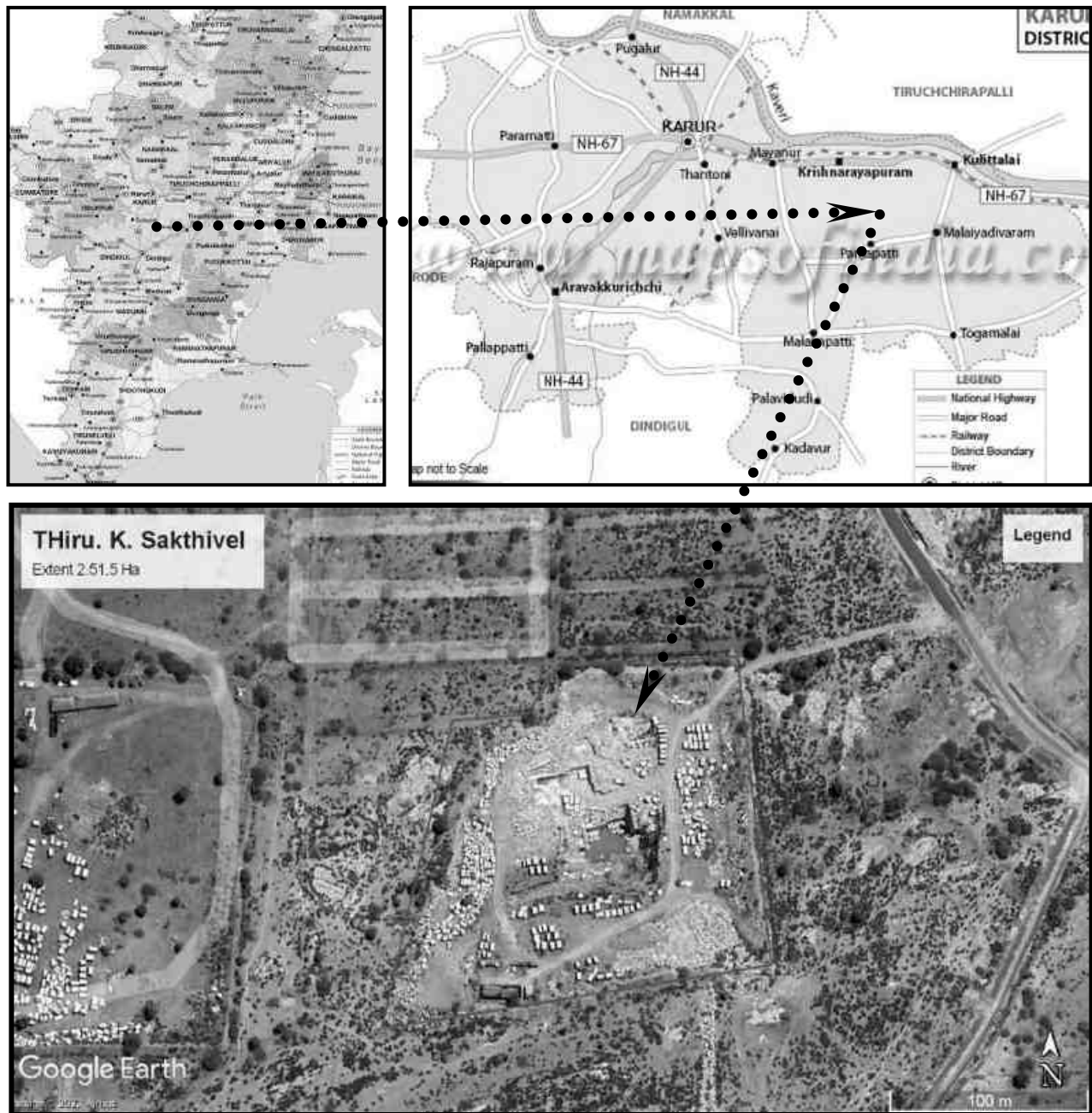
Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
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Project Location	Nallur Village, Kulithalai taluk, Karur District.	

6	Extent of lease area	2.51.5 Ha
7	Nearest highway/Road	NH 83 - Chennai Theni Road – 13.21 kms, SE SH 71 - Kulithalai-Manapparai Road 6.08 kms, W
8	Nearest railway station	Pettaivayatalai Railway Station – 12.41 kms, NEN Tiruchirapalli Junction – 25.54 kms, E
9	Nearest airport	Thiruchirappalli International Airport – 28.18 kms, E
10	Nearest town / city	Town : Thiruchirappalli – 22.17 kms, E City : Thiruchirappalli – 22.17 kms, E District : Karur – 44.23 kms, NW
11	Rivers / Canal	Kaveri River – 13.30 km, N
12	Lake	<ul style="list-style-type: none"> ➤ Ganeshapuram Pond – 9.36 km, N ➤ Periya Kulam – 7.17 km, SE ➤ Vayalur Kulam – 13.74 km, NW ➤ Mayanoor Barrriage Right Canal – 6.0 km, NW ➤ Inamkulathoor Lake – 13.49 km, SE ➤ Gudalur Lake – 3.45 km, SW ➤ Kaghagoor Eri – 8.19 km, SW
13	Hills / valleys	➤ Ayyamalai Hill – 11.52 km, NW
14	Archaeologically places	Nil in 15 km radius
15	National parks / Wildlife Sanctuaries	Nil in 15 km radius
16	Reserved / Protected Forests	Nil in 15 km radius
17	Seismicity	Proposed Lease area come under Seismic zone-II (low risk area)
18	Defense Installations	Nil in 15 Km radius

Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
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3. Need for the Project

The demand for granite increased due to rapid industrialization and growth in infrastructure. So the number of granite producing quarries is increasing in India. Granite is the chief material for the export industries like monuments, flooring slabs, Kitchen articles, sculptures & export. Based on the demand of Granite, the lessee intends to produce the required quantity of Multi Colour Granite for domestic market.



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Figure 1: Location Map of the Project Site



Figure 2: Google Image of the Project Site

4. Multi Colour Granite

The Multi Colour Granite and granite gneiss is mainly composed of medium to fine grained with feldspar and quartz are main constituents, garnet and other mafic minerals are secondary minerals. It has commercially called as 'Paradiso' which is widely used for Slabs, Tiles and Monuments after cutting and polishing.

5. Geological Resources

The Geological reserve is estimated as **467326 m³** upto a depth of 22.0m (2.0 m Top Soil + 1.0 m Weathered Granite + 19.0 m Multi Colour Granite), by area cross sectional method.

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Table 2. Geological resources

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Total Reserve in m ³	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY-AB	I	31	111	2						6882
	II	63	151	1					9513	
	III	63	151	5	47565	47565	23783	23782		
	IV	63	151	5	47565	47565	23783	23782		
	V	76	151	5	57380	57380	28690	28690		
	VI	76	151	5	57380	57380	28690	28690		
	TOTAL					209890	209890	104946	104944	9513
XY-CD	I	51	121	2						12342
	II	51	123	1					6273	
	III	51	149	4	30396	30396	15198	15198		
	IV	88	172	5	75680	75680	37840	37840		
	V	88	172	5	75680	75680	37840	37840		
	VI	88	172	5	75680	75680	37840	37840		
	TOTAL					257436	257436	128718	128718	6273
GRAND TOTAL					467326	467326	233664	233662	15786	19224

Table 3. Mineable Resources

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Total Reserve in m ³	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY-AB	I	22	89	2						3916
	II	49	122	1					5978	
	III	48	120	5	28800	28800	14400	14400		
	IV	43	110	5	23650	23650	11825	11825		
	V	51	100	5	25500	25500	12750	12750		
	VI	46	90	5	20700	20700	10350	10350		

<i>Project Name</i>	<i>Thiru. K. Sakhivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

	TOTAL				98650	98650	49325	49325	5978	3916
XY-CD	I	42	102	2						8568
	II	38	95	1					3610	
	III	37	121	4	17908	17908	8954	8954		
	IV	69	133	5	45885	45885	22943	22942		
	V	64	123	5	39360	39360	19680	19680		
	VI	59	113	5	33335	33335	16668	16667		
	TOTAL				136488	136488	68245	68243	3610	8568
GRAND TOTAL					235138	235138	117570	117568	9588	12484

Table 4. Year wise Production Plan

Year	Section	Bench	Length in (m)	Width in (m)	Depth in(m)	Volume in m³	Total Reserve in m³	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
Year I	XY-AB	I	42	69	2						5796
		II	38	63	1					2394	
		III	37	83	4	12284	12284	6142	6142		
		TOTAL				12284	12284	6142	6142	2394	5796
Year II	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL				10000	10000	5000	5000		
Year III	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL				10000	10000	5000	5000		
Year IV	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL				10000	10000	5000	5000		
Year V	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL				10000	10000	5000	5000		
		GRAND TOTAL						52284	52284	26142	26142

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6. Mining

Opencast mining

The quarry operation is proposed to be carried out with conventional open cast semi mechanized mining with 5.0 meter vertical bench with a bench width of 5.0 meter. The Quarry operation involves Diamond wire saw cutting, loading and transportation.

Process Description

The proposed mining is planned to be carried out by open cast-semi mechanized method of mining, in this proposed mining area by using compressor operated jack hammer drills, excavators and dumpers etc.

Hydraulic excavators will be used to remove the over burden, Shifting of Blocks and waste removal etc. Compressor operated jack hammers will be used to drill the holes as preparatory work before cutting the Block by using Wire saw.

The diamond wire saw has many advantages to its credit such as

1. Reduced Consumption of Explosives.
2. Reduced noise level
3. Reduced Loss of material
4. Simple to use and saves squaring operation.

7. Water Requirement

Total water requirement for the mining project is 2.25 KLD. Domestic water will be sourced from nearby Sanga Goundampatti Village and other water will be source from nearby road tankers supply.

Table 5. Water Balance

Purpose	Quantity	Source
Domestic & Flushing	1.25 KLD	Drinking water will be brought from the approved water vendors in the nearby villages.
Green belt	0.50 KLD	Other domestic activities through road tankers supply
Dust suppression	0.50 KLD	From road tankers supply
Total	2.25 KLD	

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8. Man Power and Organization Chart

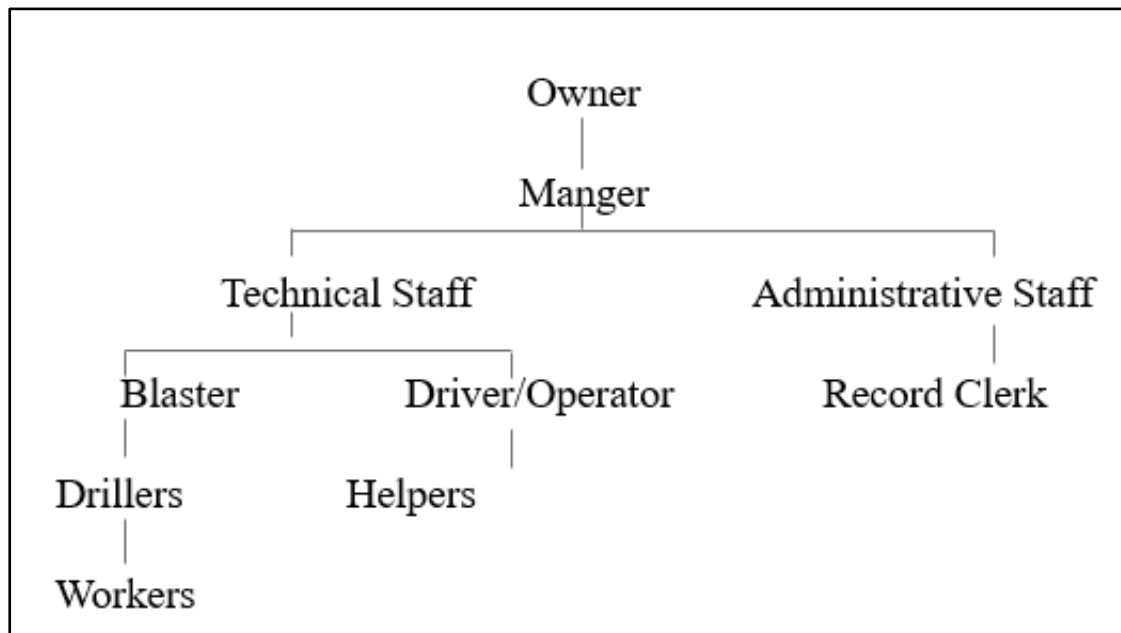
Total manpower required for the project is approximately 24 persons. Workers will be from nearby villages.

Table 6. Man Power

1.		Manager	1 No
2.		Record Clerk	1 No
3.	High-Skilled	Supervisor Cum Blaster	1 No
4.	Skilled	Compressor / Wagon Drill Operator	1 No
		Drillers/ Workers	5 Nos
		Excavator/ Rock Breaker Operators	3 Nos
		Vehicle Drivers	2 Nos
5.	Semi- Skilled	Watchmen	1 No
6.	Unskilled	Dresser/ Cutter	9 Nos
Total			24 Nos.

No child less than 18 years will be entertained during quarrying operations.

ORGANISATION CHART



Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
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Project Location	Nallur Village, Kulithalai taluk, Karur District.	

9. Solid Waste Management

Table 7. Solid Waste Management

S. No	Type	Quantity	Disposal Method
1	Organic	6.48 kg/day	Municipal bin including food waste
2	Inorganic	4.32 kg/day	TNPCB authorized recyclers

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

Table 8. 500m Radius Cluster Mine

1) Existing quarries:

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent	Lease Period
1	Thiru. K. Sakthivel, S/o Karuppannan, Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District.	Nallur Village, Kulithalai Taluk	351	2.51.5	Sep 2017 - 2027
2	M/s Apple Granites S. f. No. 299/1,2 Kallai Village, Kulithalai Taluk, Karur District.	Kallai Village, Kulithalai Taluk	299/1 (P), 299/2A (P), 299/2B (P), 301/1 (P), 302/2 (P), 302/3 (P)	2.97.0	Feb 2018 - 2028
3	M/s. V. B. S Exports No. 38, Srinivasa Nagar, 1 st Street, Thiran Nagar, Madurai District.	Kallai Village, Kulithalai Taluk	349/Part, 303/2A(P), 302/1 (P)	2.80.5	Feb 2018 - 2028

2) Abandoned/Old quarries:

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent	Lease Period
----- Nil-----					

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

3) Details of Proposed/Applied quarries:

S. No.	Name of the lessee / Permit Holder	Village & Taluk	S. F. No.	Extent	Lease Period
----- Nil-----					

The Total extent of the Existing / Lease expired / Proposed quarries are 8.29.0 Ha

10. Land Requirement

The total extent area of the project is 2.51.5 Ha, of Patta land in Nallur Village of Kulithalai taluk, Karur District.

Table 9. Land Use Breakup

Description	Present Area (Ha.)	Area to be required at the present scheme period (Ha)	End of life of Quarrying Period (Ha.)
Area under Quarry	0.22.0	0.89.0	2.00.0
Dumps	0.45.0	0.47.0	Backfilling
Stockyard	Nil	Nil	Nil
Infrastructure	0.01.0	0.01.0	0.02.0
Roads	0.03.0	0.01.0	0.04.0
Green Belt	Nil	0.18.0	0.45.5
Unutilized Area	1.80.5	0.95.5	Nil
Grand Total	2.51.5	2.51.5	2.51.5

11. Human Settlement

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

Table 10. Habitation

Direction	Village	Population	Distance in Kms
North	Nallur	600	3.0 km
West	Gudalur	500	5.0 km
East	Kallai	800	3.0 km
South	Puthur	500	4.0 km

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

12. Power Requirement

The proposed multi colour granite quarrying does not required any power supply for the quarrying operation.16 Litres diesel per hour required for excavator whenever needed.

13. Scope of the Baseline Study

This chapter contains information on existing environmental scenarios on the following parameters.

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

13.1 Micro – Meteorology

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

- i) Average Minimum Temperature : 26.3⁰ C
- ii) Average Maximum Temperature. : 40.0⁰ C
- iii) Average Annual Rainfall of the area : 806 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 10 km. radius, air quality survey has been conducted at 7 locations. Major air pollutants like Particulate Matter (PM10), Sulphur Dioxide (SO2), Nitrogen Dioxide (NO2) were monitored and the results are summarized below.

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The baseline levels of PM10 (65-45($\mu\text{g}/\text{m}^3$)), PM 2.5(35-17 ($\mu\text{g}/\text{m}^3$)), SOx (20-5 ($\mu\text{g}/\text{m}^3$)), NOx (9-32 ($\mu\text{g}/\text{m}^3$)), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from April to June, 2022

13.3 Noise Environment

Ambient noise levels were measured at 7 locations around the proposed project site. The noise level during day varies from 41-64 dB(A) and during night varies between 33-56 dB(A).

13.4 Water Environment

- The average pH ranges from 7.21-8.44
- TDS value varied from 692 mg/l to 1605 mg/l
- Hardness varied from 376 to 959 mg/l
- Chloride varied from 99.3 to 502 mg/l

13.5 Land Environment

The analysis results show that the majority of soil in the project and surrounding area is slightly base in nature and pH value ranges from 6.95 to 8.54 with organic matter 0.47 % to 1.90 %. The concentration of Nitrogen, Phosphorus & Potassium has been found to be in good amount in the soil samples.

13.6 Biological Environment

The proposed Mining lease area is mostly dry barren ground with small shrubs and bushes. No specific endangered flora & fauna exist within the mining lease area.

14. Rehabilitation/ Resettlement

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

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15. Greenbelt Development

1. The development of greenbelt in the peripheral buffer zone of the mine area.
2. Green belt has been recommended as one of the major component of Environmental Management Plan, which will improve ecology, environment and quality of the surrounding area.
3. Local trees like Neem will be planted along the lease boundary and avenues as well as over non-active dumps at a rate of 252 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table 11 Plantation/ Afforestation Program

Sl.No	Name of the species		Survival rate expected in %	No. of trees expected to be grown
	Scientific Name	Common Name		
1	<i>Azadirachta indica</i>	Neem	80 %	450
2	<i>Pongamia pinnata</i>	Pungam	80 %	300
3	<i>Pterocarpus marsupium</i>	Vengai	80 %	150
4	<i>Cassia fistula</i>	Sarakondrai	80 %	190
5	<i>Aegle marmelos</i>	Vilvam	80 %	50
6	<i>Lagerstroemia speciosa</i>	Poo Marudhu	80 %	50
7	<i>Mimusops elengi</i>	Magizha maram	80 %	70
Total				1260

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.

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

16.2 Noise Environment and Mitigation Measures

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

17. Responsibilities for Environmental Management Cell (EMC)

The responsibilities of the EMC include the following:

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

18. Environmental Monitoring Program

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

19. Project Cost

The total project cost is **Rs.2,04,20,000/-** for deployment of machinery and creation of infrastructural facilities like approach road, Mine office / Workers Shed, First Aid Room etc., including electrifications and water supply

Table 12 Project Cost details

S. No	Description of cost	Cost of lakhs
A	Fixed Asset cost:	
1	Land cost	Rs. 30,00,000/-
2	Labour Shed	Rs.1,50,000/-
3	Sanitary Facility	Rs. 70,000/-
4	Fencing Cost	Rs. 1,00,000/-
	Total Fixed Asset cost	Rs. 33,20,000/-
B	Operational cost:	
1	Excavator	Rs. 55,00,000/-
2	Tipper 2 Nos	Rs. 20,00,000/-

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3	Wire Saw	Rs. 8,00,000/-
4	Compressor with loose tools	Rs. 10,00,000/-
Machinery Cost		Rs. 93,00,000/-
C	EMP Cost:	
1	Year 1	Rs. 2641013
2	Year 2	Rs. 1197605
3	Year 3	Rs. 1257027
4	Year 4	Rs. 1319420
5	Year 5	Rs. 1384933
EMP Cost		Rs. 78,00,000
Total Project cost		Rs. 2,04,20,000/-

20. Corporate Environmental Responsibility

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

Table 13 CER Cost

S.No.	CER Activity	CER value (Rs)
1.	<p>P.U.P School, Nallur Village, Kulithalai Taluk, Karur District.</p> <p>Following details are provided to the school.</p> <ul style="list-style-type: none"> ➤ Vegetable Garden. ➤ Electric Motor. ➤ Repair works on Roof of the School. ➤ Hygienic Toilet facilities through lease period. ➤ Greenbelt Development inside and around the campus – 50 No's. ➤ Environmental, Social Awareness and General Knowledge Books in Tamil Language. 	5,00,000/-
Total		5,00,000/-

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.

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

1 Introduction

10.3 1.1 Preamble

Environment Impact Assessment (EIA) is a process used to identify the environmental, social & economic impacts of a project prior to decision making. It is a decision-making tool, which guides the project proponent in taking appropriate decisions for proposed projects. It aims to predict environmental impacts at an early stage of project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the prediction options to the proponent. By using EIA, both environmental & economic benefits can be achieved. By considering environmental effects - prediction & mitigation, early benefits in project planning, protection of the environment, optimum utilization of resources, thus saving overall time & cost of the project. EIA also lessens conflicts by promoting community participation, informs project proponents, and helps to lay the base for environmentally sound projects.

The Ministry of Environment & Forests, Govt. of India, made environmental clearance (EC) for certain development projects mandatory through its notification of 27/01/1994 under the Environment Protection Act, 1986 and subsequently the MoEF came out with Environment Impact Notification, S.O.1533(E), and dt.14/09/2006. It has been made mandatory to obtain environmental clearance for different kinds of developmental projects (Schedule of notification). The proposed project falls under item 1(a) of the EIA notification, 2006.

10.4 1.2 General Information on Mining of Minerals

The Karur District forms part of the Archean complex of peninsular gneiss. The general rock types of this area are Charnockite, Biotite gneiss, Migmatites and Anorthosites. Karur District is blessed with good reserves of Crystalline Limestone known as “Palayam belt” in Varavanai, Thennilai, Gudalur etc., villages in Kulithalai Taluk and the occurrences of good quality of pegmatite veins constituting with glassy Quartz and potash Feldspar in lensoid patches in Nagampalli and Pungambadi areas in Aravakurichi Taluk. The major mineral such as Limestone, Quartz and Feldspar and Magnesite and Dunite are exploited in Karur District and utilized in the mineral based industries.

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

The Charnockite and Granite Gneiss rocks are found to occur in K. Paramathi, Athur, Thennilai, Punnam, Kuppam, Munnur, Karudayampalayam, Anjur villages in Karur and Aravakurichi Taluk are exploited to produce building materials and road metal (Jelly) and over burden soil appear as gray to reddish in colour called as gravel.

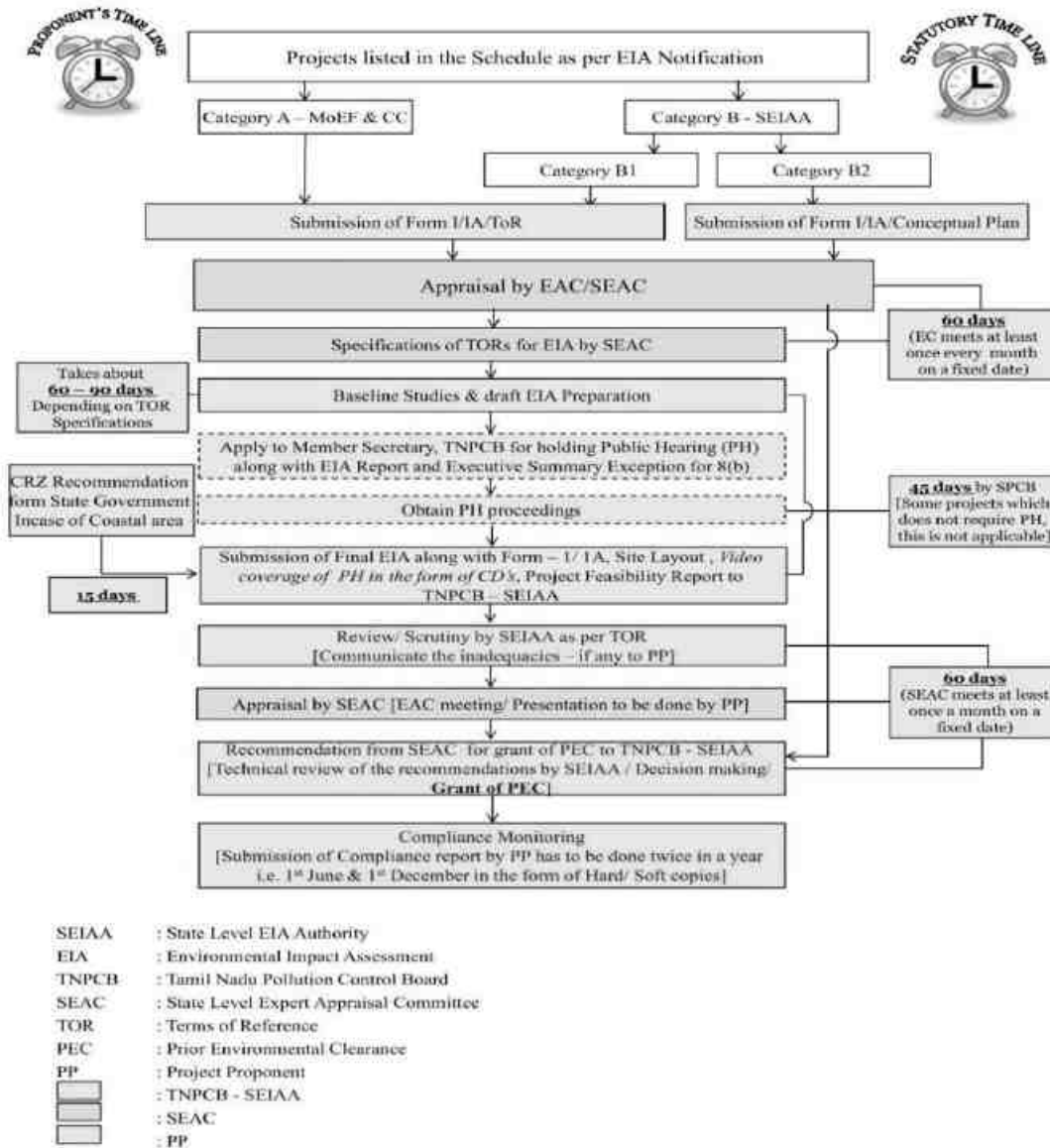
The commercially known “Coloumbo Zubrana” the unique type in the Multicoloured Granite / Granite Gneiss category is occurring in Thogamalai, Nallur, Naganur and Kazhugur Villages in Kulithalai Taluk. These rock type belong to minor mineral category. The arrangement of alternate layers of felsic and mafic minerals in linear pattern and exhibits wavy pattern in the rock and giving very good structure for the rock type. The well-developed gneissic pattern with linear arrangement, the rock type have attracted the granite market and found to be suitable for the exploitation of granite blocks. Calc-Gneiss (called colonial white occurs in Nallur Village of Karur Taluk are of export worthy quality commodity known at Nallur Village.

10.5 1.3 Environmental Clearance

As per EIA Notification, 2006 and its subsequent amendments (O.M vide No.F.No.L- 11011/175/2018-IA-II(M) Govt of India MOEF&CC on December 12th 2018) project comes under category B1 cluster & schedule 1(a) under item 1

The proposed project is categorized under Category “B1” 1(a) (Cluster) - {Mining of Minerals} as the 500m radius area is more than 5 Ha including the mine lease area. Hence, the project will be considered at SEAC, Tamil Nadu.

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Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	



10.6 1.4 Terms of Reference (ToR)

The terms of Reference have been issued by SEAC TN vide TOR Identification No. T023B0108TN5594047N Dated: 22.04.2024 (Annexure - I). 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.

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<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

10.7 1.5 Post Environmental Clearance Monitoring

1.5.1 *Methodology adopted*

Post project monitoring will be carried out as per conditions stipulated in environmental clearance letter issued by SEIAA, consent issued by SPCB as well as according to CPCB guidelines. The lease area is considered as core zone and the area lying within 10 km radius from the lease boundary is considered as buffer zone, where some impacts may be observed on physical and biological environment. In the buffer zone slight 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

10.8 1.6 Generic Structure of the EIA Document

Chapter 1: Introduction. This chapter contains the general information on the mining of minerals, major sources of environmental impacts in respect of mining projects and details of environmental clearance process.

Chapter 2: Project Description. In this chapter the proponent should also furnish detailed description of the proposed project, such as the type of the project, need for the project, project location, layout, project activities during construction and operational 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. If the project site is near a sensitive area, it is to be mentioned clearly why an alternative site could not be considered. The project implementation schedule, estimated cost of development as well as operation etc., should be also included.

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<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Chapter 3: Analysis of Alternatives (Technology and Site). This chapter gives details of various alternatives both in respect of location of site and technologies to be deployed, in case the initial scoping exercise considers such a need.

Chapter 4: Description of Environment. This chapter should cover baseline data in the project area and study area.

Chapter 5: Impact Analysis and mitigation measures. This chapter describes the anticipated impacts on the environment and 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. It should give the details of the impacts on the baseline parameters, both during the construction and operational phases and suggests the mitigation measures to be implemented by the proponent.

Chapter 6: Environmental Monitoring Program. This chapter should cover the planned environmental monitoring program. It should also include the technical aspects of monitoring the effectiveness of mitigation measures.

Chapter 7: Additional Studies. This chapter should cover the details of the additional studies required in addition to those specified in the ToR and which are necessary to cater to more specific issues applicable to the particular project.

Chapter 8: Project Benefits. This chapter should cover the benefits accruing to the locality, neighbourhood, region and nation as a whole. It should bring out details of benefits by way of improvements in the physical infrastructure, social infrastructure, employment potential and other tangible benefits.

Chapter 9: Environmental Cost Benefit Analysis. This chapter should cover on Environmental Cost Benefit Analysis of the project.

Chapter 10: Environmental Management Plan. This chapter should comprehensively present the Environmental Management Plan (EMP), which includes the administrative and technical setup, summary matrix of EMP, the cost involved to implement the EMP, both during the construction and operational phase and provisions made towards the same in the cost estimates of project construction and operation. This chapter should also describe the proposed post-monitoring scheme as well as inter-organizational arrangements for effective implementation of the mitigation measures.

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Chapter 11: Summary and Conclusions. This chapter gives the summary of the full EIA report condensed to ten A-4 size pages at the maximum. It should provide the overall justification for implementation of the project and should explain how the adverse effects have been mitigated.

Chapter 12: Disclosure of Consultants. This chapter should include the names of the consultants engaged with their brief resume and nature of consultancy rendered.

10.9 1.7 Details of Project Proponent

Project Proponent : Thiru. K. Sakthivel
Status of the Proponent : Individual
Proponent's Name & Address : S/o. Paramasivam,
S/o. Karuppannan,
Ponnampatti, Perunathalur Village, Kulithalai Taluk,
Karur District.

10.10 1.8 Brief Description of the Project

1.8.1 Project Nature, Size & Location

As per EIA Notification, 2006 and its subsequent amendments (O.M vide No.F.No.L-11011/175/2018-IA-II(M) Govt of India MOEF&CC on December 12th, 2018) project comes under category B1 cluster & schedule 1(a) under item 1.

Proposed proposal pertains to Multi Colour Granite mining project by semi mechanized open cast method on allotted mine lease area at Nallur Village, Kulithalai taluk, Karur District, Tamil Nadu. It is an Undulated terrain. The total allotted mine lease for the proposed project is 2.51.5 Ha with their production capacity i.e. 26,142 m³ of Multi Colour Granite for Five years only (Sixty months) and total reserve of 4,67,326 m³

Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

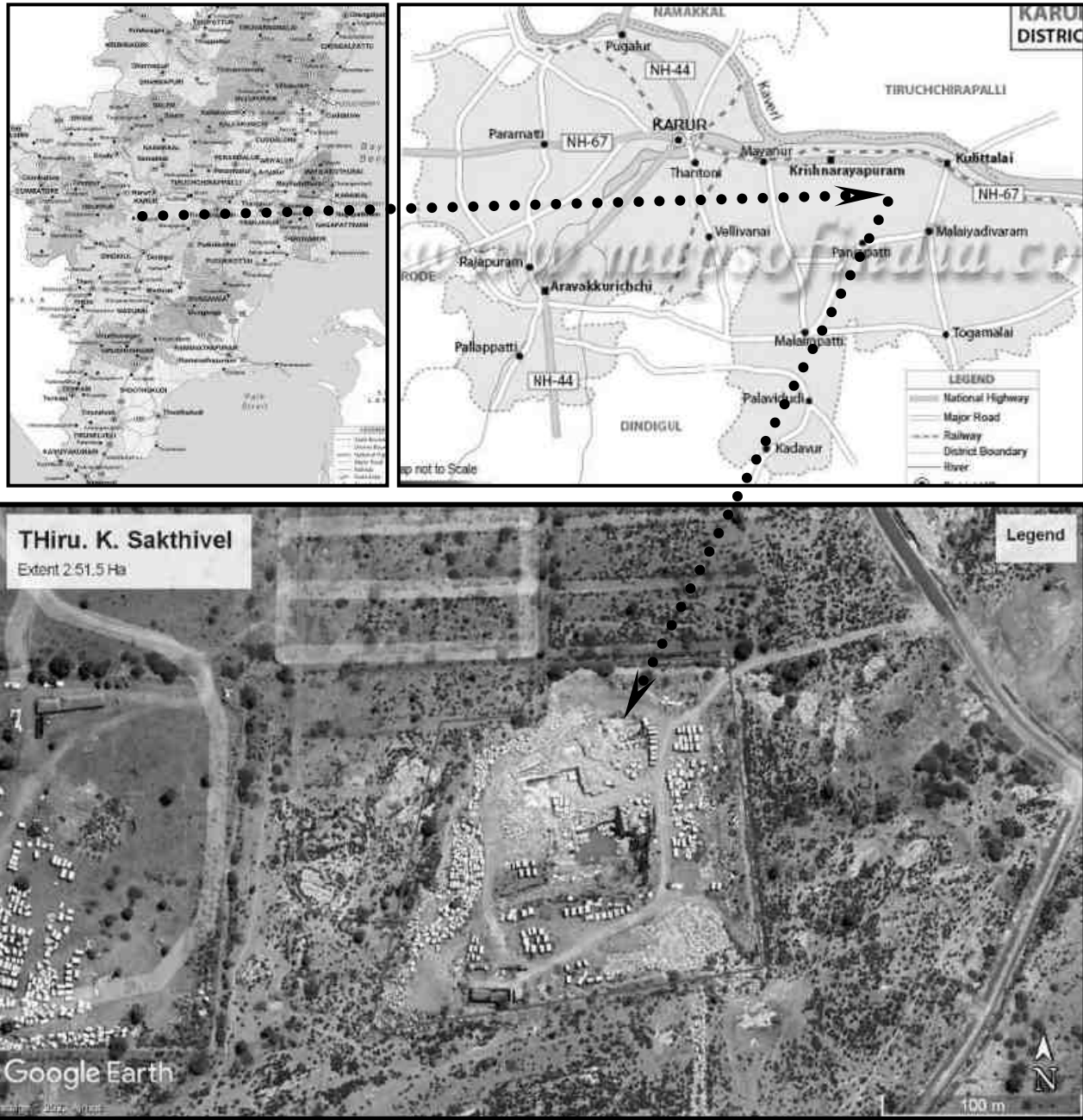


Figure 1-1: Location Map of the Project site

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai 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.

10.11 2.1 General

- ❖ Proposed proposal pertains to Multi Colour Granite mining project by open cast mechanized method on allotted mine lease area at Nallur Village, Kulithalai taluk of Karur District, Tamil Nadu. It is a Undulated terrain.
- ❖ The 1st scheme of mining for the period from 2022 - 2023 to 2026 - 2027 is now being prepared and submitted under rule 18(2) of GCDR 1999 for approval on 29.03.2021.
- ❖ The quarry operation is proposed up to depth for 23 m (2.0 m Top Soil + 1.0 m Weathered granite + 20 m Multi colour Granite) below ground level. The total Geological Reserves is 4,67,326 m³ and Mineable Reserves is 2,35,138 m³. The Geological reserve in ROM is about 4,67,326 m³. Geological reserve at 50% reserves is about 2,33,664 m³. The Mineable Reserves in ROM is about 1,17,570 m³. Mineable reserve at 50% reserves is about 1,17,570 m³ and Proposed Yearwise production is carried out as 26,142 m³ at 50% reserves to be mined for (Sixty months) Five years only.

Type of the project:

As per EIA Notification, 2006 and its subsequent amendments (O.M vide No.F.No.L-11011/175/2018-IA-II(M) Govt of India MOEF&CC on December 12th, 2018) project comes under category B1 cluster & schedule 1(a) under item 1. The project required to be appraised at state level by State Environment Impact Assessment Authority, Tamil Nadu. Environment Clearance study will involve preparation of final 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 Name	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	Final EIA Report
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Project Location	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

project involves the Public Consultation and the same will be conducted under SPCB (TN) in Karur District. The proceedings of the same has been incorporated in the EIA Report.

The mines within 500m radius from the project site are listed below.

Table 2-1: Quarry within 500m Radius

1) Existing quarries:

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent	Lease Period
1	Thiru. K. Sakthivel, S/o Karuppannan, Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District.	Nallur Village, Kulithalai Taluk	351	2.51.5	Sep 2017 - 2027
2	M/s Apple Granites S. f. No. 299/1,2 Kallai Village, Kulithalai Taluk, Karur District.	Kallai Village, Kulithalai Taluk	299/1 (P), 299/2A (P), 299/2B (P), 301/1 (P), 302/2 (P), 302/3 (P)	2.97.0	Feb 2018 - 2028
3	M/s. V. B. S Exports No. 38, Srinivasa Nagar, 1 st Street, Thiran Nagar, Madurai District.	Kallai Village, Kulithalai Taluk	349/Part, 303/2A(P), 302/1 (P)	2.80.5	Feb 2018 - 2028

2) Abandoned/Old quarries:

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent	Lease Period
-----Nil-----					

3) Details of Proposed/Applied quarries:

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent	Lease Period
-----Nil-----					

The Total extent of the Existing / Lease expired / Proposed quarries are 8.29.0 Ha

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

2.1.1 Need for the project:

Multi Colour Granite is specifically used for the buildings, paving, monuments, aesthetics and many other exterior projects. This project will give employment opportunities to the nearby villagers directly and indirectly. The products of Multi Colour Granite is well known in the international supermarket which will fetch a good foreign exchange to the nation. The Multi Colour Granite quarry provides perennial employment to the villages and improves their standard of living. The product manufacturing industry from Multi Colour Granite improves the technical skill of the local people. This provides economic development and earn foreign exchange to our country

10.12 2.2 Brief Description of the project

Table 2-2 Salient Features of the Project

S. No.	Description	Details
1	Project Name	Proposed Multi Colour Granite Quarry-2.51.5 Ha
2	Proponent	Thiru. K. Sakthivel
3	Mining Lease Area Extent	2.51.5 Ha
4	Location	S.F.No. 351 of Nallur Village, Kulithalai taluk, Karur District.
5	Latitude	10° 47' 40.9465" N to 10° 47' 35.0079" N
6	Longitude	78° 27' 6.0451" E to 78° 27' 0.2310" E
7	Topography	Undulated terrain
8	Site Elevation above MSL	124 m from MSL
9	Topo sheet No.	58 J/5
10	Minerals of Mine	Multi Colour Granite
11	Proposed production of Mine	Proposed capacity of Multi Colour Granite : 52,284 m ³
		Recoverable Reserve of Multi Colour Granite : 26,142 m ³
12	Ultimate depth of Mining	23 m below ground level
13	Method of Mining	Open cast, mechanized mining
14	Water demand	2.25 KLD
15	Source of water	Water will be supplied through tankers supply and drinking water will be purchased from vendors
16	Manpower	24 Nos.
17	Mining Lease	The Lessee had obtained lease for quarrying granite vide Government Order.(3D) No. 12, Industries (MMB.2) Department dated 11.08.2017 for a period of twenty years

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

		and the lease deed was executed on 05.09.2017 and the lease will expire on 04.09.2037.
18	Mining Plan Approval	The 1st scheme of mining for the period from 2022 - 2023 to 2026 - 2027 is now being prepared and submitted under rule 18(2) of GCDR 1999 for approval on 21.01.2023.
19	Production details	Geological reserves of Multi Colour Granite : 4,67,326 m ³ Proposed year wise of Multi Colour Granite : 52,284 m ³ (Multi Colour Granite Recovery @ 50% for first five years - 26,142 m ³ and Granite Waste @ 50% - 26,142 m ³)
20	Boundary Fencing	7.5m & 10.0 m barrier all along the boundary, Fencing will be provided.
21	Disposal of overburden	The top soil of the lease area is 5,796 m ³ . Multi Colour Granite waste forms nearly 50% of ROM and the quantity of granite waste in the five years will be around 26,142 m ³ . Total waste generated in five years is 34,332 m ³ . This rejected wastes are stored in the non-mineable part of the lease area in scattered manner.
22	Ground water	The quarry operation is proposed up to a depth of 23 m below ground level. The water table is below 47 from ground level which is observed from the nearby open wells and bore wells. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.
23	Habitations within 500m radius of the Project Site	There is no Habitation within 300m radius of the project site.
24	Drinking water	Water will be supplied through tankers and drinking water can be purchased from nearby vendors of village Sanga Goundampatti which is approx. 0.83 km from the project site in West Side.

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Project Proponent	Thiru. K. Sakhivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

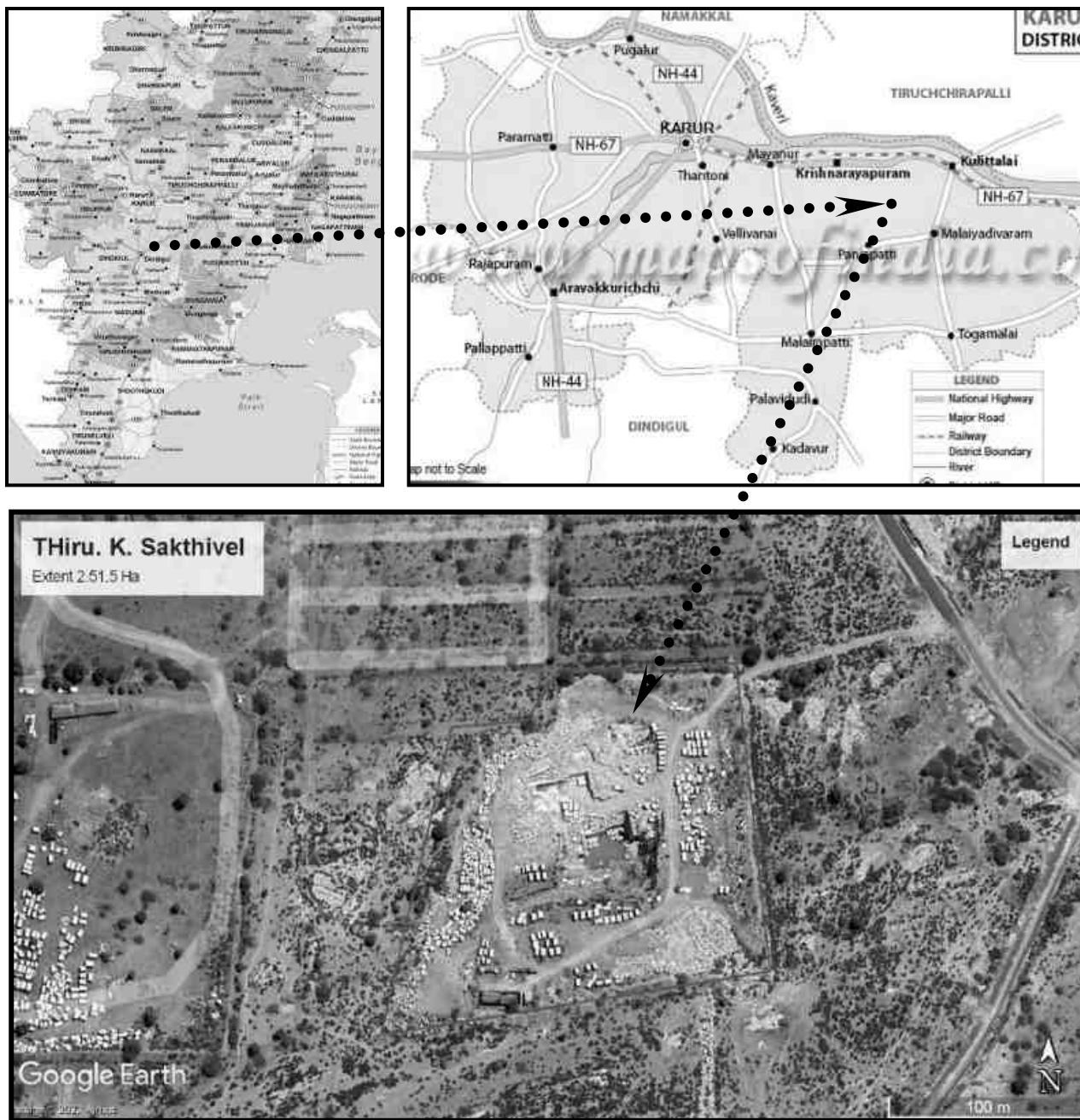


Figure 2-1: Location Map of the Project Site

Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	



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

2.2.1 Site Connectivity:

The site is connected through

- SH 71 – Kulithalai to Manapparai Road - 6.08 km, W

10.13 2.3 Location Details:

Table 2-3: Location Details

S. No	Particulars	Details
1.	Latitude	10° 46' 54.76"N to 10° 46' 47.80"N
2.	Longitude	78° 04' 07.23"E to 78° 04' 15.25"E
3.	Site Elevation above MSL	124 m AMSL
4.	Topography	Undulated Terrain
5.	Land use of the site	Patta Land (Consent Registered)
6.	Extent of lease area	2.51.5 Ha

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Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

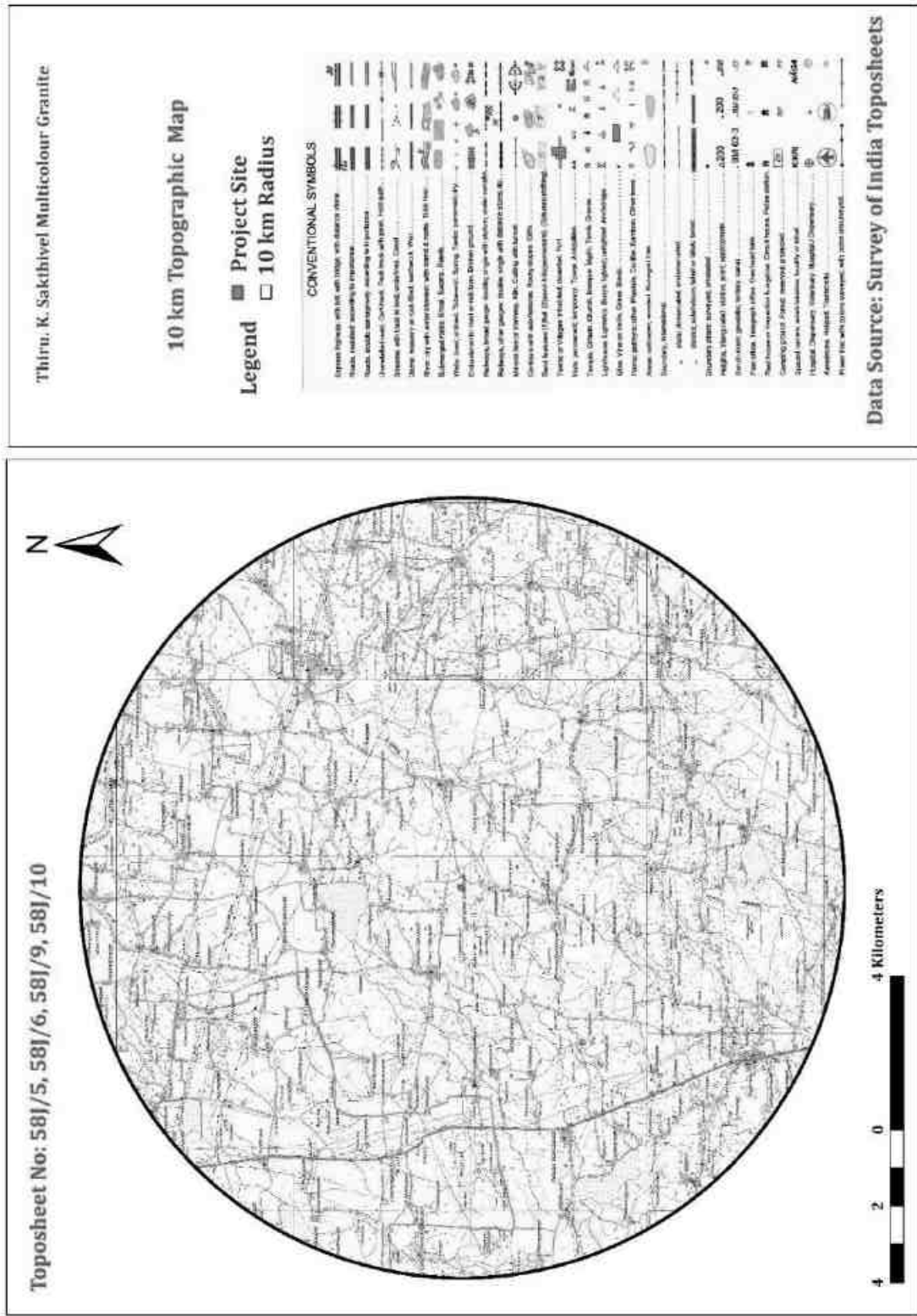


Figure 2-3: Topo Map of Project Site

Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

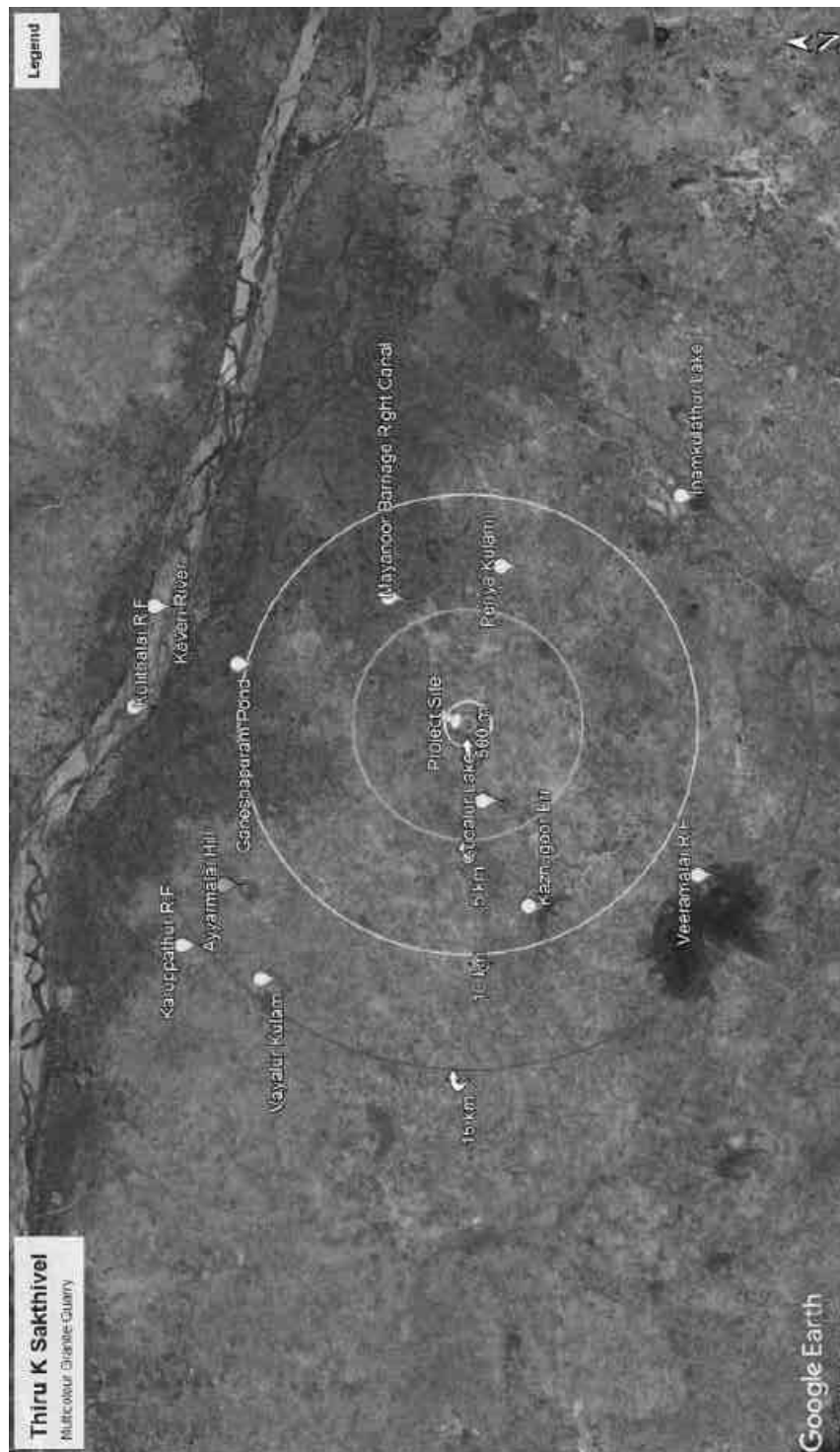


Figure 2-4: Environmental Sensitivity within 15km radius

Project Name	Thiru. K. Sakhivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
Project Proponent	Thiru. K. Sakhivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

2.3.1 Site Photographs

The site photographs of the project site are as follows.



Figure 2-5: Site Photographs

2.3.2 Land Use Breakup of the Mine Lease Area

The Mine Lease area is undulated terrain. The land use pattern of the mine lease area as follows.

Table 2-4: Land use pattern

Description	Present Area (Ha.)	Area to be required at the present scheme period (Ha)	End of life of Quarrying Period (Ha.)
Area under Quarry	0.22.0	0.89.0	2.00.0
Dumps	0.45.0	0.47.0	Backfilling

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Stockyard	Nil	Nil	Nil
Infrastructure	0.01.0	0.01.0	0.02.0
Roads	0.03.0	0.01.0	0.04.0
Green Belt	Nil	0.18.0	0.45.5
Unutilized Area	1.80.5	0.95.5	Nil
Grand Total	2.51.5	2.51.5	2.51.5

2.3.3 Human Settlement

There are no habitations within the radius of 300m. The nearby habitations are as follows

Table 2-5: Habitation

Sl. No	Direction	Village	Population	Distance
1	North	Nallur	600	3.0 km
2	West	Gudalur	500	5.0 km
3	East	Kallai	800	3.0 km
4	South	Puthur	500	4.0 km

10.14 2.4 Leasehold Area

The proposed Multi Colour Granite Quarry mine of 2.51.5 Ha is Patta land. The lease area falls in S.F.No. 351 of Nallur Village, Kulithalai taluk, Karur Districts. 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.

10.15 2.5 Geology

Karur District is comprised of Achaean peninsular gneisses such as Charnockites, Hornblende gneisses, Biotite gneisses and migmatites, dolerites and is intruded by younger formations like pegmatite and quartz veins. The peninsular gneiss/migmatite consists of biotite mica, plagioclase and orthoclase feldspars and Quartz and are found as sheet rocks running to several kms from NNE-SSW as a massive rock formation.

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Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

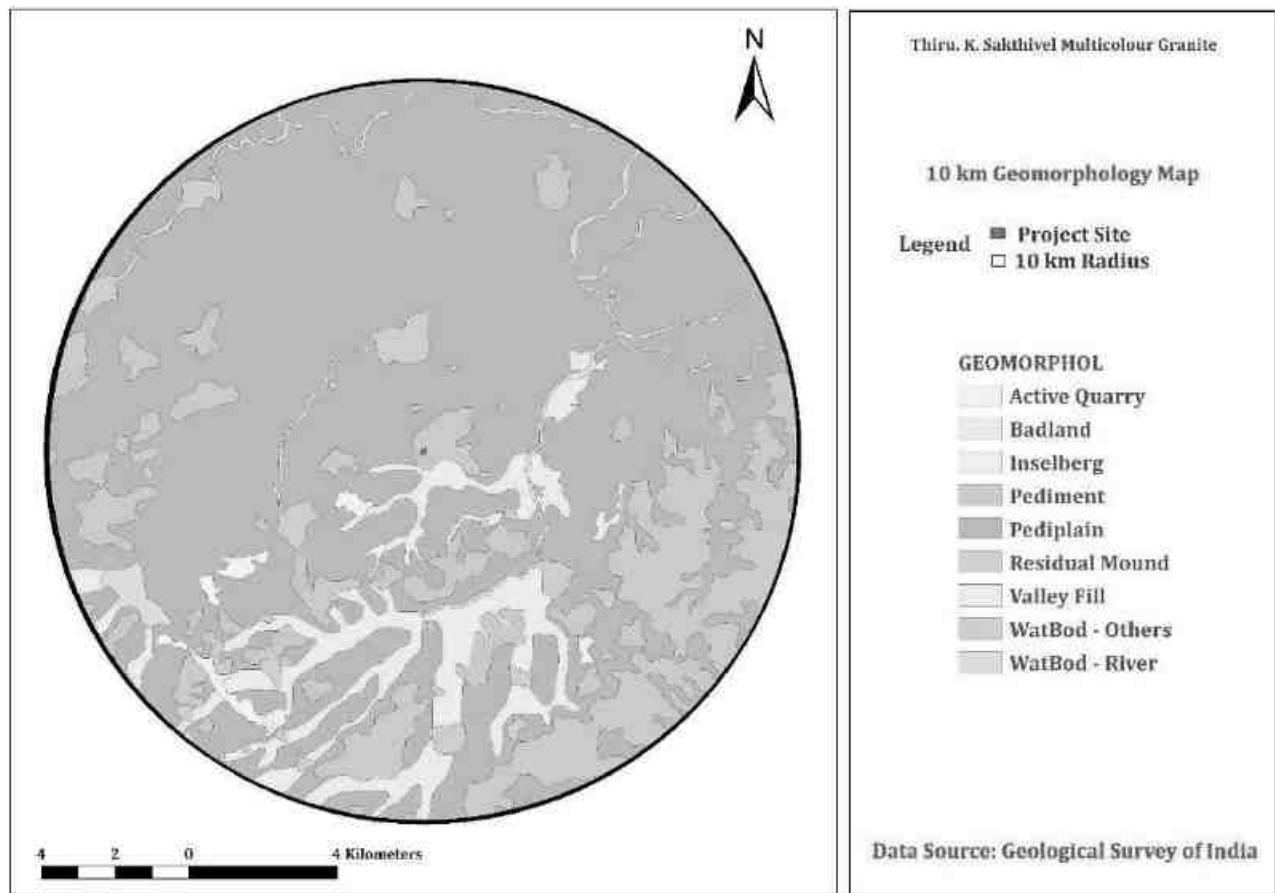


Figure 2-6: Geomorphology

The area applied for quarry lease is a plain ground sloping towards South. The general geological sequences of the rocks in this area are given below.

Description	Geological Age
Top soil	Recent Age
Pegmatite and Quartz veins	Archaean Age
Dolerite Dyke	Archaean Age
Peninsular gneisses and Migmatites	Archaean (Kolar Group)
Biotite gneisses	Archaean complex

The regional rocks mostly composed of Quartz, plagioclase feldspar, Orthoclase feldspar and accessories like mica.

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<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Description	Geological Age
Top Soil gravelly earth	- Recent Age
Pegmatite and Quartz veins	- Archaean Age
Dolerite Dyke	- Archaean Age
Migmatites (Paradiso& Multi)	- Archaean Age (Kolar Group)
Biotite Gneisses	- Archaean Complex

The Regional rocks are mostly composed of quartz, plagioclase feldspar, orthoclase feldspar and accessories like mica.

10.16 2.6 Quality of Reserves:

The mining lease area is of 2.51.5 Ha, with production capacity of **52,284 m³** of Multi Colour Granite, Due to significant role in the domestic as well as infrastructural market, making the mining of Stone along with associated minor minerals is economically viable.

Table 2-6: Details of Mining

S. No	Particulars	Details
1	Method of Mining	Open Cast mechanized
2	Geological Reserves	Multi Colour Granite – 467326 m ³
3	Mineable Reserves	Multi Colour Granite – 235138 m ³
4	Proposed Production	Total Reserve – 52284 m ³ Recoverable Reserve – 26142 m ³
5	Elevation Range of the Mine Site	124 m from MSL

2.6.1 Estimation of Reserves

The geological plan demarcating the commercially viable granite body has been prepared in 1:1000 scale (Plate No. IV). Four sections have been drawn, One along the strike direction as (X-Y) Length wise and another three sections are drawn perpendicular to strike as (A-B), (A1-B1) & (A2-B2) drawn as widthwise. These Sections are suitably chosen to cover maximum area.

The proved depth persistence of 22.0m (2.0m Top Soil + 1.0m Weathered Granite + 19.0m Multi Colour Granite). has been worked out for each cross sectional area. The cross sectional area multiplied by its length of influence on the longer axis gives the volume. The total of the in situ reserves available within the individual cross sectional area gives the Geological Resources of the quarry lease area. From the total Geological in situ Reserves, the quantity of saleable granite stones

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

and quantity of granite waste generation are computed by applying recovery factor of about 60% by volume. As the saleable Multi Colour Granite stone are in terms of cubic meters (Volume) only and not in terms of tonnage as in the case of major industrial mineral, the geological Reserves, mineable reserves and quantum of waste generated etc., are given only in terms of cubic meters. (Volume). The details of estimation of Geological Reserves and Mineable Reserves with reference to the Geological Plan & section and Conceptual Plan & Section as shown in (Plate no. IV and VII) respectively.

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2.6.2 Geological Reserves

The Geological reserve is estimated as 4,67,326 m³ up to a depth of 23.0m (2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite), by area cross sectional method.

Table 2-7: Geological Reserves

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Total Reserve in m ³	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY-AB	I	31	111	2						6882
	II	63	151	1					9513	
	III	63	151	5	47565	47565	23783	23782		
	IV	63	151	5	47565	47565	23783	23782		
	V	76	151	5	57380	57380	28690	28690		
	VI	76	151	5	57380	57380	28690	28690		
TOTAL					209890	209890	104946	104944	9513	6882
XY-CD	I	51	121	2						12342
	II	51	123	1					6273	
	III	51	149	4	30396	30396	15198	15198		
	IV	88	172	5	75680	75680	37840	37840		
	V	88	172	5	75680	75680	37840	37840		
	VI	88	172	5	75680	75680	37840	37840		
TOTAL					257436	257436	128718	128718	6273	12342
GRAND TOTAL					467326	467326	233664	233662	15786	19224

Top Soil = 19224 m³

Weathered Granite = 15786 m³

Total Geological Reserves in ROM = 467326 m³

Recoverable Reserves @ 50% = 233664 m³

Granite Waste @ 50% = 233662 m³

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Total Waste = 268672 m³ Granite waste ratio: = 1:1.14

(* Total Waste- Top soil + weathered granite + Granite waste)

2.6.3 Mineable Reserves

The Mineable reserves are calculated by deducting 7.5m Safety distance and Bench Loss.

The Mineable Reserve is calculated upto a depth of 23.0m (2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite).

Table 2-8: Mineable Reserves

Section	Bench	L (m)	W (m)	D (m)	Volume in m ³	Total Reserve in m ³	Multi-Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY-AB	I	22	89	2						3916
	II	49	122	1					5978	
	III	48	120	5	28800	28800	14400	14400		
	IV	43	110	5	23650	23650	11825	11825		
	V	51	100	5	25500	25500	12750	12750		
	VI	46	90	5	20700	20700	10350	10350		
	TOTAL					98650	98650	49325	49325	5978
XY-CD	I	42	102	2						8568
	II	38	95	1					3610	
	III	37	121	4	17908	17908	8954	8954		

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	IV	69	133	5	45885	45885	22943	22942		
	V	64	123	5	39360	39360	19680	19680		
	VI	59	113	5	33335	33335	16668	16667		
	TOTAL				136488	136488	68245	68243	3610	8568
	GRAND TOTAL				235138	235138	117570	117568	9588	12484

Top Soil = 12484 m³

Weathered Granite = 9588 m³

Total Mineable Reserves in ROM = 235138 m³

Total Waste = 139640 m³

(* Total Waste- Top soil + weathered granite + Granite waste)

Recoverable Reserves @ 50% = 117570 m³

Granite Waste @ 50% = 117570 m³

Granite waste ratio: = 1:1.18

2.6.4 Year wise Production Plan

The year-wise development for the ensuing Five Years period is shown in the plates with cross sections. In view of the development, year wise proposal for the present scheme period is from existing pit towards Middle side of the lease area.

The Proposal for the next five Years reserves are calculated upto a depth of 12.0 m.

Table 2-9: Year wise Production Plan

Year	Section	Bench	L (m)	W (m)	D (m)	Volume in m ³	Total Reserve in m ³	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
Year I	XY-AB	I	42	69	2						5796

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		II	38	63	1					2394	
		III	37	83	4	12284	12284	6142	6142		
		TOTAL				12284	12284	6142	6142	2394	5796
Year II	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL				10000	10000	5000	5000		
Year III	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL				10000	10000	5000	5000		
Year IV	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL				10000	10000	5000	5000		
Year V	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL				10000	10000	5000	5000		
GRAND TOTAL						52284	52284	26142	26142	2394	5796

Top Soil = 5796 m³

Weathered Granite = 2394 m³

Total Reserves ROM = 52284 m³

Total Waste = 34332 m³

Total Production for the next Five Years, Recoverable Reserves @ 50% = 26142 m³

Granite Waste @ 50% = 26142 m³

Granite waste ratio: = 1:1.31

(* Total Waste- Top soil + weathered granite + Granite waste)

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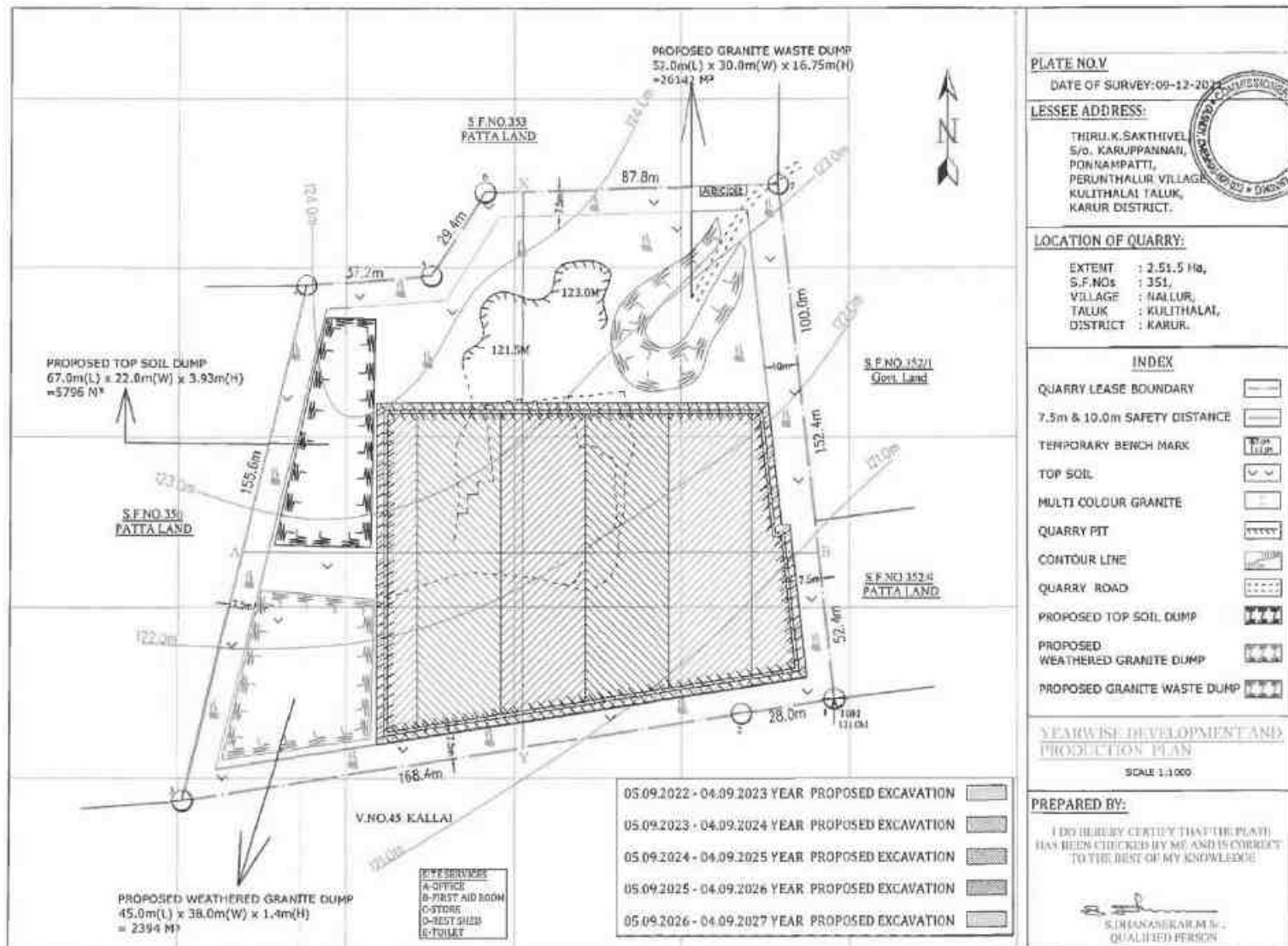


Figure 2-7 Year wise Production Plan

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2.7 Type of Mining

The proposed project is an open cast mechanized mining with one 1.0 m bench for Top soil followed by 5.0m vertical bench with a bench width not less than the bench height. However, as far as the quarrying of Granite is concerned, observance of the provisions of regulations 106(2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence, it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106(2) (b) of MMR-1961, under Mines Act- 1952.

2.7.1 Method of Working:

In mechanized mining help of compressors, drilling, machine, various diamond saws, wire saws, channeling machines, wedges and broaching tools, cranes, dumpers etc., is taken. Endless braided steel wires and diamond saws are employed for cutting blocks. Jet channeling or jet piercing is quite common. In some mines flame cutting is done to cut the rocks.

In this proposed Quarry area under consideration mining will be done by opencast semi-mechanized method.

2.7.2 Overburden

The Top soil of the lease area is 5796 m³ for the next five years, Weathered granite is 2394 m³. Multi Colour Granite waste forms nearly 50 % of ROM and the quantity of granite waste in the five years will be around 26142 m³. The Total waste generated will be 34,332 m³. Granite Waste will be dumped in the North Eastern side of the lease area for the next five years. The generated top soil during the entire life of the quarry will be utilized for construction of bunds, road and afforestation purpose. Suitable specific trees to be grown over in such soil dumps will be identified with the help of agriculture experts to evolve proper afforestation plan. Weathered Granite will be dumped in the western side of the lease area.

Description	Length (m)	Width (m)	Depth (m)	Total (m³)
Granite Waste Dump	52	30	16.75	26142
Weathered Granite Dump	45	38	1.4	2394
Topsoil Dump	67	22	3.93	5796

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Total Dump	34332
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2.7.3 Machineries to be used

Type of machineries proposed for quarrying operation for the entire project is listed below.

Table 2-10: List of Machineries used.

S.No	Type	Nos	Dia Hole mm	Size Capacity	Make	Motive power
1	Jack hammer & Accessories	4	35	1.2m to 6m	Atlas Copco	Compressed air
2	Compressor	1	7.5kgs/cm ²	400 psi	ELGI	Diesel Drive
3	Diamond wire saw	1	-	30 m ³ /Day	Optima	Diesel Generator
4	Gen set	1	-	Powerica	-	CP 125 D5P (H.P)
5	Excavator	1	-	300	Tata Hitachi	Diesel Drive
6	Tippers	2	-	10 tonnes	Tata	Diesel Drive

2.7.4 Blasting:

2.7.4.1 Blasting Pattern:

During future development of quarrying, removal of Top soil will be done by excavator and mild blasting with explosives in holes drilled by jack hammer of 32 mm dia especially. No deep hole blasting is proposed. The mining only done wire saw cutting. Authorized explosive dealers supply the explosive at site as per the requirement.

2.7.4.2 Drilling & Blasting:

The drilling and blasting parameters are in correlation with the proposals laid down in the approved mining plan. Shallow holes of 32mm dia. holes are drilled and the depth of hole will be generally about 1.0m. Water sprinkled for suppression of air borne dust on Mine haulage roads and waste dumps on regular intervals by water tankers. Drilling of blast holes will be always under wet condition to prevent flying of dust. In the unloading point of Tippers, water was sprinkled and further the drillers were provided with respirators in accordance with mines regulations.

Conventional low explosives were used. Since the dimensional stones, which are needed to be without internal cracks, high explosives were not used. The scale of blasting was however very less

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considering the rate of production. Muffle blasting was not necessary as the area was free from dwelling houses, public utilities etc., Now wire saw machine is being utilized for primary cutting to liberate the required sizes of block from the parent rock The secondary splitting of the blocks been done by pressure-split method with the help of feather and wedges. In view of above, there is no adverse effect on dust, noise and ground vibration by mining activities.

2.7.4.3 Storage & Safety measures taken during blasting:

The project proponent “Thiru. K. Sakthivel” will engage an authorized explosive agency to carry out the small amount of blasting (if necessary) and it will be supervised by Permit Mines Manager.

2.8 Man Power Requirements and Organization Chart

The manpower requirement to meet out the production Schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations is as follows.

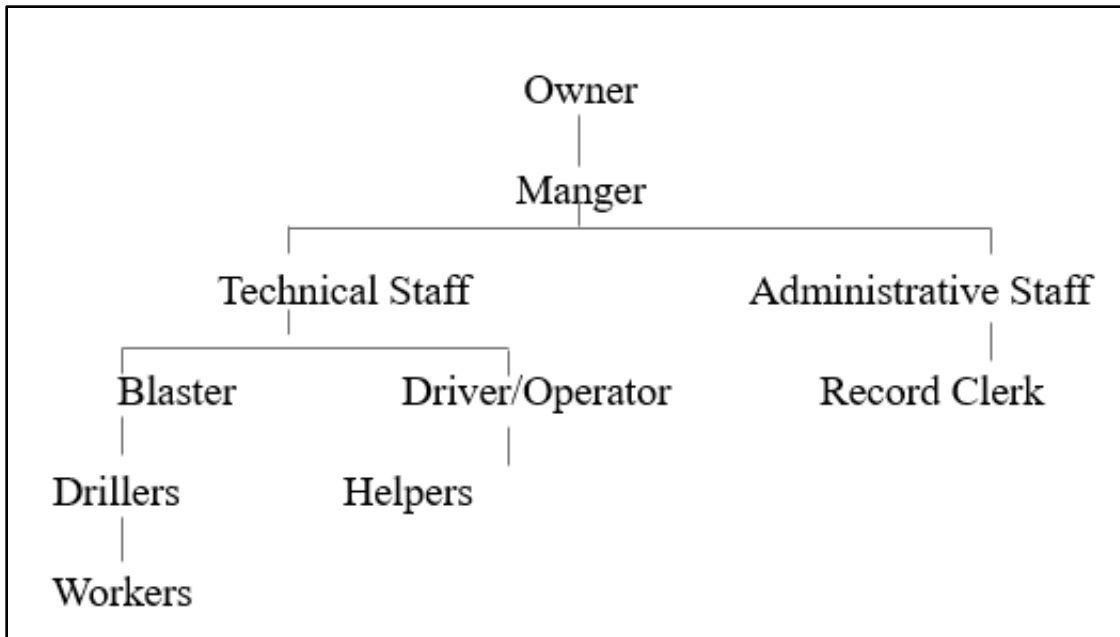
Table 2-11: Man Power Requirements

1.		Manager	1 No
2.		Record Clerk	1 No
3.	High-Skilled	Supervisor Cum Blaster	1 No
4.	Skilled	Compressor / Wagon Drill Operator	1 No
		Drillers/ Workers	5 Nos
		Excavator/ Rock Breaker Operators	3 Nos
		Vehicle Drivers	2 Nos
5.	Semi- Skilled	Watchmen	1 No
6.	Unskilled	Dresser/ Cutter	9 Nos
Total			24 Nos.

No child less than 18 years will be entertained during quarrying operations.

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ORGANISATION CHART



2.8.1 Water Requirement

Total water requirement for the mining project is 2.25 KLD. Domestic water will be sourced from nearby Sanga Goundampatti Village and other water will be source from nearby road tankers supply.

Table 2-12: Water Requirement

Purpose	Quantity	Sources
Domestic & Flushing	1.25 KLD	Drinking water will be brought from the approved water vendors in the nearby villages.
Green belt	0.5 KLD	Other domestic activities through road tankers supply
Dust suppression	0.5 KLD	From road tankers supply
Total	2.25 KLD	

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2.9 Project Implementation Schedule

The implementation schedule of the proposed Mine Lease of Thiru. K. Sakthivel (2.51.5 Ha) is as follows.

Table 2-13: Mining Schedule

MINING SCHEDULE					
Activity	Oct-24	Oct -25	Oct -26	Oct -27	Oct -28
Site Clearance					
Excavation - Top Soil Removal/Overburden					
I Year Production – 6142 Cum – Multi Colour Granite					
II Year Production – 5000 Cum – Multi Colour Granite					
III Year Production – 5000 Cum – Multi Colour Granite					
IV Year Production - 5000 Cum – Multi Colour Granite					
V Year Production - 5000 Cum – Multi Colour Granite					

2.9 Solid Waste Management

Table 2-14: Solid Waste Management

S. No	Type	Quantity	Disposal Method
1	Organic	6.48 kg/day	Municipal bin including food waste
2	Inorganic	4.32 kg/day	TNPCB authorized recyclers

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

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2.11 Mine Drainage

The quarry operation is proposed up to a depth of 25 m below ground level. The water table is below 52-60m from the ground level which is observed from the nearby bore wells and bore wells of this area. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.

2.12 Power Requirement

The proposed Multi Colour Granite Building Stone quarrying does not required any power supply for the quarrying operation. **16 Liter** diesel per hour used for excavator whenever needed.

2.13 Project Cost

S. No	Description of cost	Cost of lakhs
A	Fixed Asset cost:	
1	Land cost	Rs. 30,00,000/-
2	Labour Shed	Rs.1,50,000/-
3	Sanitary Facility	Rs. 70,000/-
4	Fencing Cost	Rs. 1,00,000/-
	Total Fixed Asset cost	Rs. 33,20,000/-
B	Operational cost:	
1	Excavator	Rs. 55,00,000/-
2	Tipper 2 Nos	Rs. 20,00,000/-
3	Wire Saw	Rs. 8,00,000/-
4	Compressor with loose tools	Rs. 10,00,000/-
	Machinery Cost	Rs. 93,00,000/-
C	EMP Cost:	
1	Year 1	Rs. 2641013
2	Year 2	Rs. 1197605

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3	Year 3	Rs. 1257027
4	Year 4	Rs. 1319420
5	Year 5	Rs. 1384933
EMP Cost		Rs. 78,00,000
Total Project cost		Rs. 2,04,20,000/-

Grand Total project Cost = Rs. 2,04,20,000/-

2.14 Greenbelt Development

1. The development of greenbelt in the peripheral buffer zone of the mine area.
2. Green belt has been recommended as one of the major component of Environmental Management Plan, which will improve ecology, environment and quality of the surrounding area.
3. Local trees like Neem will be planted along the lease boundary and avenues as well as over non-active dumps at a rate of 252 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table 2-15 Plantation/ Afforestation Program

Sl.No	Name of the species		Survival rate expected in %	No. of trees expected to be grown
	Scientifical Name	Common Name		
1	<i>Azadirachta indica</i>	Neem	80 %	450
2	<i>Pongamia pinnata</i>	Pungam	80 %	300
3	<i>Pterocarpus marsupium</i>	Vengai	80 %	150
4	<i>Cassia fistula</i>	Sarakondrai	80 %	190
5	<i>Aegle marmelos</i>	Vilvam	80 %	50
6	<i>Lagerstroemia speciosa</i>	Poo Marudhu	80 %	50
7	<i>Mimusops elengi</i>	Magizha maram	80 %	70
Total				1260

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3 Description of the Environment

3.1 General:

The method of mining for extracting Multi Colour Granite quarry 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 10 km 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.

We have obtained Terms of Reference from SEIAA vide TOR Identification No. TO23B0108TN5594047N Dated: 22.04.2024.

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The baseline monitoring is carried out in April to May 2024 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, Envirotech APM 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 April to May 2024.

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	7 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	7 locations	24 hourly Once in 7 locations

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Water (Ground water) pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Fluoride, Nitrate, Sodium, Potassium, Salinity, Total nitrogen, Total Coliforms, Fecal Coliforms	7 locations	Once in 7 locations
Water (surface water) pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Fluoride, Nitrate, Sodium, Potassium, Salinity, Total nitrogen, Total Coliforms, Fecal Coliforms	2 locations Sample from nearby lakes/river	One-time Sampling
Soil (Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	7 locations	Once in 7 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

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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)

3.1.5.1 Study area details

Table 3-2 Study area details

S. No	Description	Details	Source
1.	Project Location	S.F.No. 351, Nallur Village, Kulithalai Taluk, Karur District.	Field Study
2.	Latitude & Longitude	Latitude : 10°47'40.9465"N - 10°47'35.0079"N Longitude: 78°27'6.0451"E - 78°27'0.2310"E	Topo Sheet
3.	Topo Sheet No.	58 J/5	Survey of India Toposheet
4.	Mine Lease Area	2.51.5 Ha	--
Demography in the study area (as per Census 2011)			
5.	Total Population	8,47,387	Census Survey of India
6.	Total Number of Households	1,28,518	
7.	Maximum Temperature (°C)	40	IMD
8.	Minimum Temperature (°C)	26.3	
9.	Ecological Sensitive Areas - Wetlands, watercourses or other waterbodies, coastal zone, biospheres,	Nil	Google Earth/Field Study

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	mountains, forests				
10.	Densely Populated area	Verul (2.0 km, NW)			
11.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Schools & Colleges		Google Earth/ Field Study	
		1	Government School, kallai		2.65 km, E
		2	P.U Metriculation School, Nallur		2.66 km, N
		3	Government Middle School, Kuppachipatti		8.74 km, NW
		4	J.J College of Engg & Technology		13.89 km, SE

3.1.6 Site Connectivity:

- SH - 71 - Kulithalai - Manapparai Road - 6.08 km, W

10.17 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.

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.

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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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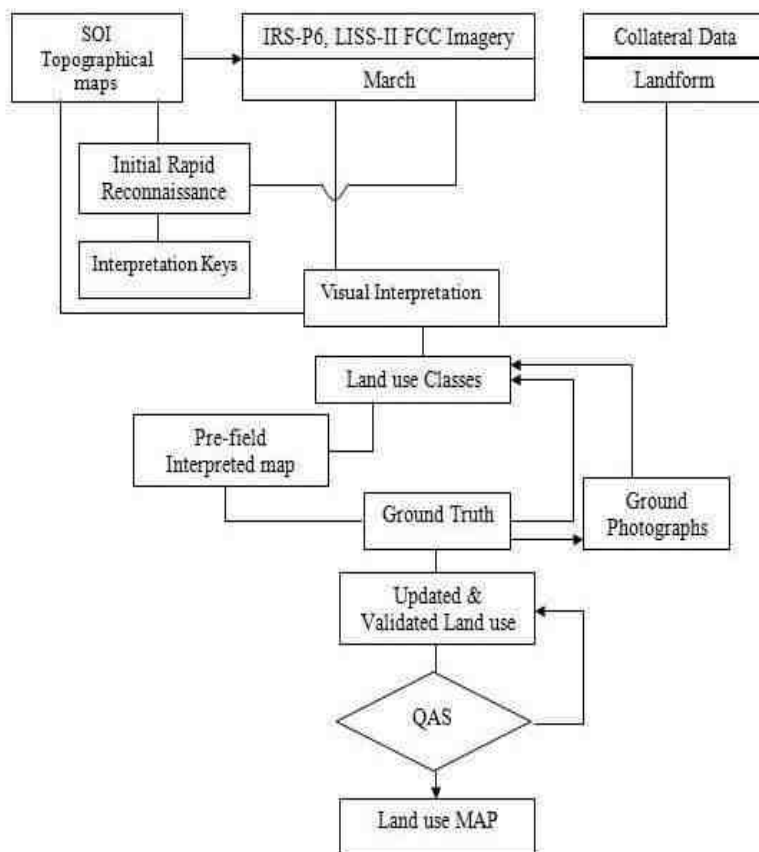


Figure 3-1 Flow Chart showing Methodology of Land use mapping

3.2.3 Satellite Data

IRS Resourcesat-2 LISS-III multispectral satellite data of 05th March 2016 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 and SOI topo sheets of 47-F/01,02,03 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. Field Verification

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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.

3.2.6 Description of the Land Use / land cover classes

3.2.6.1 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. The built- up in 10 km radius from the proposed project site is as follows.

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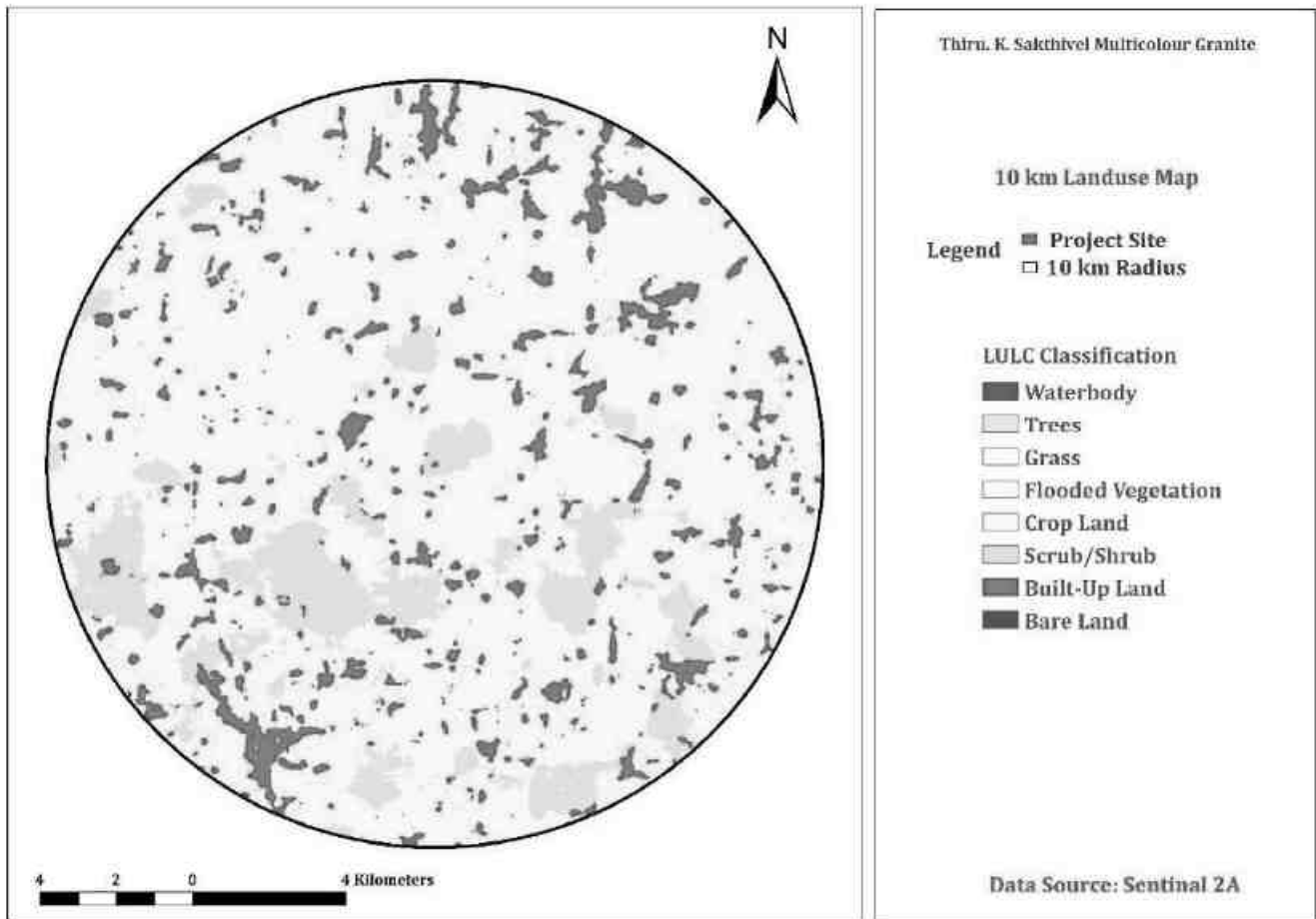


Figure 3-2 Land use classes around 10 km radius from the project site

3.2.6.2 Different Land use classes around 10 km radius from the project site

Table 3-3 Land use pattern in 10 km Radius

Sl.No	Categories	Area in Hectares
1	Water Body	0.0407
2	Trees	0.305
3	Grass	0.008
4	Flooded Vegetation	250.37
5	Crops	35.63
6	Scrub/Shrub	27.22
7	Built-up Area	0.0027
8	Barren Land	0.45

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3.3 Water Environment

3.3.1 Contour & Drainage

The project site is 124 m from MSL. The drainage pattern within in the 10 km of the project site is dendritic.

3.3.2 Geomorphology

Karur District is comprised of Archaean peninsular gneisses such as Charnockites, Hornblende gneisses, Biotite gneisses and migmatites, dolerites and are intruded by younger formations like pegmatite and quartz veins. The peninsular gneisses/migmatite consists of biotite mica, plagioclase and orthoclase feldspar and quartz and are found as heat rocks running to several kms from NNE-SSW as a massive rock formation. The order of superposition of geological sequence are given as under,

ROCK TYPE:

Top Soil gravelly earth	- Recent Age
Pegmatite and Quartz veins	- Archaean Age
Dolerite Dyke	- Archaean Age
Migmatites (Paradiso& Multi)	- Archaean Age (Kolar Group)
Biotite Gneisses	- Archaean Complex

The Regional rocks mostly composed of quartz, plagioclase feldspar, orthoclase feldspar and accessories like mica.

The geological formations of the district belong mainly to Archaean age along with rock of Proterozoic age. The former is represented by Khondalite Group of rocks, Charnockite Group of rocks, Migmatites Complex, Santhyamangalam Group of rocks, while the latter is represented by Alkaline rocks. The Khondalite Group includes garnet sillimanite gneiss and quartzite which occur as small patches. The migmatite complex includes garnetiferous quartz of eld spathic gneiss and hornblende biotite gneiss, the former exposed on the western part of the district. The Santhyamangalam Group includes fuchsite quartzite, sillimanite mica schist and amphibolites. The Bhavani Group in this area includes fissile hornblende-biotite gneiss, granitoid gneiss and pink migmatite. Amphibolites with barbed ferruginous quartzite and associated quartzo- feldspathic

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rocks (Champion Gneiss) represent the Kolar group and are found west and southwest of Veppanapalli. Following this there are basic intrusions occurring as dykes.

The Charnockite Group occupies a major part of the south-west portion of this district with small bands of Garnetiferous quartzo-feldspathic gneiss, Granite gneiss and dolerite dykes. The North-East and Northern part of the district mainly consist of granite gneiss with small patches of Pink Migmatite, hornblende-biotite gneiss and dolerite dykes. The Eastern part of the district consists of Epidote-Hornblende Gneiss, Ultra Mafics, Syenite and Carbonatite.

The Alkaline Complex is represented by epidote-hornblende gneiss, ultramafics, syenite and carbonatite and these are distributed in the eastern part of the district. Innumerable basic dykes and felsites, quartz, barites and pegmatite veins form part of the Alkali Complex.

The geomorphologic study is done within 10 km from the project site. The major formations are

- Denudational Origin- Pediment Pediplain Complex: The groundwater condition in pediments generally varies depending upon the type of underlying folded structures, fracture systems and degree of weathering. Groundwater prospecting in pediments is considered as normal to poor.

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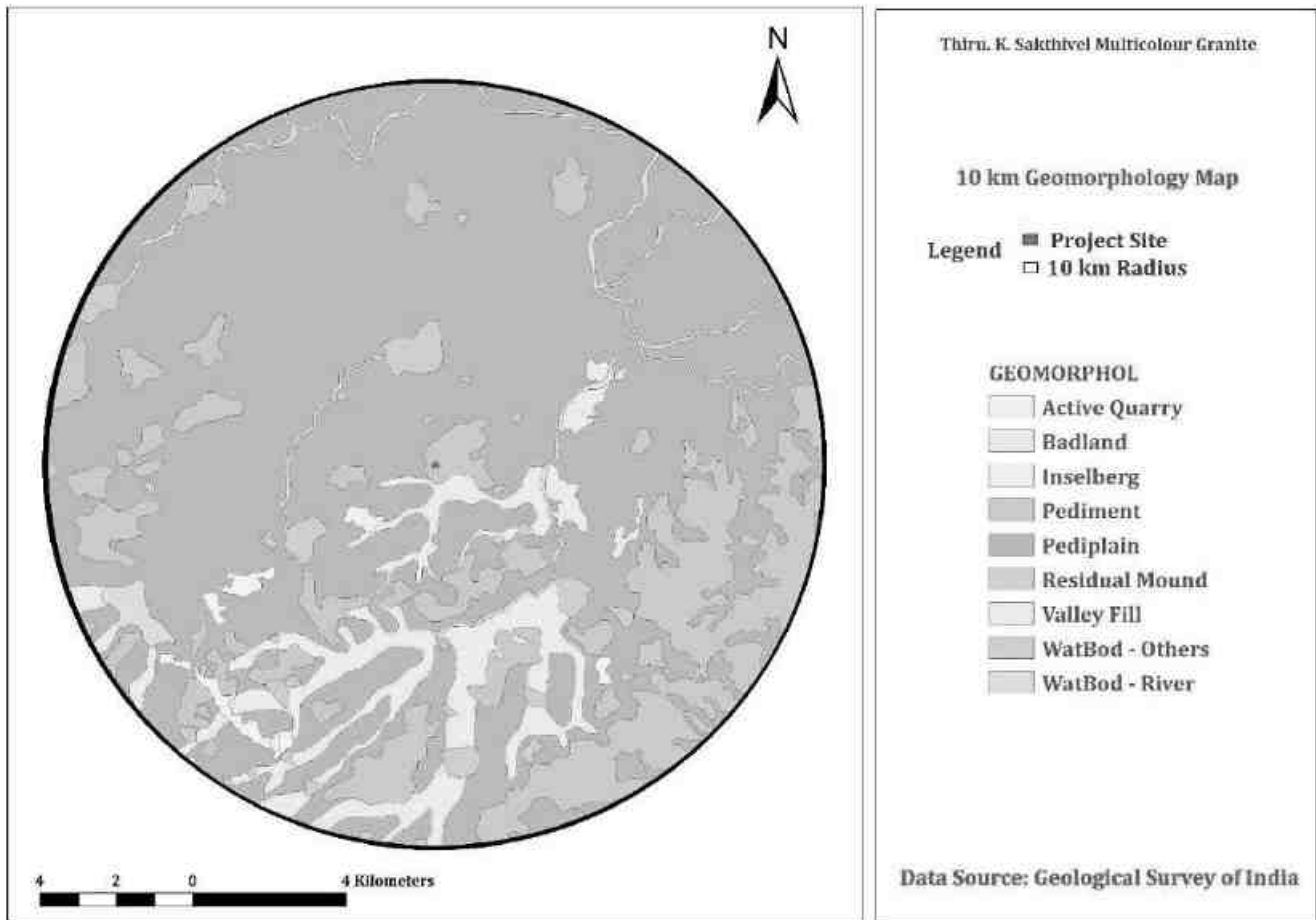


Figure 3-3 Geomorphology within 10km from the project site

3.3.3 Geology:

The area of mining lease comprised of Migmatite, a type of Multi Colour Granite. Its mineral constituents are biotite, Quartz, orthoclase feldspar, and plagioclase feldspar. The biotite is fine grained and other minerals are medium grained. The graphic texture and intergrowth of quartz and feldspar indicates that younger intrusive were invaded into the pre-existing country rock, which preferably would have been biotite gneisses (Peninsular Gneisses), Flowage structure and texture of rock indicates deep seated metamorphism at high temperature and pressure. Xenolith of schistose rock is also found in the adjacent Peninsular Gneisses which indicates assimilation of older rocks by the younger intrusive. Therefore, it is clear from the regional flow structure and texture of Xenolith, the rock would be a type of Migmatite. Since the fine-grained biotite is rich in assemblages

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shows a grey shade to the Granite. The pinkish colour of the rock is due to rich fresh orthoclase feldspar. Dimensional cutting and polishing of these types of hard and compact rocks exhibits an attractive pinkish and grey shades of background with attractive wave patterns. It is a part of peninsular gneisses migmatite by younger intrusive. It is commercially called as Paradiso by the buyers in view of its wave pattern of accessory minerals.

The rock is hard, compact and sheet in nature so as to cut required sizes of blocks.

The mineral constituents of the rock mass shall be about Orthoclase feldspar 40%, quartz roughly 25%, Plagioclase feldspar 25%, mica 15% and others 5%.

Lease Area

The area applied for lease is situated in a Plain terrain with an average height of 5.0 meters gently sloping towards southwest. The rock type available in the area is granite gneiss having a general trend of N30°E to S30°W with dipping towards 80° West. Surface level outcrops of multi-colour granite deposits is observed on the north eastern side and in other areas concealed under top soil + weathered Rock and overburden having an average thickness of 3.0 meters. Below which massive formation may encounter. This rock type is having wavy pattern with quartz, orthoclase feldspar as major constituents, pyroxene, mica, garnet and other mafic minerals as accessories. The average recovery percentage is around 60%.

The Multi Colour Granite deposits of this area are rich in orthoclase feldspar with excellent wave pattern. It is commercially called as Paradiso. It is mainly composed of mineral constituents such as biotite, Quartz, orthoclase feldspar and less plagioclase feldspar. It is a type of para gneiss with alternative bands of orthoclase and dark minerals. The biotite is fine grained and other minerals like alkaline and soda feldspars are medium grained. The flow structure, equigranular texture and presence of fresh orthoclase feldspars indicates that it is a type of Migmatite with purple colour feldspar. Presence of Xenoliths is common in this Multi Colour Granite. Dimensional cutting and polishing of these type of hard and compact rocks exhibits an attractive alternative bands of light pink and dark minerals with excellent wave patterns.

It is a Multi Colour granite covered partly by gravelly soil. The rock is hard, compact and sheet in nature so as to cut required sizes of blocks. The mineral constituents of the rock mass shall be about Orthoclase feldspar 45%, Quartz roughly 20%, Plagioclase feldspar 15%, mica 15% and others 5%.

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Geological setting and structure:

The order of geological sequence are,

Description		<u>Geological Age</u>
Top Soil- (Intermittent)	-	Recent
Migmatite (Paradiso) with wave Pattern	-	Archaean
Biotite Gneisses (Peninsular Gneisses)	-	Archaean

The Top soil cover is found all around the exposures of outcrops of Multi Colour Granite. The trend of the rock formation is N300E – S300W direction dipping towards 800 West. The regional trend is shown in the geological plan. The Multi-Colour Granite that occur in this area is massive with less boulders of fractures. It is suitable for commercial exploitation of gang saw size rough blocks.

3.3.4 Hydrogeology

Karur district is underlined by Archaean crystalline formations with Recent alluvial deposits of limited areal extent and thickness along the courses of major rivers. The occurrence and movement of ground water are controlled by various factors such as physiography, climate, geology and structural features. Weathered, and fractured crystalline rocks constitute the important aquifer systems in the district. Ground water generally occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fractured zones at deeper levels. The thickness of weathered zones in the district ranges from less than a meter to more than 28 m. The yield of large diameter dug wells in the district, tapping the weathered mantle of crystalline rocks ranges from 100 to 500 lpm. These wells normally sustain pumping for 2 to 6 hours per day, depending upon the local topography and characteristics of the weathered mantle. The depth to water level (DTW) during pre-monsoon (May 2006) ranged between 0.5 and 9.9 m bgl in the district. In major parts of the district the DTW is more than 5.5 mbgl. Whereas it ranged between 2 and 9.9 m bgl during post monsoon, in the district and the DTW is in the range of 5 – 10 m bgl in the entire district except a few isolated pockets. The yield of successful exploratory wells drilled in the district ranged from 0.78 lps to 26 lps. As per the studies the wells drilled in granitic gneiss have higher yields than the wells drilled in charnockites. The specific capacity of the wells ranged from 1.2 to 118.0 lpm/m/dd. The piezometric head of fracture zones varied between 0.50 and 18.45 m bgl.

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3.3.5 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	April to June 2024
Design Criteria	Based on the Environmental settings in the study area
Monitoring Locations	Project Site – GW 1 St. Xavier Roman Catholic Church, Perur Uthayapatti – GW 2 Government Higher Sec School, Kalugur – GW 3 Government School, Kallai – GW 4 Shri Kaaliyamman Temple, Thalinji – GW 5 Sri Kaaliyamman Temple, Kalingapatti – GW 6 Pattathazhachi Amman Temple, Kosur – GW 7
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

3.3.5.1 Sampling Procedure

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

S. No	Parameters	Test Method
1	pH (at 25°C)	IS:3025(P -11)1983 RA: 2012
2	Electrical Conductivity	IS:3025(P -14) 2013
3	Colour	IS:3025 (P -4)1983 RA: 2012
4	Turbidity	IS:3025(P -10)1984 RA: 2012
5	Total Dissolved Solids	APHA 23 rd Edn.2017-2540-C
6	Total Suspended Solids	IS:3025(P-17)-1984 RA:2012
7	Total Hardness as CaCO ₃	APHA 23 rd Edn.2017-2340-C
8	Calcium Hardness as CaCO ₃	APHA 23 rd Edn2017.3500 Ca-B
9	Magnesium Hardness as CaCO ₃	APHA 23 rd Edn.2017-3500 Mg-B
10	Calcium as Ca	APHA 23 rd Edn2017.3500 Ca-B
11	Magnesium as Mg	APHA 23 rd Edn.2017-3500 Mg-B
12	Chloride as Cl	IS:3025(P -32)-1988 RA: 2014
13	Sulphate as SO ₄	APHA 23 rd Edn.2017-4500 SO ₄ -E
14	Total Alkalinity as CaCO ₃	APHA 23 rd Edn.2017-2320-B
15	Iron as Fe	IS:3025(P -53):2003 RA: 2014
16	Silica as SiO ₂	IS:3025(P -35)1988 RA: 2014
17	Fluoride as F	APHA 23 rd Edn.2012-4500-F-D
18	Nitrate as NO ₃	IS:3025(P -34):1988 RA: 2014
19	Potassium as K	IS:3025(P -45):1993 RA: 2014
20	Sodium as Na	IS:3025(P -45):1993 RA: 2014

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Table 3-6 Ground water sampling results

S. No	Parameters	Units	GW 1	GW 2	GW 3	GW 4	GW 5	GW 6	GW 7
1	pH (at 25°C)	-	8.3	7.21	8.44	8.42	8.18	7.89	7.59
2	Electrical Conductivity	µS/cm	2644	1549	1871	995	2990	1680	1131
3	Colour	Hazen Unit	BQL(LOQ:5)	BQL(LOQ:5)	BQL(LOQ:5)	BQL(LOQ:5)	BQL(LOQ:5)	BQL(LOQ:5)	BQL(LOQ:5)
4	Turbidity	NTU	BQL(LOQ:1)	BQL(LOQ:1)	BQL(LOQ:1)	BQL(LOQ:1)	BQL(LOQ:1)	BQL(LOQ:1)	BQL(LOQ:1)
5	Total Dissolved Solids	mg/L	1605	935	1265	612	1844	1110	692
6	Total Suspended Solids	mg/L	BQL(LOQ:2)	BQL(LOQ:2)	BQL(LOQ:2)	BQL(LOQ:2)	BQL(LOQ:2)	BQL(LOQ:2)	BQL(LOQ:2)
7	Total Hardness as CaCO ₃	mg/L	959	376	770	376	429	526	483
8	Calcium Hardness as CaCO ₃	mg/L	409	243	447	240	174	228	308
9	Magnesium Hardness as CaCO ₃	mg/L	550	133	323	136	255	304	175

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10	Calcium as Ca	mg/L	164	97.5	179	96	70	90.4	123
11	Magnesium as Mg	mg/L	134	32.3	78.6	32.9	61.9	73.1	42.5
12	Chloride as Cl	mg/L	502	249	309	99.3	626	261	202
13	Sulphate as SO ₄	mg/L	161	141	131	77.5	130	32.9	40.1
14	Total Alkalinity as CaCO ₃	mg/L	265	265	447	293	572	568	117
15	Iron as Fe	mg/L	BQL(LOQ:0.1)	BQL(LOQ:0.1)	BQL(LOQ:0.1)	BQL(LOQ:0.1)	BQL(LOQ:0.1)	BQL(LOQ:0.1)	BQL(LOQ:0.1)
16	Silica as SiO ₂	mg/L	56.3	29.4	31.9	25.8	51.3	52.6	21.4
17	Fluoride as F	mg/L	0.874	0.514	0.633	0.216	0.699	0.311	0.428
18	Nitrate as NO ₃	mg/L	22.5	23.6	27.1	16.6	19.7	21.1	14.4
19	Potassium as K	mg/L	21.8	10.3	15.7	6.92	145	15.2	12.3
20	Sodium as Na	mg/L	385	189	223	73.9	410	223	165

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3.3.6 Interpretation of results:

3.3.6.1 Physical parameters of water:

The basic physical parameters of water include

Colour:

Value observed in Project Site (True/Apparent Color): BQL (LOQ:5). Value of Color for all the locations are less than 5 and this value is less than permissible limit of IS:10500.

Acceptable and permissible limits: 5 Hazel units and 15 Hazel units respectively. The value in the project site is less than the acceptable limits prescribed by IS 10500:2012 (referred as “Standards” from herein).

Odour & Taste:

The water is odourless. The taste of the water is slightly salty which is due to the presence of hardness in water, which is attributed to the presence of calcium and magnesium in the water. As per the standards, the odour and taste should be agreeable.

pH:

Value observed in the Project Site: 8.3

Acceptable and permissible limits: 6.5-8.5. The pH value is the measure of acid – base equilibrium. The value of pH in the project site clearly indicates that water is slightly base in nature.

Turbidity:

Value observed in the Project Site: BQL(LOQ :1) NTU.

Acceptable and permissible limits: 1 NTU & 5 NTU respectively. The value of turbidity generally indicates the presence of phytoplanktons and other sediments. The value in the project site indicates the water is less turbid and no any physical treatment is required to treat the turbidity of the water.

Total Dissolved Solids:

Value observed in the Project Site: 1605 mg/L.

Acceptable and permissible limits: 500 mg/L and 2000 mg/L respectively.

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The TDS is the presence of the inorganic salts and small amounts of organic matter present in the water. This is mainly due to the result of surface runoff as the cations and anions in the top soil is carried away by the water. The value in the project site indicates the water is less turbid.

3.3.6.2 Chemical parameters of water:

The chemical parameters of the drinking water include,

Calcium:

Value observed in the Project Site: 164 mg/L.

Acceptable and permissible limits: 75mg/L and 200 mg/L respectively.

Calcium is the essential macronutrient. The value of the calcium is within the prescribed permissible standards. The higher level of calcium may cause hardening in domestic equipment and will also reduce the detergent efficiency. Higher levels of calcium will lead to constipation, gas, and bloating. Apart from that, extra calcium may also increase the risk of kidney stones. If the calcium deposit in blood is high, it may lead to hypercalcemia.

Magnesium:

Value observed in the Project Site: 134 mg/L.

Acceptable and permissible limits: 30 mg/L and 100 mg/L respectively.

The value of Magnesium in the project site is higher than permissible limit. The increase in the level of magnesium will cause diarrhea and vomiting in children.

Chloride

Value observed in the project site: 502 mg/L.

Acceptable and permissible limits: 250 mg/L and 1000 mg/L respectively.

The chloride level in the project site is within the acceptable and permissible limit. If the level of chloride is more, it may cause galvanic and pitting corrosion, increases level of metals. It imparts bitter taste to the water.

Hardness:

Value observed in the Project Site: 959 mg/L.

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Acceptable and permissible limits: 200 mg/L and 600 mg/L respectively.

The value of Hardness in the project site is greater than the permissible limit. The increase in the level of hardness may cause corrosion and scaling problems, increased soap consumption and it also contributes to the salty taste of water.

3.3.7 Surface Water Analysis

Surface water samples were taken from pond at Project site. The results are summarized below.

Table 3-7 Surface Water Sample Results

S. No.	Parameters	Units	Canal	Mayanur Barrage Right Canal
1	pH (at 25°C)	-	8.38	8.29
2	Electrical Conductivity	µS/cm	145	1086
3	Colour	Hazen Unit	35	50
4	Turbidity	NTU	37.4	52.4
5	Total Dissolved Solids	mg/L	89.7	615
6	Total Suspended Solids	mg/L	72	112
7	Total Hardness as CaCO ₃	mg/L	10.5	319
8	Calcium Hardness as CaCO ₃	mg/L	6.65	163
9	Magnesium Hardness as CaCO ₃	mg/L	3.85	156
10	Calcium as Ca	mg/L	2.66	65.4
11	Magnesium as Mg	mg/L	BQL(LOQ:1)	37.8
12	Chloride as Cl	mg/L	19.7	112
13	Sulphate as SO ₄	mg/L	2.65	71.5
14	Total Alkalinity as CaCO ₃	mg/L	53	303
15	Iron as Fe	mg/L	1.05	2.04
16	Silica as SiO ₂	mg/L	3.01	20.9
17	Fluoride as F	mg/L	0.21	0.78
18	Nitrate as NO ₃	mg/L	10.3	32.3

Inference: The surface water quality is compared with the CPCB Water Quality Criteria against A, B, C, D & E class of water.

3.3.8 Climatology & Meteorology:

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

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

The year may broadly be divided into four seasons:

Winter season : December to February

Pre-monsoon season : March to May

Monsoon season : June to September

Post-monsoon season : October to November

i) Climate

High temperature throughout the year. Generally a dry and hot climate prevails in the District. The district receives the rainfall under the influence of northeast monsoon. The heaviest rainfall in the district used to be received in the year of 2022 was 1145.9 mm.

ii) Temperature

The average daily temperature ranges from a maximum of 40 °C to a minimum of 26.3 °C

iii) Rainfall:

The total rainfall received during 2022 is 1130mm against the Normal rainfall of 850.58mm with average of 59 rainy days.

KARUR DISTRICT -NORMAL AND ACTUAL RAINFALL (2013 TO 2017)

Unit in mm.

Actual Rainfall In Mm					Normal Rainfall In Mm
2018	2019	2020	2021	2022	
766.0	757.6	1049.7	590.6	1145.9	850.58

Source: TWAD Board

Metrological Data

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

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vi) 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 April to June, 2024.



Windrose Plot for [VOTR] Tiruchirappalli
 Obs Between: 01 Apr 2023 11:30 AM - 01 Jul 2023 08:30 AM Asia/Kolkata

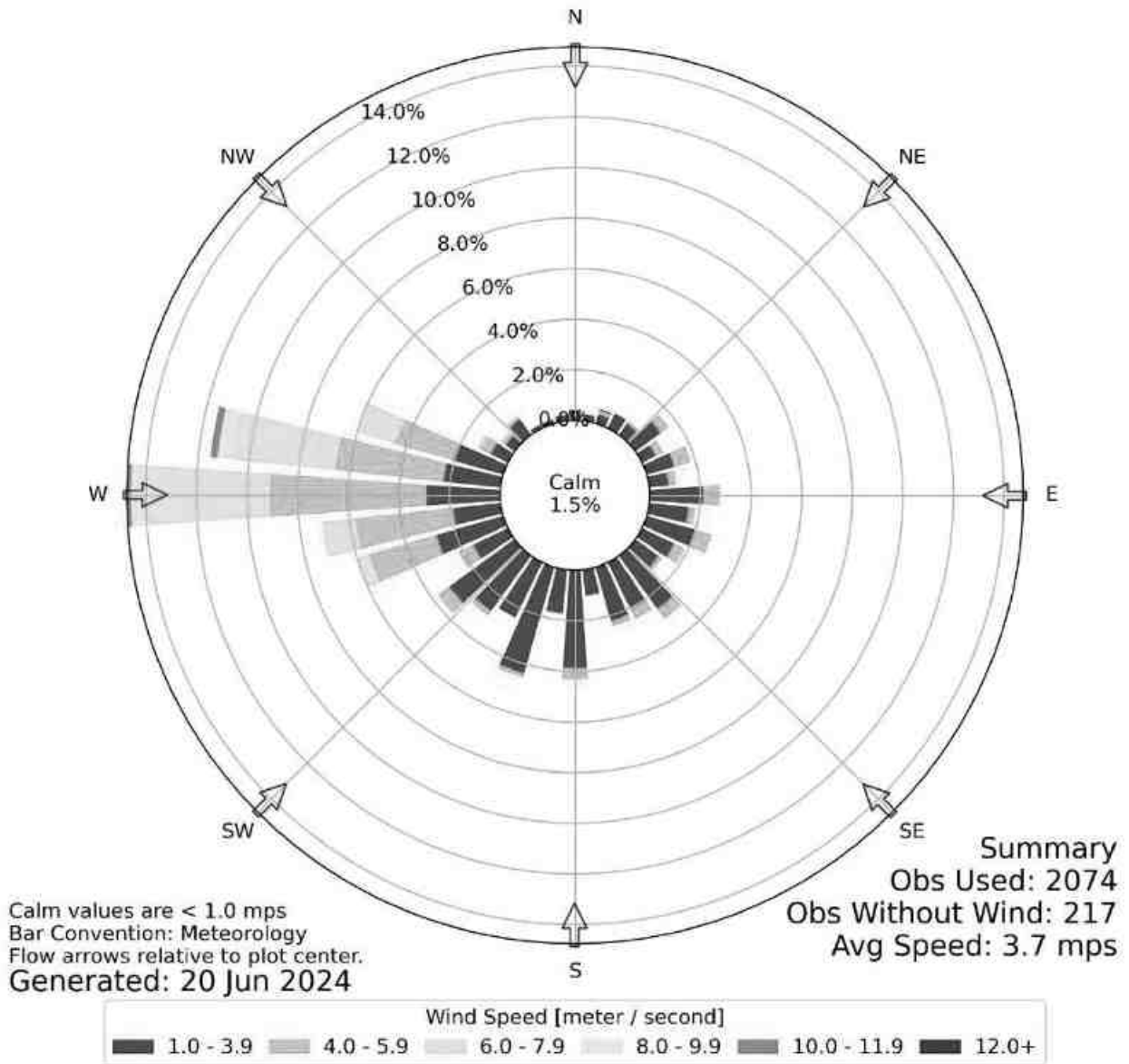


Figure 3-4 Wind-Rose

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3.3.9 Selection of Sampling Locations:

Four Monitoring locations along with the project site is selected based on Wind Direction & Wind Speed. All the monitoring locations are chosen in the downwind direction.

3.4 Ambient Air Quality

Table 3-8: Selection of Sampling Location

Environmental Parameters: Ambient Air			
Monitoring Period	April to June, 2024		
Design Criteria	The monitoring stations are selected based on factors like topography/terrain, prevailing meteorological conditions like predominant wind direction, etc., play a vital role in the selection of air sampling stations. Based on these criteria, 7 air sampling station were selected in the area as shown below.		
Monitoring Locations	Location & Code	Distance (km)	Direction
	Project Site	-	-
	St. Xavier Roman Catholic Chruch, Perur	2.23 km	W
	Uthayapatti	7.59 km	W
	Government Higher Sec School, Kalugur.	2.63 km	E
	Government School, Kallai	6.01 km	E
	Shri Kaaliyamman Temple, Thalinji	4.03 km	N
	Sri Kaaliamman Temple, Kalingapatti	5.16 km	S
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 Monitorin	2 days in a week, 4 weeks in a month for 3 months in a season.		

3.4.1 Ambient Air Quality: Results & Discussion

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

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Table 3-9 Ambient Air Quality

Code	Location	PM 10 ($\mu\text{g}/\text{m}^3$)				PM 2.5 ($\mu\text{g}/\text{m}^3$)				SO2 ($\mu\text{g}/\text{m}^3$)				NOx ($\mu\text{g}/\text{m}^3$)			
		Max	Min	Avg	98 percentile	Max	Min	Avg	98 percentile	Max	Min	Avg	98 percentile	Max	Min	Avg	98 percentile
AAQ 1	Project Site	59	50	55	59	27	21	24	27	13	6	9	12.1	25	18	17	23.6
AAQ 2	St. Xavier Roman Catholic Church, Perur Uthayapatti	68	60	65	68	33	26	29	32.5	18	10	15	18	31	19	25	30.5
AAQ 3	Government Higher Sec School, Kalugur.	65	57	60	64.1	32	22	27	31.1	19	10	13	18.5	29	18	22	28.1
AAQ 4	Government School, Kallai	71	63	67	71	35	24	30	34.1	20	14	18	20	32	21	26	31.5
AAQ 5	Shri Kaaliyamman Temple, Thalinji	61	52	57	60.1	28	23	26	28	14	8	11	13.5	25	15	19	24.5
AAQ 6	Sri Kaalamman Temple, Kalingapatti	67	58	63	66.1	34	26	30	33.1	18	12	14	18	31	18	24	31
AAQ 7	Pattathazhachi Amman Temple, Kosur	59	45	52	58.1	25	17	22	25	9	5	7	9	18	9	14	18
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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3.4.2 Interpretation of ambient air quality:

To assess the impact, AAQ were monitored in project site and four locations.

Observation:

The Maximum value of PM10 – 63 µg/m³, PM 2.5 – 26 µg/m³, SOx – 14 µg/m³, NOx – 21 µg/m³ is observed in different places.

Inference:

The monitoring results for PM10, SOx, NOx was found to be high in Government School, Kallai. The only contributing factor to the higher values is due to the vehicular movement. In the absence of vehicular movement, the values of PM10, SOx, NOx was found to be less.

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

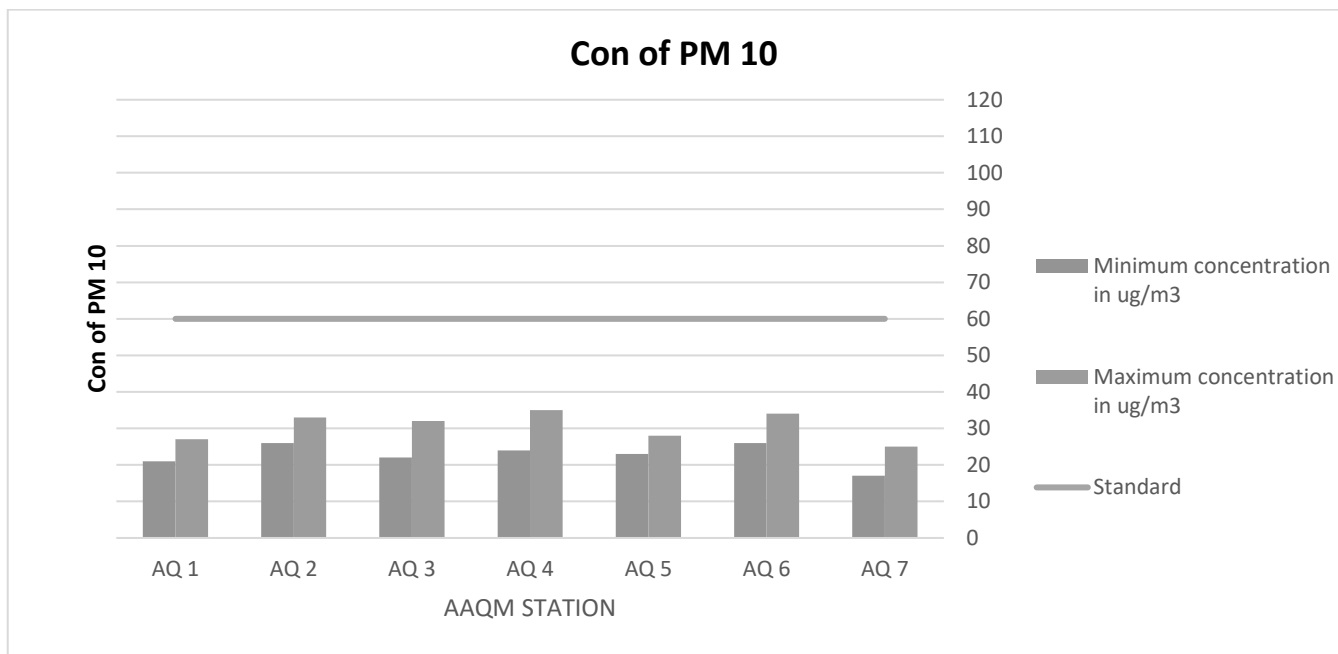


Figure 3-5 Concentration of PM10 (µg/m³) in Study Area

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Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

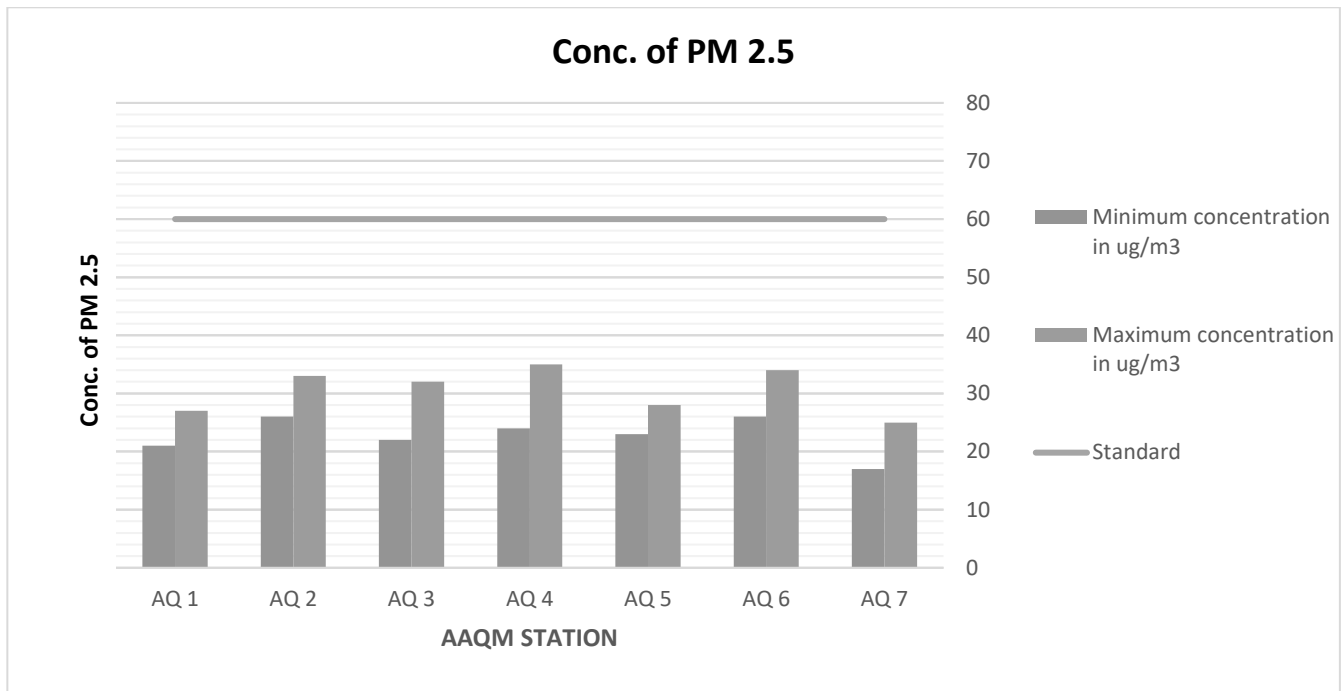


Figure 3-6 Concentration of PM2.5 (ug/m3) in Study Area

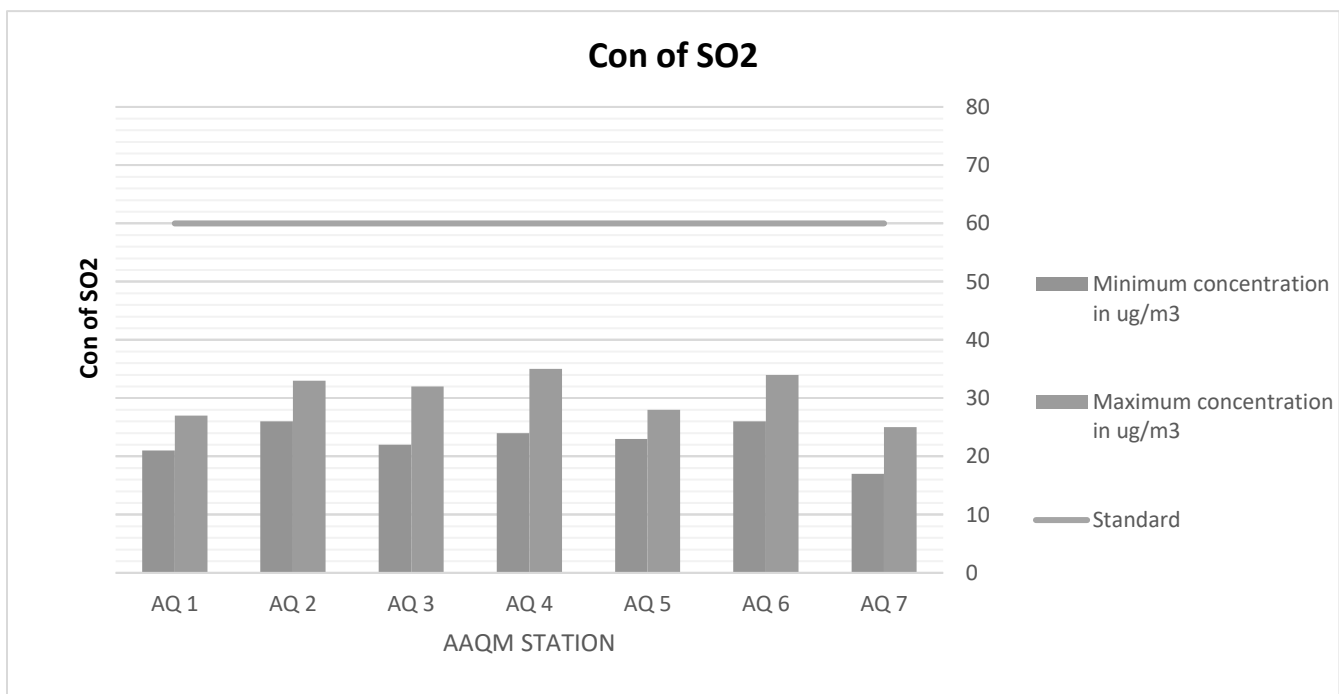


Figure 3-7 Concentration of SOx (ug/m3) in Study Area

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Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

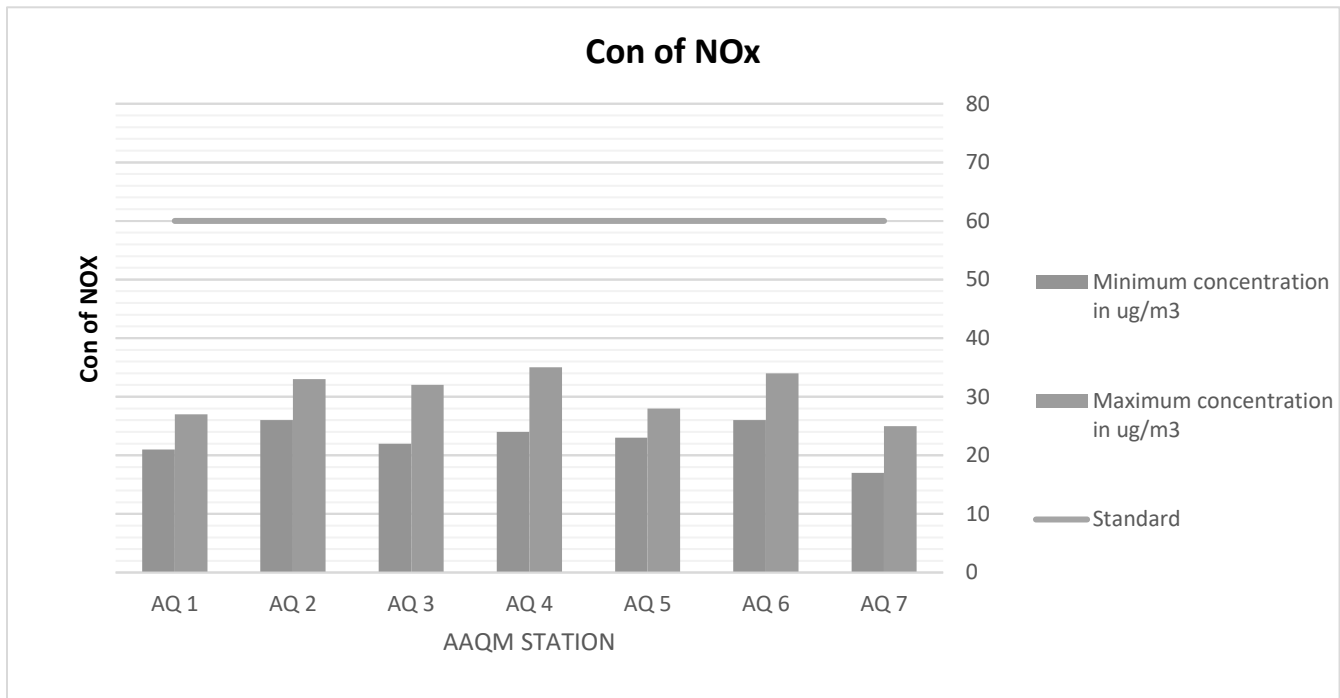


Figure 3-8 Concentration of NOx (ug/m3) in Study Area

3.5 Noise Environment:

Table 3-10 Noise Analysis

Environmental Parameters: <i>Noise Analysis</i>	
Monitoring Period	April to June 2024
Design Criteria	Based on the Sensitivity of the area
Monitoring Locations	Project Site - N 1 St. Xavier Roman Catholic Church, Perur - N 2 Uthayapatti Government Higher Sec School, Kalugur. - N 3 Government School, Kallai - N 4 Shri Kaaliyamman Temple, Thalinji - N 5 Sri Kaaliyamman Temple, Kalingapatti - N 6 Pattathazhachi Amman Temple, Kosur - N 7
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 7 locations - Once season

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Ambient Noise Levels are monitored in the chosen 7 Locations including the project Site and the monitoring results are summarized below

3.5.1 Day Noise Level (Leq day)

Table 3-11 Day Noise Level (Leq day)

Location	Noise level dB(A)		
	Max	Min	Average
Project Site	55	45	51
St. Xavier Roman Catholic Church, Perur Uthayapatti	64	55	60
Government Higher Sec School, Kalugur.	58	48	55
Government School, Kallai	64	56	61
Shri Kaaliyamman Temple, Thalinji	57	48	54
Sri Kaaliyamman Temple, Kalingapatti	64	55	59
Pattathazhachi Amman Temple, Kosur	51	41	48

3.5.2 Night Noise Level (Leq Night)

Table 3-12 Night Noise Level (Leq Night)

Location	Noise level dB(A)		
	Max	Min	Average
Project Site	43	35	39
St. Xavier Roman Catholic Church, Perur Uthayapatti	55	46	51
Government Higher Sec School, Kalugur.	46	38	42
Government School, Kallai	56	48	52
Shri Kaaliyamman Temple, Thalinji	45	38	41
Sri Kaaliyamman Temple, Kalingapatti	53	45	49
Pattathazhachi Amman Temple, Kosur	40	33	36

Observation:

The noise level during day varies from 41-64 dB(A) and during night varies between 36-56 dB(A).

3.6 Soil Environment

Soil environment is studied for 10 km radius from the project site. The 10 km radius image shows that the soil is not affected by any kind of erosion.

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Project Location	Nallur Village, Kulithalai taluk, Karur District.	

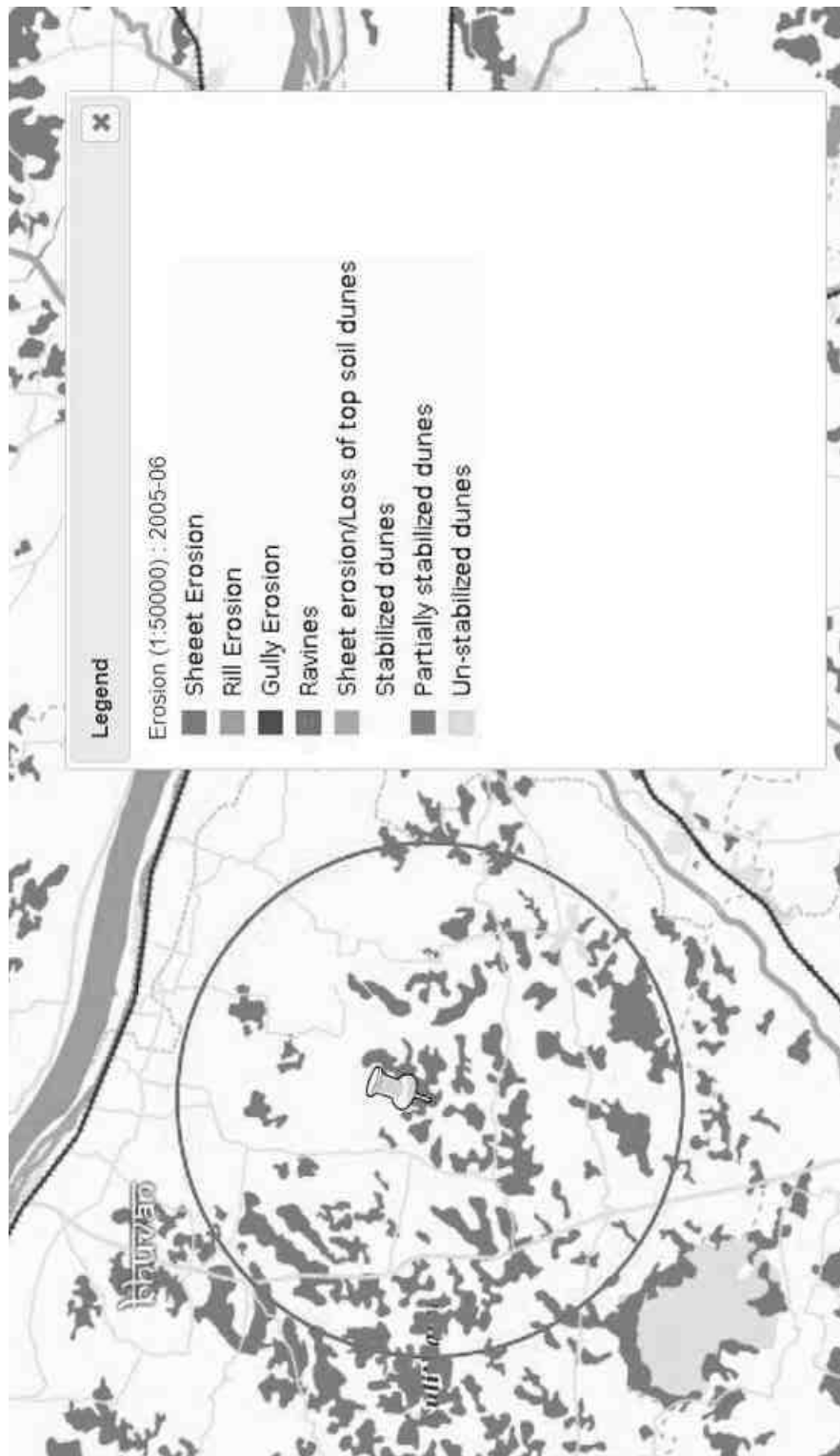


Figure 3-9 Soil Erosion pattern within 10 km radius of the project site

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

3.6.1 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.

Table 3-13 Soil Quality Analysis

<i>Environmental Parameters: Soil Quality Analysis</i>	
Monitoring Period	April to June 2024
Design Criteria	Based on the environmental settings of the study area
Monitoring Locations	Project Site - S 1 St. Xavier Roman Catholic Church, Perur - S 2 Uthayapatti Government Higher Sec School, Kalugur. - S 3 Government School, Kallai - S 4 Shri Kaaliyamman Temple, Thalinji - S 5 Sri Kaaliyamman Temple, Kalingapatti - S 6 Pattathazhachi Amman Temple, Kosur - S 7
Methodology	Composite soil samples using sampling augers and field capacity apparatus
Frequency of Monitoring	Soil samples were collected from 7 locations Once in a season

To assess the soil quality of the study area, 7 monitoring stations were selected and the results are summarized below.

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Table 3-14 Soil Quality Analysis Results

Parameters	Unit	S 1	S 2	S 3	S 4	S 5	S 6	S 7
pH	-	8.36	7.99	8.54	6.95	7.69	8.13	6.95
Electrical Conductivity	ms/cm	0.15	0.57	0.18	0.28	0.27	0.21	0.21
water holding Capacity	ml/L	5.90	4.80	7.20	6.10	5.90	4.70	5.10
Chloride	mg/Kg	170.00	165.00	132.00	145.00	268.00	169.00	295.00
Calcium	mg/Kg	33.20	40.60	82.60	115.00	110.00	140.00	95.20
sodium	mg/Kg	625.00	546.00	810.00	895.00	1131	975.00	972.00
Potassium	mg/Kg	551.00	558.00	696.00	912.00	1007	966.00	990.00
Organic matter	%	0.47	0.63	0.98	1.90	1.30	0.98	0.87
Magnesium	mg/Kg	13.60	12.20	11.50	32.50	45.20	33.90	32.40
Sulphate	mg/Kg	191.00	165.00	110.00	120.00	80.90	142.00	101.00
CEC	meq/100g	12.50	15.20	13.80	13.10	12.40	12.40	11.50
Carbonate	mg/Kg	NIL	Nil	Nil	Nil	Nil	Nil	Nil

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BiCarbonate	mg/Kg	70.90	396.00	115.00	103.00	198.00	66.90	38.50
TKN	%	0.13	0.81	0.11	1.02	0.08	0.90	0.09
Bulk dencity	g/cm3	1.01	1.04	1.18	1.14	1.28	1.08	1.24
Phosphorous	mg/Kg	68.90	60.20	80.40	62.20	90.20	50.40	50.50
Sand	%	53.10	44.70	53.60	52.50	66.70	41.80	49.30
Clay	%	12.70	13.20	14.40	17.30	27.70	8.01	29.20
Silt	%	34.20	42.10	32.10	30.20	5.56	38.90	21.50
SAR	meq/Kg	23.09	19.30	22.14	18.99	22.94	19.19	21.96
Silicon	%	0.08	0.09	0.10	0.09	0.09	0.10	0.09
pH	-	8.36	7.99	8.54	6.95	7.69	8.13	6.95
Electrical Conductivity	ms/cm	0.15	0.57	0.18	0.28	0.27	0.21	0.21
water holding Capacity	ml/L	5.90	4.80	7.20	6.10	5.90	4.70	5.10
Chloride	mg/Kg	170.00	165.00	132.00	145.00	268.00	169.00	295.00
Calcium	mg/Kg	33.20	40.60	82.60	115.00	110.00	140.00	95.20

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3.6.1.1 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 1.01 to 1.28 g/cc which indicates favorable physical condition for plant growth. The water holding capacity was found in the range of 4.70 ml/l to 7.20 ml/l.

3.6.1.2 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 ranges from 6.95 to 8.54, which it indicates majority of pH of the soil is slightly alkaline. The soil in the project site is sodic in nature, which challenges because they tend to have very poor structure which limits or prevents water infiltration and drainage. The organic matter varies from 0.47 to 1.90 mg/kg, which indicates the soil is slightly unfertile.

3.7 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

3.7.1 Methods available for floral analysis:

3.7.1.1 Plot Sampling Methods

- Quadrat – 2D shape (e.g. square or rectangle, or other shape) used as a sampling unit
- Transect

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- 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.

3.7.1.2 Plot less Sampling Methods

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

3.7.2 Field study & Methodology adopted:

To assess the suitability of the methodology, random field survey was done. Field survey was conducted around 2 km radius from the project site and five locations were chosen based on the species density. Quadrat method 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.

3.7.3 Study outcome:

Phyto-sociological 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 part of the study area of 2 km radius. Analysis of the

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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 3-15 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 3-16 Tree Species in the core Zone

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants	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	33.3 3	1	0.28	1.68	2.17	4.45	8.31	Least Concern
2	Cassia siamea	ManjalKonrai	3	2	6	0.5	33.3 3	1.5	0.07	2.52	2.17	1.11	5.81	Least Concern
3	Acacia nilotica	Karuvelai	4	4	6	0.67	66.6 7	1	0.28	3.36	4.35	4.45	12.1 6	Least Concern
4	Bambusa vulgaris	Moongil	4	4	6	0.67	66.6 7	1	0.5	3.36	4.35	7.92	15.6 3	Not assessed
5	Anacardium occidentale	Cashew	1	1	6	0.17	16.6 7	1	0.44	0.84	1.09	6.96	8.88	Not assessed
6	Alstonia scholaris	Elilaipalai	2	2	6	0.33	33.3 3	1	0.27	1.68	2.17	4.31	8.16	Least Concern
7	Psidium guajava	Guava	3	3	6	0.5	50	1	0.23	2.52	3.26	3.61	9.39	Not assessed
8	Aegle marmelos	Vilvam	1	1	6	0.17	16.6 7	1	0.16	0.84	1.09	2.5	4.43	Not assessed
9	Causuarina equisetifolia	Savukku	2	2	6	0.33	33.3 3	1	0.21	1.68	2.17	3.34	7.2	Not assessed
10	Albizia amara	Wunja	1	1	6	0.17	16.6 7	1	0.2	0.84	1.09	3.22	5.14	Not assessed
11	Cocos nucifera	Thennai	10	6	6	1.67	100	1.6 7	0.15	8.4	6.52	2.39	17.3 2	Not assessed

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12	Artocarpus heterophyllus	Palaa	2	2	6	0.33	33.3 3	1	0.18	1.68	2.17	2.85	6.7	Not assessed
13	Bombax ceiba	Sittan	4	4	6	0.67	66.6 7	1	0.08	3.36	4.35	1.27	8.98	Not assessed
14	Azadirachta indica	Veppam	17	6	6	2.83	100	2.8 3	0.13	14.2 9	6.52	1.98	22.7 9	Not assessed
15	Delonix regia	Cemmayir-Konrai	1	1	6	0.17	16.6 7	1	0.21	0.84	1.09	3.34	5.27	Least Concern
16	Delonix elata	Perungondrai	1	1	6	0.17	16.6 7	1	0.17	0.84	1.09	2.62	4.54	Least Concern
17	Dalbergia sissoo	Shisham	1	1	6	0.17	16.6 7	1	0.15	0.84	1.09	2.29	4.21	Not assessed
18	Ficus benghalensis	Alai	2	2	6	0.33	33.3 3	1	0.08	1.68	2.17	1.19	5.04	Not assessed
19	Annona squamosa	Sitapalam	1	1	6	0.17	16.6 7	1	0.23	0.84	1.09	3.61	5.53	Not assessed
20	Pithecellobium dulce	Kodukapuli	1	1	6	0.17	16.6 7	1	0.14	0.84	1.09	2.18	4.11	Not assessed
21	Ficus religiosa	Arasa maram	3	3	6	0.5	50	1	0.09	2.52	3.26	1.35	7.13	Not assessed
22	Couroupita guianensis	Nagalingam	5	3	6	0.83	50	1.6 7	0.14	4.2	3.26	2.18	9.64	Not assessed
23	Musa paradise	Vaazhai	3	3	6	0.5	50	1	0.08	2.52	3.26	1.19	6.97	Not assessed
24	Prosopis juliflora	Vaelikaruvai	3	3	6	0.5	50	1	0.21	2.52	3.26	3.34	9.13	Not assessed
25	Mangifera indica	Mamaram	7	6	6	1.17	100	1.1 6	0.07	5.88	6.52	1.11	13.5 2	Data insufficient

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26	Mimusops elengi	Magizham	2	2	6	0.33	33.3 3	1	0.18	1.68	2.17	2.85	6.7	Not assessed
27	Morinda pubescens	Nuna	6	6	6	1	100	1	0.24	5.04	6.52	3.74	15.3 1	Not assessed
28	Thespesia populnea	Poovarasam	3	3	6	0.5	50	1	0.15	2.52	3.26	2.39	8.18	Not assessed
29	Tectona grandis	Thekku	3	3	6	0.5	50	1	0.12	2.52	3.26	1.88	7.66	Not assessed
30	Tamarindus indica	Puli	10	6	6	1.67	100	1.6 6	0.2	8.4	6.52	3.09	18.0 2	Not assessed
31	Syzygium cumini	naval	5	1	6	0.83	16.6 7	5	0.11	4.2	1.09	1.79	7.07	Not assessed
32	Carica papaya	Papaya	3	3	6	0.5	50	1	0.09	2.52	3.26	1.43	7.21	Not assessed
33	Ziziphus mauritiana	Elandai	1	1	6	0.17	16.6 7	1	0.28	0.84	1.09	4.45	6.38	Not assessed
34	Citrus medica	Elumichai	2	2	6	0.33	33.3 3	1	0.23	1.68	2.17	3.61	7.46	Not assessed
Total			119	92					6.35					

Table 3-17 Shrubs 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	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

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3	Robiniapseudoacacia	Black locust	17	5	24	0.71	0.21	3.4	8.76	5.05	Least Concern
4	Lantana camara	Unnichi	9	6	24	0.38	0.25	1.5	4.64	6.06	Not Assessed
5	Calotropis gigantea	Erukam	14	12	24	0.58	0.5	1.17	7.22	12.12	Not Assessed
6	Stachytarphaurticifolia	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 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	Vishapoondur	50	13	24	2.08	0.54	3.85	25.77	13.13	Not Assessed

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Table 3-18 Herbs & Grasses in the core zone

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants with	Total No. of	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IUCN Conservati on 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
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

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

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	Ruelliastrepens	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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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

3.7.4 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 3-19 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

3.7.5 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)
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<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

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
Alstonia scholaris	Elilalpalai	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
Causuarina equisetifolia	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
Delonix elata	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	Arasa maram	3	0.026786	-3.61989	-0.09696
Couroupita guianensis	Nagalingam	5	0.044643	-3.10906	-0.1388
Musa paradise	Vaazhai	3	0.026786	-3.61989	-0.09696
Prosopis juliflora	Vaelikaruvai	3	0.026786	-3.61989	-0.09696
Mangifera indica	Mamaram	8	0.071429	-2.63906	-0.1885
Mimusops elengi	Magizham	2	0.017857	-4.02535	-0.07188
Morinda pubescens	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
Syzygium cumini	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

Shrubs

Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
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<i>Project Name</i>	<i>Thiru. K. Sakhivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Jatropagossypifolia	Kaatamanaku	28	0.14433	-1.93565	-0.27937
Lantana trifolia	Shrub verbana	10	0.051546	-2.96527	-0.15285
Robiniapseudoacacia	Black locust	17	0.087629	-2.43464	-0.21335
Lantana camara	Unnichi	9	0.046392	-3.07063	-0.14245
Calotropis gigantea	Erukam	14	0.072165	-2.6288	-0.18971
Stachytarphaurticifolia	Rat tail	15	0.07732	-2.55981	-0.19792
Datura metal	Ummattangani	5	0.025773	-3.65842	-0.09429
Hibiscus rosa sinensis	Sembaruthi	3	0.015464	-4.16925	-0.06447
Tabernaemontanadivaricata	Crepe Jasmine	3	0.015464	-4.16925	-0.06447
Chloromolaena odorata	Venapacha	9	0.046392	-3.07063	-0.14245
Euphorbia geniculata	Amman Pacharisi	3	0.015464	-4.16925	-0.06447
Catharanthus roseus	Nithyakalyani	3	0.015464	-4.16925	-0.06447
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	Vishapoundu	50	0.257732	-1.35584	-0.34944
Total		194			-2.3656

H (Shannon Diversity Index) =1.97

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

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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

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 strepera	Grandinayagam	25	0.099206	-2.31055	-0.22922
Senna occidentalis	Nattamsakarai	25	0.099206	-2.31055	-0.22922
Total		252			-2.56298

H (Shannon Diversity Index) = 2.39

i. Evenness

Details	H	Hmax	Evenness	Species Richness (Margalef)
Trees	3.22	3.5	0.9	7
Shrubs	2.36	2.77	0.85	2.84
Herbs	2.56	2.83	0.9	2.89

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.

3.7.6 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.

Table 3-20 Frequency Pattern

Class	Frequency (%)	Normal Value in the class
A	1-20	53

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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
4.	Bambusa vulgaris	Moongil	66.67	D
5.	Anacardium occidentale	Cashew	33.33	B
6.	Alstonia scholaris	Elilaipalai	33.33	B
7.	Psidium guajava	Guava	50.00	C
8.	Aegle marmelos	Vilvam	16.67	A
9.	Causuarina equisetifolia	Savukku	33.33	B
10.	Albizia amara	Wunja	16.67	A
11.	Cocos nucifera	Thennai	100	E
12.	Artocarpus heterophyllus	Palaa	33.33	B
13.	Bombax ceiba	Sittan	66.67	D
14.	Azadirachta indica	Veppam	100	E
15.	Delonix regia	Cemmayir-Konrai	16.67	A
16.	Delonix elata	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	Arasa maram	50.00	C
22.	Couroupita guianensis	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.	Mimusops elengi	Magizham	33.33	B
27.	Morinda pubescens	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.	Syzygium cumini	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

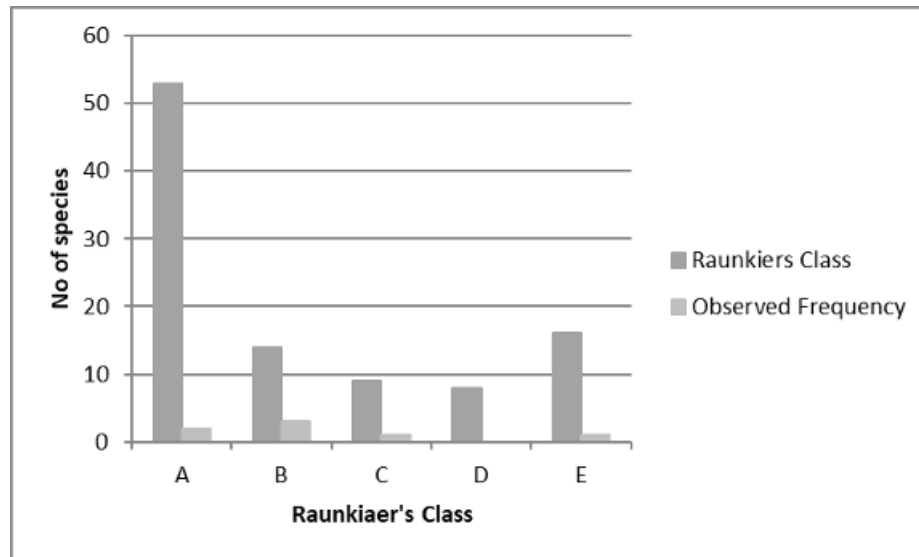


Figure 3-10 Raunkiaer's class for the observed species

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

3.7.7 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 Banana, papaya, mangoes, guava and vegetables like brinjal, drumsticks, onion, Coriander also grown by the local people.

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

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threatened under IUCN (International Union for Conservation of Nature and Natural resources) guidelines.

3.7.8 Faunal Communities

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

- Point Survey Method: Observations were made in each site for 28 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).

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:

Point Survey method was adopted for this development project where observations were made in each site for 28 minutes duration (10 times).

Study in the core zone:

Point Survey method 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. From the

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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 3-21 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 stripped palm squirrel	IV	Least Concern
Herestes edwardsii	Common Mongoose	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
Bos Indicus	Indian Cow	Not listed	Not listed
Bubalus bubalis	Buffalo	I	Not listed
Sus scrofa domesticus	Domestic pig	Not listed	Not listed
Birds			
Milvus migrans	Black kite	IV	Least concern
Saxicoloides fulicatus	Indian Robin	IV	Least concern
Pycnonotus cafer	Red vented Bulbul	IV	Least concern
Phragamaticola aedon	Thick billed warbler	IV	Least concern
Pericrocotus cinnamomeus	Small Minivet	IV	Least concern
Eudynamys scolopaceus	Koel	IV	Least concern
Psittacula krameni	Rose ringed parakeet	IV	Least concern
Dicrurus marcocercus	Black drongo	IV	Least concern
Columba livia	Rock pigeon	IV	Least concern
Corvus splendens	House crow	IV	Least concern
Alcedo atthis	Small blue kingfisher	IV	Least concern
Cuculus canorus	Common Cukoo	IV	Least concern

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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
Papilio demoleus	Common lime	--	Not listed
Euploea core	Common crow	--	Least concern
Danaus genutia	Common tiger	--	Not listed
Eurema brigitta	Small grass yellow	--	Least concern

3.8 Demography and Socio Economics

The demography survey study is done within 10 km radius from 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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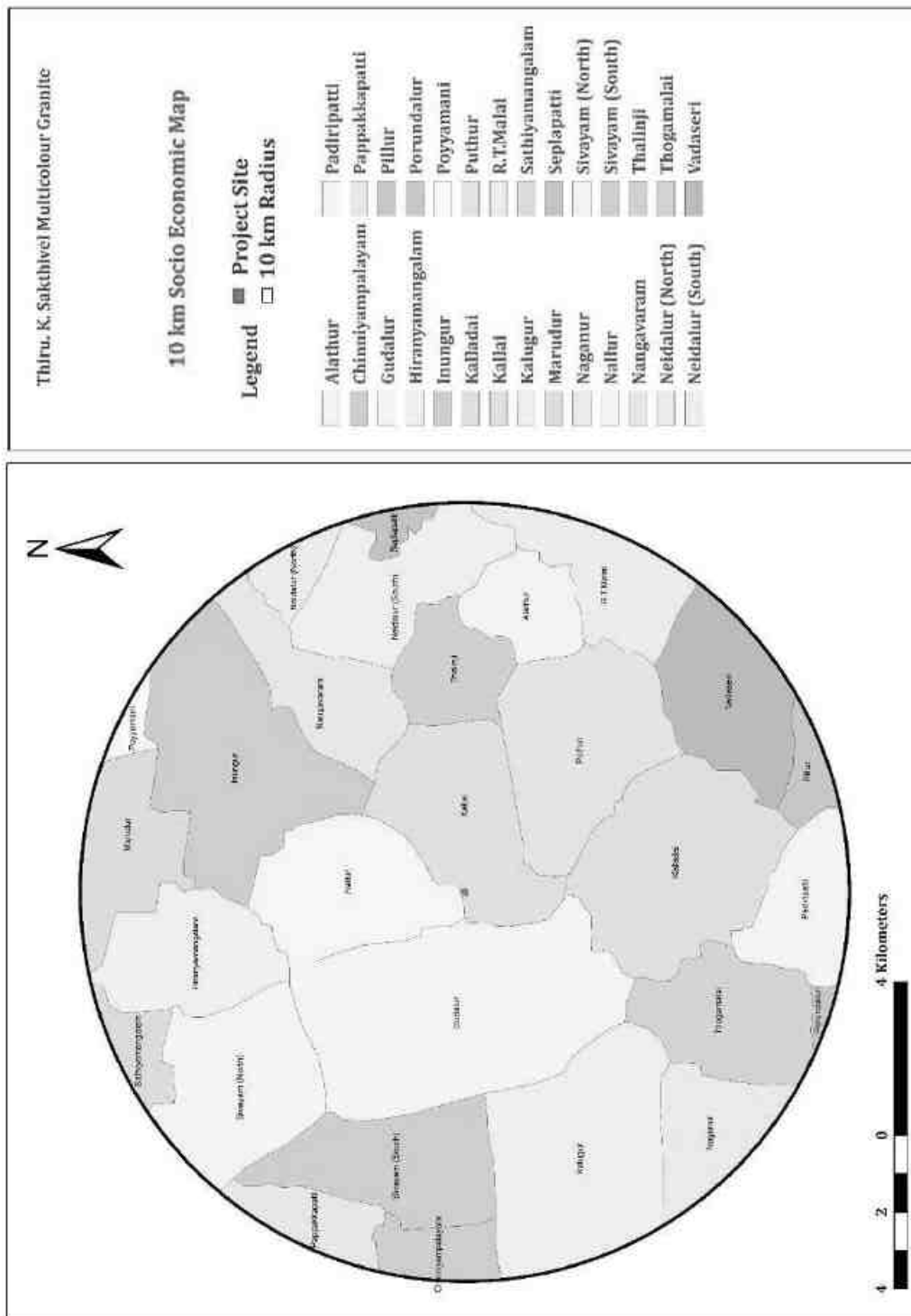


Figure 3-11 Socio Economic map around 10km radius from the project site.

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Table 3-22: Demography Survey Study Source: Census of India, 2011

Villages	Household	Population	Sex Ratio		Literacy Rate		SC	ST
			Male	Female	Male	Female		
Kodaiyur	914	3214	1576	1638	1273	1042	1255	0
Venjamangudalur(East)	955	3816	1896	1920	1209	815	798	0
Venjamangudalur(West)	734	2367	1198	1169	924	590	491	0
Pungambadi(East)	543	1961	1001	960	721	483	495	0
Kakkavadi	506	1614	791	823	568	369	263	0
Vellianai(north)	1952	6982	3486	3496	2669	1982	1925	9

3.9 Traffic Impact Assessment

Traffic data collected continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift- one person on each of the two directions for counting the traffic. At the end of each hour, fresh counting and recording was undertaken. Total numbers of vehicles per hour under the three categories were determined.

Table 3-23: No. of Vehicles per Day

S. No	Vehicles Distribution	Number of Vehicles Distribution/Day	Passenger Car Unit (PCU)	Total Number of Vehicle in PCU
		SH 71	-	
1	Cars	850	1	850
2	Buses	315	3	945
3	Trucks	321	3	963
4	Two wheelers	834	0.5	417
5	Three wheelers	318	1.5	477
	Total	2638	-	3652

Table 3-24: Existing Traffic Scenario and LOS

Road	V (Volume in PCU/hr)	C (Capacity in PCU/hr)	Existing V/C Ratio	LOS
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MDR	3652/24=152	460	0.33	B
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Note: The existing level may be “Very Good” for MDR.

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

This chapter describes the anticipated impacts on the environment and mitigation measures. The method of assessment of impacts including studies carried out, modeling techniques adopted to assess the impacts where pertinent should be elaborated in this chapter. It should give the details of the impacts on the baseline parameters, both during the construction and operational phases and suggests the mitigation measures to be implemented by the proponent.

4.1 Introduction

An environmental impact is defined as any change to the environment, whether adverse or beneficial, resulting from a facility's activities, products, or services. The anticipation of the possible & potential Environmental impact due to the proposed project is a key step in EIA. Based on the impacts assessed, appropriate mitigation measures should be adopted to maintain the environment with less or no damage.

Environmental Impacts can be group into Primary impacts & Secondary Impacts

Primary Impacts: These impacts are directly attributed by the project

Secondary Impacts: These are those which are induced by primary impacts and include the associated investments and changed patterns of the social and economic activities by the action.

Assessment of impacts is done for the following Environmental Parameters:

- Land Environment
- Water Environment
- Air Environment
- Noise Environment
- Biological Environment
- Socio Economic Environment

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4.2 LAND ENVIRONMENT:

Aspect	Impact	Mitigation Measures									
Mining of Granite	<p>The proposed 2.51.5 Ha mine located in Nallur Village, Multi Colour Granite of recoverable reserve of 26142 m³ at a depth of 12 m BGL for the period of five years respectively. The quarry operation is proposed to carry out with conventional open cast semi mechanized mining with 5.0 meter vertical bench and bench width of 5.0 meter. At the end of 5 years, mining lease area will be converted into ultimate pit.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3">ULTIMATE PIT DIMENSIONS</th> </tr> <tr> <th>Length(m)</th> <th>Width(m)</th> <th>Depth(m)</th> </tr> </thead> <tbody> <tr> <td>149.0</td> <td>145.0</td> <td>23.0</td> </tr> </tbody> </table>	ULTIMATE PIT DIMENSIONS			Length(m)	Width(m)	Depth(m)	149.0	145.0	23.0	<p>The proposed project site is not prone to any kind of soil erosion (Source: Bhuvan).</p> <p>In addition, garland drainage of 1m x 1m will be provided to avoid storm water run-off.</p> <p>It is proposed to plant 252 Nos of local tree species per year (Neem, Pungam etc) along the roads, outer periphery of the mining area which enhances the binding property of the soil.</p> <p>It is proposed to improve the affected land wherever possible for better land use, so as to support vegetation and creation of water reservoir in the ultimate pit after quarrying. Topsoil and weathered granite waste of the lease area is 5796 m³ and 2394 m³ respectively for the next five years. Multi Colour Granite waste forms nearly 50% of ROM and the quantity of waste in the five years will be around 26142 m³. This rejected wastes were stored in the non-mineable part of the lease area in scattered manner for the next five years. The generated top soil during the entire life of the quarry will be utilized for</p>
ULTIMATE PIT DIMENSIONS											
Length(m)	Width(m)	Depth(m)									
149.0	145.0	23.0									

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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 Multi Colour Granite Quarry.</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 is not properly managed, may cause odor and health problem to the workers.</p>	<p>construction of bunds, road and afforestation purpose. Suitable specific trees to be grown over in such soil dumps will be identified with the help of agriculture experts to evolve proper afforestation plan. Weathered Granite will be dumped in the western side of the lease area</p> <p>The source of dust generation is majorly due to drilling, blasting (mild blasting if necessary), loading & unloading of the mined out mineral, the impact will be mitigated by water sprinkling regularly once in 3hrs.</p> <p>The proposed mining activity is carried out in almost Plain terrain.</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. Two tier tree belts will be planted along the safety distance.</p> <p>There will be no refuse generation due to the mining activity. 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>Drilling, Blasting, 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>Chemicals consisting of nitrate used for blasting (if necessary) may pollute the surface run off.</p>	<p>The water table will not be intersected during mining, as the ultimate depth is limited upto 23 meters below the ground level, whereas the ground water table is at 52 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 52 m BGL, the mining operation will not affect the aquifer. The ultimate pit at the end of the mining operation will be used for rain water storage, the stored water will be used for green belt development and further the stored water will be used for domestic purposes (other than drinking) after proper treatment.</p> <p>Further, the run-off water will be stored in sumps and after proper treatment; water will</p>

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	Improper management of Domestic wastewater in the Mine lease may create unhygienic conditions in the site thereby causing health impacts to the labours.	be used in the mining operation for dust suppression. Provision of urinals/Latrines along with septic tank followed by soak pit arrangement will be provided in the Mine Lease area for the proper management of wastewater
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4.4 AIR ENVIRONMENT:

Aspect	Impact	Mitigation Measures
<i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i>	<p><i>Impacts during Operation Phase</i></p> <p>During mining operation, fugitive dust and other air pollutants like particulate matter (PM10 & PM 2.5) will be generated.</p> <p>The main source of pollutants arises due to drilling and blasting. 2 No of Tipper will be used for loading and unloading, 1 No of Excavator (1.2 m³ bucket capacity (with rock breaker attachment) will be used for excavation of the mineral which contributes to the generation of fugitive dust. In addition, blasting will be done using explosives leading to the generation of dust.</p>	<p><i>Mitigation Measures during Operation Phase</i></p> <p>It is proposed to plant 1260 Nos of local species (with 252 Nos each year) along the haul roads, outer periphery within the lease area to prevent the impact of dust in consultation with Forest department for the plantation of trees (Neem) in two tier to combat air pollution and with herbs (Nerium) in between the tree species.</p> <p>Planning transportation routes of the mined out mineral, so as to reach the nearest paved roads (an approach road) by shortest route</p>

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	<p><u><i>Effect on Human</i></u></p> <ul style="list-style-type: none"> • Adverse effect on human health of working labourers and neighbouring 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><i>Effect on Plants</i></u></p> <ul style="list-style-type: none"> • Stomatal index may be minimized due to dust deposit on leaf. 	<p>connecting to MDR-588.</p> <p>Alternatively, gravelled road may be constructed between mine lease area and nearest paved road connectivity. The speed of trucks plying on the haul road will be limited to 20km/hr to avoid generation of dust.</p> <p>The trucks will be covered by tarpaulin.</p> <p>Overloading will be avoided.</p> <p>Personal Protective Equipments (PPEs) like eye goggles, dust mask, leather gloves, safety shoes & boots will be provided to the workers engaged at dust generation points like excavation and loading points.</p> <p>0.5 KLD of water will be proposed for sprinkling on unpaved roads to avoid dust generation during transportation.</p>
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Air Quality Modeling:

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

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

Special features of AERMOD include its ability to treat the vertical inhomogeneity 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.

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

1. Hydraulic excavator – 300 Capacity (with Rock Breaker Attachment)
2. Jack Hammer 35 mm Dia
3. Tipper (2 Nos. 10 Tons)

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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 July to September 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 replicated 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

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 an 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.

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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 April to June 2024 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.

10.18 4.5 NOISE ENVIRONMENT:

Aspect	Impact	Mitigation Measures
<i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i>	Usage of Equipments (Excavator, Tipper, Jack Hammer), Machinery 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.	<ul style="list-style-type: none"> • The machinery 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 noise level and effect of maximum exposure to those levels. Adequate silencers will be provided in all the diesel engines of vehicles. • It will be ensured that all transportation vehicles carry a valid PUC Certificates.

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	<p>Number of vehicles will be increased due to the proposed mining activity hence vehicle may collide 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>	<ul style="list-style-type: none"> • Speed of trucks entering or leaving the mine will be limited to moderate speed (20km/hr) to prevent undue noise from empty vehicles. The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments. • It is proposed to plant 300 Nos. of local species (Neem) 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 viz. MDR-588 and a District road to avoid traffic congestion. • Health check-up 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.
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		<ul style="list-style-type: none"> • 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 already a dry land hence no site clearance is required. Only few shrubs and herbs like parthenium sp., prosopis juliflora 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 and safety. Around 0.45.5 Ha of land is utilized for greenbelt development (1260 Nos – 5 years). 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	The proposed project is a Consent Patta Land and the land is vacant where there are no human settlement within 500m radius. Hence the project does not involve Rehabilitation and resettlement

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	PAP to shift, losing their normal routine and livelihood	
Drilling, Blasting, 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 Verul village which is 2.13 km-NW away from the project site.
Grazing and Rearing activities in the nearby villages	The Grazing and rearing of local animals like Sheep, Goat and cows is observed in the nearby villages, which may be affected due to the project as the movement of the vehicles may affect/injure the animals	It is proposed to use gravelled 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. The Multi Colour Granite building stone for the infrastructural development in the area will be made available from the local markets at reasonably lower price.
Corporate Environmental Responsibility	The proposed project will help in natural resource augmentation & Community resource development.	As a part of CER, 5 Lakhs will be allocated. Developing the library, Sports/Drinking water facilities in nearby 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.	Blasting	Injury to the labours due to the blasting activity	Alarm system in the form of Siren will be engaged in the project site to caution the blasting activity. In addition to that, the blasting activity (if necessary) will be scheduled at particular time – 5 P.M to 6 P.M (or whenever required) so that the employees will be aware of the activity. Smoking will be banned in the site and sign boards will be displayed in various places at site.
3.	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 alternatives 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 first scheme of mining plan has been approved by the Commissionerate of Geology and Mining, Guindy prior to submission of the Form-1 and PFR.

ToR issued by the SEIAA-TN vide ToR Identification No: TO23B0108TN559404, DATED:22.04.2024. The study for alternative analysis involves in-depth examination of site and technology.

5.1.1 Analysis for Alternative Sites and Mining Technology

5.1.1.1 Alternative Site

The proposed project is the mining of Multi Colour Granite Quarry and is proposed after prospecting the area. In other words, these can be implemented in the mineral available zone. Since the mining block has been allotted in principal by the State Government, there is no case for studying and exploring any other site as an alternative.

5.1.1.2 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.

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Table 5-1: Alternative for Technology and other Parameters

S. No.	Particular	Alternative Option 1	Alternative Option 2	Remarks
1.	Technology	Opencast semi mechanized mining	Opencast mechanized mining	Opencast semi mechanized Involving drilling and blasting are preferred. Benefits: Material is hard so to make it loose and to bring it to appropriate size.
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 labours will be deployed from Nallur village 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 supplier	Ground water	Tanker supply will be preferred. Water will be sourced from Verul Village which is located in 2 km in Northwestern side from the project site.

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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	- 7 locations	24 hourly twice a week 4 hourly. Twice a week, One non monsoon season 8 hourly, twice a week	1. Project Site 2. St. Xavier Roman Catholic Church, Perur Uthayapatti 3. Government Higher Sec School, Kalugur.

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Lead in PM		24 hourly, twice a week	4. Government School, Kallai
Noise	7 locations	24 hourly Once in 7 locations	5. Shri Kaaliyamman Temple, Thalinji
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 	7 locations	Once in 7 locations	6. Sri Kaaliamman Temple, Kalingapatti 7. Pattathazhachi Amman Temple, Kosur
Water (surface 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 	Sample from nearby lakes/river	One time Sampling	

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Soil (Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	7 locations	Once in 7 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	

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
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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Project Location	Nallur Village, Kulithalai taluk, Karur District.	

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.

7.1.1 Public Hearing:

As the proposed mining project falls under 1(a), Category B1 – Cluster Mining (Includes

Existing Quarries :-

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent	Lease Period
1	Thiru. K. Sakthivel, S/o Karuppannan, Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District.	Nallur Village, Kulithalai Taluk	351	2.51.5	Sep 2017 - 2027
2	M/s Apple Granites S. f. No. 299/1,2 Kallai Village, Kulithalai Taluk, Karur District.	Kallai Village, Kulithalai Taluk	299/1 (P), 299/2A (P), 299/2B (P), 301/1 (P), 302/2 (P), 302/3 (P)	2.97.0	Feb 2018 - 2028
3	M/s. V. B. S Exports No. 38, Srinivasa Nagar, 1 st Street, Thiran Nagar, Madurai District.	Kallai Village, Kulithalai Taluk	349/Part, 303/2A(P), 302/1 (P)	2.80.5	Feb 2018 - 2028

Abandoned / Old Quarries :-

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent	Lease Period
----Nil----					

Proposed Quarries :-

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent	Lease Period
----Nil----					

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The Total extent of the Existing / Proposed quarries are 8.29.0 Ha.

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 Krishnagiri District. The proceedings of the same will be incorporated in the Final EIA Report.

7.1.2 Risk assessment:

For mining projects to be successful, it should meet not only the production requirements, but also maintain the highest safety standards for all the workers. The industry has to identify the hazards, assess the associated risks and bring the risks to tolerable level regularly. Mining has considerable safety risk to miners. Unsafe conditions and practices in mines lead to a number of accidents and causes loss and injury to human lives, damages the property, interrupt production etc. Risk assessment is a systematic method of identifying and analyzing the hazards associated with an activity and establishing a level of risk. 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.

7.1.3 Identification of Hazard

7.1.3.1 Blasting Pattern:

The quarrying operation will be carried out by Opencast Semi Mechanized method in conjunction with conventional method of mining using Jack Hammer drilling and blasting (if necessary) for shattering effect and loosen the Granite.

7.1.3.2 Drilling and Blasting:

Drilling and Blasting parameters are as follows:

Type	Nos	Dia Hole mm	Size Capacity	Make	Motive power
Jack hammer & Accessories	4	35	1.2m to 6m	Atlas Copco	Compressed air
Compressor	1	7.5 kgs/cm ²	400 psi	ELGI	Diesel Drive
Diamond wire saw	1	-	30m ³ /Day	Optima	Diesel Generator

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Gen set	1	-	Powerica	-	CP 125 D5P (H.P)
Excavator	1	-	300	Tata Hitachi	Diesel Drive
Tippers	2	-	10 tonnes	Tata	Diesel Drive

Heavy Machineries: The following heavy machineries will be used in the proposed area:

- For Mining – Excavator of capacity 300 (with Rock Breaker attachment), Jack Hammers (35 mm Dia) of 4 Nos.
- Loading Equipment – Excavator of capacity 300 (with Bucket attachment)
- Transportation (includes within the mine and mine to destination) – Tipper 2 No of 10 M.T capacity (from quarry to needy peoples and local crushers)

a. Risk:

Most of the accidents during transport of mined out mineral using other heavy vehicles are often attributed to mechanical failures and human errors.

b. Mitigation measures to minimize the risk

- At the time of loading no person will be allowed within the swing radius of the excavation.
- The dumpers/ trucks will stand near the loading equipment and fully braked when the muck is filled in it.
- The truck would be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.
- The workers will be provided with helmets, gloves and safety boots; loading and unloading operations will be carried out only during daylight
- All the mining machineries will be regularly maintained and checked such as brakes, lights and horns to keep in the efficient working order.

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7.1.4 General Precautionary measures for the Risk involved in the proposed mine:

- In order to take care of above hazard/disaster, the following control measures will be adopted:
- All safety precautions and provisions of Mine Act,1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations;
- Entry of unauthorized persons will be prohibited;
- Firefighting and first-aid provisions in the ECC and mining area;
- Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the workers (18 Nos.) and regular inspection for their use;
- In case of eventuality, first aid will be given by the senior safety office in the mine area initially to the injured person. The safety officer will give notice of accident as per Rule-23 of Mines Act-1952;
- The safety officer will be responsible for coordination between management district authorities/DGMS etc. Regarding general safety as per Rule-181 of MMR 1961, “No person shall negligently or will fully do anything likely to endanger life or limb in the mine, or negligible or will fully omit to do anything necessary for the safety of the mine or of the persons employed there in”. The workers will be provided with protective foot wear and safety helmets;
- Cleaning of mine faces will be regularly done;
- Handling of explosives, charging and blasting will be carried out by highly skilled labours only;
- Regular maintenance and testing of all mining equipment as per manufacturer’s guidelines;
- Suppression of dust by sprinkling water on the haulage roads;

7.1.5 Safety Team:

The effective implementation of compliance of Safety Rules/ Statutory Provisions will be ensured. The safety officer will be engaged, meeting the requirement of Mines Act and their duties and responsibilities. The safety officer will be responsible for identification of the hazardous conditions and unsafe acts of workers and advice on corrective actions, conduct safety audit, organize training

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programs and provide professional expert advice on various issues related to occupational safety and health. Organizing safety training will be conducted to employees and contractor labors periodically.

7.1.6 Emergency Control Centre

The emergency control center will be provided to handle the emergency. The site main controller, key personnel and the senior officers of the fire and police services will attend it. The center will be equipped to receive and transmit information and directions from and to the incident controller and other areas of the works, as well as outside. The emergency control center will be sited in an area of minimum risk. This common Emergency control centre will be used for the mines around the 500m radius

7.2 Disaster Management:

The possible risks in the case of stone along with associated minor minerals mining projects are fly rock, vibration failure of pit, slope and waste dump, accidents due to transportation. Mining and allied activities are associated with several potential hazards to both the employees and the public at large. Safety of the mine and the employees is taken care of by the mining rules & regulations, which are well defined with laid down procedure for safety, which when scrupulously followed, safety is ensured not only to manpower but also to machines & working environment.

7.2.1 Emergency Management Plan For Proposed Mines On Site- Offsite Emergency Preparedness Plan:

The emergency plan delineates the procedures for dealing with accidents or unexpected events and natural calamities arising from mining activity. An experience of any accidents that have occurred in other manufacturing/mining projects is considered to prepare this plan. This Emergency plan should be periodically reviewed and modified. It should also be changed based on the observations of emergency mock drills and experience of handling actual emergencies.

Major objectives of this onsite – offsite emergency plan are:

- To take necessary proactive and preventive actions to avoid the emergency.

The main aim of any emergency plan should be to prevent emergency situations.

To train the manpower to handle the emergencies of the following nature:

- Onsite (Within ML boundary)

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- Offsite (Outside ML boundary)

7.2.2 Onsite off-site emergency Plan:

1- Emergency on account of:

- Fire
- Explosion
- Major accidents involving man-made collapse of the mining edges.
- Snake bites, attack by honey bees or attack by wild animals.

2- Disaster due to natural calamities like:

- Flood/ heavy rains which can involve natural landslides.
- Earth quake
- Cyclone
- Lightening

7.2.3 Emergency Plan:

- The mining operations should be immediately stopped in case of any emergency. A siren will be sounded during emergency time.
- An emergency assembly point will be created and all the workers will guide visitors or contractors to approach assembly point.
- Emergency vehicle (Ambulance) will be available in the nearby place, in proximity to the three mines and will rush to the emergency control centre at the blowing of emergency siren. The driver of emergency vehicle will follow the instructions of Incident Controller/Site Main Controller.
- Workers will be trained for the precautions to be taken during natural disasters like heavy rain, floods, earthquake and cyclone.
- All escape routes from mines to the assembly point or any other safe location will be made and the escape plan will be displayed in many places in the mine area

7.2.4 Emergency Control:

- Shut down of mining operations: Raising the alarm or siren followed by immediate safe shut down of the power supply, and isolation of affected areas.

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- Treatment of injured: First aid and hospitalization of injured persons
- Protection of environment and property: During mitigation, efforts will be made to prevent impacts on environment and property to the extent possible.
- Preserving all evidences and records: This will be done to enable a thorough investigation of the true causes of the emergency.
- Ensuring safety of personnel prior to restarting of operations: Efforts required will be made to ensure that work environment is safe prior to restarting the work.

7.3 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 Chapter 5 to prevent the effects on nearest water bodies. No surface runoff from the project site will be let into the nearest water bodies.

7.4 Resettlement and Rehabilitation:

The proposed Mine lease area is not habitated. There is no displacement of the population within the project area and adjacent nearby area and hence Rehabilitation & Resettlement is not applicable.

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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 (Multi Colour Granite) will sold in the market in the affordable price.

b. Infrastructure: The excavated Multi Colour Granite will be used for **Building & Construction Projects.**

c. Enhancement of Green Cover & Green Belt Development: As a part of reclamation plan, native tree species will be planted along the safety boundary (0.45.5 Ha) 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 252 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. The granite for the infrastructural development in the area will be made available from the local markets at reasonably lower price.

As a part of CER, 5.00 Lakhs will be allocated. The detailed agenda, which is to be executed has been framed. The salient features of the programme are as follows:

Panchayat Union Primary School, Nallur Village, Kulithalai Taluk, Karur District.

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Provision of

- Vegetable Garden.
- Electric Motor.
- Repair works on Roof of the School.
- Hygienic Toilet facilities and maintenance upto lease period.
- Greenbelt Development inside and around the campus – 50 No's.
- Environmental, Social Awareness and General Knowledge Books in Tamil Language.

8.3 Project Cost / Investment Details

(a) Fixed Asset Cost :

Sl.No	Description	Amount (Rs)
1	Land cost	30,00,000
2	Labour shed	1,50,000
3	Sanitary facility	70,000
4	Fencing cost	1,00,000
Total		33,20,000

(b) Operational Cost:

S.No	Description	Approximate Amount (Rs)
1	Excavator	55,00,000
2	Tippers	20,00,000
3	Wire saw	8,00,000
4	Compressor with loose tools	10,00,000
Total		93,00,000

(c) EMP Cost :

Year 1	Rs. 2641013
Year 2	Rs. 1197605
Year 3	Rs. 1257027
Year 4	Rs. 1319420
Year 5	Rs. 1384933
Total	Rs. 78,00,000

GRAND TOTAL PROJECT COST = Rs. 2,03,20,000/-

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9 Environmental Cost Benefit Analysis

Not Applicable, Since Environmental Cost Benefit Analysis not recommended at the Scoping stage.

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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 semi mechanized mining method as per scheme of mining plan approved by Commissionerate of Geology and Mining, Guindy. Subsidence/slope failures are not envisaged because there are no loose strata overlying the deposit (mineral to be excavated). The bench height will be average 5m. The individual bench slope has been proposed to be kept at 60° from horizontal. Moreover, all safety standards/ safeguards will be implemented as per guidelines prescribed by Director General of Mines Safety.

10.19 Mine Drainage

10.3.1 Storm water Management

The following measures will be taken with respect to the prevailing site conditions.

- Storm water drains with silt traps of size 1m x 1m will be suitably constructed all along the periphery of the pit area to collect the run-off from the mine area and divert into the pit.
- All measures will be taken not to disturb the existing drainage pattern adjacent to the mine lease area.
- The storm water collected from the mine area will be utilized for dust suppression on haul roads, plantation within the premises, etc.,

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

10.3.2 Drainage

Local workers will be deployed for the project. But, urinals and Latrines will be provided and the same will be connected to septic tank followed by soak pit arrangement. No domestic waste will be deposited into the nearby area. Regular checking will be carried out to find any blockage due to silting or accumulation of loose materials. The drains will also be checked for any damage in lining / stone pitching, etc.

10.3.3 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. K. Sakthivel will work in association with M/s. Ecotech Labs Pvt Ltd.

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Table 10-1: Impacts and mitigation measures

S. No	Impacts on Environment	Activity /Aspect	Anticipated impacts	Mitigation measures	Budgetary Allocation
1	Air	Fugitive Emission	During mining operation, fugitive dust and other air pollutants like particulate matter (PM10 & PM 2.5) will be generated.	• Planting of trees along the safety distance of the Mine Lease Area	Rs.50,000
				• Water will be sprinkled in the site as dust suppression measure.	Rs.1,50,000
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	• 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.	Rs.55,000
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. Apart from Mining activities like drilling, blasting may generate noise	• Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.	Rs.10,000
4	Land	Improper management of Storm water Runoff	Storm water Runoff may result in Soil Erosion	Garland drainage of 1m x 1m will be provided to avoid storm water run- off.	Rs.1,00,000
5	Social Responsibility	Mining workers	Unhygienic site sanitation facilities may cause health damage to workers.	The objective is to ensure health and safety of the workers with effective provisions for the basic facilities of sanitation, drinking water, safety of equipments or machinery etc. The following will be done in the site	

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

				<ul style="list-style-type: none"> ✓ By complying with the safety procedures, norms and guidelines (as applicable) as outlined in the National Building Code of India, Bureau of Indian Standards. ✓ 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. Firefighting extinguishers and buckets of sand will be provided in the construction site 	<p>Rs.25,000</p> <p>Rs.30,000</p> <p>Rs.1,00,000</p> <p>Rs.36,000</p> <p>Rs.50,000</p>
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. 	

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

Table 10-2: Budgetary Allocation for EMP during Mining

S. No.	Description	Budgetary Allocation (in Rs.)	
1.	EMP COST		
	i.	Drinking water facility	1,00,000/-
	ii.	Safety Kits	1,20,000/-
	iii.	Water Sprinkling	1,25,000/-
	iv.	Afforestation	3,64,675/-
2.	Environmental Monitoring		
	i.	Air Quality Monitoring	40,000/-
	ii.	Water Quality Monitoring	30,000/-
	iii.	Noise/Vibration Monitoring	30,000/-
Total Cost		8,09,675/-	

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

11 Summary & Conclusion

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

11.1 Introduction

Thiru. K. Sakthivel site is a cluster of three mining projects. The individual mine lease area is 2.51.5 Ha of Multi Colour Granite Quarry located at S.No. 351 of Nallur Village, Kulithalai taluk in Karur District.

11.2 Project Overview

Table 11-1: Project Overview

S. No.	Description	Details
1	Project Name	Proposed Multi Colour Granite Quarry - 2.51.5 Ha
2	Proponent	Thiru. K. Sakthivel
3	Mining Lease Area Extent	2.51.5 Ha
4	Location	S.F.No. 351, Nallur Village, Kulithalai taluk, Karur District.
5	Latitude	10° 47' 40.9465" N to 10° 47' 35.0079" N
6	Longitude	78° 27' 6.0451" E to 78° 27' 0.2310" E
7	Topography	Undulated terrain
8	Site Elevation above MSL	124 m from MSL
9	Topo sheet No.	58 J/5
10	Minerals of Mine	Multi Colour Granite
11	Proposed production of Mine	Proposed capacity of Multi Colour Granite : 52284 m ³ Recoverable Reserve of Multi Colour Granite : 26142 m ³
12	Ultimate depth of Mining	23 m below ground level
13	Method of Mining	Open cast, mechanized mining
14	Water demand	2.25 KLD

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

15	Source of water	Water will be supplied through tankers supply and drinking water will be purchased from vendors
16	Manpower	24 Nos.
17	Mining Lease	The Lessee had obtained lease for quarrying granite vide Government Order.(3D) No. 12, Industries (MMB.2) Department dated 11.08.2017 for a period of twenty years and the lease deed was executed on 05.09.2017 and the lease will expire on 04.09.2037.
18	Mining Plan Approval	The 1st scheme of mining for the period from 2022 - 2023 to 2026 - 2027 is obtained from Commissioner, Commissionerate of Geology and Mining, Guindy, Chennai – 32 vide Letter No. Rc. No. 4088/MM2/2022, Dated: 21.01.2023.
19	Production details	Geological reserves of Multi Colour Granite : 467326 m³ Proposed year wise total reserves of Multi Colour Granite : 52284 m ³ (Multi Colour Granite Recovery @ 50% for first five years – 26,142 m ³ and Granite Waste @ 50% - 26,142 m ³)
20	Boundary Fencing	7.5m barrier all along the boundary, Fencing will be provided.
21	Disposal of overburden	The top soil of the lease area is 5796 m ³ . Multi Colour Granite waste forms nearly 50% of ROM and the quantity of granite waste in the five years will be around 26,142 m ³ . Total waste to be generated in five years is 34,332 m ³ .
22	Ground water	The quarry operation is proposed up to a depth of 23 m below ground level. The water table is below 52 from ground level which is observed from the nearby open wells and bore wells. Hence the ground water will not be

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

		affected in any manner due to the quarrying operation during the entire lease period.
23	Habitations within 500m radius of the Project Site	There is no Habitation within 300m radius of the project site.
24	Drinking water	Water will be supplied through tankers and drinking water can be purchased from nearby vendors of village Verul which is approx. 2.0 km from the project site in Northwestern Side.

11.3 Justification of the proposed project

The said project plays a significant role in the domestic as well as infrastructural market. To achieve a huge infrastructure being envisaged by Government of India, particularly in road and housing sector, there is a need for basic building materials. The granite form the primary building material.

Multi Colour Granite is one of the most valuable natural building materials. Aggregates are mostly used for building roads and footpaths. Aggregates – stone used for its strong physical properties – crushed and sorted into various sizes for use in concrete, coated with bitumen to make asphalt or used 'dry' as bulk fill in construction. Mostly used in roads, concrete and building products. Aggregates represent about 98% of quarry output, most of which is used in road construction, maintenance and repair. Much of this goes to the production of asphalt; the remainder is used 'dry' without the addition of other materials to provide a sturdy base for roads.

Since Karur, a city known for its small-scale industries and also the soil in the area near project site is not very fertile making it unsuitable for carrying out agricultural activities. The topography near the lease area is barren dry lands showing only less chance for crop growth and development of vegetation. In addition to that, geological reserves of granite is abundant in the lease area which is evident from the mine activities carried out in the nearby sites.

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, excavation,	Proper mitigation measures like water sprinkling on haul roads will be adopted to control dust emissions.

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<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

	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	Wastewater 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 wastewater 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

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

		minimizes propagation of noise and 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 100% recovery is achieved by extracting the entire mineable reserve. Hence there will be no refuse generation due to the mining activity. 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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<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

12. Disclosure of Consultant

12.1 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.

12.2 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.

Project Name	Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha	Final EIA Report
Project Proponent	Thiru. K. Sakthivel	
Project Location	Nallur Village, Kulithalai taluk, Karur District.	

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

Declaration by experts contributing to the EIA report for Proposed Multi Colour Granite Quarry mining project of Thiru. K. Sakthivel Multi Colour Granite Quarry over an extent of 2.51.5 Ha is situated at S.F.No. 351 of Nallur Village, Kulithalai taluk, Karur District, 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	Thiru. K. Sakthivel Multi Colour Granite Quarry – 2.51.5 Ha
Type & Category	1 (a) Mining of Minerals
Project Proponent	Thiru. K. Sakthivel
Environment Consultant with their Accreditation Status	M/s. Eco Tech Labs Pvt. Ltd., QCI Accredited.
NABET Certificate No.	NABET/ EIA/2225/ SA 0222
EIA Coordinator Name	Dr. A. Dhamodharan (Mining of Minerals)
Signature	 Dr. A. DHAMODHARAN (NABET APPROVED EIA COORDINATOR) NABET/EIA/22-25/SA 0222 Environmental Consultant Eco Tech Labs Pvt. Ltd Plot No.48A, 2nd Main Road, Ram Nagar South Extn. Paljikanal, Chennai - 600 100.
Period of Involvement	January 2024 – Till date
Contact Information	M/s. Eco Tech Labs Pvt. Ltd.

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	




	No. 48, 2nd Main Road, Ram Nagar South Extension Pallikaranai, Chennai - 600 100 Mobile: +91 9789906200 E-mail: dhamo@ecotechlabs.in
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Functional Area Experts




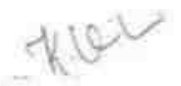

The basic fact division that environment and laboratory are accredited by NABL and Ministry of Environment and Forests, India and by other international bodies, stand testimony to its emphasis.

S. No.	Functional areas	Name of the experts	Involvement (period and task)	Signature and date
1	AP	Mrs. K. Vijayalakshmi	4. Selection of Baseline Monitoring stations based on the wind direction 5. Interpretation of Baseline data by comparing it with standards prescribed by CPCB against the type of area 6. Identification of sources of air pollution and suggesting mitigation measures to minimize impact Period: July 2022 - Till now	
2	WP	Dr. A. Dhamodharan	5. Selection of baseline Monitoring Locations for Ground water analysis and also identifying nearest surface water to be studied. 6. Interpretation of baseline data collected 7. Identification of impacts based on the baseline study conducted and also to the ground water and nearby surface water due to the proposed project 8. Preparation of suitable and appropriate mitigation plan. Period: July 2022 - Till now	
3	SHW		5. Identification of nature of solid waste generated	

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
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<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

		Dr. A. Dhamodharan	<p>6. 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</p> <p>7. Suggesting suitable mitigation measures by recommending appropriate disposal method for each category of waste generated</p> <p>8. Top soil and refuse management</p> <p>Period: July 2022 - Till now</p>	
4	SE	Mr. S. Pandian	<p>5. Primary data collection through the census questionnaire</p> <p>6. Obtaining Secondary data from authenticated sources and incorporating the same in EIA report.</p> <p>7. Impact assessment & proposing suitable mitigation plan</p> <p>8. CSR budget allocation by discussing with the local body and allotting the same for need based activity.</p> <p>Period: July 2022 - Till now</p> <p>*Involves Public Hearing</p>	
5	EB	Dr. A. Dhamodharan	<p>4. Primary data collection through field survey and sheet observation for ecology and biodiversity</p> <p>5. Secondary Collection through various authenticated sources</p> <p>6. Prediction of anticipated impacts and suggesting appropriate mitigation measures.</p> <p>Period: July 2022 - Till now</p>	
6	HG	Dr. T. P. Natesan	<p>3. 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</p> <p>4. Determination of groundwater use pattern, development of rainwater harvesting program. Storm water management through garland drainage system.</p>	

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

			Period: July 2022 – Till now	
7	GEO	Dr. T. P. Natesan	2. Field survey for assessing regional and local geology, aquifer distribution, Determination of groundwater use pattern, development of rainwater harvesting program. Period: July 2022 – Till now	
8	SC	Dr. A. Dhamodharan	3. Interpretation of baseline report 4. Identification of possible impacts on soil, prediction of soil conservation and suggesting suitable mitigation measures. Period: July 2022 – Till now	
9	AQ	Mrs. K. Vijayalakshmi	6. Collection of Meteorological data for the baseline study period 7. Plotting wind rose plot and thereby selecting the monitoring locations based on the wind pattern 8. Estimation of sources of air emissions and air quality modeling is done 9. Interpretation of the results obtained 10. Identification of the impacts and suggesting suitable mitigation measures. Period: July 2022 – Till now	
10	NV	Mrs. K. Vijayalakshmi	4. Selection of monitoring locations 5. Interpretation of baseline data 6. Prediction of impacts due to noise pollution and suggestion of appropriate mitigation measures Period: July 2022 – Till now	
11	LU	Dr. T. P. Natesan	4. Collection of Remote sensing satellite data to study the land use pattern. 5. Primary field survey and limited field verification for land categorization in the study area 6. Preparation of Land use map using Satellite data for 10km radius around the project site. Period: July 2022 – Till now	

<i>Project Name</i>	<i>Thiru. K. Sakthivel Multicolour Granite Quarry – 2.51.5 Ha</i>	<i>Final EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Sakthivel</i>	
<i>Project Location</i>	<i>Nallur Village, Kulithalai taluk, Karur District.</i>	

12	RH	Mrs. K. Vijayalakshmi	4. Identification of the risk 5. Interpreting consequence contours 6. Suggesting risk mitigation measures Period: July 2022 - Till now	<i>7/12/22</i>
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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 of mining project at Survey number. 351 of Nallur Village, Kulithalai Taluk, Karur District, 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/2225/SA 0222

ANNEXURE-I

**STANDARD TOR CONDITIONS WITH
ADDITIONAL TOR POINTS**



सत्यमेव जयते

File No: 10535
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), TAMIL NADU)



Dated 22/04/2024



To,

SAKTHIVEL
SAKTHIVEL

S/o Karuppanan Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District, Ponnampatti,
Perunthalur Village, Kulithalai Taluk, Karur District., KARUR, TAMIL NADU, 639104
sakthivelmcg@gmail.com

Subject: Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding.

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Thiru. K. Sakthivel Multicolour Granite submitted to SEIAA-TN vide proposal number SIA/TN/MIN/451778/2023 dated 29/02/2024.

Reference:

1. Online proposal No. SIA/TN/MIN/451778/2023, dt: 09/11/2023.
2. Your application submitted for Terms of Reference dated: 15.11.2023.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO23B0108TN5594047N
(ii) File No.	10535
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	Thiru. K. Sakthivel Multicolour Granite
(viii) Name of Company/Organization	SAKTHIVEL
(ix) Location of Project (District, State)	KARUR, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were

submitted to SEIAA for an appraisal under the provision of EIA notification 2006 and its subsequent amendments.

4. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority(SEIAA) in the meeting held on 01/04/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1, EIA, EMP)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
5. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
6. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to grant Terms of Reference for instant proposal of M/s. SAKTHIVEL under the provisions of EIA Notification, 2006 and as amended thereof.
7. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
8. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
9. This issues with the approval of the Competent Authority.
10. The TORs with public hearing 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.

Copy To

1. The Additional Chief Secretary to Government, Environment, Climate Change and Forests Department, 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 - 110 032.
3. The Chair Person, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.
6. The District Collector, Karur District.
7. Stock File.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Specific Conditions:

S. No	Terms of Reference
1.1	After detailed discussions, the Authority accepted the recommendation of SEAC and decided to grant Terms of Reference (ToR) with Public Hearing based on studies, assessments and records to be produced as sought by the SEAC and SEIAA, for undertaking the Environment Impact Assessment Study and preparation of Environment Management Plan subject to the conditions as recommended by SEAC for the production quantity of 26,142 m³ of Multi Colour Granite and

S. No	Terms of Reference
	depth of upto 12m BGL as per the approved mining plan.

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	<ol style="list-style-type: none"> 1. The Proponent shall justify the selection of the site for carrying out the stone quarrying with the total volume arrived for the excavation & production adequate details such as lithology of the deposit, reserve estimation, place for waste dump/mined mineral storage, end-use of mined materials, identified potential customers/end-users and travel path. 2. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc. 3. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc located within 1 km of the proposed quarry. 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 Proponent shall carry out Bio diversity study through Department of Ecology and Environmental Sciences, Pondicherry University and the same shall be included in EIA Report. 6. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine. 7. The PP shall furnish the certified compliance report for the existing quarry issued by the competent authority. 8. PP shall furnish the details of survival of the green belt plants while submitting EIA report. 9. PP shall mark the quarries located nearby this quarry in the KML file.

3. Seac Standard Conditions

S. No	Terms of Reference
3.1	<ol style="list-style-type: none"> 1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: <ol style="list-style-type: none"> (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. 2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site. 3. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.

S. No	Terms of Reference
	<p>4. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.</p> <p>5. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.</p> <p>6. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p> <p>7. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.</p> <p>8. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, I/I Class mines manager appointed by the proponent.</p> <p>9. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.</p> <p>10. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.</p> <p>11. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <p>12. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>13. Quantity of minerals mined out.</p> <ul style="list-style-type: none"> ● Highest production achieved in any one year ● Detail of approved depth of mining. ● Actual depth of the mining achieved earlier. ● Name of the person already mined in that leases area. ● If EC and CTO already obtained, the copy of the same shall be submitted. ● Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. <p>14. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p> <p>15. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p> <p>16. 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.</p> <p>17. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.</p> <p>18. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the</p>

S. No	Terms of Reference
	<p>Mines Act' 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.</p> <p>19. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p> <p>20. 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.</p> <p>21. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p> <p>22. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.</p> <p>23. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p> <p>24. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.</p> <p>25. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.</p> <p>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.</p> <p>27. Impact on local transport infrastructure due to the Project should be indicated.</p> <p>28. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.</p> <p>29. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.</p> <p>30. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.</p> <p>31. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.</p> <p>32. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along</p>

S. No	Terms of Reference
	<p>the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner</p> <p>33. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>34. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>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.</p> <p>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.</p> <p>37. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.</p> <p>38. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.</p> <p>39. 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.</p> <p>40. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.</p> <p>41. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.</p> <p>42. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.</p>

4. Seiaa Standard Conditions:

S. No	Terms of Reference
4.1	<p>Cluster Management Committee</p> <p>1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.</p> <p>2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,</p> <p>3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.</p> <p>4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.</p> <p>5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.</p> <p>6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.</p>

S. No	Terms of Reference
	<p>7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.</p> <p>8. The committee shall furnish the Emergency Management plan within the cluster.</p> <p>9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.</p> <p>10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.</p> <p>11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.</p> <p>Impact study of mining</p> <p>12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following</p> <ol style="list-style-type: none"> Soil health & soil biological, physical land chemical features . Climate change leading to Droughts, Floods etc. Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people. Possibilities of water contamination and impact on aquatic ecosystem health. Agriculture, Forestry & Traditional practices. Hydrothermal/Geothermal effect due to destruction in the Environment. Bio-geochemical processes and its foot prints including environmental stress. Sediment geochemistry in the surface streams. <p>Agriculture & Agro-Biodiversity</p> <p>13. Impact on surrounding agricultural fields around the proposed mining Area.</p> <p>14. Impact on soil flora & vegetation around the project site.</p> <p>15. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.</p> <p>16. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.</p> <p>17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</p> <p>18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.</p> <p>Forests</p> <p>19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.</p> <p>20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.</p> <p>21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.</p> <p>22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.</p> <p>Water Environment</p> <p>23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</p> <p>24. Erosion Control measures.</p> <p>25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.</p>

S. No	Terms of Reference
	<p>26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</p> <p>28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.</p> <p>29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p>Energy</p> <p>31. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.</p> <p>Climate Change</p> <p>32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.</p> <p>33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.</p> <p>Mine Closure Plan</p> <p>34. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.</p> <p>EMP</p> <p>35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.</p> <p>36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.</p> <p>Risk Assessment</p> <p>37. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.</p> <p>Disaster Management Plan</p> <p>38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.</p> <p>Others</p> <p>39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.</p> <p>40. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.</p> <p>41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.</p>

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.
1.3	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need eloboration in form of lengthe, quantity and quality of water to be diverted
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.

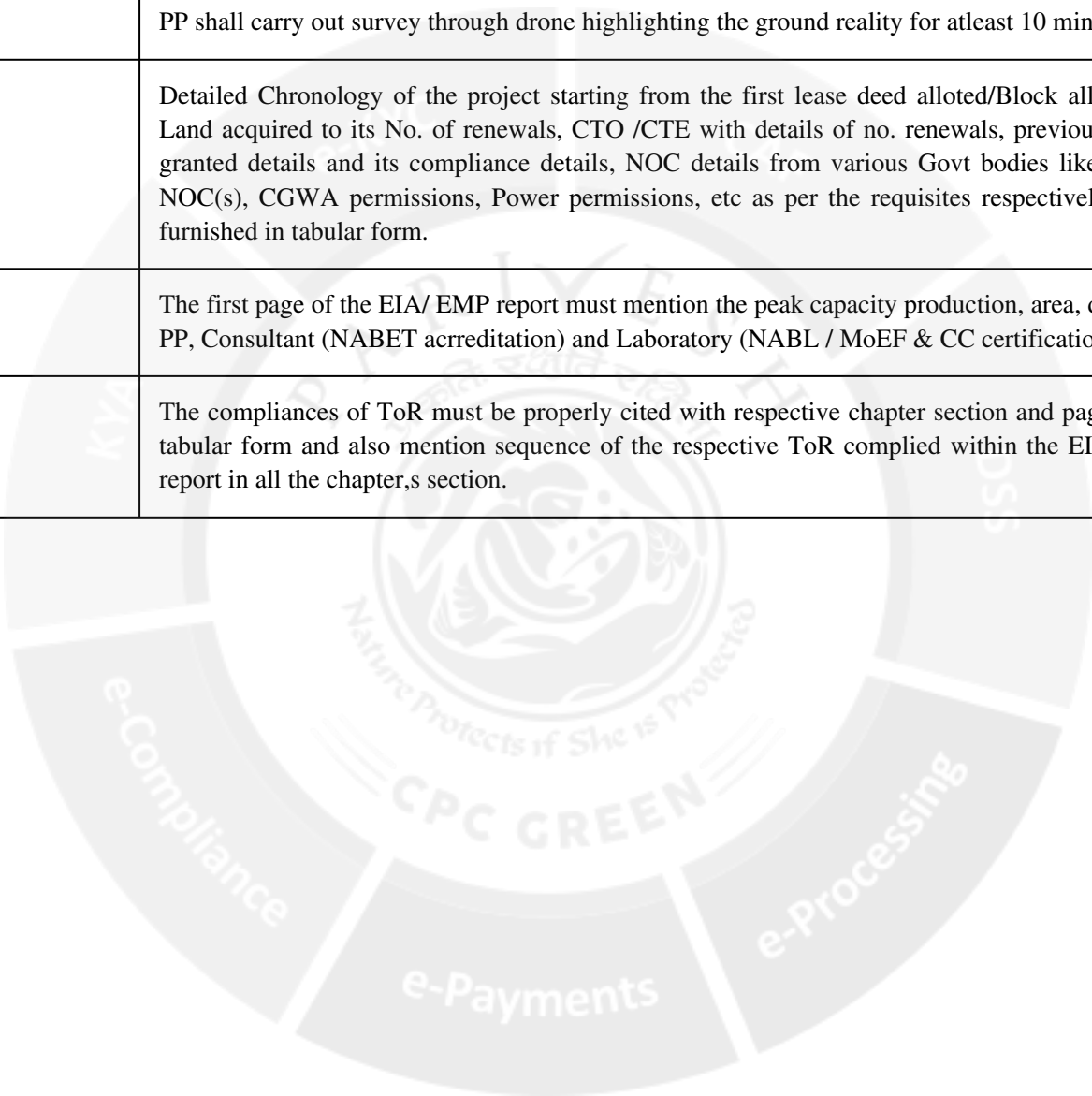
S. No	Terms of Reference																																																						
1.11	<p>A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.</p>																																																						
1.12	<p>Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights</p> <table border="1"> <thead> <tr> <th>S.N</th> <th>ML/Project use</th> <th>Land Area Surface Rights(ha)</th> <th>Area under Surface Rights(ha)</th> <th>Area Under Mining Rights(ha)</th> <th>Area under Both (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Agricultural land</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Forest Land</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>Grazing Land</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>Settlements</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>Others (specify)</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>S.N.</th> <th>Details</th> <th>Area (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Buildings</td> <td></td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td></td> </tr> <tr> <td>3</td> <td>Roads</td> <td></td> </tr> <tr> <td>4</td> <td>Others (specify)</td> <td></td> </tr> <tr> <td></td> <td>Total</td> <td></td> </tr> </tbody> </table>	S.N	ML/Project use	Land Area Surface Rights(ha)	Area under Surface Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	1	Agricultural land					2	Forest Land					3	Grazing Land					4	Settlements					5	Others (specify)					S.N.	Details	Area (ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (specify)			Total	
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1.13	<p>Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.</p>																																																						
1.14	<p>One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.</p>																																																						
1.15	<p>Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting</p>																																																						

S. No	Terms of Reference
	sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.

S. No	Terms of Reference
1.24	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.27	PP to evaluate the green house emission gases from the mine operation and corresponding carbon absorption plan.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.

S. No	Terms of Reference																																										
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.																																										
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.																																										
1.38	Corporate Environment Responsibility:																																										
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.																																										
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.																																										
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.																																										
1.42	d) To have proper checks and balances, the company should have a well laid down 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.																																										
1.43	e) Environment Managment Cell and its responsibilities to be clearly spleel out in EIA/ EMP report																																										
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.																																										
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.																																										
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.																																										
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.																																										
1.48	<p>Details on the Forest Clearance should be given as per the format given:</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%;">Total ML Total</td> <td style="width: 15%;"></td> <td style="width: 15%;">Extent</td> <td style="width: 15%;">ofBalance</td> <td style="width: 15%;">area</td> <td style="width: 15%;">forStatus of appl For</td> </tr> <tr> <td></td> <td>Project Area Forest</td> <td></td> <td>Forest</td> <td>which FC is yet to</td> <td>be diversion</td> <td>of forest</td> </tr> <tr> <td></td> <td>(ha)</td> <td>land (ha)</td> <td>Land</td> <td>obtained</td> <td>land</td> <td></td> </tr> <tr> <td></td> <td></td> <td>If more than one</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>provide details of</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>each FC</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Total ML Total		Extent	ofBalance	area	forStatus of appl For		Project Area Forest		Forest	which FC is yet to	be diversion	of forest		(ha)	land (ha)	Land	obtained	land				If more than one							provide details of							each FC				
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		each FC																																									

S. No	Terms of Reference
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.



TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

COMPLIANCE OF TOR CONDITIONS

Point wise compliance of TOR points issued by SEIAA, TN vide TOR Identification : TO23B0108TN5594047N Dated: 22/04/2024 for Mining of Minor Minerals in the Mine of “Thiru. K. Sakthivel Multi Colour Granite Quarry in S.F.Nos. 351 of Nallur Village, Kulithalai Taluk, Karur District.

ToR Ref.	Description	Response
1	<p>In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:</p> <p>(i) Original pit dimension</p> <p>(ii) Quantity achieved Vs EC Approved Quantity</p> <p>(iii) Balance Quantity as per Mineable Reserve calculated.</p> <p>(iv) Mined out Depth as on date Vs EC Permitted depth</p> <p>(v) Details of illegal/illicit mining</p> <p>(vi) Violation in the quarry during the past working.</p> <p>(vii) Quantity of material mined out outside the mine lease area</p> <p>(viii) Condition of Safety zone/benches</p> <p>(ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and</p>	<p>50 m (L) x 45 m (W) x 10 m (D) BGL.</p> <p>379.713 m³ & 25138 m³</p> <p>24758.287 m³</p> <p>10 m & 12 m</p> <p>Nil</p> <p>Nil</p> <p>Nil</p> <p>Good as per CCR</p> <p>Bench Height of 5m is provided</p>

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	ultimate depth of not exceeding 50m.	
2.	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	There is no Habitation within 300m Radius from the applied lease area. VAO Certificate is obtained from Village Administrator, Kulithalai Taluk, Karur District vide Dated:19.09.2023.
3	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Hydrological Report will be submitted along with Final Presentation.
4	The Proponent shall carry out Biodiversity study through reputed Institution and the same shall be included in EIA Report.	Biodiversity study has been conducted and detailed study is discussed in chapter 3
5	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	Veeramalai Reserve Forest and Kulithalai Reserve Forest are located 11.43 Km & 13.59 km from the Proposed Project Site and There are no Eco sensitive Boundaries within 25km from the proposed project site. DFO letter will be obtained from District Forest Officer, Karur District.
6.	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the	We have Provided the bench height of max 5m and previous mining was carried for a depth of 10m BGL and the ultimate depth is 23 m BGL.

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	<p>approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions -CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p>	<p>Scientific Slope study will be carryout and submit along with final presentation.</p>
7	<p>However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.</p>	<p>Ultimate Depth of Project is 23m BGL so it is lesser than 30m. Not applicable for Slope Stability Plan.</p>

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

8	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	It is a Granite Quarry. We adopt Diamond wire saw cutting method and hence we use minimal amount of Blasting in rare cases.
9	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	We adopt Diamond wire saw cutting method hence we does not use blasting in our project
10	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	It is an Existing Quarry. Proponent is well experienced in Granite quarry operation of more than 15 years. Proposed quarry has lease executed for 20 years now; we are applying for 1 st Scheme of Mining. We will incorporate the Drone video and site Photographs along with Final Presentation

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

11	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	Existing Pit Letter was obtained from the Deputy Director, Dept. Geology and Mining Vide Letter No. Rc.No.67/Mines/2022, Dated: 27.07.2023
12	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Mining was carried out on 2017-18 to 2021-22 for the period of 5 Years and the total Excavated quantity of 379.713 m ³ . Existing Pit letter is incorporated along with the EIA Report
13	<p>Quantity of minerals mined out Highest production achieved in any one year</p> <ul style="list-style-type: none"> ➤ Detail of approved depth of mining. ➤ Actual depth of the mining achieved earlier. ➤ Name of the person already mined in that leases area. ➤ If EC and CTO already obtained, the copy of the same shall be submitted. ➤ Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. 	<p>15 m BGL</p> <p>10 m BGL</p> <p>Thiru. K. Sakthivel (Proponent)</p> <p>We have obtained CCR EC and CTO copy are incorporated in CCR.</p> <p>Yes, Mining was carried out as per Environmental Clearence.</p>

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

14	<p>All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).should be indicated.</p>	<p>All corner coordinates of the lease area, Toposheet, Geolomorphology, Lithology are incorporated in Chapter 3 of EIA Report</p>
15	<p>The PP shall carry out Drone video survey covering the cluster, green belt, fencing, Etc.,</p>	<p>Drone video survey will be carried out and incorporated along with final Presentation</p>
16	<p>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.</p>	<p>Photographs of Fencing, Greenbelt along with Periphery safe distance will be incorporated along with final Presentation</p>

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

17	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.	We have discussed the Quantity of Geological, Mineable and Yearwise reserve along with Methodology in EIA Report
18	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Complied. Manpower requirements table attached in EIA Report Chapter 2
19	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with	Hydro Geological study report will be submitted during final EIA Presentation.

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	<p>the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p>	
20	<p>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.</p>	<p>The proponent has furnished the baseline data for the Environmental and ecological parameters with regard to surface water/ Ground water quantity, air quantity, soil quantity & Flora/fauna including traffic / vehicular movement study datils attached in EIA report chapter 3.</p>
21	<p>The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the</p>	<p>Noted. Agree to Comply.</p>

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	concerned quarry and the surrounding habitations in the mind.	
22	Rainwater harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Noted. Agree to Comply.
23	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.	Current land use of the study area has attached in EIA report chapter 3.Operational and post operational land use will be submitted.
24	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	The overburden is in the form of topsoil and weathered rock formation. It will be quarried for filling purposes to nearby end users and part of soil will be preserved all along the boundary as barrier for afforestation.
25	Proximity to Areas declared as	Noted.

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	<p>'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.</p>	
26	<p>Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.</p>	<p>The ultimate pit at the end of the mining operation will be used for rainwater storage, the stored water will be used for green belt development and further the stored water will be used for domestic purposes (other than drinking) after proper treatment.</p>
27	<p>Impact on local transport infrastructure due to the Project should be indicated.</p>	<p>Traffic impact assessment has given in EIA report chapter 3.</p>
28	<p>A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.</p>	<p>No tree species were found inside the project site. only few shrubs and thorny bushes were present. Tree survey study details given in EIA report chapter 3.</p>
29	<p>A detailed mine closure plan for the proposed project shall be</p>	<p>Noted. The mine plan and mine closure plan has been approved by the</p>

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	included in EIA/EMP report which should be site-specific.	Assistant Director, Department of Mining and Geology, Virudhunagar District.
30	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	Noted. Agree to Comply.
31	The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	Noted. Agree to comply.
32	Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the	The Green belt plan enclosed with mining plates in Annexure VII

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	<p>advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner</p>	
33	<p>A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p>	<p>Disaster management plan has prepared and enclosed in Chapter 7.</p>
34	<p>A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p>	<p>Risk assessment and management plan has prepared and enclosed in chapter 7.</p>
35	<p>Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific</p>	<p>Occupational Health impacts of the project has prepared and incorporated in Environmental management plan.</p>

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	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.	Suitable measure will be adopted to minimize occupational health impacts of the project.
37	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	The socio-economic study has been discussed in chapter 3.
38	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No. litigation is pending against the project in any court.
39	Benefits of the Project if the Project is implemented should be	Benefits of the project has incorporated in EIA report chapter 8

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.,	
40	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	Agree to comply.
41	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	The PP will prepare the EMP for the entire life/lease of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
42	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted.

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

Additional ToR Compliance by SEAC

S.No.	Condition	Compliance
1.	The Proponent shall justify the selection of the site for carrying out the stone quarrying with the total volume arrived for the excavation & production adequate details such as lithology of the deposit, reserve estimation, place for waste dump/mined mineral storage, end-use of mined materials, identified potential customers/end-users and travel path	It is a Multicolour Granite quarry. Total Geological Quantity of 2,33,664 m ³ , Total Mineable quantity of 1,17,570 m ³ and total year wise for the 1 st Scheme of mining is 26142 m ³ . Already mining was carried out in the lease area for the period of 5 years from 2017-18 to 2021 - 22.
2.	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc..	Will be Complied along with final Presentation.
3.	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc located within 1 km of the proposed quarry.	The PP will submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

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.	Will be incorporated in final Presentation.
5.	The Proponent shall carry out Biodiversity study through Department of Ecology and Environmental Sciences, Pondicherry University and the same shall be included in EIA Report.	The Proponent will carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.
6.	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	The Proponent will carry out Biodiversity study through reputed Institution and the same shall be included in EIA Report.
7.	The PP shall furnish the certified compliance report for the existing quarry issued by the competent authority	Complied.
8.	PP shall furnish the details of survival of the green belt plants while submitting EIA report.	Greenbelt details has been discussed in EIA report chapter 2 and the green belt plan has been in annexure VII
9.	PP shall mark the quarries located nearby this quarry in the KML file.	Noted. Agree to Comply.

Additional TOR by SEIAA

1	Cluster Management Committee, which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Noted All the proponents in the cluster is discussed in Chapter-2, Page number-35
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TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	Green belt development, water sprinkling, tree plantation is discussed in chapter-2, Page number-58
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Agreed to comply.
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Agreed to comply.
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Risk management plan is discussed in Chapter-7, page number-135
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Agreed to comply.
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed to comply.

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8	The committee shall furnish the Emergency Management plan within the cluster.	Emergency management plan is discussed in Chapter-7.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Health of workers and staff is discussed in Chapter-9 Page number-153.
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	Agreed to comply.
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents	Fire safety and evacuation plan is discussed in chapter-7
12	<p>Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following</p> <p>a) Soil health & soil biological, physical land chemical features .</p> <p>b) Climate change leading to Droughts, Floods etc.</p> <p>c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.</p> <p>d) Possibilities of water contamination and impact on aquatic ecosystem health.</p> <p>e) Agriculture, Forestry & Traditional practices.</p> <p>f) Hydrothermal/Geothermal effect due to destruction in the Environment.</p> <p>g) Bio-geochemical processes and its foot prints</p>	<p>The biodiversity has been studied and discussed in chapter 3.</p> <p>The soil erosion map 5km surrounding the project site has been given in chapter 3.</p> <p>The detailed study will be carried out and is enclosed in the EIA Report.</p>

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	including environmental stress. h) Sediment geochemistry in the surface streams.	
13	Impact on surrounding agricultural fields around the proposed mining area.	There is no agricultural fields around the proposed mining area
14	Impact on soil flora & vegetation around the project site	Impact on soil flora & vegetation around the project site discussed in Chapter-4 page number-110
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Type of vegetation no.of trees & shrubs is discussed in Chapter 3.
16	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	Noted and will be complied.
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted and will be complied.
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The detailed study will be carried out and furnished in the Final Presentation.
19	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	Study has been conducted and include in reserve forest in final EIA report.
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic,	The biological environment impacts, and its mitigation measures has been

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	vulnerable and endangered indigenous flora and fauna.	given in Chapter 4.
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	There is no existing trees in the project site and surrounding the project site. Only thorny shrubs were present.
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Study has been conducted and discussed in chapter 2.
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	The hydro-geological study will be conducted and submitted in EIA presentation..
24	Erosion Control measures.	The soil erosion map 5km surrounding the project site has been given in chapter 3. The soil samples have been collected surrounding the project site and physical, chemical components and microbial components study has been carried out and the results are tabulated in chapter 3

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	The water environment impacts and its mitigation measures has been given in Chapter 4
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	There is no water bodies within 1km radius, The seasonal pond located 50m south from the project site. Water gets stagnant only during rainy season. Hence there won't be much impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	There is no existing trees in the project site and surrounding the project site. Only thorny shrubs were present.
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible landform changes visual and aesthetic impacts.	The water environment impacts and its mitigation measures has been given in Chapter 4
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The soil erosion map 5km surrounding the project site has been given in chapter 3. The soil samples have been collected surrounding the project site and physical, chemical components and microbial components study has been carried out and the results are tabulated in chapter 3

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The biological environment impacts, and its mitigation measures has been given in Chapter 4
31	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	Measures has been discussed in Chapter 3 of EIA Report.
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Noted and agree to comply.
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	Noted and will be complied.
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Noted. Agree to comply.
35	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Environment Management Plan has been described in detail in Chapter-10 of the EIA/EMP Report.
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	The EMP details has been given in Chapter 8
37	To furnish risk assessment and management plan including anticipated vulnerabilities during	The hydro-geological study will be conducted and submitted in EIA

TOR Reply of Proposed Multi Colour Granite Quarry over an Extent of 2.51.5 Ha

	operational and post operational phases of Mining.	presentation.
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazard & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	A Risk Assessment and management Plan will be prepared and complied.
39	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.	Obtained and same has been attached as Annexure.
40	As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.	Noted and public hearing details are included in chapter 7 of final EIA report.
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and freshwater systems due to activities, contemplated during mining may be investigated and reported.	There will not be any plastic and microplastic pollution due to mining activity. Also, we ensure that we won't use any single use plastics in the project site.

ANNEXURE-II
PRECISE AREA COMMUNICATION



ABSTRACT

Mines and Quarries – Minor Mineral – Multi Colour Granite – Karur District, Kulithalai Taluk, Nallur Village - S.F.No. 351 - Over an extent of 2.51.5 Hects of Patta land – Quarry Lease Application of Thiru. K. Sakthivel – Grant of quarry lease - Sanctioned – Orders – Issued.

Industries (MMB.2) Department

G.O. (3D) No.12

Dated:11.08.2017

ஹெவிஸ்பி-ஆர் 26

திருவள்ளூர் ஆண்டு 2048

Read:

- 1) From Thiru. K. Sakthivel Quarry Lease Application dated: 05.02.2016.
- 2) From the District Collector, Karur, Letter Rc. No.163/Mines/2016, Dated: 5.8.2016.
- 3) From the Commissioner of Geology and Mining, Chennai, File No.5369/MM2/2016, Dated: 23.8.2016.
- 4) Government Letter No.11329/MMB.2/2016-1, dated: 17.10.2016.
- 5) From the Commissioner of Geology and Mining Letter No.5369/MM2/2016, dated: 03.11.2016.
- 6) From the District Collector, Karur / Chairman, DEIAA, Letter No.DEIAA-DIA/TN/MIN/ 5852/ 2017-KRR Ec.No. 17/2017/Mines, dated: 02.08.2017.

ORDER:

In the reference first read above, Thiru. K. Sakthivel has applied for grant of lease for quarrying Multi Colour Granite over an extent of 2.51.5 hectares of patta land in S.F.No.351 of Nallur Village, Kulithalai Taluk, Karur District for a period of 20 years under rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959.

2. In the reference second and third read above, the Collector of Karur District and the Commissioner of Geology and Mining have



2.

received and forwarded the application of Thiru. K. Sakthivel to the Government for passing orders.

3. Based on the reports of the District Collector, Karur and the Commissioner of Geology and Mining, the Government have examined the quarry lease application of the individual and communicated the area recommended by the Commissioner of Geology and Mining as precise area and requested the applicant in the reference fourth read above to furnish the approved Mining Plan as per sub-rule (13) of rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959 through the Commissioner of Geology and Mining and to produce environmental clearance from the DEIAA. The Commissioner of Geology and Mining in his reference 5th read above has approved the mining plan as per sub-rule (13) of rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959 subject to the condition that the applicant shall obtain the Environmental Clearance as per the orders of the Hon'ble Supreme Court of India Order dated: 27.2.2012 in I.A.No. 12-13/2011 in SLP (C) No.19629/2009 and as per the Office Memorandum No.L11011/47/ 2011-1A II(M), dated: 18.5.2012 of Ministry of Environment and Forest, Government of India. The District Level Environment Impact Assessment Authority in their reference 6th read above have accorded Environment Clearance for mining in the above said area subject to certain conditions.

4. The Government after careful examination have decided to grant lease to quarry Multi Colour granite to Thiru. K. Sakthivel in the above patta lands. Accordingly, in exercise of the powers conferred under Rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959, the Governor of Tamil Nadu hereby grant quarry lease to Thiru. K. Sakthivel for quarrying Multi Colour Granite over an extent of 2.51.5 hectares of patta land in S.F.No.351 of Nallur Village, Kulithalai Taluk, Karur District for a period of twenty years, subject to the conditions specified in the annexure to this order and also the following special conditions along with all the conditions imposed by the District Level Environment Impact Assessment Authority in the reference 6th read above.

- 1) 7.5 meter safety distance should be provided for the adjacent patta lands.
- 2) 10 meters safety distance should be provided for the adjacent Tharisu poramboke land in S.F. No.352/1 lying on the eastern side of the applied area.
- 3) No hindrance shall be caused to the adjacent patta and poramboke land while quarrying and transportation of Granite.



- 4) The applicant should fence the lease granted area with barbed wire before the execution of lease deed as follows:-
 - The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters with a distance between two pillars shall not be more than 3 meters.
 - The applicant shall incorporate the DGPS readings for the entire boundary pillars of the area and the same should be clearly shown in the mining plan.
- 5) The lessee shall strictly adhere to the statutory and safety requirements.
- 6) The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
- 7) Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- 8) The lease grantee shall submit scheme of mining; mine closure plan and other statutory requirements within the time stipulated for submission of the above, as per rules.
- 9) The District Collector, Karur shall obtain a sworn-in-affidavit from the appellant containing the above conditions before execution of lease deed and also ensure that the instructions issued in Government Letter No.12789/MMB.2/2002-7, Industries Department, Dated: 9.1.2003 are complied with.

5. The Collector of Karur District is requested to take necessary further action for the execution of agreement in the prescribed form and communicate the date of execution of agreement to the Government and Commissioner of Geology and Mining.



-4-

6. The District Collector, Karur is also directed to verify and furnish a certificate to the effect that all lease deed conditions and other conditions mentioned in paragraph 4 above have been complied with, duly incorporated in the lease agreement and send it to the Government. The District Collector, Karur is also instructed to include all the conditions imposed by District Level Environment Impact Assessment Authority in the reference 6th read above.

(BY ORDER OF THE GOVERNOR)

ATULYA MISRA
PRINCIPAL SECRETARY TO GOVERNMENT

To
✓ Thiru. K. Sakthivel,
S/o. Karuppannan,
Ponnampatti, Perunthalur Village,
Kulithalai Taluk, Karur District.

The Commissioner of Geology and Mining,
Guindy, Chennai - 600 032.

The District Collector,
Karur District.

Copy to:
Special Personal Assistant to Hon'ble Minister for Industries,
Chennai-600 009.
Industries (OP.II) Department, Chennai - 600 009.
Stock File / Spare Copy.

// Forwarded By order //

M. Senthil Kumar
11.8.17
SECTION OFFICER

Home
11.8.17



Annexure

G.O (3D) No.12, Industries (MMB.2) Department, Dated: 11.08.2017

1. The applicant shall execute an agreement within one month from the date of receipt of the Government order.
2. The date of commencement of the period of lease shall be the date on which the agreement is executed.
3. The applicant shall pay seigniorage or dead rent whichever is more in respect of the actual quantity of granite removed at the rate prescribed from time to time in Appendix-II of the Tamil Nadu Minor Mineral Concession Rules, 1959.
4. The applicant should keep correct accounts showing the quantities and other particulars of all minerals obtained from the lands permitted to quarry.
5. The applicant should also allow any officer authorized by the District Collector or any other officer authorized by the State Government in this behalf to inspect the area and verify records and accounts and furnish such information under the terms as may be required by them.
6. The applicant shall carry out the quarrying operations in skilful, scientific systematic manner keeping in view, the proper safety of the labour conservation of minerals and preservation of environment ecology.
7. The applicant shall allow any officer authorized by the District Collector and Director of Geology and Mining to enter upon the area and inspect for the purpose mentioned in conditions 4 and 6 above and also carry out the directions issued to the satisfaction of the above said authorities.
8. No quarrying activities connected there to shall be done before the execution of the agreement and registration is at the cost of the applicant.
9. No hindrance shall be caused to the adjoining pattadars or public.
10. The applicant should restrict his mining operation strictly within the permitted area as defined in the sketch.
11. The terms and conditions are also subject to such further modifications, deletion and additions alternation as may be ordered by the Government to be included in the agreement to be executed for this purpose.



12. The applicant should maintain at his cost proper signboards indicating the survey numbers, years of the lease, name of the lease holder and the lease period to the satisfaction of the District Collector, Director of Geology and Mining and maintain it all time at the quarry site.
13. No quarrying shall be done within a distance of 7.5 metres of the boundaries of the permitted area.
14. The applicant should make his own arrangements to form the approach road from the public road to the place of his quarry.
15. The lessee shall strictly adhere to the statutory and safety requirements.
16. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
17. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
18. That the approval of the mining plan does not in any way imply the approval of the Government in terms of any other provision, Mines and Minerals (Development and Regulation) Act, 1957, or any other connected Laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act 1884, (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Minerals Concession Rules, 1959.
19. That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

ATULYA MISRA
PRINCIPAL SECRETARY TO GOVERNMENT

// True copy //

M. S. Senthil Kumar
11.5.17
SECTION OFFICER

H. S. Senthil Kumar
11.2.17

S. Dhanasekar
S. DHANASEKAR, M.Sc. (Geo)
Qualified Person

ANNEXURE-III
MINING PLAN APPROVED LETTER

Letter

COMMISSIONERATE OF GEOLOGY AND MINING

From
Thiru J.Jayakanthan, I.A.S.,
Commissioner
Commissionerate of Geology and Mining,
Guindy,
Chennai-32

To
Thiru.K.Sathivel,
Ponnampatti,
Pernthalur Village,
Kulithalai Taluk,
Karur District

Rc. No. 4088/MM2/2022, Dated:21.01.2023

Sir,

Sub: Mines and Mineral - Minor Mineral - Multicolour Granite - Karur District - Kulithalai Taluk - Nallur Village - S.F.No.351 over an extent of 2.51.5 Hect., - Quarry lease granted to Thiru.K.Sakthivel - 1st Scheme of Mining submitted for approval - Recommended and Forwarded by Deputy Director, Geology and Mining, Karur -Report called for - Approval accorded - Regarding.

- Ref:**
- 1) Mining plan approved by Commissioner of Geology and Mining, Industrial Estate, Guindy, Chennai -32 vide reference No. 5369/MM2/2016, Dt. 03.11.2016.
 - 2) G.O.(3D) No.12, Industries (MMB2), Department, Dated:11.08.2017.
 - 3) 1st Scheme of mining submitted by Thiru.K.Sakthivel,S/o.Karuppannan, Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District, letter dated: 04.05.2022
 - 4) Deputy Director, Geology and Mining, Karur. Lr.No.67/Mines/2022, dated.15.06.2022.
 - 5) Commissioner of Geology and Mining letter in Rc No. 4088/MM2/2022 dated17.09.2022.
 - 6) Deputy Director, Geology and Mining, Karur. Lr.No.67/Mines/2022, dated 16. 12.2022

Kind attention is invited to the references cited above.

2) Thiru.K.Sakthivel has been granted quarry lease for quarrying Multi Colour Granite in S.F.No.351 over an extent of 2.51.5 Hect. of patta land in Nallur Village, Kulithalai Taluk, Karur District vide G.O.(3D) No.12, Industries (MMB2), Department, Dated:11.08.2017.

The lease deed was executed on 05.09.2017 and Mining operation commenced on 11.09.2017. The lease period is twenty years from 05.09.2017 to 04.09.2037. The mining plan for the subject lease was approved by Commissioner of Geology and Mining vide letter No. 5369/MM2/2016 dated 03.11.2016.

3) The Deputy Director (G&M), Karur District in the reference 4th cited has recommended and forwarded the 1st Scheme of Mining Plan submitted by the lessee Thiru.K.Sakthivel for the period from 2022-23 to 2026-27 for approval in respect of multi-colour granite in Nallur Village, Kulithalai Taluk, Karur District and reported that as per 1st Scheme of Mining plan submitted by the lessee, the mineable reserves are calculated at 50% recovery factor is about 26,142 cbm of Multi Colour Granite up to 23 mts depth. Further, the lessee, Thiru.K.Sakthivel has complied the terms and conditions stipulated in the lease granting G.O and the lease deed and there is no violations are noticed in the subject area. There is no litigation in the subject area. The Geological plan, Geomorphological and reserve details furnished in the scheme of mining plan are verified with the ground realities and they are found to be correct.

4) Based on the recommendation of the Deputy Director (G&M), Karur and in exercise of the powers conferred under Rule, 18(4) of Granite Conservation and Development Rules, 1999 read with G.O.(Ms).No.87, Industries (MMC.1) Department dated 22.02.2001, the 1st Scheme of Mining submitted by Thiru.K.Sakthivel is hereby approved for the period from 2022-23 to 2026-27 for the proposed production of 26142 Cbm from the ROM of 52284 Cbm of granite subject to the following conditions:

- i. A safety distance of 7.5 meters should be maintained to adjacent Patta lands.
- ii. A safety distance of 10 metres should be maintained to the adjacent Tharisu poramboke land in S.F.No.352/1) lying on eastern side of the applied area.
- iii. No hindrance shall be caused to the adjacent patta and poramboke lands while quarrying and transport granite.

- iv. This scheme of mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
- v. The approval of the scheme of mining (including progressive mine closure plan) does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1986, Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- vi. This scheme of mining including progressive mine closure plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- vii. Provisions of the Mines Act, 1952 and the Rules and Regulations made there under including submission of notice of opening, appointment of manager and other statutory officials as required under Mines Act, 1952 shall be complied with.
- viii. Provisions made under Mines and Minerals (Development & Regulation) Act, 1957, MMDR Amendment Act, 2015 and Granite Conservation and Development Rules, 1999 made there under shall be complied with.
- ix. This approval of scheme of mining is restricted to the mining lease area only. The mining lease area is as shown on the statutory plan under Granite Conservation and Development Rules, 1999. The Directorate of Geology and Mining 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.
- x. If anything is found to be concealed as required by the Granite Conservation and Development Rules, 1999 and Tamil Nadu Minor Mineral Concession Rules, 1959 and proposal for rectification has not

been made, the approval shall be deemed to have been withdrawn with immediate effect.

- x. Relaxation to be obtained under Rule 106(2)(a)&(b) of Metalliferous Mines Regulations, 1961 from the Director of Mines Safety, if necessary.
- xi. The lessee should obtain environmental clearance from the appropriate authority.
- xii. This 1st Scheme of Mining is approved for the proposal contained therein and is applicable from the date of approval of the document for the quarrying activities to be carried out within the leasehold area.
- xiii. The earlier instances of irregular / illegal quarrying, if any, shall not be regularized through the approval of this document.
- xiv. The lessee shall remit the penalty / cost of mineral / other dues if any as arrived by the Deputy Director/ Assistant Director (G&M), Karur District.
- xv. The quarry labourers shall be registered with the Labour Board and shall be enrolled under the Insurance Scheme.
- xvi. Non adherence to any condition set-out above, the approval shall be deemed to have been withdrawn with immediate effect.
- xvii. The applicant should comply with the conditions stipulated in the Government of India, Ministry of Mines order no.11/02/2020, dated 14.01.2020 issued as per the orders of the Hon'ble Supreme Court of India dated 08.01.2020 states that, "the mining lease holders shall after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to this mining activities and restore the land to a condition which is fit for growth of fodders, flora and fauna etc."
- xviii. The child labourer should not be engaged in the quarry works.
- xix. The lessee has to pay the stamp duty for enhanced quantity in the 1st scheme of mining.
- xx. No encroachment shall be made in the adjacent tharisu poramboke land and the waste generated during the quarrying operation shall not be dumped in the adjacent tharisu poramboke land.

- xxii. The waste material generated during the time of quarry should be dumped only within the lease hold area that will be earmarked for the purpose in the mining plan as per rule 31 of granite conservation development and regulation act, 1999.

Approved scheme of mining is sent herewith for further necessary action.

Encl: Approved scheme of mining

Dr. P. S. Srinivasan
15/12/2023
Commissioner of Geology and Mining

Copy to:

1. The Director of Mines Safety,
Lapis Lagoon, AA Block,
Shanthi Colony, Anna Nagar,
Chennai-40. (With AMP)
2. The Deputy Director,
Geology and Mining,
Karur. (With AMP)
3. The District Collector,
Karur.

Su
15/12/2023

Copy Submitted to:

Additional Chief Secretary to Government,
Industries, Investment Promotion &
Commerce Department, Secretariat,
Chennai-09.

ANNEXURE-IV
500M Radius letter

From
Dr.P.Jayapal M.Sc., Ph.D.,
Deputy Director,
Geology and Mining,
Karur.

To
Thiru.K.Sakthivel,
S/o.Karuppannan,
Ponnampatti,
Perunthalur Village,
Kulithalai Taluk,
Karur District

R.C. No.67/Mines/2022, Dated: 27.07.2023

Sir,

Sub: Mines and Minerals – Minor Mineral – Multicolour Granite – Karur District – Kulithalai Taluk – Nallur Village – S.F.No.351 over an extent of 2.51.5 Hect., of patta land - quarry lease granted to Thiru.K.Sakthivel - Requested for - Production quantity, existing depth and Existing/proposed/expired & abandoned quarries situated within 500 mts radial distance and permitted quantity - details furnished – Regarding.

- Ref: 1. G.O.(3D) No.12, Industries (MMB2), Department, Dated:11.08.2017.
2. The Commissioner of Geology and Mining, Guindy, Chennai -32 letter Rc.No.4088/MM2/2022, dated:21.01.2023.
3. Thiru.K.Sakthivel letter dated:07.07.2023 and 18.07.2023.

In the reference 1st cited, Thiru.K.Sakthivel had been granted quarry lease for quarrying Multicoloured Granite in S.F.No.351 over an extent of 2.51.5 Hect., of patta land in Nallur Village, Kulithalai Taluk, Karur District for a period of 20 year under rule 19-A of Tamil Nadu Minor Mineral Concession Rule, 1959 and lease deed executed on 05.09.2017. The lease period is from 05.09.2017 to 04.09.2037.

Further, the Commissioner of Geology and Mining, Chennai has approved for 1st Scheme of Mining in respect of above said quarry vide in the reference 2nd cited.

In this regard, Thiru.K.Sakthivel have requested the Deputy Director, Geology and Mining, Karur to provide the details of production quantity, existing depth and existing/proposed/expired & abandoned quarries with 500 meter radial distance from the lease granted area.

As requested by the lessee the particulars furnished as detailed below.

I. Existing Quarries: -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period	Remarks
1	Thiru.K.Sakthivel, S/o.Karuppannan, Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District	Multicoloured Granite	Kulithalai Taluk, Nallur Village	351	2.61.5	05.09.2017 to 04.09.2037	Scheme of Mining plan approved and proposal sent for Environmental Clearance
2	M/s Apple Granites S.F.No.299/1, 2 Kallai Village Kulithalai Taluk Karur District.	Multicoloured Granite	Kulithalai Taluk, Kallai Village	299/1 (P) 299/2A (P) 299/2B (P) 301/1 (P) 302/2 (P) 302/3 (P)	2.97.0	21.02.2018 to 20.02.2038	Scheme of Mining plan approved and proposal sent for Environmental Clearance
3	M/s V.B.S. Exports No.38, Srinivasa Nagar 1st street Thirunagar, Madurai District.	Multicoloured Granite	Kulithalai Taluk, Kallai Village	349/part 303/2A(P) 302/1(P) Total	2.80.5	21.02.2018 to 20.02.2038	Last permit obtained on 21.07.2022

II. Proposed Quarries: -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1	-- Nil--					

III. Lease Expired Quarries: -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1	-- Nil--					

IV. Abandoned Quarries: -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1	-- Nil--					

V. Details of production quantity:

- a. Details of approved quantity of Multicoloured Granite as per EC and approved mining plan : 25138 cbm
- b. Details of permit issued quantity for Multicoloured Granite as on date : 379.713 cbm
- c. Validity period mining plan : 5 years

VI. Details of existing Depth:

As per the scheme of Mining approved by the Commissioner of Geology and Mining, Chennai, dated:21.01.2023 submitted by the applicant, it reveals the average dimensions of pits as follows; -

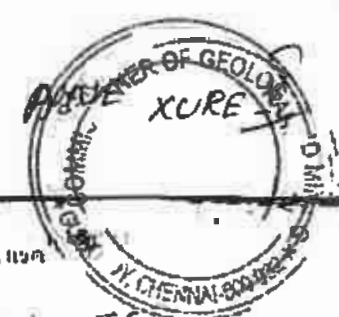
Sl No.	Description	Length	Width	Depth
1	Pit	50	45	10

[Signature]
27/07/23
Deputy Director,
Geology and Mining,
Karur.

[Signature]
27/07/2023

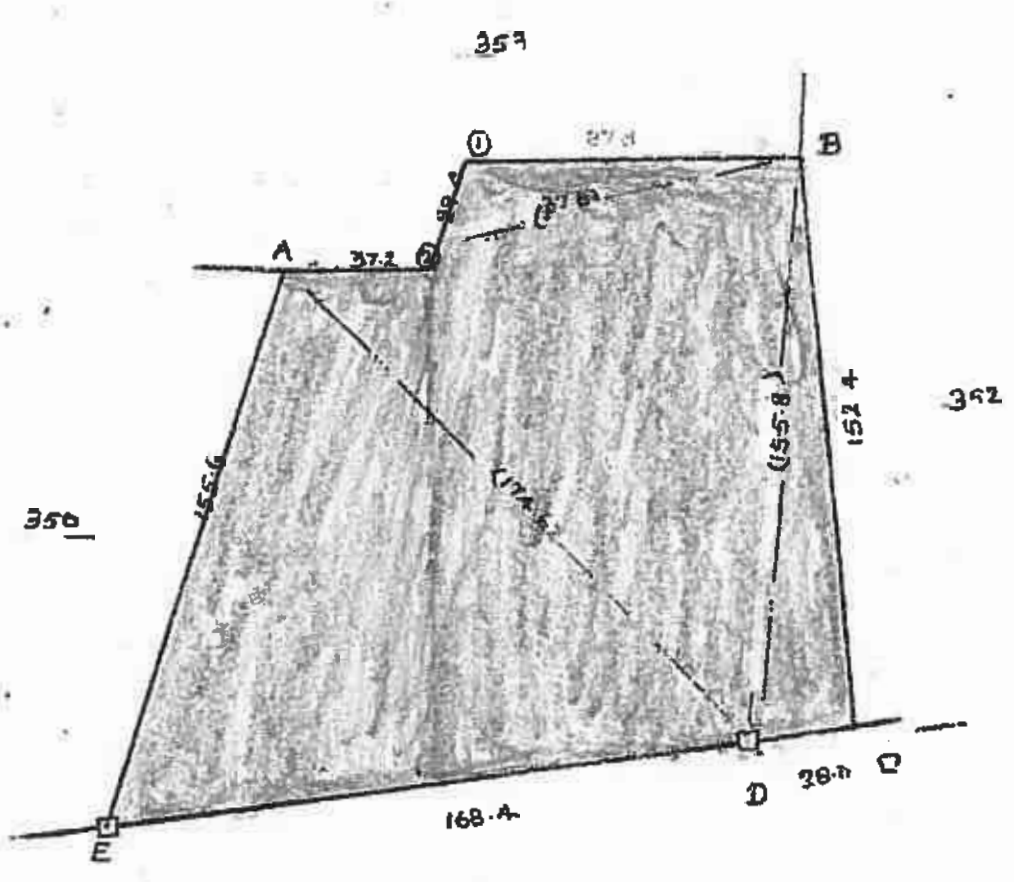
ANNEXURE-V
FMB, A REGISTER, VILLAGE MAP AND
PATTA COPY

மரபுமீட்டம் :- கனம்
 உடல் :- குளித்திணை
 கிராமம் :- நெல்லை.



மரபுமீட்டம் . திருச்சிராப்பள்ளி
 மரபுமீட்டம் குளித்திணை
 புல எண். 351

35
 161
 2



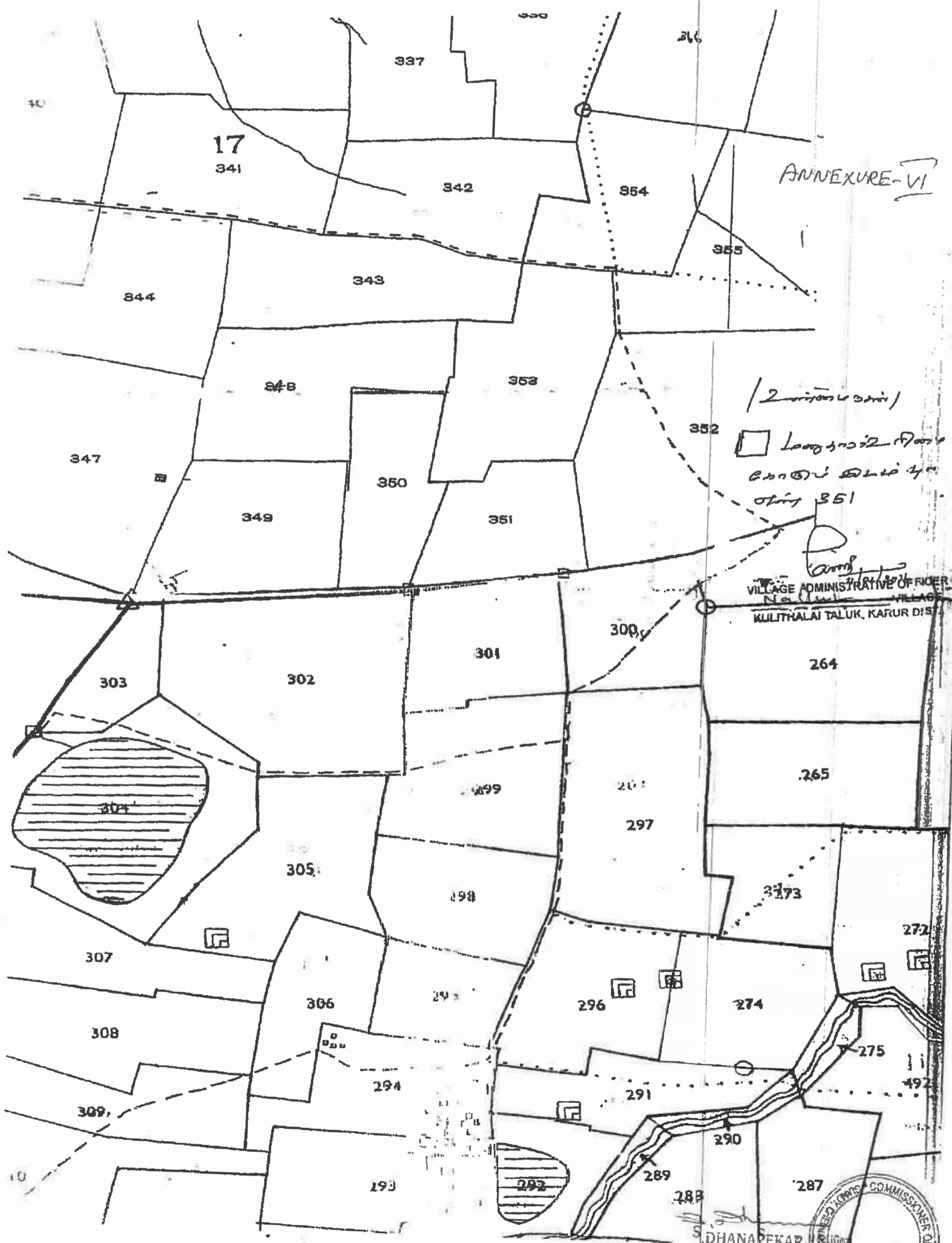
கிராம எண் 45 களகை.

(2 கட்டைகள்)

S. DHANASEKAR, M.Sc. (Geo)
 Qualified Person

P. Ann
 கிராம நிர்வாக அலுவலர்
 23, பழைய கிராமம்
 மதுரை.

2	7.8	A	137.6		
			701.2		
			85.8	176	1
		B	155.8		
			5.4	27.4	C



ANNEXURE-VI

(2 வினாக்கள்)
 □ Long 4002 7000
 6000 5000 4000
 01/11/351

VILLAGE ADMINISTRATIVE OFFICER
 KULTHALAI TALUK, KARUR DIST.

DHANAPEKAR
 Qualified Per



பெரிய நகராட்சி (Municipality) 25.0

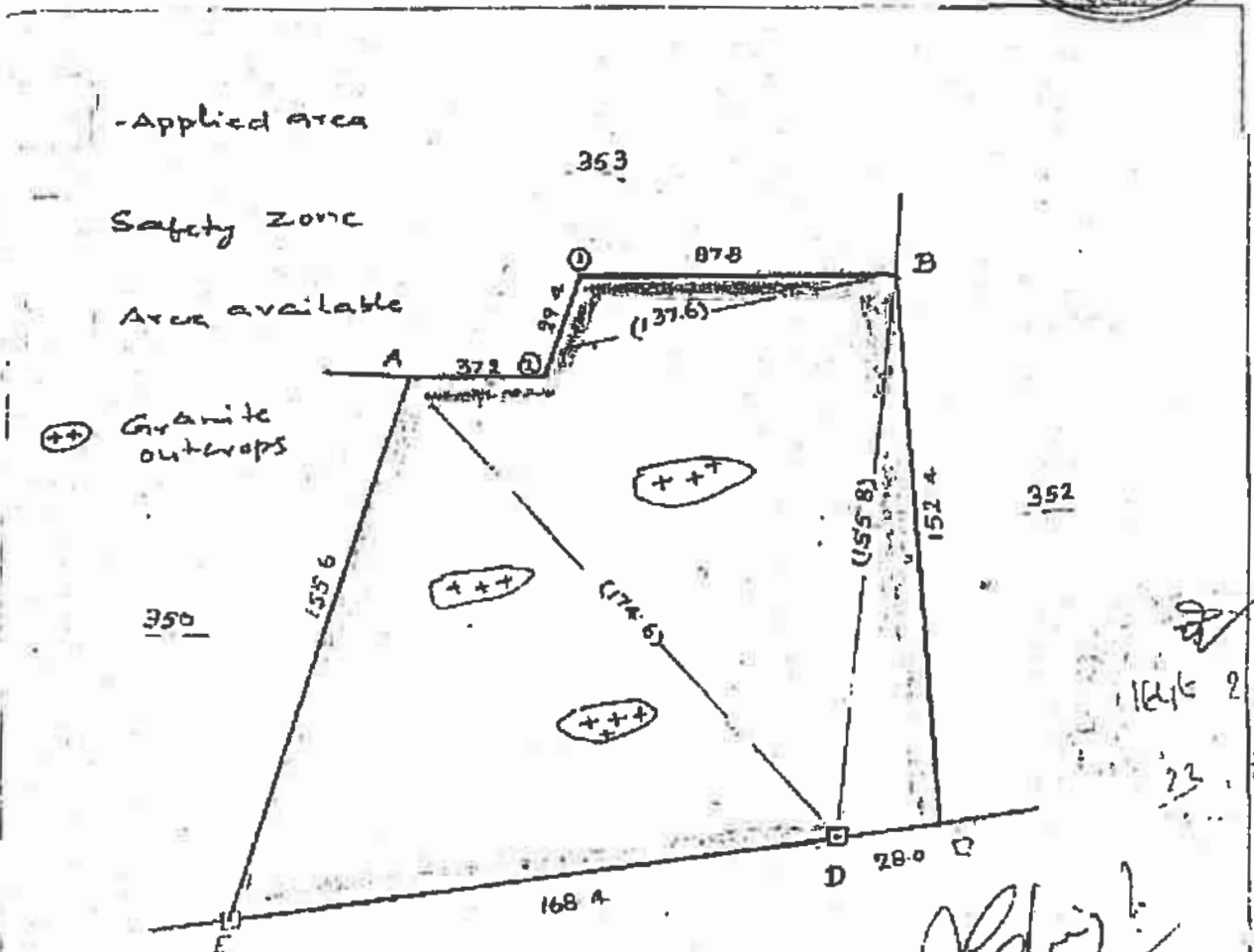
சென்னை நகராட்சி

பெண்: 351

பெண்

பெண்

பெண்: பெருங்கோ



16/10 2 17
23 27

கிராம எண் 4.6 கள்ளை.

DISTRICT COLLECTOR, KARUR.

சென்னை நகராட்சி
வட்டாளர் சபை
சென்னை.

கரூர் நகராட்சி 251-5000
பெண்: 351. கரூர் நகராட்சி 251-5000

25.0
4.17
ASSISTANT DIRECTOR
GEOLOGY AND MINING
KARUR

REGISTRAR & ESF

வட்டாளர் சபை
சென்னை.

		A		
		137.6		
2	78	701.2		
		85.8	176	1
		B		
		155.6		
		5A	27.4	C
		D		

பெண்: 206 31 18

சென்னை நகராட்சி
பெண்: 206 31 18

3 16 85 31 18



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர்

வட்டம் : குளித்தலை

வருவாய் கிராமம் : நல்லூர்

பட்டா எண் : 1944

உரிமையாளர்கள் பெயர்

I	கருப்பணிகள்		மகன்		சக்திலேல்		
	நன்செய்		புன்செய்		பற்றாவை		
	பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
35:				2 - 51.50	3.11		
				2 - 51.50	3.11		

குறிப்பு 2 :

	1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் http://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/2017/01944/30578 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
	2. இது நகவாய்கள் 07-09-2017 அன்று 06:34:16 PM நேரத்தில் அச்சடிக்கப்பட்டது.
	3. சைன்பேசி கோமராவினிடம் barcode படிப்பான மூலம் படித்து 3G/GPRS வழி இணையபுள்ளத்தில் சரிபார்க்கவும்

Handwritten signature and date: 14/3/2017

**ANNEXURE-VI MINING PLAN REPORT &
PLATES**



**SCHEME OF MINING
WITH
PROGRESSIVE MINE CLOSURE PLAN
FOR
MULTI COLOUR GRANITE QUARRY**

**(Under Rule 18(2) of Granite Conservation and Development
Rules, 1999)**

**EXTENT : 2.51.5 HA.
S.F. No. : 351
VILLAGE : NALLUR
TALUK : KULITHALAI
DISTRICT : KARUR
STATE : TAMIL NADU**

Scheme of Mining Period: 2022-2023 to 2026-2027

**LESSEE
THIRU. K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT**

PREPARED BY :

**S. DHANASEKAR, M.SC., M.M.E.A.I.,
QUALIFIED PERSON,
NO. 5/30-7 B, AVVAI NAGAR,
PONKUMAR MINES ROAD,
JAGIR AMMAPALAYAM,
SALEM DISTRICT - 636 302.**

**E-mail: geodhana@yahoo.co.in
CELL: 98946 28970 & 73733-74702.**

K.SAKTHIVEL,

Ponnampatti
Perunthalur Village
Kulithalai Taluk,
Karur District.



CONSENT LETTER FROM LESSEE

The Scheme of Mining with Progressive Mine Closure Plan in respect of Multi Colour Granite Quarry over an extent of 2.51.5 Ha. in S.F.No.351 in Nallur Village, Kulithalai Taluk, Karur District, Tamil Nadu State has been prepared by **Shri S. DHANASEKAR, M.Sc.,** Qualified Person.

I request the Commissioner of Geology and Mining, Chennai to make further correspondence regarding modification of the Scheme of Mining with Progressive Mine Closure Plan with the said qualified person in his following Address:

S.DHANASEKAR, M.Sc., M.M.E.A.I.,

Qualified Person

No.5/30-7B, Avvai Nagar,
Ponkumar Mines Road,
Jagirammalayam,
Salem District - 636302.

E-Mail: geodhana@yahoo.co.in

Cell: 98946-28970

I hereby undertake that all the modifications, if any, made in the Scheme of Mining with Progressive Mine Closure Plan by the qualified person may be deemed to have been made with our knowledge and consent and shall be acceptable to me and binding on me in all respects.

(K.SAKTHIVEL)

Signature of the Lessee

Place: Karur

Date:


K.SAKTHIVEL,

Ponnampatti,
Perunthalur Village,
Kulithalai Taluk,
Karur District.



DECLARATION OF THE MINE OWNER

The Scheme of Mining with Progressive Mine Closure Plan in respect of Multi Colour Granite Quarry over an extent of 2.51.5 Ha. in S.F. No.351 in Nallur Village, Kulithalai Taluk, Karur District, Tamil Nadu State has been prepared in full consultation with us by **Shri S. DHANASEKAR, M.Sc.**, Qualified Person. I have understood its contents and agree to implement the same in accordance with Laws applicable to mines.

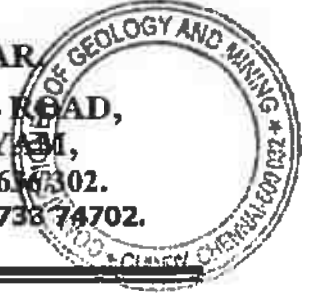

(K.SAKTHIVEL)
Signature of the Lessee

Place: Karur

Date:

S. DHANASEKAR, M.Sc.,
QUALIFIED PERSON

5/30-7B, AVVAI NAGAR,
PONKUMAR MINES ROAD,
JAGIR AMMAPALAYAM,
SALEM DISTRICT - 636302.
Cell : 98946-28970 & 73733 74702.



CERTIFICATE

The provisions of Granite Conservations and Development Rules, 1999 have been observed in the Scheme of Mining with Progressive Mine Closure Plan for Multi Colour Granite Quarry over an extent of 2.51.5Ha. In S.F. No.351 in Nallur Village, Kulithalai Taluk, Karur District, Tamilnadu State and is prepared for Thiru. K.Sakthivel, S/o.Karuppannan, Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District.

Whenever specific permissions, approvals, exemptions or relaxations are required, the lessee will approach the concerned authorities of Directorate of Geology and Mining, Government of Tamilnadu, Guindy, Chennai - 600 032 for such permissions, exemptions, relaxations and approvals.

It is also certified that the information furnished in the above Scheme of Mining with Progressive Mine Closure Plan are true and correct to the best of our knowledge.

Certified

A handwritten signature in black ink, appearing to read "S. Dhanasekar".

Signature of Qualified Person.
S.DHANASEKAR, M.Sc.(Geo)
Qualified Person

Place : Salem

Date :

S. DHANASEKAR, M.Sc.,
QUALIFIED PERSON

5/30-7B, AVVAI NAGAR,
PONKUMAR MINES ROAD,
JAGIR AMMAPALAYAM,
SALEM DISTRICT - 636 302.
Cell : 98946-28970 & 73733 74702.




CERTIFICATE

Certified that provision of Mines Act, Rules and Regulations and orders made there under have been observed in the Scheme of Mining with Progressive Mine Closure Plan for Multi Colour Granite Quarry over an extent of 2.51.5Ha. In S.F. No.351 in Nallur Village, Kulithalai Taluk, Karur District, Tamilnadu State and is prepared for Thiru. K.Sakthivel, S/o.Karuppattan, Ponnampatti, Perunthalur Village, Kullithalai Taluk, Karur District.

Whenever specific permissions, approvals, exemptions or relaxations are required, the lessee will approach D.G.M.S. for such permissions, approvals, exemptions or relaxations. Standard prescribed by D.G.M.S. in respect of miners health will be strictly implemented.

It is also certified that information furnished in the above Scheme of Mining with Progressive Mine Closure Plan are true and correct to the best of our knowledge.

Certified


Signature of Qualified Person.
S.DHANASEKAR, M.Sc.(Geo)
Qualified Person

Place : Salem

Date :

LIST OF CONTENTS

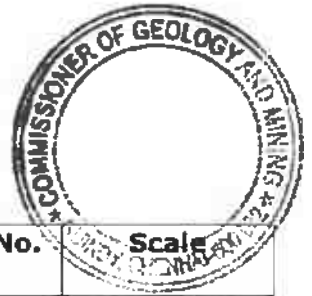


S.No	Description	Page No
1	General	1
2	Review of Mining Plan	2
3	Proposals under scheme of mining for the next five years	5
4	Geology and Reserves	7
5	Mining	16
6	Mine Drainage	21
7	Stacking of Mineral Waste and Disposal of Waste	21
8	Use of the Granite Stone	22
9	Quality Control	23
10	Surface Transport	24
11	Mineral Beneficiation	24
12	Site Services	24
13	Employment Potential	25
14	Environmental Management Plan	26
15	Progressive Mine Closure Plan	31
16	Mineral Conservation and Development	31
17	Statutory Provisions	32

ANNEXURES



1.	Geological Reserve	
2.	Mineable Reserve	II
3.	Year wise Development And Production Schedule	III
4.	Copy of G.O	IV
5.	Copy of FMB	V
6.	Copy of Combined Sketch	VI
7.	Copy of Execution Deed	VII
8.	Copy of Patta, Adangal & 'A' Register	VIII
9.	Copy of Land Registration Document	IX
10.	Copy of Mining Plan Approval Letter	X
11.	Copy of Environment Clearance Letter From SEIAA	XI
12.	Copy of Tamilnadu Pollution Control Board	XII
13.	Copy of Id Proof	XIII
14.	Copy of Qualification Certificate	XIV
15.	Copy of Experience Certificate	XV
16.	Copy of Existing Lease Area Photos	XVI-A & B



LIST OF PLATES

Sl. No.	Description	Plate No.	Scale
1.	Location Plan	I	Not to scale
2.	Key Map/ Route Map	IA	Not to scale
3.	Toposheet Map	IB	Not to scale
4.	Satellite Image (Lease Area)	IC	Not to Scale
5.	Satellite Image (500m Radius)	ID	1:5000
6.	Mine Lease Plan	II	1:1000
7.	Surface Plan	III	1:1000
8.	Geological Plan	IV	1:1000
9.	Geological Sections	IV-A	Hor: 1:1000 Ver:1:500
10.	Year wise Development and Production Plan	V	1:1000
11.	Year wise Development and Production Sections	V-A	Hor: 1:1000 Ver:1:500
12.	Mine Layout, Land Use Pattern and Afforestation Plan	VI	1:1000
13.	Environment Plan	VII	1:5000
14.	Conceptual/Final mine closure plan	VIII	1:1000
15.	Conceptual/ Final mine closure Sections	VIII-A	Hor: 1:1000 Ver:1:500
16.	Progressive Mine Closure Plan	IX	1:1000

**SCHEME OF MINING
WITH
PROGRESSIVE MINE CLOSURE PLAN
FOR
NALLUR MULTI COLOUR GRANITE QUARRY**

(Under Rule 18(2) of GCDR 1999 & 41 of TNMMCR 1959)

@@@@@



1.0 General

The Mining Scheme has been prepared in respect of Multi Colour Granite Quarry in S.F. No.351 Extent. 2.51.5 Ha. Of patta land in Nallur Village, Kulithalai Taluk, Karur District, for Thiru. K.Sakthivel, S/o.Karuppannan, Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District.

Thiru. K.Sakthivel, the Lessee had obtained lease for quarrying Multi colour granite vide Government Order.(3D) No.12 Industries (MMB.2) Department dated 11.08.2017 for a period of twenty years and the lease deed was executed on 05.09.2017. Mining operations commenced on 11.09.2017 and the lease will expire on 04.09.2037.

The Director of Geology and Mining, Guindy approved the Mining Plan, Chennai vide letter No.5369/MM2/2016 dated: 03.11.2016.

Accordingly, the Lessee had obtained Environmental Clearance from SEIAA-TN vide order No. DEIAA-DIA-TN/ MIN/5852/ 2017-KRR EC.No.17/2017/ Mines dated 02.08.2017. Please refer Annexure- X.

The 1st Scheme of Mining for the period of 05.09.2022-04.09.2023 to 05.09.2026-04.09.2027 is now being prepared and submitted under Rule 18(2) of GCDR 1999 for approval.

Open cast method adopted to win the Multi Colour Granite dimensional stones occurring in this area. After removal of over burden soil, conventional blast hole method, wire saw cutting method is being proposed to produce granite dimensional stones from the parent rock mass.

Cutting into required size, removal of defective portions done manually using feather and wedges. The dressing of blocks into the required rectangular shaped dimensional stones are done manually by chiseling with experienced chisel men for the maximum recovery of defect free salable material. Marketing of these stone blocks to customers ensured by strict quality control measures adopted by the Lessee personals.


S.DHANASEKAR, M.Sc.(Geo)
Qualified Person

2.0 Review of Mining Plan:

a) **Name of lessee** : Thiru. K. Sakthivel,
Address : S/o.Karuppannan,
Ponnampatti,
Perunthalur Village,
Kulithalai Taluk,
Karur District.
District : KARUR
State : Tamil Nadu
Phone No : +91 94886 11483



TABLE 1 – LEASE PARTICULARS

GO. No	Extent (Ha)	Date of Grant	Date of Execution	Period of lease	Date of Expiry
G.O. (3D)No. 12	2.51.5	11.08.2017	05.09.2017	20 Years	04.09.2037

2.1 DETAILS OF APPROVED MINING PLAN/SCHEME OF MINING:

Date and reference of earlier approved Mining Plan/Scheme of Mining under MCR (OR) MCDR: (Indicate Approval No. and Date)

The Mining Plan was approved by Commissioner of Geology and Mining, Guindy, Chennai vide letter No.5369/MM2/2016 dated 03.11.2016.

2.2 Details of last modifications if any (for the previous approved period) of approved MP/SOM, indicating date of approval, reason for modification:

-Nil-

2.3 Give review of earlier approved proposal (if any) in respect of exploration, excavation, reclamation etc:

a) **Exploration:**

The Depth persistence of Multi Colour Granite deposit is already proved based on existing pit. This Multi Colour Granite quarry is in operation for last 5 Years. The Mineable Multi Colour Granite body is clearly visible from the existing quarry pit.

b) **Mine Development:**

During the previous approved mining plan period quarry Production & development was taken from middle side of the lease area(Please refer plate No.III & IV.) Already have only one working pit in this lease area. The existing pit dimension is given below:

Table No: 2

	PIT
Length (m)(Avg)	50.0
Width (m)(Avg)	45.0
Depth (m)(max)	10.0

The present workings have reached a depth of 10.0m. Development of the ore has been done only in the areas where the Granite blocks could be easily mined.

The Multicolor Granite is pale white in colour and in deep-seated condition it may be white in colour. Some slender pegmatite veins are intruded in a crisscross fashion which is likely to be reduced at deeper levels.

Minor strike and dip joints observed at the surface level, which is likely to decrease or absent in deep-seated condition. Taking into consideration of the above geological factors, overburden, inter burden wastage during quarrying, other flaw and flower patches etc, the average recovery percentage has been computed as 50% from the ROM. It is inferred the minor strike and dip joints are preset on the surface layers which may not have a good recovery, these and strike and dip joints may reduce in deep seated conditions, taking into consideration of these above factors, the average recovery percentage has been computed as 50%, the proposed mine development in the ensuing Five Years period of mining scheme is furnished in the year wise development and production plans as shown in Annexure-III and in Plate Nos.V & V-A.

c) Exploitation (Production)

Production of Multi Colour Granite from 05.09.2017-04.09.2018 to 05.09.2021-04.09.2022 was 379.713M³.

The Production proposed in the Mining Plan and the actual production (permit quantity) achieved is given below:

Table No:3

Sl.No	Year	Production proposed in the Mining period In M ³	Actual production achieved In M ³
1	05.09.2017-04.09.2018	4905	-
2	05.09.2018-04.09.2019	4905	10.315
3	05.09.2019-04.09.2020	4905	96.641
4	05.09.2020-04.09.2021	5225	-
5	05.09.2021-04.09.2022	5198	272.757
	TOTAL	25138	379.713

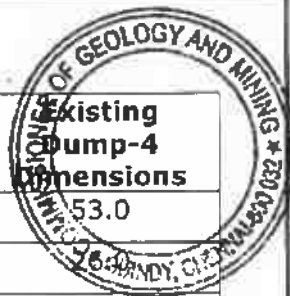
Stock Saleable blocks present in the lease area is 712.316 M³.

d) Waste Management:

In the Previous approved Mining Plan, the proposal of the waste dumps in the southeastern side of the lease area. But, presently, waste material was dumped in the East, West, North and southwestern side of the lease area. Please refer plate No.III & IV.

Table No:3a

	Existing Dump-1 Dimensions	Existing Dump-2 Dimensions	Existing Dump-3 Dimensions	Existing Dump-4 Dimensions
Length (m)	62.0	114.0	70.0	53.0
Width (m)	14.0	14.0	10.0	
Height (m)	4.0	3.0	3.0	8.0
Direction	North	East	West	South



Top soil dump will be utilized for road low lying areas and afforestation purposes.

e) Afforestation:

In the previous approved mining plan, though afforestation programme is clearly stated to plant Casuarina, Eucalyptus, Teak and acacia trees in the lease area. But, lessee planted Pungan, neem trees in the lease area in scattered manner.

f) Land Reclamation and Rehabilitation:

Reclamation of Mined out area does not arise and has not reached the full extent of working. Dumps are properly utilized by planting trees. Reclamation and Rehabilitation of the mine pit shall be started after completion of quarrying.

g) Control of dust, noise and ground vibrations:

The drilling and blasting parameters are in correlation with the proposals laid down in the approved mining plan. Shallow holes of 32mm dia. holes are drilled and the depth of hole will be generally about 1.0m. Water sprinkled for suppression of air borne dust on Mine haulage roads and waste dumps on regular intervals by water tankers. Drilling of blast holes will be always under wet condition to prevent flying of dust. In the unloading point of Tippers, water was sprinkled and further the drillers were provided with respirators in accordance with mines regulations.

Conventional low explosives were used. Since the dimensional stones, which are needed to be without internal cracks, high explosives were not used. The scale of blasting was however very less considering the rate of production. Muffle blasting was not necessary as the area was free from dwelling houses, public utilities etc., Now wire saw machine is being utilized for primary cutting to liberate the required sizes of block from the parent rock The secondary splitting of the blocks been done by pressure-split method with the help of feather and wedges. In view of above, there is no adverse effect on dust, noise and ground vibration by mining activities.

PART -II

3.0. PROPOSAL UNDER SCHEME OF MINING FOR THE NEXT FIVE YEARS:



a) Name of lessee : Thiru. K. Sakthivel,
Address : S/o.Karuppannan,
Ponnampatti,
Perunthalur Village,
Kulithalai Taluk,
Karur District.
District : KARUR
State : Tamil Nadu
Phone No : +91 94886 11483

b) Status of lessee:

The lessee is a Private and Individual.

c) Mineral(s) which is / are included in the prospecting license (For Fresh grant):

-Nil-

d) Mineral(s) which is / are included in the letter of Intent / lease deed:

Multi Colour Granite occurs in the Lease area and the Lessee Quarry the same.

e) Mineral(s), which is the lessee, intends to Quarry:

Multi Colour Granite occurs in the Lease area and the Lessee Quarry the same.

f) Name and Address of the Qualified Person:

Name : **SHRI S. DHANASEKAR, M.Sc., M.M.E.A.I.,**
Address : 5/30-7B, Avvai Nagar,
Ponkumar Mines Road,
Jagir Ammapalayam,
SALEM DISTRICT - 636 302.
Cell No. : 98946-28970 & 73733-74702.
Email : geodhana@yahoo.co.in

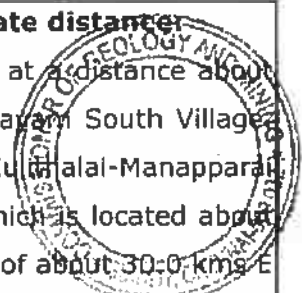
g) Details of the Area:

The details of the land covered by the area is given below: Table No:4

District & Area	Taluk	Village	S.F. No.	Area in Hec.	Occupancy
Karur TAMILNADU	Kulithalai	Nallur	351	2.51.5	Patta Land
	Total			2.51.5	

h) Existence of public road/railway line, if any nearby and approximate distance:

Extent of the area is shown in the FMB. The District Head Quarter at a distance about 62.0Kms(NW) from Quarry site. The area is about 6.7kms, away from Sivaram South Village. Quarry lease area is well connected with roadways, the nearest roadway is Kulithalai-Manapparai Road, 6.7km West. Nearest Railway station is Kulithalai Railway station, which is located about 16 kms N, from the Quarry lease area. Air Port is available in Trichy Airport of about 30.0 kms E from the Quarry lease area. Nearest Port is Tuticorin at a distance of 250.0 kms S. The Existing area is easily accessible by means of roadways (Lorries and trucks).



i) The Mining lease area is bounded by four corners and the coordinates are:

Table No:5

Toposheet No	:	58 J/5
Latitude	:	10° 47' 40.9465"N to 10° 47' 35.0079"N
Longitude	:	78° 27' 6.0451"E to 78° 27' 0.2310"E
North East	:	N 10° 47' 40.9465" E 78° 27' 6.0451"
South East	:	N 10° 47' 36.0256" E 78° 27' 6.6231"
North West	:	N 10° 47' 39.9353" E 78° 27' 1.4235"
South West	:	N 10° 47' 35.0079" E 78° 27' 0.2310"

j) 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:

A general location map showing area boundaries and existing access routes are shown on the Toposheet Plan (Key Plan) which is enclosed Plate No.Ib. Since existing routes are being followed to reach the lease area no fresh access routes are proposed hence not shown.

Top Sheet No. with : The area falls in Topo Sheet No.58 J/5
Latitude and longitude of Survey of India
Latitude : 10° 47' 40.9465"N to 10° 47' 35.0079"N
Longitude : 78° 27' 6.0451"E to 78° 27' 0.2310"E

k) Land use pattern :

Dry Mineral bearing land.

l) Location of the Area :

The area for Mining Lease of Nallur Multi Colour Granite Quarry is over an extent of 2.51.5Ha. located in S.F.No.351 in Nallur Village, Kulithalai Taluk, Karur District, Tamilnadu State.

4.0. GEOLOGY & RESERVES

4.1. PHYSIOGRAPHY:

The quarry lease area is an Undulated terrain, gently sloping towards southeast. The altitude of the area is about 124 meters above MSL. It is a dry land and is found to be unfit even for seasonal cultivation.

Water table is located at a depth of 53m from the surface in the open wells in the neighbor areas. It is a waste land with rock exposure. Outcrops of Multi Coloured Granite are visible in some areas.

The following villages are located within the 5km radius of quarry site and approximate distance with direction & population are given below. Table -6

S.No	Direction	Name of the Village	Approximate Distance	Approximate population
1	North	Nallur	3.0kms	600
2	West	Gudalur	5.0kms	500
3	East	Kallai	3.0kms	800
4	South	Puthur	4.0km	500

The area receives rainfall of about 650 - 800 mm/per annum and the rainy period is mainly from Oct - Jan during North East monsoon. The summer is hot with maximum temperature upto 42°C and winter records a minimum temperature of 23°C.

The water table is about 53m below ground level during summer and 47m during rainy season. Electric power lines are available nearby and electrification of quarry operations is possible.

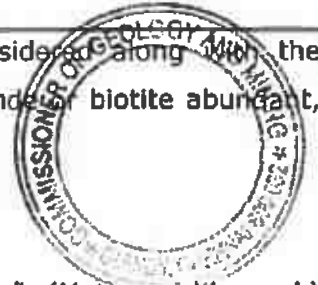
4.2. GEOLOGY

a) Regional Geology:

The Multi-colour Granite proposed to quarry is medium to coarse grained with quartz, Plagioclase feldspar and Alkali feldspar is major constituents and Hornblende, Biotite and other mafic minerals are secondary constituents. The petrological settings of the area are simple and not a complicated phenomena. There are no major minerals observed in the vicinity of the proposed quarry. A brief description of the regional geology is discussed below.

This area forms a part of peninsular gneiss the most wide spread group of rocks in many parts of Tamilnadu. The southern domain of Tamilnadu is characterized by the khondalite group of rocks (with subordinate amounts of charnockite) and marked by the absence of BMQ and dolerite dyke systems. The most common varieties of granite are pink, grey and coloured ones. In the granites feldspar forms about 50%, quartz a little less and the rest accounted for by amphiboles and pyroxenes. This type occurs in the form of large massive bodies (Batholiths, laccoliths) spreading over hundreds of square kilometers exhibiting variation in colour and texture. Other types occur as lenses and bands within gneisses and other metamorphic rocks. In these cases, the molten magma of granite has been emplaced into the earlier rocks as narrow, small bodies and partly interacting.

Anorthosites, syenites, porphyries and like that generally considered along with the coloured granites. In these rocks quartz is nearly absent when hornblende or biotite abundant, the rock may be dark green or almost black.



b) Geology of the Area

The rock formation is popularly known as "Granite Gneiss" (Metamorphic rock) essentially made up of a supra crustal assemblages of quartz, plagioclase feldspar and Alkali feldspar is major constituents and Hornblende and Biotite are secondary constituents, closely inter banded with Granite gneiss, occurring within a vast area of Hornblende biotite, gneiss Hornblende biotite gneiss is the country and the Multi colour granite(Granite Gneiss) is intruded between the batholithic formation of country rock with trending of $N60^{\circ}E - S60^{\circ}W$ and dipping towards $NW80^{\circ}$ in a width of 40m which stretches about the entire area.

The rock type is leucocratic, euhedral, medium to coarse grained, equigranular and well developed gneissic banding of alternate layers of dark and light coloured minerals are the specialty of this area which denotes the indicative of flow pattern of the rock mass in this $N60^{\circ}E - S60^{\circ}W$ (i.e., the cutting direction of the multi-colour granite). The rock formation seems to pink colour in the surface level and in deeper level the pink colour may be changed as pale yellow-white. Some slender pegmatite veins are intruded in a crisscross fashion which is likely to be reduced at deeper levels.

The Multi-colour granite mostly concealed under reddish soil having an average thickness of 2m and 1m weathered rock as overburden totally 3m from the ground level and followed by fresh granite mass. Well-developed strike and dip joints observed at the surface level which is likely to decrease in deep seated condition.

Taking into consideration of the above geological factors, overburden, interburden wastage during quarrying, other flaw and flower patches etc, the average recovery percentage has been computed as 50% from the ROM.

It is inferred that the strike and dip joints are present on the surface layers which may not have a good recovery, these strike and dip joints may reduce in deep seated conditions, taking into consideration of these above factors, the average recovery percentage has been computed as 50%. This mining plan is discussed based on 50% recovery factor. If there is any considerable increase or decrease in the recovery and any other factor a modified mining plan will be prepared and will be submitted to relevant authorities for subsequent clearance and approval.



Structural Settings of Karur:

The general geological sequence of the rock types in the lease applied area is:-

order of superposition :-

AGE		ROCK TYPE
Pleistocene to Recent	-	Reddish Soil
-----Unconformity-----		
↑ Archaean to Proterozoic	-	Peninsular Gneissic Complex
	-	Hornblende Biotite Gneiss
	-	Charnockite,
	-	Khondalite, Quartzite, Limestone,

The physical attitude of the Multi-colour Granite deposit of this area is given below:-

Strike Direction	-	NE – SW
Dip amount and direction	-	NW80 ⁰

4.3 Details Of Exploration:

4.3.1 Already Carried Out:

Qualified Person and his team of geologist had carried out a thorough exploration of the area. The Depth persistence of Multi Colour Granite deposit is already proved based on existing pit.

This Multi Colour Granite quarry is in operation for last 5Years (05.09.2017-04.09.2018 to 05.09.2021-04.09.2022) and **379.713M³** of Multi Colour Granite blocks have been removed and exported in raw form as well as in processed form (Tiles) till now. Moreover, there are few Multi Colour Granite quarries is in operation in the nearby areas.

4.3.2 Proposed study to be carried out:

Even though the depth persistence of the **Multi Colour Granite Stone** may be beyond depth from 23.0m (2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite) depth persistent has been taken as economically viable depth to calculate all the categories of proved Geological reserves. The recovery of saleable Multi Colour Granite stones (Gang saw size) has been taken as 50%.

The proposal for this quarry for the next five years is given upto 12.0m (2.0m Top Soil + 1.0m Weathered Granite + 9.0m Multi Colour Granite). The quarrying activities during the next five years with deep cut as envisaged in the Scheme of mining may render additional data as may be required for future planning.

4.4. METHOD OF ESTIMATION OF RESERVES

The geological plan demarcating the commercially viable granite body has been prepared in 1:1000 scale (Plate No. IV). Three sections have been drawn, One Section (X-Y) drawn as Length wise and another two sections (A-B) & (C-D) are drawn perpendicular as Width wise which is suitably chosen to cover the maximum area, in the scale of Hori: 1:1000 & Vert: 1:500 respectively. (Plate No.IV & IV-A).

The cross sectional area for the proved depth persistence of 23.0m (2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite) has been worked out for each section. The cross sectional area multiplied by its length of influence on the longer axis gives the volume (insitu) in the cross sectional area. The sum total of the insitu reserves available within the individual cross sectional area gives the Geological Reserves of the quarry lease area.

From the total Geological insitu Reserves, the quantity of saleable granite stones and quantity of granite waste generation are computed by applying recovery factor of about 50% by volume. As the saleable Multi Colour Granite stone are in terms of cubic meters (Volume) only and not in terms of tonnage as in the case of major industrial mineral, the geological Reserves, mineable reserves and quantum of waste generated etc, are given only in terms of cubic meters. (Volume).

The details of estimation of Geological Reserves and Mineable Reserves with reference to the Geological Plan & section and Conceptual Plan & Section as shown in (Plate no.IV and VIII) have been furnished in Table - 7 & Table - 8 respectively.

4.5. Geological Reserves:

The Geological reserve is estimated as **467326M³** upto a depth of 23.0m (2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite), by area cross sectional method.

Table -7

GRANITE GEOLOGICAL RESERVES										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M3	Total Reserve in M3	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY-AB	I	31	111	2						6882
	II	63	151	1					9513	
	III	63	151	5	47565	47565	23783	23782		
	IV	63	151	5	47565	47565	23783	23782		
	V	76	151	5	57380	57380	28690	28690		
	VI	76	151	5	57380	57380	28690	28690		
	TOTAL				209890	209890	104946	104944	9513	6882
XY-CD	I	51	121	2						12342
	II	51	123	1					6273	
	III	51	149	4	30396	30396	15198	15198		
	IV	88	172	5	75680	75680	37840	37840		
	V	88	172	5	75680	75680	37840	37840		
	VI	88	172	5	75680	75680	37840	37840		
	TOTAL				257436	257436	128718	128718	6273	12342
	GRAND TOTAL				467326	467326	233664	233662	15786	19224



Top Soil	=	19224 m ³
Weathered Granite	=	15786 m ³
Total Geological Reserves in ROM	=	467326 m ³
Recoverable Reserves @ 50% (Multi Colour Granite)	=	233664 m ³
Granite Waste @ 50%	=	233662 m ³
Total Waste	=	268672 m ³
Granite waste ratio:	=	1:1.14
(* Total Waste- Top soil + weathered granite + Granite waste)		



4.6. Mineable Reserves:

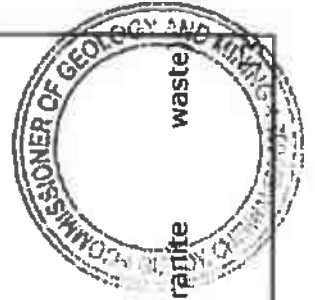
The Mineable reserves are calculated by deducting 7.5m & 10.0m Safety distance and Bench Loss.

The Mineable Reserve is calculated upto a depth of 23.0m (2.0m Top Soil + 1.0 Weathered Granite + 20.0m Multi Colour Granite).

Table-8

GRANITE MINEABLE RESERVES										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M3	Total Reserve in M3	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY-AB	I	22	89	2						3916
	II	49	122	1					5978	
	III	48	120	5	28800	28800	14400	14400		
	IV	43	110	5	23650	23650	11825	11825		
	V	51	100	5	25500	25500	12750	12750		
	VI	46	90	5	20700	20700	10350	10350		
TOTAL					98650	98650	49325	49325	5978	3916
XY-CD	I	42	102	2						8568
	II	38	95	1					3610	
	III	37	121	4	17908	17908	8954	8954		
	IV	69	133	5	45885	45885	22943	22942		
	V	64	123	5	39360	39360	19680	19680		
	VI	59	113	5	33335	33335	16668	16667		
TOTAL					136488	136488	68245	68243	3610	8568
GRAND TOTAL					235138	235138	117570	117568	9588	12484

Top Soil = 12484 m³
 Weathered Granite = 9588 m³
 Total Mineable Reserves ROM = 235138 m³
 Recoverable Reserves @ 50% (Multi Colour Granite) = 117570 m³
 Granite Waste @ 50% = 117568 m³
 Total Waste = 139640 m³
 Granite Waste ratio: = 1:1.18
 (*Total Waste - Top soil + Weathered granite + Granite waste)



The geological Reserves computed based on the geological cross sections up to economically workable depth of 23.0m (2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite) works out to 233664m³ (50% recovery) cubic meters (Table-9) and mineable reserves have been computed as 117570m³ (Table-8) at the rate of 50% recovery upto a depth of 23.0m (2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite). The above projections are for the next Five Years plan period.

The mineable reserve is found out by deducting the locked up area in safety distance all along the perimeter of the lease boundaries. Proved reserves are categorized up to 23.0m (2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite).

The Multi Colour Granite body occurring in this area exhibits more or less uniform color and texture and sold in par with commercial granite deposit. If any variations occur locally during mining such as cracks flaws and patches, the defective area is removed during dressing & marketed.

4.7. Category-wise (Proved, Probable and Possible) Reserves Estimated in the earlier Mining Plan with grades.

The geological reserves were calculated and estimated as 376800m³. The Mineable reserve were calculated as 224125m³. Actually the Geological and Mineable reserves was calculated by applying recovery percentage of 50% and depth is taken up to only 18.0mts.

4.8. Depletion of Reserves:

The geological reserves from at the time of presentation of mining plan were 376800m³ and the mineable reserve was 224125m³. The Planned production during the Mining Plan period was 25138m³ with a recovery of 50% only, the achieved production quantity is 379.713m³ .i.e. (from 05.09.2017-04.09.2018 to 05.09.2021-04.09.2022).

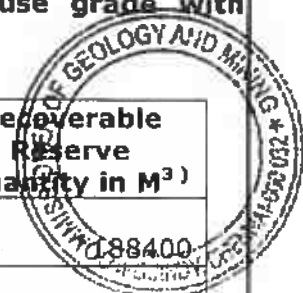
4.9. Additional reserves established category wise (with basis and parameters considered).

Additional reserves have been established during the present plan period. Please refer Annexure I and II.

4.10. Category-wise updated reserves with grade (indicate and use grade with analysis) as well as marginal grades based on above.

Table-9

Sl. No.	Details	Total reserve (quantity in M ³)	Recovery Percentage	Recoverable Reserve (quantity in M ³)
1.	Geological reserve calculated in the approved Mining Plan	376800	50%	188400
2.	Mineable reserve calculated in the approved Mining Plan	224125	50%	112063
3.	Year wise reserve calculated in the approved Mining Plan	50275	50%	25138
4.	Updated geological reserve calculated in this 1 st Scheme of mining period	467326	50%	233664
5.	Updated mineable reserve calculated in this 1 st Scheme of mining period	235138	50%	117570
6.	Updated Year wise reserve calculated in this 1 st Scheme of mining period	52284	50%	26142



The planned year wise recoverable reserve during the approved mining plan was **25138m³** and The actual production (permit quantity) achieved during the period is **379.713m³** .i.e. (from 05.09.2017-04.09.2018 to 05.09.2021-04.09.2022).

4.11. CONCEPTUAL MINING PLAN

Conceptual mining plan is prepared with an object of long-term systematic development of benches; lay outs, selection of permanent ultimate pit limit, depth of mining and ultimate pit, selection of sites for construction of infrastructure etc.

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area etc. The ultimate pit dimensions of the quarry are given below. (Please refer Plate No.VIII).

Table-10

ULTIMATE PIT DIMENSIONS(Avg)		
Length(m)	Width(m)	Depth(m)
149.0	145.0	23.0

However, during extraction of blocks each bench will be of 5.0m height and 5.0m width with vertical slope for proper dimensional cutting. The quantum of excavation is estimated to be **257210m³** (ROM 235138 m³ + Top soil 12484 m³ + Weathered Granite 9588 m³) upto the depth of 23.0m (2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite).(refer Table-8).

The Granite waste 50% is estimated at 117568m³, (Table-8) and marketable granite blocks as 117570m³. (Plate No-VIII). Topsoil will be dumped in the North, South & Western side boundary barrier of the lease area and Weathered Granite will be dumped in the Eastern side boundary barrier of the lease area and Granite waste will be backfilled in the mined out pit of the lease area. Please refer plate No.VIII.

The Dump & backfilling Dimensions are given below:

Table No:11

	Top Soil Dump	Weathered Granite Dump	Granite Waste Backfilling
Length (m)	506.0	152.0	10800
Width (m)	7.5	10.0	90.0
Height (m)	3.28	6.30	12.0
Total Quantity (m ³)	12484	9588	117568

Please refer Table No.8.

Waste dump - the excavated granite waste will be used for Back-filling at the end of quarry.

5.0. MINING

5.1. OPEN CAST WORKING

In this proposed Quarry area under consideration mining will be done by opencast semi-mechanized method.

The Granite to be mined is first examined for its suitability for forming blocks or slabs. For this textural uniformity, colour, strength, durability, presence of cracks joint planes and their frequency are noted before marking or channeling the blocks.

Well-spaced joints at right angles make the extraction easier. The Top Soil (weathered rock portion) is removed by drilling. The quarry is opened as trenches taking advantage of joint systems. As far as possible, rectangular blocks of standard size are marked either by hand channeling in manual mining or by channeling machines in mechanized mining. Efforts are made to develop vertical face and granite is quarried in rectangular blocks. The blocks are separated from the parent ledge by putting wire saw method of drilling.

A series of close space holes are drilled underneath the blocks, which are broken free with the use of feathers and wedges. Feathers are pieces of semi-circular steel wedges that are inserted into the holes. The steel wedges are driven between the features to produce a break to free a block of stone. The blocks are lifted manually with levels or by cranes and loaded into trucks.

In mechanized mining help of compressor, drilling, machine, various diamond saws, wire saws, channeling machines, wedges and broaching tools, cranes, dumpers etc., is taken. Endless braided steel wires and diamond saws are employed for cutting blocks. Jet channeling or jet piercing is quite common. In some mines flame cutting is done to cut the rocks.

The Top Soil bench will be formed to a height of about 2.0m at a slope about 45°.

Benches in Granite body will be formed Two benches to a height and width of about 5.0m respectively at a slope of about 90° in the Next five years. Haul roads will be made at a gradient of 1:10 to 1:16. Please refer Plate No.V & V-A. Footpaths will be provided between benches for easy access of men. Compressor and jackhammers will be used for drilling purposes.

Excavators, cranes, chain-pulley blocks and winch will be used for dislodging blocks and loading the blocks.

The dislodged blocks from the sheet rock will be dressed by chisel mallet to the maximum possible size and then loaded by cranes or chain-pulley block or winch into the trucks for Despatch to the destination.

After excavating to the economic limit of depth, permission will be obtained from DGMS and DGM to work the deposit in the boundary barrier.

Topsoil will be dumped in the Northwestern side of the lease area and Weathered Granite will be dumped in the Southwestern side of the lease area and Granite waste will be dumped in the North eastern side of the lease area. Please refer plate No.V & V-A.

5.2. EXTENT OF MECHANIZATION / COST OF MACHINERY:

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

I. DRILLING MACHINE

Table -12

S.No	Type	Nos	Dia Hole mm	Size Capacity	Make	Motive power
1	Jack hammer & Accessories	4	35	1.2m to 6m	Atlas Copco	Compressed air
2	Compressor	1	7.5kgs/cm ²	400 psi	ELGI	Diesel Drive
3	Diamond wire saw	1	-	30m ³ /Day	Optima	Diesel Generator
4	Gen set	1	-	Powerica	-	CP 125 D5P (H.P)

II. LOADING EQUIPMENT

Table -13

S.No.	Type	Nos	Capacity	Make	Motive Power
1	Excavator	1	300	Tata Hitachi	Diesel Drive

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT

a)

Table -14

S.No.	Type	Nos	Capacity	Make	Motive Power
1	Tippers	2	10 tonnes	Tata	Diesel Drive

b) Transport from the quarry head to destination

Transport from quarry head to desired destination is done by trucks or by trailers.

c) Miscellaneous:

Apart from the above the following tools and tackles are required for quarry operation.

For operation

The operation of granite quarry requires the following loose tools material and have to be kept sufficiently in stock for non - interruption of the quarry work.

1. Drill roads - 0.3m ,0.4m , 0.5 m ,0.6m , 0.75m ,1.65m, 2.25m, 3m & 3.6m.
2. Steel Alloy chains of sufficient length of 12mm, 16mm and 18mm, sizes.
- 3.'D' shackets to link the chain lengths.
4. Rubber hose of required length.
5. Hose clamps to link the compressor delivery hoses.
6. Feather and wedges of 6" and 12" dia sizes utilize for splitting the block from the parent rock. This is an important tool in the operation of a quarry.
7. Crow bars.
8. Spades.
9. Sludge Hammer
10. Iron Pans
11. Pitcher Hammer
12. Chisels.
13. Consumables, such as diesel, Hydraulic oil, grease, abrasive wheels, welding Machineries etc.
14. Stock of essential spare parts of machinery.

In addition to the above diamond wire saw equipment with a accessories are required to remove rock from parent body rapidly with minimum damage.

The above machineries are adequate to meet out the simultaneous development and production schedule drawn out in this Scheme of mining.

5.3. BLASTING

During future development of quarrying, removal of over burden will be done by excavator and mild blasting with explosives in holes drilled by jack hammer of 32mm dia especially. No deep hole blasting is proposed. The mining only done wire saw cutting. Authorized explosive dealers supply the explosive at site as per the requirement.

5.4. Year wise Production & Development for the ensuing Five Years period:

The year-wise development for the ensuing Five Years period is shown in the plates with cross sections. In view of the development, year wise proposal for the present scheme period is from west towards Eastern side of the lease area.

The Proposal for the next five Years reserves are calculated upto a depth of 12.0m.

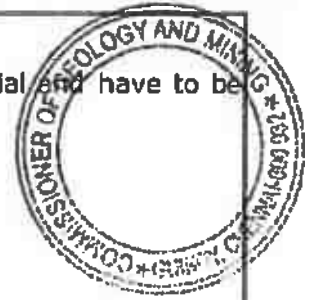


Table-15

GRANITE YEARWISE AND DEVELOPMENT RESERVES											
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M3	Total Reserve in M3	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
05.09.2022 to 04.09.2023	XY-AB	I	42	69	2						5796
		II	38	63	1					2394	
		III	37	83	4	12284	12284	6142	6142		
			TOTAL			12284	12284	6142	6142	2394	5796
05.09.2023 to 04.09.2024	XY-AB	IV	80	25	5	10000	10000	5000	5000		
			TOTAL			10000	10000	5000	5000		
05.09.2024 to 04.09.2025	XY-AB	IV	80	25	5	10000	10000	5000	5000		
			TOTAL			10000	10000	5000	5000		
05.09.2025 to 04.09.2026	XY-AB	IV	80	25	5	10000	10000	5000	5000		
			TOTAL			10000	10000	5000	5000		
05.09.2026 to 04.09.2027	XY-AB	IV	80	25	5	10000	10000	5000	5000		
			TOTAL			10000	10000	5000	5000		
			GRAND TOTAL			52284	52284	26142	26142	2394	5796

Top Soil

Weathered Granite

Total Reserves ROM

Total production for the next Five Years (50%)

(Multi Colour Granite)

Granite waste (50%)

Total Waste

Granite: Waste ratio is

(* Total Waste- Top soil + weathered granite + Granite waste)

= 5796 m³= 2394 m³= 52284 m³= 26142 m³= 26142 m³= 34332 m³

= 1:1.31



Estimated Life of the quarry

Mineable ROM = 235138 m³
 Mineable Reserves @ 50% = 117570 m³
 Average production per year = 5228 m³
 Estimated Life of the Quarry = 117570/5228 = 22.4 years

Life = 22 years

The average proposed rate of production of Granite is about 5228m³ per year.

**5.5. Year-wise production for the ensuing Five Years Period:**Table-16

Sl. No	Year	Total Excavation of ROM (in cum)	Percentage of recovery	Production for Granite ROM (in cum)	Granite waste 50% (in cum)
1	05.09.2022-04.09.2023	12284	50%	6142	6142
2	05.09.2023-04.09.2024	10000	50%	5000	5000
3	05.09.2024-04.09.2025	10000	50%	5000	5000
4	05.09.2025-04.09.2026	10000	50%	5000	5000
5	05.09.2026-04.09.2027	10000	50%	5000	5000
	TOTAL	52284		26142	26142

5.6. Year-wise Development for the ensuing Five Years Period:Table-17

Year	Top Soil (in cum)	Weathered Granite (in cum)	Granite waste 50% (in cum)	Total Waste (in cum)
05.09.2022-04.09.2023	5796	2394	6142	14332
05.09.2023-04.09.2024	-	-	5000	5000
05.09.2024-04.09.2025	-	-	5000	5000
05.09.2025-04.09.2026	-	-	5000	5000
05.09.2026-04.09.2027	-	-	5000	5000
TOTAL	5796	2394	26142	34332

The recovery percentage for the ensuing mining scheme period has been calculated based on the practical experience gained during the mining operation.

Topsoil will be dumped in the Northwestern side of the lease area and Weathered Granite will be dumped in the Southwestern side of the lease area and Granite waste will be dumped in the North eastern side of the lease area. Please refer plate No.V.

The dumping details are furnished below :

Table No.18

	Top Soil	Weathered Granite	Granite Waste
Length (m)	67.0	45.0	52.0
Width (m)	22.0	38.0	30.0
Height (m)	3.93	1.4	16.75
Total Quantity (m ³)	5796	2394	26142

Please refer plate No.V.



6.0 MINE DRAINAGE

The water table in this area in 47m-53m as observed in nearby wells. Now, the present Quarry operation confined to 23m which is well above the water table and hence, quarrying may not affect the ground water. If water is encountered at depth due to rain water seepage, the same may be drained by suitable pumping & drained will be utilized for afforestation area.

6.1. Arrangement and Places where the mine water is finally proposed to be discharged:

The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300 lpm and it shall be pumped about periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor. The quality of water is potable and it is not contaminated with any hazardous things.

7.0 STACKING OF MINERAL WASTE AND DISPOSAL OF WASTE:

a) Top Soil:

Top soil of the lease area is about 5796m³.

b) Weathered Granite:

Weathered Granite of the lease area is about 2394m³.

c) Granite waste:

Multi Colour Granite waste forms nearly 50% of ROM and the quantity of waste in the five years will be around 26142m³. Granite Waste will be dumped in the Northeastern side of the lease area for the next five years. Please refer plate No.V & VI.

The dumping details is furnished below :

Table No.19

	Top Soil	Weathered Granite	Granite Waste
Length (m)	67.0	45.0	52.0
Width (m)	22.0	38.0	30.0
Height (m)	3.93	1.4	16.75
Total Quantity (m ³)	5796	2394	26142

d) Manner of disposal of waste:

As and when there is accumulation of waste, the same is loaded into the tipper by loading machines and dumped in the respective places ear-marked for the purpose.

The waste management plan with reference to the quantum of waste generated is shown in Mine layout and Afforestation plan (Plate No.VI).



8.0 USES OF THE GRANITE STONE

The quarried Multi Colour Granite blocks are either exported as raw blocks or processed as value added products such as slabs, tiles, fancy items, Monuments, precision surface plates for engineering application.

The export market for granite is china, European Country, North America, Middle East, Far East, Japan, Taiwan & Canada besides catering local markets.

8.1. Products and Application areas of Granites :

Broadly there are six categories of granite products – rough blocks, slabs, panels, tiles, monuments and others.

Granites are most adoptable as interior veneers in sky scrapers. In architecture, granites are mostly used for artistic veneers as they enrich other aspects of buildings.

Slabs, Panels, Tiles and Monuments:

Granite in the form of slabs of various sizes is mainly used in building monumental institutions, commercial and residential buildings.

Slabs :

A semi-finished block of rectangular size with one side polished and the other outside sawn and thickness in the range of 20mm upto 20 cm. are used for interior wall panels in the building.

Panels:

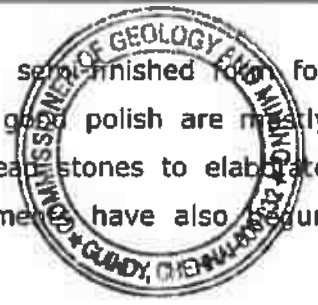
Panels are used for covering the interior surface of the buildings, as tabletops and as interior wall paneling. Size of panel range from 50 cms x 100 cms upto 100 cms x 100 cms and thickness correspondingly varying from 20mm to 50mm.

Tiles:

Granite tiles are used as flooring material and also for wall cladding – most preferred size is 30 x 30 sq. cms with 10mm thickness though sizes vary within the range 15 x 10 sq.cms and 60 x 60 sq. cms. Tolerance requirement in the international market on thickness is generally 0.1 cm to 0.2 cm.

Monuments:

Indian Multi Coloured Granite is being exported in finished / semi finished form for making monuments and tomb-stones for graveyards. Granite with good polish are mostly selected for making memorials ranging from simple markers and headstones to elaborate monuments and mausoleums. Some export of red granite monuments have also begun recently.



Other Uses:

In India granite is used as kitchen platform, kitchen sink, nameplates, foundation / inaugural stones etc., Granites ashtrays; flower vases and other art pieces which have both domestic and export markets.

Other uses for dressed or cuter shaped forms of different sizes are as flagging stones in the form of flat slabs or rectangular or irregular shapes over steps, walk ways, parks and terraces, parking streets and highways or other traffic areas with rectangular blocks.

Less known is the fact, that granites find important applications in the engineering fields as they possess high stability, non-denting and wear resistance qualities. These engineering grade granites are used in the construction of bridges, piers, sea and river walls, dams and related structures, bridges, super structures, grade separations and retaining walls.

Granites are often used for the manufacture of inspection equipment, like surface plates, parallels, cubes, squares, straight edges, measuring prisms, guide ways of precision instruments and other metrological aids such as in weight measurements.

8.2. Changes proposed in the use of mineral, if any, with reasons

No change is proposed in the use of minerals as the mineral is being sold out in raw form as per the buyer's requirement.

8.3. Changes in the specification, if any, imposed by the user industries and / or specifications required in the case of new user industries, if any, to be given.

As mentioned above there is no specification imposed by the user industries. Because the buyers prefer the bigger size blocks called as Gang saw.

8.4. Efforts made for utilization of the sub-grade mineral including fines.

As such there is no sub-grade mineral, there is no separate stacking of such wastes.

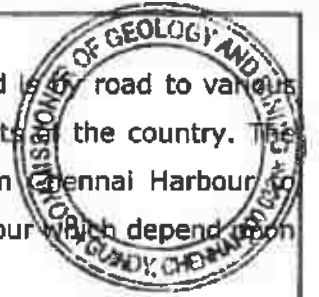
9.0 QUALITY CONTROL

The Multi Colour Granite deposit occurring in this quarry shows uniform quality throughout and hence quarried and marketed as a single variety.

The excavated blocks are carefully inspected for any natural defects such as joints, cracks, xenoliths growth etc and such defects is removed manually using feather and wedges and the blocks are then shaped into perfect rectangular dimensional stone blocks by chiseling. Different price for each quality material have been fixed and the entire production quantity is marketed accordingly.

10. SURFACE TRANSPORT

The mode of transport of the granite blocks produced and marketed is by road to various customer destinations and granite processing units located at different parts of the country. The Multi Colour Granite blocks approved for export market are shipped from Chennai Harbour to various countries and if required the blocks may be shifted to Tuticorin Harbour which depend upon the exporters' destination.



11.0. MINERAL BENEFICIATION

11.1. Results of any beneficiation investigations conducted and changes made in existing mineral beneficiation plant and tailing disposals, if any, with benefits expected (necessary) flow sheet and tailing dam designs etc. to be submitted as applicable).

Not Applicable.

11.2. Beneficiation test done, if any, on sub-grade mineral including fines and proposals for installation of new or additional beneficiation facility, if any (furnish process details in brief along with expected tailings loss).

The production of granite dimensional stones involving splitting of rock mass of considerable volume from the parent sheet rock carefully avoiding any kind of damage in the form of cracks, followed by "Secondary Splitting" into required size involves long hole drilling upto the bottom of the separated block and mild blasting along the required plans.

The blocks splitter as above are toppled and removed from the pit, removing the defective portions and dressing into the dimensional blocks are done manually using feather and wedges and chiseling respectively the laborers who are skilled in this work, which is constantly supervised by experienced mining geologists. Nowadays modern techniques of wire-saw machines have been deployed for liberation of the rock from the parental rock, sometimes to the required sizes also.

12. SITE SERVICES

The simple methods adopted and the limited scale of activities involved in granite dimensional stone quarrying does not require high-tension electric power supply or huge workshop facilities. The quarry operation is restricted to one general shift during day time only. Machinery repair works are attended at Kulithalai (16.0 kms) town. Minor repairs carried out by Lessee staff at the quarry site itself.

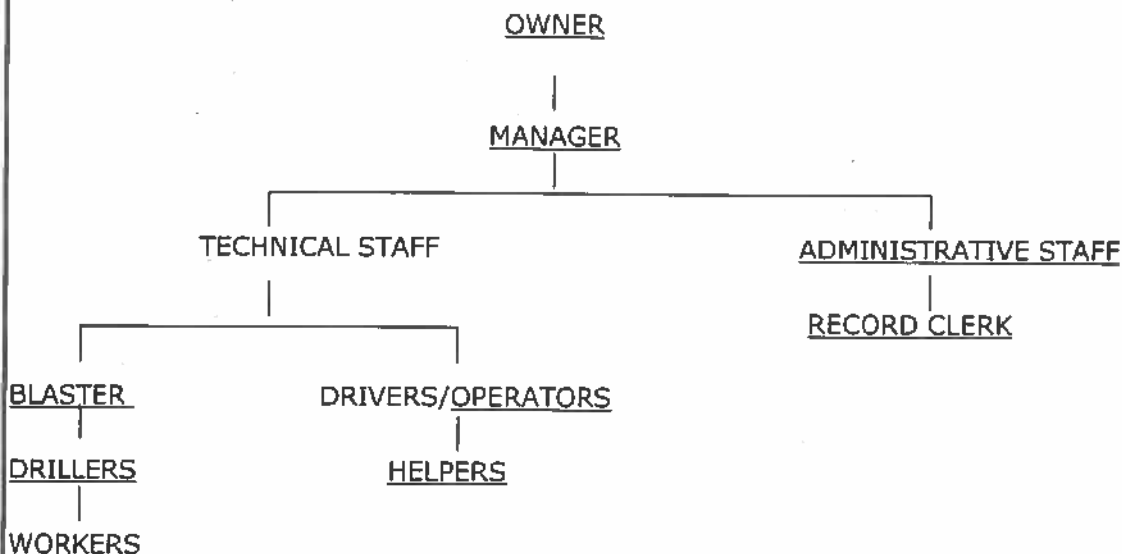
Potable drinking water is supplied from the nearby community wells and approved water vender can be transported to the work site through tanker placed on tippers. Quarry office, first-aid room, store room, rest shed, toilet etc, will be provided on semi - permanent structures within the quarry lease area (Plate No - V - IX).

13. EMPLOYMENT POTENTIAL

Except some established varieties of granites like Nallur Multi, Paithua black, Kashmir white or Melur white, Paradiso of Karur, Sivanmalai green, Colombo Zuberina, English teak, Tiger skin Lady dream, Midnight blue etc., market for other varieties are seasonal one. With result, the quarry work becomes seasonal and the employment also becomes seasonal.

The man power is proposed for the Multi Colour Granite Quarry to look after and carryout the day-to-day quarrying activities, and achieves targeted production duly comply with the statutory provisions of the Quarry is as summarized below:

ORGANISATION CHART



The strength of man power requirement is proportionate to the proposed production for the Multi Colour Granite Quarry in the referred area as detailed below:

1.	Manager	:	1
2.	Record Clerk	:	1
	Total	:	2 Nos.

Highly skilled, Skilled, Semi-skilled and Unskilled:

Supervisor Cum Blaster	:	1
------------------------	---	---

Skilled:

Compressor and Wagon Drill operators	:	1
Drillers / Workers	:	5
Excavator / Rock Breaker Operators	:	3
Vehicle Drivers	:	2
Total	:	12 Nos

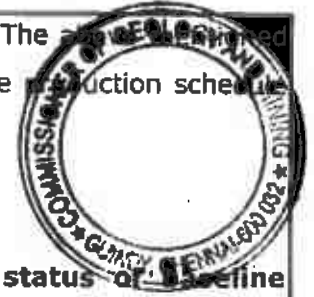
Semi-skilled:

Watchman	:	1
Total	:	1 Nos

Unskilled:

Dresser/cutter	:	9
Total	:	9 Nos
Grand Total	:	24 Nos

The man power strength is subject to the extent of mechanizations. The technical staff and administrative staff are to be considered to meet out the production schedule and to comply with the statutory provisions of the Mines Safety Regulations.



14. ENVIRONMENT MANAGEMENT PLAN:

14.1 Environment Base line information: Attach a note on the status of Baseline Information with regard to the following:

The quarry lease is a plain terrain. The altitude of the area is about 121m above from MSL and the gradient is gentle towards Southeast. The MultiColour Granite is clearly visible right from the surface outcrops and existing pit of the lease area. The area comprises soil with boulders of Granite.

Table-20

Description	Present Area (Ha.)	Area to be required at the present scheme period (Ha)	End of life of Quarrying Period (Ha.)
Area under Quarry	0.22.0	0.89.0	2.00.0
Dumps	0.45.0	0.47.0	Backfilling
Stockyard	Nil	Nil	Nil
Infrastructure	0.01.0	0.01.0	0.02.0
Roads	0.03.0	0.01.0	0.04.0
Green Belt	Nil	0.18.0	0.45.5
Unutilized Area	1.80.5	0.95.5	Nil
Grand Total	2.51.5	2.51.5	2.51.5

Water Regime

Ground water is touched at a depth of 53m in summer and at 47m in NE monsoon season. The average rainfall is around 600-800 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.

Flora and Fauna

The main crops are Casuarina, Pungan, Neem, Tamarind, etc. In some places lift irrigation is carried out. Since the sub-seed area is a stony waste, it does not contain much vegetation and villages.

Climate Conditions

The area receives rainfall of about 650 - 800 mm/per annum and the rainy period is mainly from Oct - Jan during North East monsoon. The summer is hot with maximum temperature upto 42°C and winter records a minimum temperature of 23°C.

Human Settlement

There are few villages located within the radius of 5km from the quarry lease area. It is rural area with small hamlets scattered all around the area. The approximate distance and population are given below:

Table-21

S.No	Direction	Name of the Village	Approximate Distance	Approximate population
1	North	Nallur	3.0kms	600
2	West	Gudalur	5.0kms	500
3	East	Kallai	3.0kms	800
4	South	Puthur	4.0km	500

Basic human welfare amenities such as health center, schools, communication facilities, commercial centers etc are available in Kulithalai town which is at a distance of about 16.0kms towards Northern side of the quarry lease area.

Public building, Places of worship and Monuments

There are no Public buildings, Archaeological or National Monuments or places of worship situated within 500m of the quarry site.

14.2 Impact Assessment: Attach an Environmental Impact Assessment Statement Describing the impact of mining and beneficiation on environment on the following:

Environmental Impact Assessment Statement:

The factors that should be covered in this para are: -

01. Land
02. Air Quality
03. Water Quality
04. Noise Levels
05. Vibration Levels
06. Water Regime
07. Socio-Economics
08. Historical Monuments etc.

Land:

It is a working mine. There is a proposal for back filling and reclamation at the conceptual stage.

Before closure of the mine, a parapet wall will be constructed to prevent inadvertent entry of 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 2.51.5Ha.



Conceptual position of the mining details:

The area covered by pits	:	2.00.00 Ha.
The area covered by waste dumps	:	Backfilling
The area covered by afforestation	:	0.45.50 Ha.
The area covered by mine roads and Infrastructure	:	0.06.0 Ha.
Virgin area	:	Nil

Afforestation will be attempted in the boundary barrier.

Air-Quality:

There will be generation of dust during drilling and 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 rainwater 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-22

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 on ground water.

Socio-Economics:

The local population is mostly agriculture based. Agricultural is done 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 improved 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.

14.3 Proposal For Reclamation Of Land Affected By Mining Activities During & At The End Of Quarrying

Due to nature of occurrence of massive granite formation, the depth persistence of the granite body in this quarry is beyond the workable limits. In the proposed Scheme of mining only 23.0m(2.0m Top Soil + 1.0m Weathered Granite + 20.0m Multi Colour Granite) has been envisaged as workable depth for safe, systematic & economic mining. Hence after quarry reaches ultimate pit limit waste will be used for Back-filling at the end of quarry also used for safety bunds and barbed wire fencing will be construct and maintaining around the quarried out pits.

14.4 PHASED PROGRAMME OF PLANTING TREES :

It is an existing mine. The only proposal now is to plant 70 Casuarina & Pungan trees every year in the boundary barrier. A retaining wall will be constructed around the dumping yard. Please refer Plate No.VI. The afforestation programme for the Next Five Years are as follows:

Table-23

Year	Name of the species	No. Of species	Interval	Area in Ha.	Survival rate
05.09.2022-04.09.2023	Casuarina & Pungan	70	5m	0.09.5	80%
05.09.2023-04.09.2024	Casuarina & Pungan	70	5m	0.09.0	80%
05.08.2024-04.08.2025	Casuarina & Pungan	70	5m	0.09.0	80%
05.08.2025-04.08.2026	Casuarina & Pungan	70	5m	0.09.0	80%
05.08.2026-04.08.2027	Casuarina & Pungan	70	5m	0.09.0	80%
TOTAL		350		0.45.5	

After complete extraction of mineral, the pit will be backfilled with the wastes and afforestation will be carried out.

14.5. GRANITE CUTTING AND POLISHING :

The Lessee does not have the facilities to cut and polish the granite blocks. He proposes to export the Granite blocks directly to the potential buyers of the Domestic and World Market.

PROPOSED ENVIRONMENT MANAGEMENT(EMP) FOR FIXED ASSET COST AND**OPERATIONAL COST:****Table-24****A.FIXED ASSET COST:**

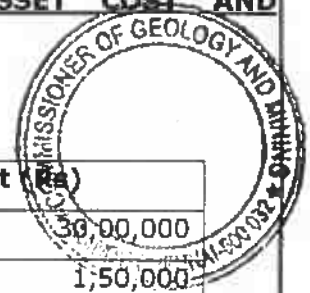
SL.No	Description	Amount (Rs)
1	Land cost	30,00,000
2	Labour shed	1,50,000
3	Sanitary facility	70,000
4	Fencing cost	1,00,000
Total		33,20,000

B.OPERATIONAL COST:

SL.No	Description	Approximate Amount (Rs)
1	Excavator	55,00,000
2	Tippers 2 Nos	20,00,000
3	Wire saw	8,00,000
4	Compressor with loose tools	10,00,000
Total		93,00,000

C. EMP COST:

SL.No	Description	Approximate Amount (Rs)
1	Drinking water facility	1,00,000
2	Safety kits	80,000
3	Water sprinkling	50,000
4	Afforestation	30,000
5	Water quality test	30,000
6	Air quality test	30,000
7	Noise / Vibration test	30,000
Total		3,50,000

Total Project Cost (A+B+C) = Rs. 1,29,70,000/-

15.0 PROGRESSIVE MINE CLOSURE PLAN

In the Multi Colour Granite quarry operations the maximum depth proposed is **23.0m (2.0m Top soil + 1.0m weathered granite + 20.0m Colour Granite)** for the entire life of quarrying operations, this is based on the market potential at present scenario and **12.0m depth (2.0m Top soil + 1.0m weathered granite + 9.0 Colour Granite)** during the 1st scheme five year plan period.

The proposed to safety barrier in the quarried out pits after the end of the life of the quarry period. After completion of quarry operation the quarried out land will be fenced and maintained with barbed wire to prevent inherent entry of the public and cattle's. Garland drains will be constructed around the quarry to prevent the surface run off the rain water.

Afforestation and Green belt development will be maintained in all the boundaries, till the trees attain the stabilize level.

Land use pattern

Table-25

Description	Present Area (Ha.)	Area to be required at the present scheme period (Ha)	End of life of Quarrying Period (Ha.)
Area under Quarry	0.22.0	0.89.0	2.00.0
Dumps	0.45.0	0.47.0	Backfilling
Stockyard	Nil	Nil	Nil
Infrastructure	0.01.0	0.01.0	0.02.0
Roads	0.03.0	0.01.0	0.04.0
Green Belt	Nil	0.18.0	0.45.5
Unutilized Area	1.80.5	0.95.5	Nil
Grand Total	2.51.5	2.51.5	2.51.5

16.0 MINERAL CONSERVATION AND DEVELOPMENT

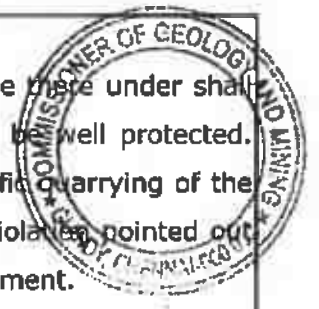
The Scheme of mining proposed has fully covered the aspects of Granite Conservation and development with a future plan to extend the proposed working of the quarry to the maximum possible workable depth of the deposit. Extreme care is taken to ensure proper supervision of quality control of the granite dimensional stone aimed at the recovery of the maximum saleable quality and quantity of Multi Colour Granite dimensional stones suitable for full utilization of the consumers.

Care is been taken for each process just to safeguard the material quarried in an economical and efficient manner by adopting systematic and scientific quarrying with consultation and supervision of well experienced quarry masters.

17.0 STATUTORY PROVISIONS

The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied with, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety, Chennai. Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the department.

Certified that this Mining Plan has been Prepared in Accordance with the Mines Act, Rules and Regulations and orders made there under and also in Conformity with the Under Rule 18(2) of Granite Conservation and Development Rules, 1999.



S. Dhanasekar
S.DHANASEKAR, M.Sc.,(Geo)
Qualified Person

S. Dhanasekar
COMMISSIONER
GEOLOGY AND MINING,
GUINDY, CHENNAI-600 032.
15/1/2023

4
15/2/23

This Scheme of Mining Plan is approved
Subject to the Conditions / Regulation Indicated
in the Scheme of Mining Plan Approval
Letter No. 14038/MM2/2023 Dated: 21.01.2023

ANNEXURE-I.

GEOLOGICAL RESERVE
(Please Refer Plate No.IV & IV-A)

THIRU. K. SAKTHIVEL,
KARUR.

GRANITE GEOLOGICAL RESERVES										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M3	Total Reserve in M3	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY-AB	I	31	111	2						6882
	II	63	151	1					9513	
	III	63	151	5	47565	47565	23783	23782		
	IV	63	151	5	47565	47565	23783	23782		
	V	76	151	5	57380	57380	28690	28690		
	VI	76	151	5	57380	57380	28690	28690		
	TOTAL				209890	209890	104946	104944	9513	6882
XY-CD	I	51	121	2						12342
	II	51	123	1					6273	
	III	51	149	4	30396	30396	15198	15198		
	IV	88	172	5	75680	75680	37840	37840		
	V	88	172	5	75680	75680	37840	37840		
	VI	88	172	5	75680	75680	37840	37840		
	TOTAL				257436	257436	128718	128718	6273	12342
	GRAND TOTAL				467326	467326	233664	233662	15786	6882

Top Soil

Weathered Granite

Total Geological Reserves in ROM

Total Waste

(* Total Waste- Top soil + weathered granite + Granite waste)

= 19224 m³= 15786 m³= 467326 m³= 268672 m³

Recoverable Reserves @ 50%

(Multi Colour Granite)

Granite Waste @ 50%

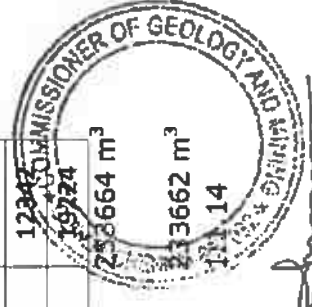
Granite waste ratio:

=

=

=

=



S. DHANASEKAR, M.Sc., (Geo)
Qualified Person

ANNEXURE-II

**MINEABLE RESERVE
(Please Refer Plate No.VIII & VIII-A)**

**THIRU. K. SAKTHIVEL,
KARUR.**

GRANITE MINEABLE RESERVES										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M3	Total Reserve in M3	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY-AB	I	22	89	2						3916
	II	49	122	1					5978	
	III	48	120	5	28800	28800	14400	14400		
	IV	43	110	5	23650	23650	11825	11825		
	V	51	100	5	25500	25500	12750	12750		
	VI	46	90	5	20700	20700	10350	10350		
TOTAL					98650	98650	49325	49325	5978	3916
XY-CD	I	42	102	2						8568
	II	38	95	1					3610	
	III	37	121	4	17908	17908	8954	8954		
	IV	69	133	5	45885	45885	22943	22942		
	V	64	123	5	39360	39360	19680	19680		
	VI	59	113	5	33335	33335	16668	16667		
TOTAL					136488	136488	68245	68243	3610	8568
GRAND TOTAL					235138	235138	117570	117568	9588	12484

Top Soil = 12484 m³
 Weathered Granite = 9588 m³
 Total Mineable Reserves ROM = 235138 m³
 Total Waste = 139640 m³
 (* Total Waste- Top soil + weathered granite + Granite waste)

Recoverable Reserves @ 50%
 (Multi Colour Granite) = 117570 m³
 Granite Waste @ 50% = 117568 m³
 Granite Waste ratio: = 1:1.11




S. DHANASEKAR, M.Sc. (Geo)
 Qualified Person

ANNEXURE-III

YEARWISE DEVELOPMENT & PRODUCTION SCHEDULE
(Please Refer Plate No.V & V-A)

THIRU. K. SAKTHIVEL,
KARUR.

GRANITE YEARWISE AND DEVELOPMENT RESERVES											
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M3	Total Reserve in M3	Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
05.09.2022 to 04.09.2023	XY-AB	I	42	69	2						5796
		II	38	63	1					2394	
		III	37	83	4	12284	12284	6142	6142		
			TOTAL			12284	12284	6142	6142	2394	5796
05.09.2023 to 04.09.2024	XY-AB	IV	80	25	5	10000	10000	5000	5000		
			TOTAL			10000	10000	5000	5000		
05.09.2024 to 04.09.2025	XY-AB	IV	80	25	5	10000	10000	5000	5000		
			TOTAL			10000	10000	5000	5000		
05.09.2025 to 04.09.2026	XY-AB	IV	80	25	5	10000	10000	5000	5000		
			TOTAL			10000	10000	5000	5000		
05.09.2026 to 04.09.2027	XY-AB	IV	80	25	5	10000	10000	5000	5000		
			TOTAL			10000	10000	5000	5000		
			GRAND TOTAL			52284	52284	26142	26142	2394	5796

Top Soil

Weathered Granite

Total Reserves ROM

Total Waste

(* Total Waste- Top soil + weathered granite + Granite waste)

= 5796 m³

= 2394 m³

= 52284 m³

= 34332 m³

Total production for the next Five Years (50%)

(Multi Colour Granite)

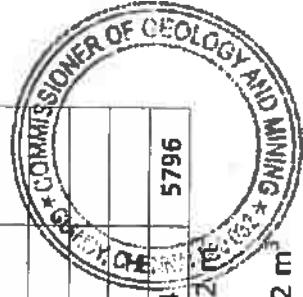
Granite waste (50%)

Granite: Waste ratio is

= 26142 m³

= 26142 m³

= 1:1.31



S.DHANASEKAR, M.Sc.,(Geo)
Qualified Person

10° 47' 40.9465" N



78° 27' 0.2310" E

78° 27' 6.0451" E

10° 47' 35.0079" N



PLATE NO.1

DATE OF SURVEY:09-12-2021

LESSEE ADDRESS:

THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT,

INDEX

QUARRY LEASE AREA : ●
 TOPO SHEET NO : 58-1/5
 LATITUDE : 10° 47' 40.9465" N to 10° 47' 35.0079" N
 LONGITUDE: 78° 27' 6.0451" E to 78° 27' 0.2310" E

LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
 S.F.NOS : 351,
 VILLAGE : NALLUR,
 TALUK : KULITHALAI,
 DISTRICT : KARUR.

LOCATION PLAN

NOT TO SCALE

PREPARED BY:

I DO HEREBY CERTIFY THAT THE PLATE
 HAS BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

S. Dhanasekar
 S.DHANASEKAR,M.Sc.,
 QUALIFIED PERSON

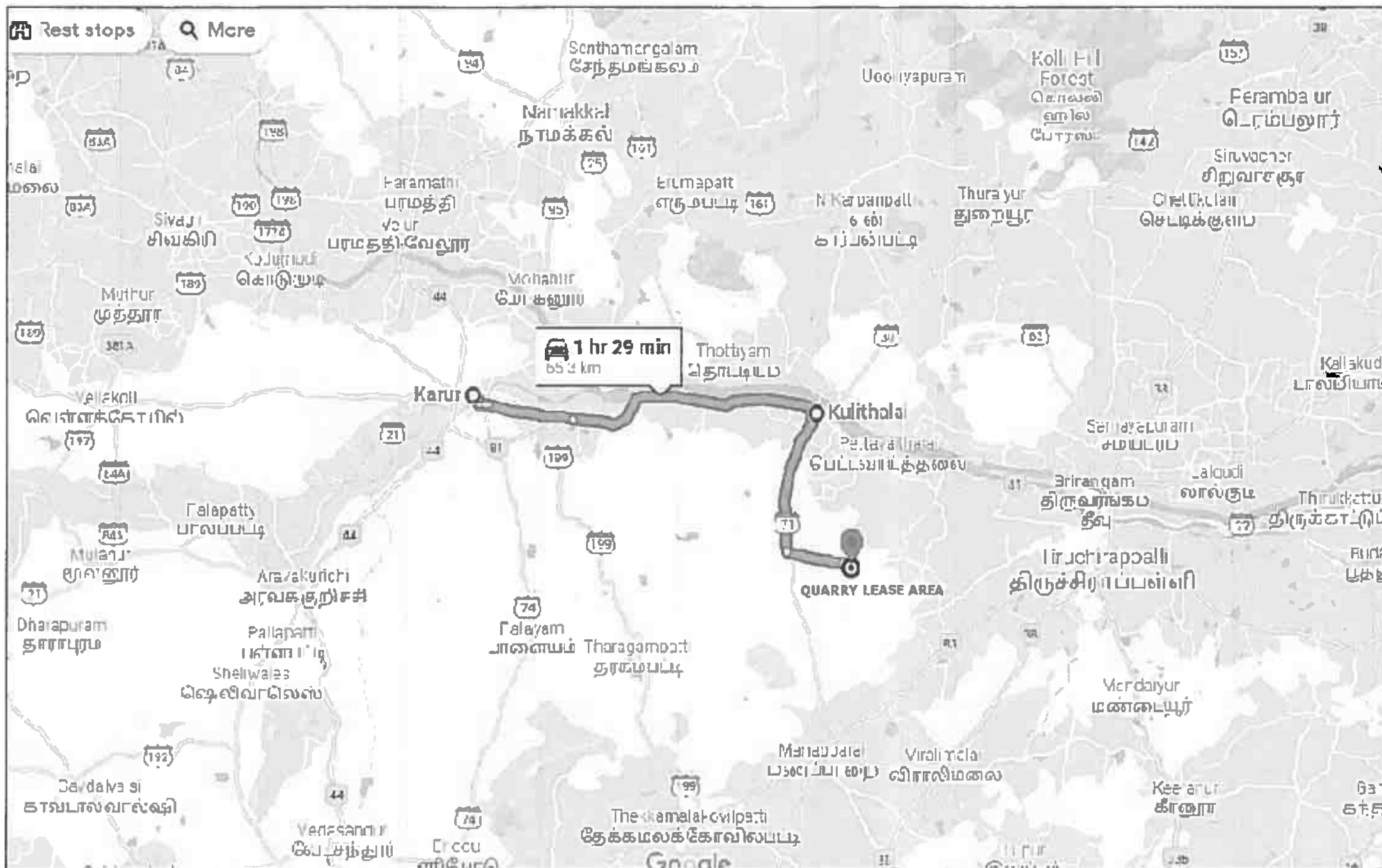




PLATE NO. IA
DATE OF SURVEY: 09-12-2021

LESSEE ADDRESS:
THIRU. K. SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.

INDEX
QUARRY LEASE AREA 
ROAD 

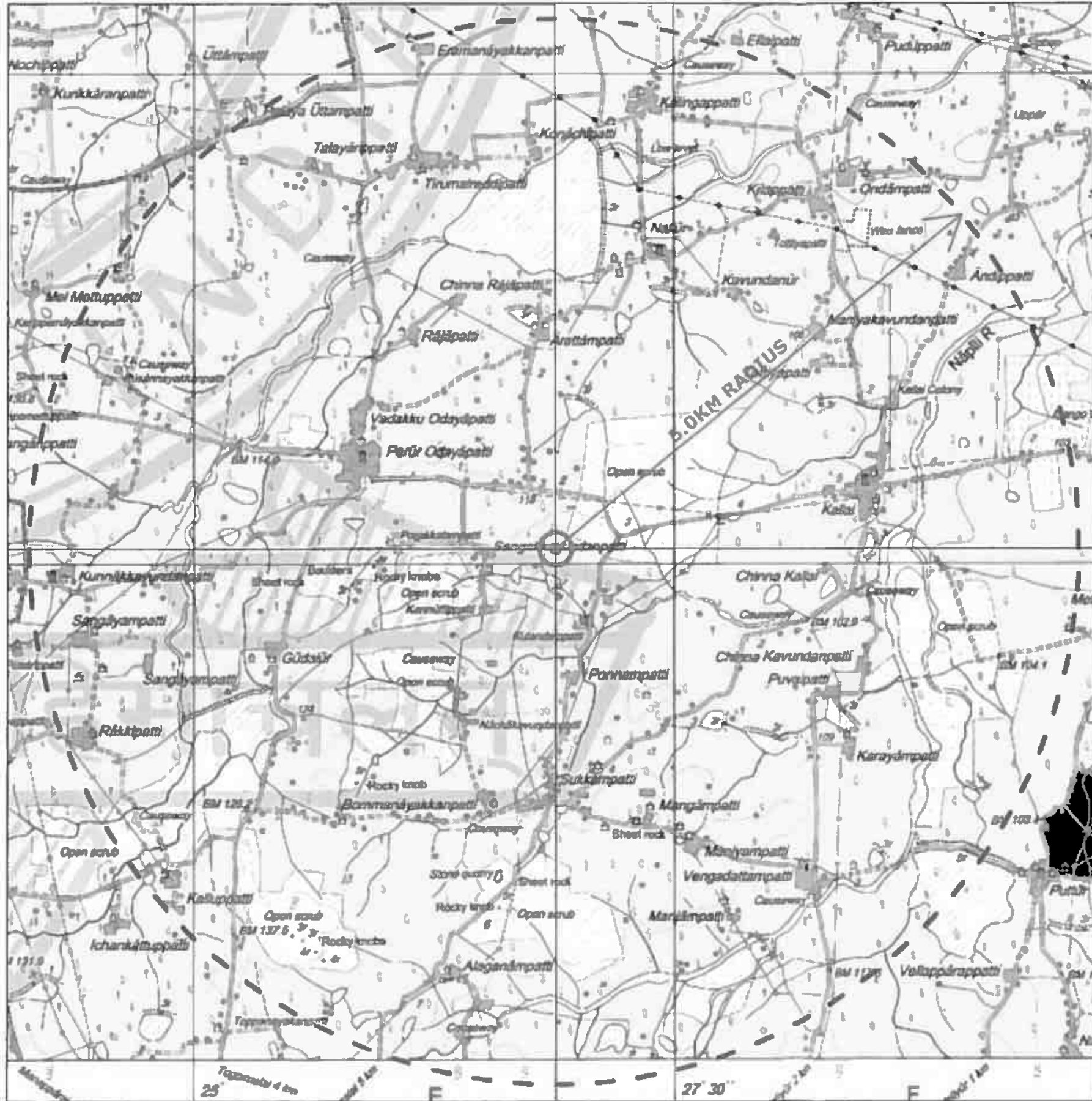
LOCATION OF QUARRY:
EXTENT : 2.51.5 Ha,
S.F. NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

KEY MAP/ROUTE MAP
NOT TO SCALE

PREPARED BY:
I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE


S. DHANASEKAR, M.Sc.,
QUALIFIED PERSON

10° 47' 40.9465" N



78° 27' 0.2310" E

78° 27' 6.0451" E

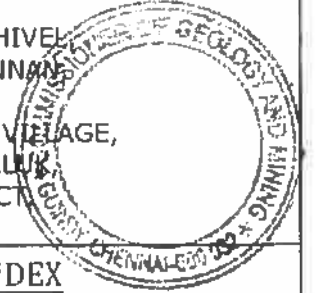
10° 47' 35.0079" N

PLATE NO.IB

DATE OF SURVEY:09-12-2021

LESSEE ADDRESS:

THIRU.K.SAKTHIVEL
S/o. KARUPPANNAN
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT



INDEX

QUARRY LEASE AREA



5.0KM RADIUS



TOPO SHEET NO : 58-1/5

LATITUDE : 10° 47' 40.9465" N to 10° 47' 35.0079" N

LONGITUDE: 78° 27' 6.0451" E to 78° 27' 0.2310" E

LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

TOPOSHEET MAP

NOT TO SCALE

PREPARED BY:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

S.DHANASEKAR,M.Sc.,
QUALIFIED PERSON



PLATE NO-IC

DATE OF SURVEY:09-12-2021

LESSEE ADDRESS:

THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

QUARRY LEASE AREA : 

**SATELLITE IMAGE
(LEASE AREA)**

SCALE 1:1000

PILLAR NO	LATITUDE	LONGITUDE
1	10° 47' 36.0256" N	78° 27' 6.6231" E
2	10° 47' 35.8811" N	78° 27' 5.7214" E
3	10° 47' 35.0079" N	78° 27' 0.2310" E
4	10° 47' 39.9353" N	78° 27' 1.4235" E
5	10° 47' 40.0331" N	78° 27' 2.6414" E
6	10° 47' 40.8427" N	78° 27' 3.1568" E
7	10° 47' 40.9465" N	78° 27' 6.0451" E

PREPARED BY:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE


S. DIANASEKAR, M.Sc.,
QUALIFIED PERSON

10° 47' 40.9465" N
78° 27' 6.0451" E

10° 47' 39.9353" N
78° 27' 1.4235" E

10° 47' 36.0256" N
78° 27' 6.6231" E



10° 47' 35.0079" N
78° 27' 0.2310" E

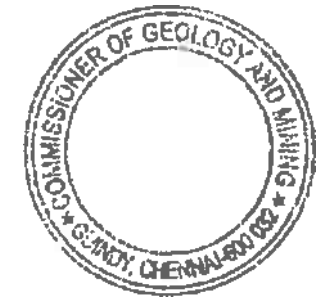


PLATE NO-ID

DATE OF SURVEY:09-12-2021

LESSEE ADDRESS:


THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

QUARRY LEASE AREA 

500M RADIUS 

300M RADIUS 

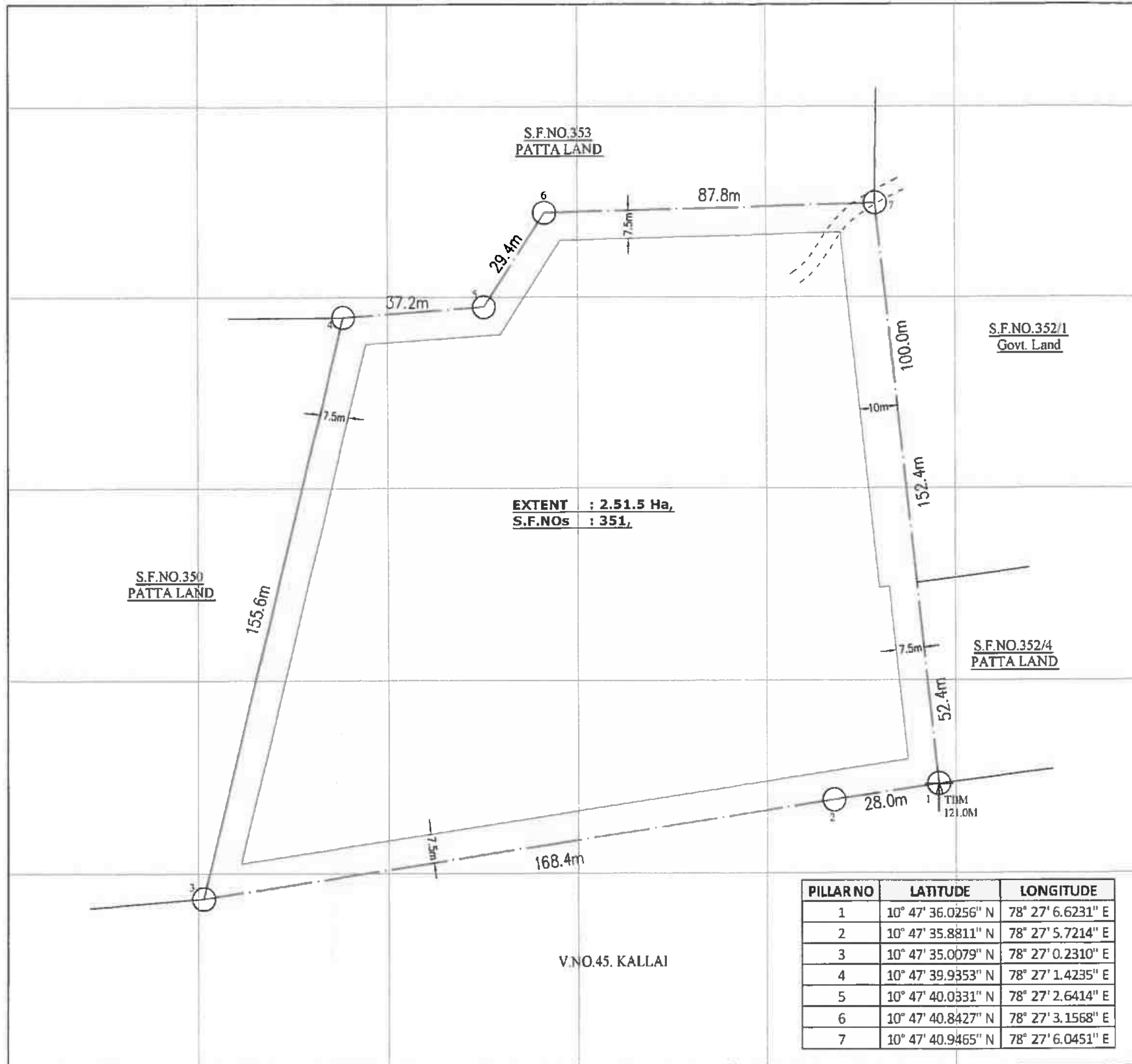
SATELLITE IMAGE
(500m RADIUS)

SCALE 1: 5000

PREPARED BY:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE


S.DHANASEKAR,M.Sc.,
QUALIFIED PERSON



EXTENT : 2.51.5 Ha,
S.F.NOs : 351,

S.F.NO.350
PATTA LAND

S.F.NO.353
PATTA LAND

S.F.NO.352/1
Govt. Land

S.F.NO.352/4
PATTA LAND

PILLAR NO	LATITUDE	LONGITUDE
1	10° 47' 36.0256" N	78° 27' 6.6231" E
2	10° 47' 35.8811" N	78° 27' 5.7214" E
3	10° 47' 35.0079" N	78° 27' 0.2310" E
4	10° 47' 39.9353" N	78° 27' 1.4235" E
5	10° 47' 40.0331" N	78° 27' 2.6414" E
6	10° 47' 40.8427" N	78° 27' 3.1568" E
7	10° 47' 40.9465" N	78° 27' 6.0451" E

V.NO.45. KALLAI

PLATE NO.II
DATE OF SURVEY:09-12-2021

LESSEE ADDRESS:
THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.

LOCATION OF QUARRY:
EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
APPROACH ROAD	

MINE LEASE PLAN
SCALE 1:1000

PREPARED BY:
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S.DHANASEKAR.M.Sc.,
QUALIFIED PERSON



PLATE NO.III

DATE OF SURVEY:09-12-2021











LESSEE ADDRESS:

THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

- QUARRY LEASE BOUNDARY 
- 7.5m & 10.0m SAFETY DISTANCE 
- TEMPORARY BENCH MARK 
- TOP SOIL 
- MULTI COLOUR GRANITE 
- QUARRY PIT 
- CONTOUR LINE 
- EXISTING WASTE DUMP 
- QUARRY ROAD 
- SHRUB 

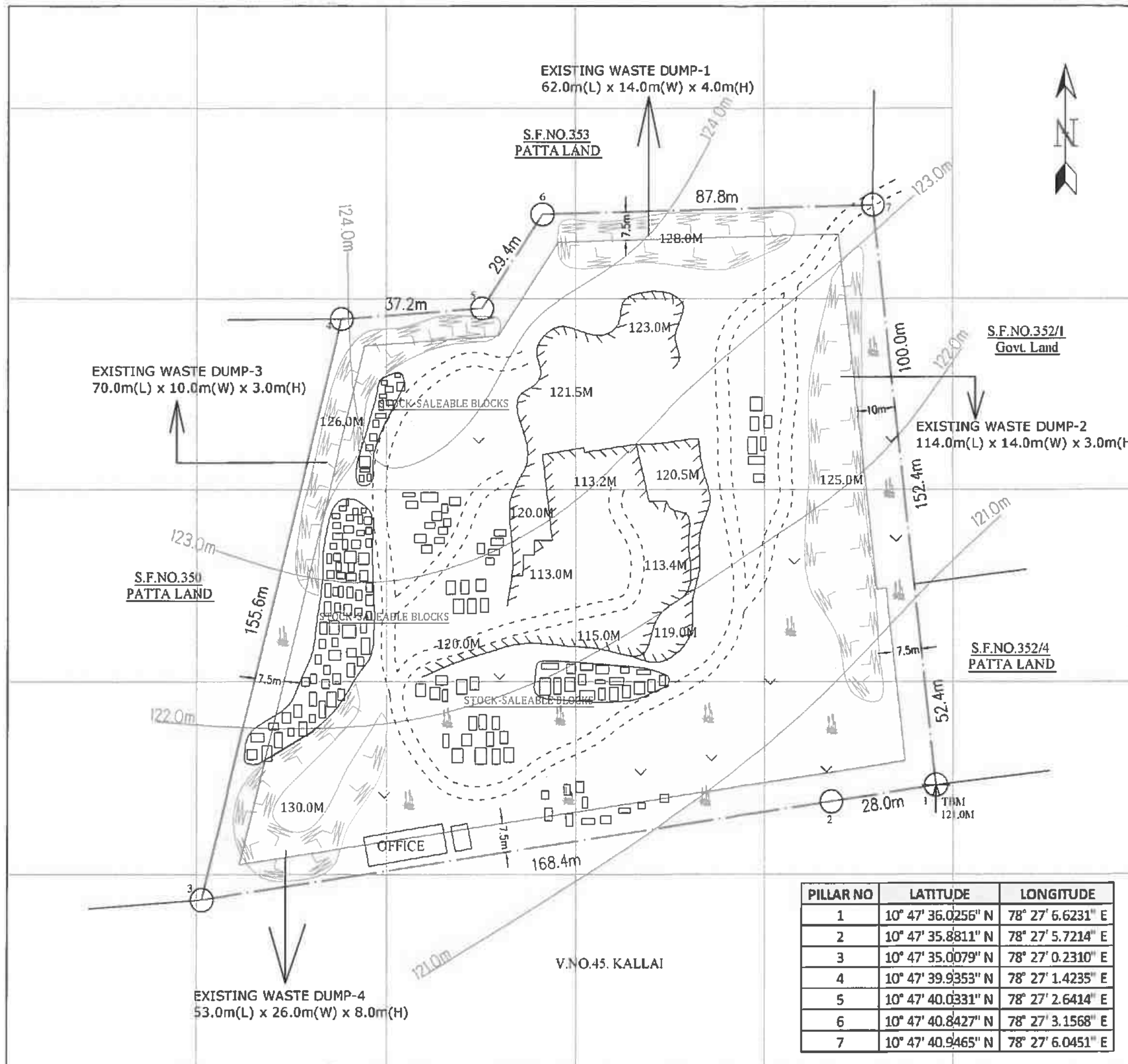
SURFACE PLAN

SCALE 1:1000

PREPARED BY:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE


S.DHANASEKAR,M.Sc.,
QUALIFIED PERSON



PILLAR NO	LATITUDE	LONGITUDE
1	10° 47' 36.0256" N	78° 27' 6.6231" E
2	10° 47' 35.8811" N	78° 27' 5.7214" E
3	10° 47' 35.0079" N	78° 27' 0.2310" E
4	10° 47' 39.9353" N	78° 27' 1.4235" E
5	10° 47' 40.0331" N	78° 27' 2.6414" E
6	10° 47' 40.8427" N	78° 27' 3.1568" E
7	10° 47' 40.9465" N	78° 27' 6.0451" E

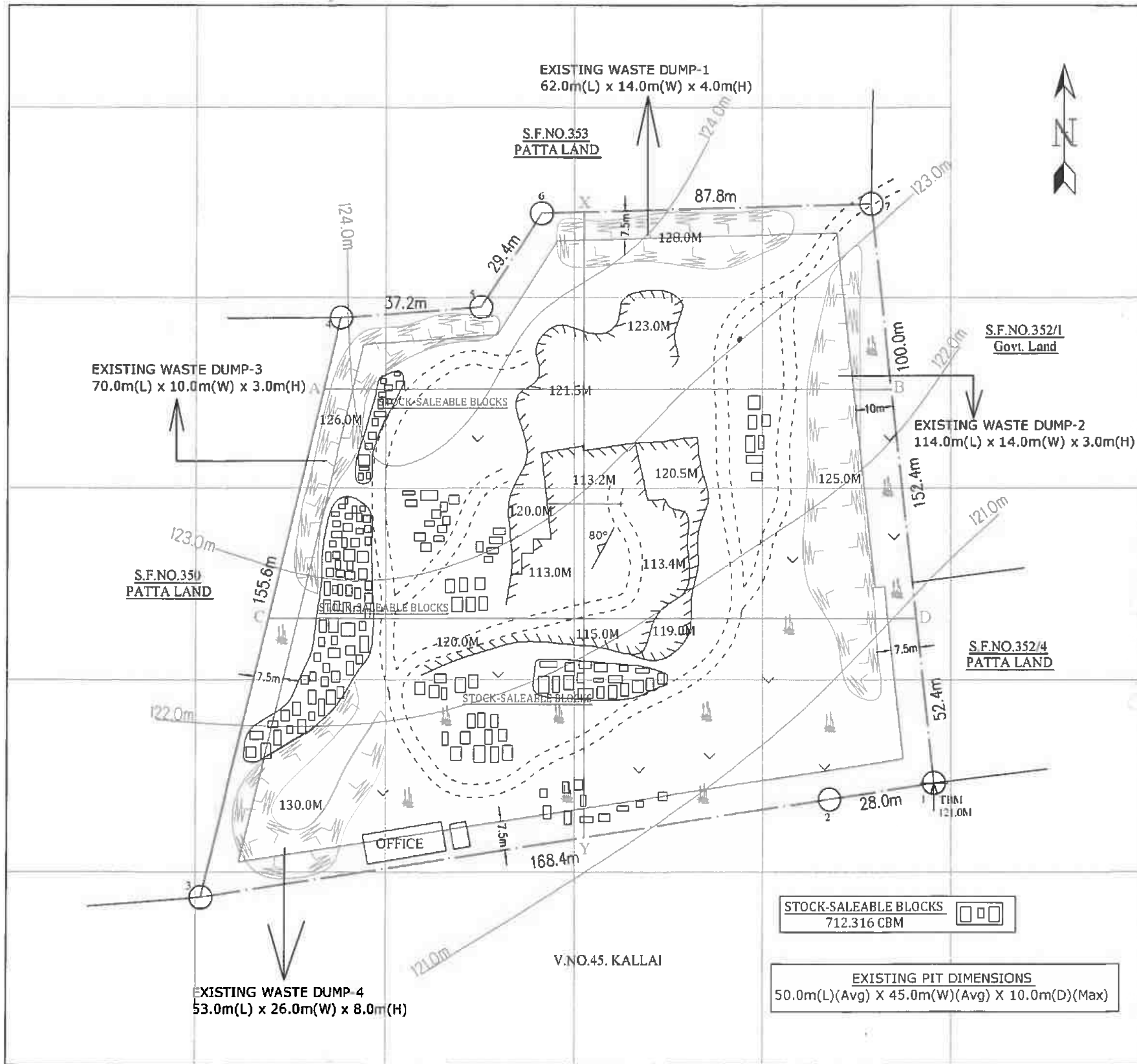
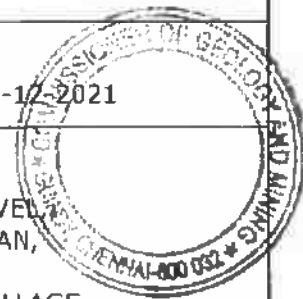


PLATE NO.IV

DATE OF SURVEY:09-17-2021

LESSEE ADDRESS:

THIRU.K.SAKTHIVELU,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.



LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
TOP SOIL	
MULTI COLOUR GRANITE	
QUARRY PIT	
CONTOUR LINE	
STRIKE AND DIP	
EXISTING WASTE DUMP	
QUARRY ROAD	
SHRUB	

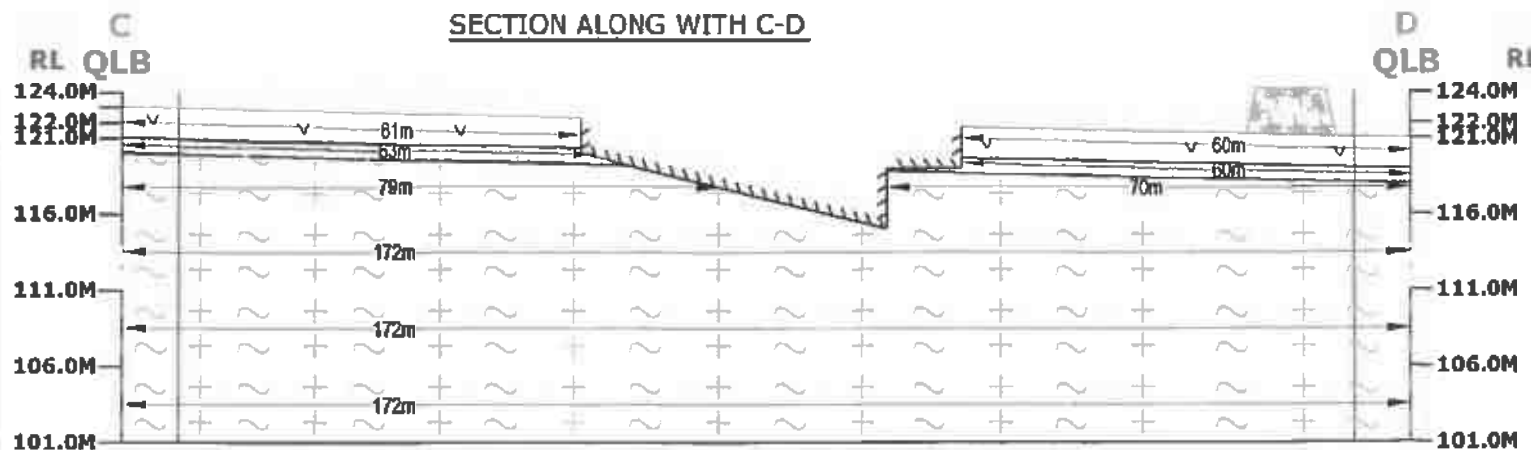
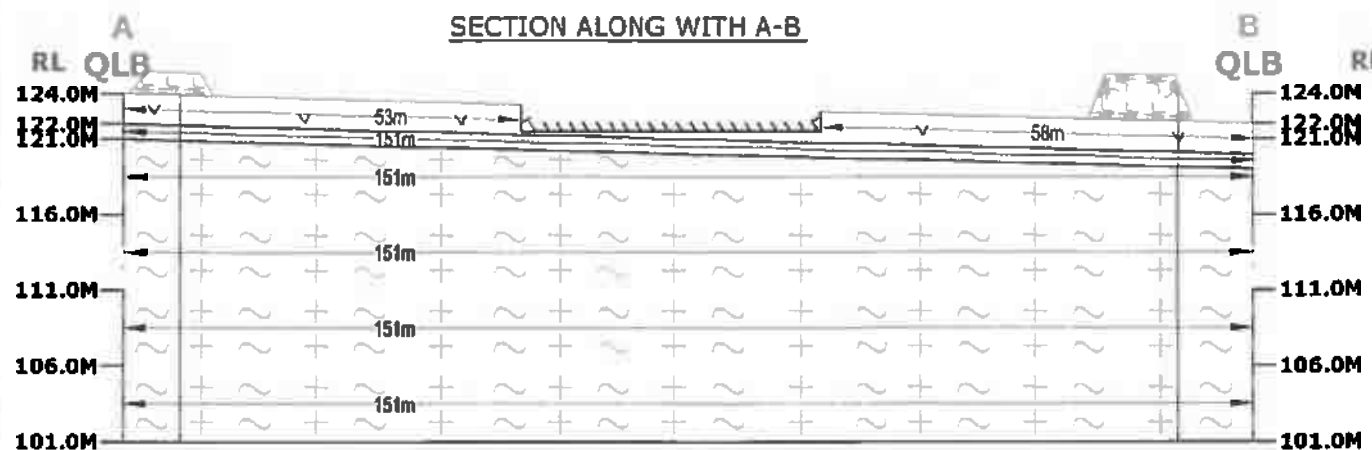
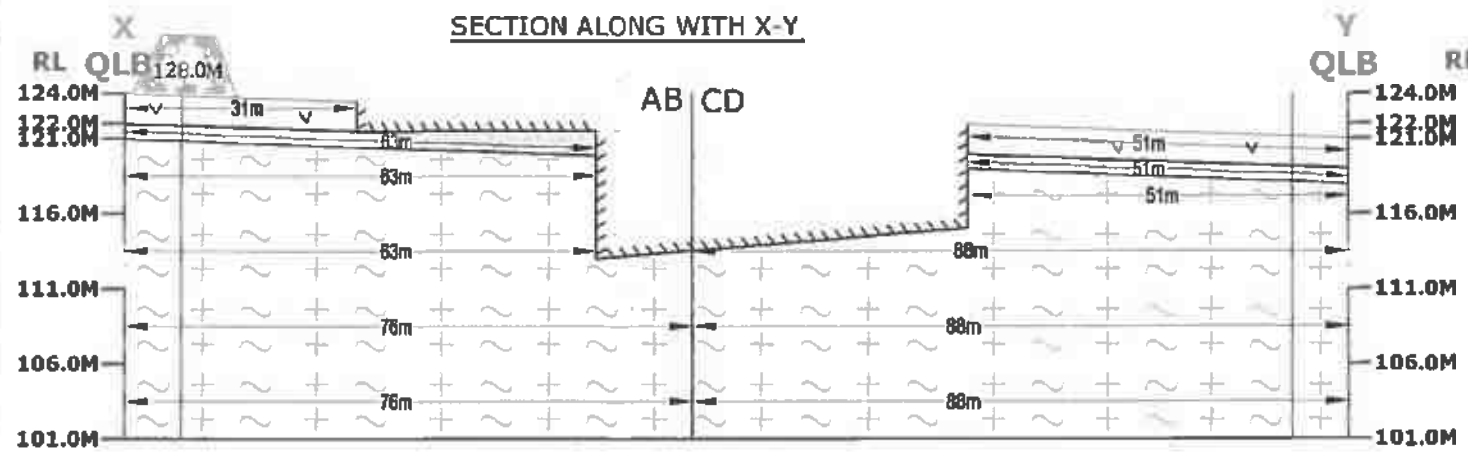
GEOLOGICAL PLAN

SCALE 1:1000

PREPARED BY:

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S.DHANASEKAR,M.Sc.,
QUALIFIED PERSON



GRANITE GEOLOGICAL RESERVE										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M3	Total Reserve in M3	Multi Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY-AB	I	31	111	2						882
	II	63	151	1					9513	
	III	63	151	5	47565	47565	23783	23782		
	IV	63	151	5	47565	47565	23783	23782		
	V	76	151	5	57380	57380	28690	28690		
	VI	76	151	5	57380	57380	28690	28690		
TOTAL					209890	209890	104946	104944	9513	882
XY-CD	I	51	121	2						
	II	51	123	1					6273	
	III	51	149	4	30396	30396	15198	15198		
	IV	88	172	5	75680	75680	37840	37840		
	V	88	172	5	75680	75680	37840	37840		
	VI	88	172	5	75680	75680	37840	37840		
TOTAL					257436	257436	128718	128718	6273	12342
GRAND TOTAL					467326	467326	233664	233662	15786	19224



PLATE NO.IV-A
DATE OF SURVEY:09-12-2021

LESSEE ADDRESS:
THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.

LOCATION OF QUARRY:
EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TOP SOIL	
WEATHERED GRANITE	
MULTI COLOUR GRANITE	
EXISTING WASTE DUMP	

GEOLOGICAL SECTIONS
SECTIONS: HOR :1:1000
VER: 1:500

PREPARED BY:
I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

S.DHANASEKAR,M.Sc.,
QUALIFIED PERSON

PROPOSED GRANITE WASTE DUMP
52.0m(L) x 30.0m(W) x 16.75m(H)
=26142 M³

S.F.NO.353
PATTA LAND

PROPOSED TOP SOIL DUMP
67.0m(L) x 22.0m(W) x 3.93m(H)
=5796 M³

S.F.NO.350
PATTA LAND

S.F.NO.352/1
Govt. Land

S.F.NO.352/4
PATTA LAND

V.NO.45 KALLAI

PROPOSED WEATHERED GRANITE DUMP
45.0m(L) x 38.0m(W) x 1.4m(H)
= 2394 M³

SITE SERVICES
A-OFFICE
B-FIRST AID ROOM
C-STORE
D-REST SHED
E-TOILET

- 05.09.2022 - 04.09.2023 YEAR PROPOSED EXCAVATION
- 05.09.2023 - 04.09.2024 YEAR PROPOSED EXCAVATION
- 05.09.2024 - 04.09.2025 YEAR PROPOSED EXCAVATION
- 05.09.2025 - 04.09.2026 YEAR PROPOSED EXCAVATION
- 05.09.2026 - 04.09.2027 YEAR PROPOSED EXCAVATION



PLATE NO.V

DATE OF SURVEY:09-12-2022

LESSEE ADDRESS:

THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.



LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

- QUARRY LEASE BOUNDARY
- 7.5m & 10.0m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- TOP SOIL
- MULTI COLOUR GRANITE
- QUARRY PIT
- CONTOUR LINE
- QUARRY ROAD
- PROPOSED TOP SOIL DUMP
- PROPOSED WEATHERED GRANITE DUMP
- PROPOSED GRANITE WASTE DUMP

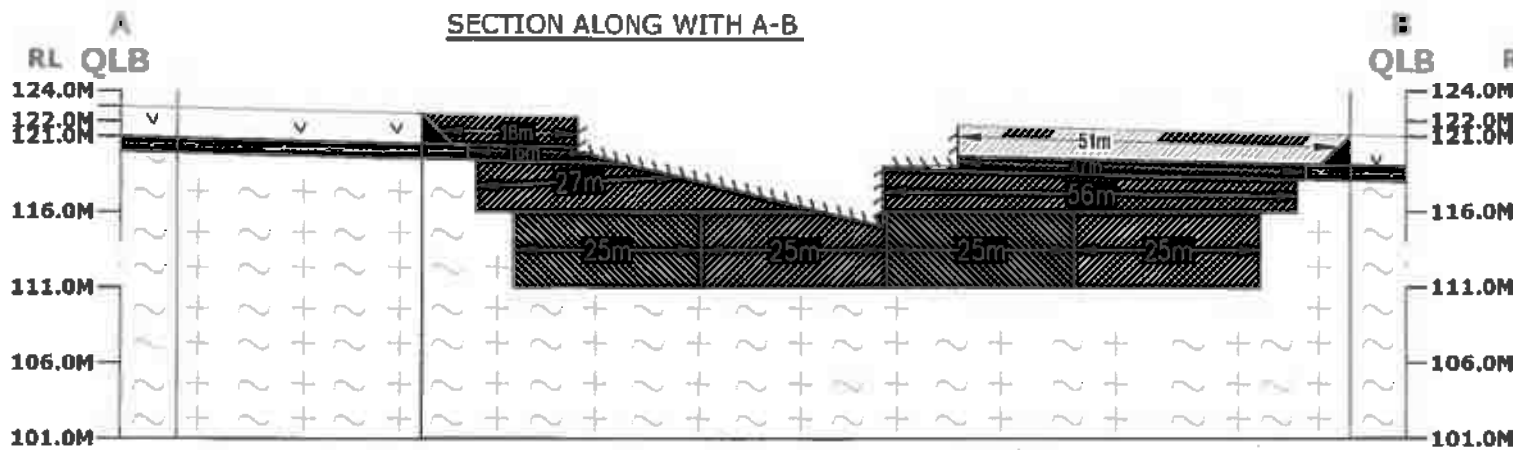
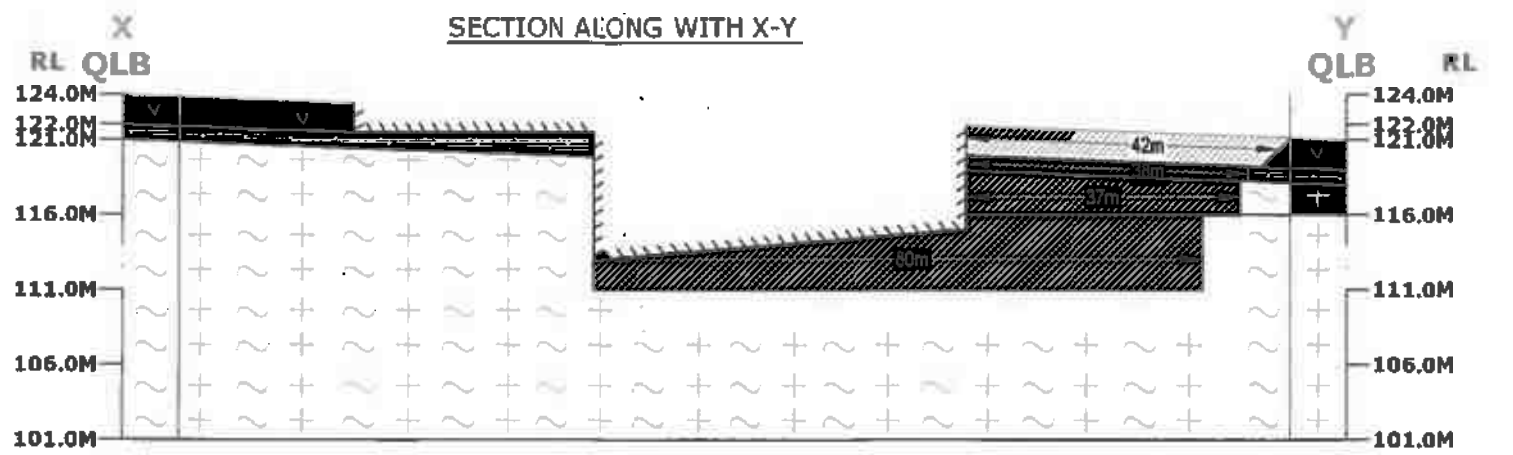
YEARWISE DEVELOPMENT AND
PRODUCTION PLAN

SCALE 1:1000

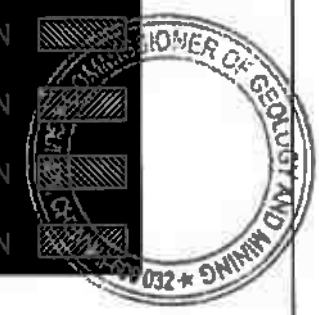
PREPARED BY:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

S. Dhanasekar
S.DHANASEKAR,M.Sc.,
QUALIFIED PERSON



05.09.2022 - 04.09.2023 YEAR	PROPOSED EXCAVATION	
05.09.2023 - 04.09.2024 YEAR	PROPOSED EXCAVATION	
05.09.2024 - 04.09.2025 YEAR	PROPOSED EXCAVATION	
05.09.2025 - 04.09.2026 YEAR	PROPOSED EXCAVATION	
05.09.2026 - 04.09.2027 YEAR	PROPOSED EXCAVATION	



S. Dhanasekar
 15/12/2023
COMMISSIONER
GEOLOGY AND MINING,
GUINDY, CHENNAI-600 032.

PLATE NO.V-A
 DATE OF SURVEY:09-12-2021
 LESSEE ADDRESS:
 THIRU.K.SAKTHIVEL,
 S/o. KARUPPANNAN,
 PONNAMPATTI,
 PERUNTHALUR VILLAGE,
 KULITHALAI TALUK,
 KARUR DISTRICT.
 LOCATION OF QUARRY:
 EXTENT : 2.51.5 Ha,
 S.F.Nos : 351,
 VILLAGE : NALLUR,
 TALUK : KULITHALAI,
 DISTRICT : KARUR.

GRANITE YEARWISE DEVELOPMENT AND PRODUCTION RESERVES

Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M3	Total Reserve in M3	Multi Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsail
05.09.2022 to 04.09.2023	XY-AB	I	42	69	2						5796
		II	38	63	1					2394	
		III	37	83	4	12284	12284	6142	6142		
		TOTAL					12284	12284	6142	6142	2394
05.09.2023 to 04.09.2024	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL					10000	10000	5000	5000	
05.09.2024 to 04.09.2025	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL					10000	10000	5000	5000	
05.09.2025 to 04.09.2026	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL					10000	10000	5000	5000	
05.09.2026 to 04.09.2027	XY-AB	IV	80	25	5	10000	10000	5000	5000		
		TOTAL					10000	10000	5000	5000	
GRAND TOTAL						52284	52284	26142	26142	2394	5796

INDEX

QUARRY LEASE BOUNDARY

7.5m & 10.0m SAFETY DISTANCE

TOP SOIL

WEATHERED GRANITE

MULTI COLOUR GRANITE

YEARWISE DEVELOPMENT AND PRODUCTION SECTIONS

SECTIONS: HOR :1:1000
VER: 1:500

PREPARED BY:
 I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

S. Dhanasekar
 S.DHANASEKAR.M.Sc.,
 QUALIFIED PERSON

LANDUSE PATTERN				
DESCRIPTION	PRESENT AREA (Ha)	AREA TO BE REQUIRED AT THE PRESENT MP PERIOD(Ha)	END OF LIFE OF QUARRYING PERIOD (Ha)	Color code
AREA UNDER QUARRY	0.22.0	0.89.0	2.00.0	
DUMPS	0.46.0	0.47.0	BACKFILLING	
STOCKYARD	NIL	NIL	NIL	
INFRASTRUCTURE	0.01.0	0.01.0	0.02.0	
ROADS	0.03.0	0.01.0	0.04.0	
GREEN BELT	NIL	0.18.0	0.45.5	
UNUTILIZED AREA	1.80.5	0.85.5	NIL	
TOTAL	2.51.5	2.51.5	2.51.5	

PROPOSED GRANITE WASTE DUMP
52.0m(L) x 30.0m(W) x 16.75m(H)
=26142 M³

S.F.NO.353
PATTA LAND

PROPOSED TOP SOIL DUMP
67.0m(L) x 22.0m(W) x 3.93m(H)
=5796 M³

S.F.NO.350
PATTA LAND

S.F.NO.352/1
Govt. Land

S.F.NO.352/4
PATTA LAND

V.NO.45. KALLAI

PROPOSED WEATHERED GRANITE DUMP
45.0m(L) x 38.0m(W) x 1.4m(H)
= 2394 M³

SITE SERVICES
A-OFFICE
B-FIRST AID ROOM
C-STORE
D-REST SHED
E-TOILET

- 05.09.2022 - 04.09.2023 YEAR PROPOSED PLANTATION
- 05.09.2023 - 04.09.2024 YEAR PROPOSED PLANTATION
- 05.09.2024 - 04.09.2025 YEAR PROPOSED PLANTATION
- 05.09.2025 - 04.09.2026 YEAR PROPOSED PLANTATION
- 05.09.2026 - 04.09.2027 YEAR PROPOSED PLANTATION

PLATE NO.VI

DATE OF SURVEY:09-12-2021

LESSEE ADDRESS:

THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

- QUARRY LEASE BOUNDARY
- 7.5m & 10.0m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- TOP SOIL
- MULTI COLOUR GRANITE
- QUARRY PIT
- CONTOUR LINE
- QUARRY ROAD
- PROPOSED TOP SOIL DUMP
- PROPOSED WEATHERED GRANITE DUMP
- PROPOSED GRANITE WASTE DUMP
- MINE LAYOUT

MINE LAYOUT, LAND USE
& AFFORESTATION PLAN

SCALE 1:1000

PREPARED BY:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

S. DHANASEKAR, M.Sc.,
QUALIFIED PERSON

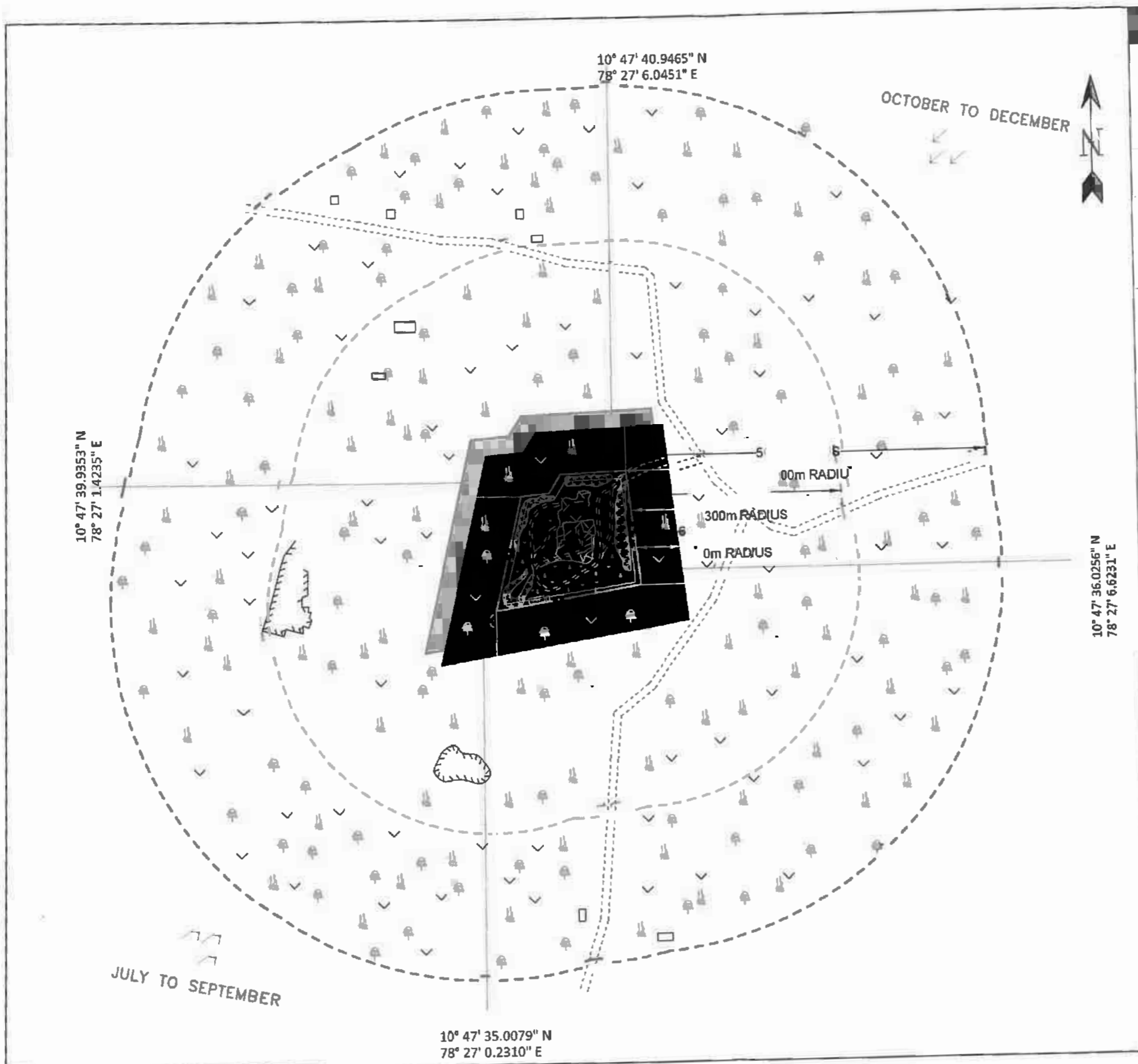


PLATE NO-VII

DATE OF SURVEY: 09-12-2021

LESSEE ADDRESS:

THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.NOs : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

Q.L.BOUNDARY	
500m RADIUS	
300m RADIUS	
60m RADIUS	
APPROACH ROAD	
QUARRY ROAD	
ADJACENT QUARRY	
WIND DIRECTION	
TREES	
DRY AGRI LAND	
INFRASTRUCTURE	
SHRUB	

ENVIRONMENT PLAN

SCALE 1 : 5000

PREPARED BY:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

S. MANICKAVEL M.S.

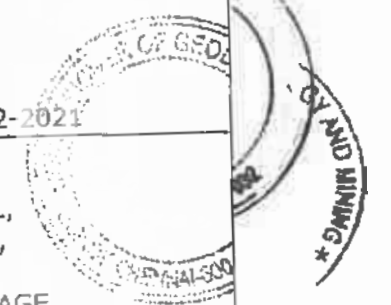
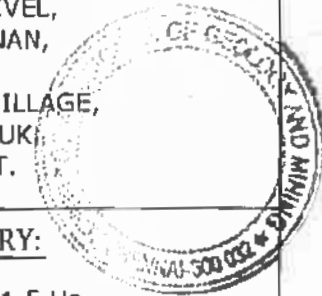


PLATE NO.VIII

DATE OF SURVEY: 09-12-2021

LESSEE ADDRESS:

THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.



LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.Nos : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TOP SOIL	
MULTI COLOUR GRANITE	
QUARRY PIT	
CONTOUR LINE	
QUARRY ROAD	
FENCING	
PARAPET WALL	
ULTIMATE PIT LIMIT	
PROPOSED TOP SOIL DUMP	
PROPOSED WEATHERED GRANITE DUMP	
PROPOSED BACKFILLING AREA	

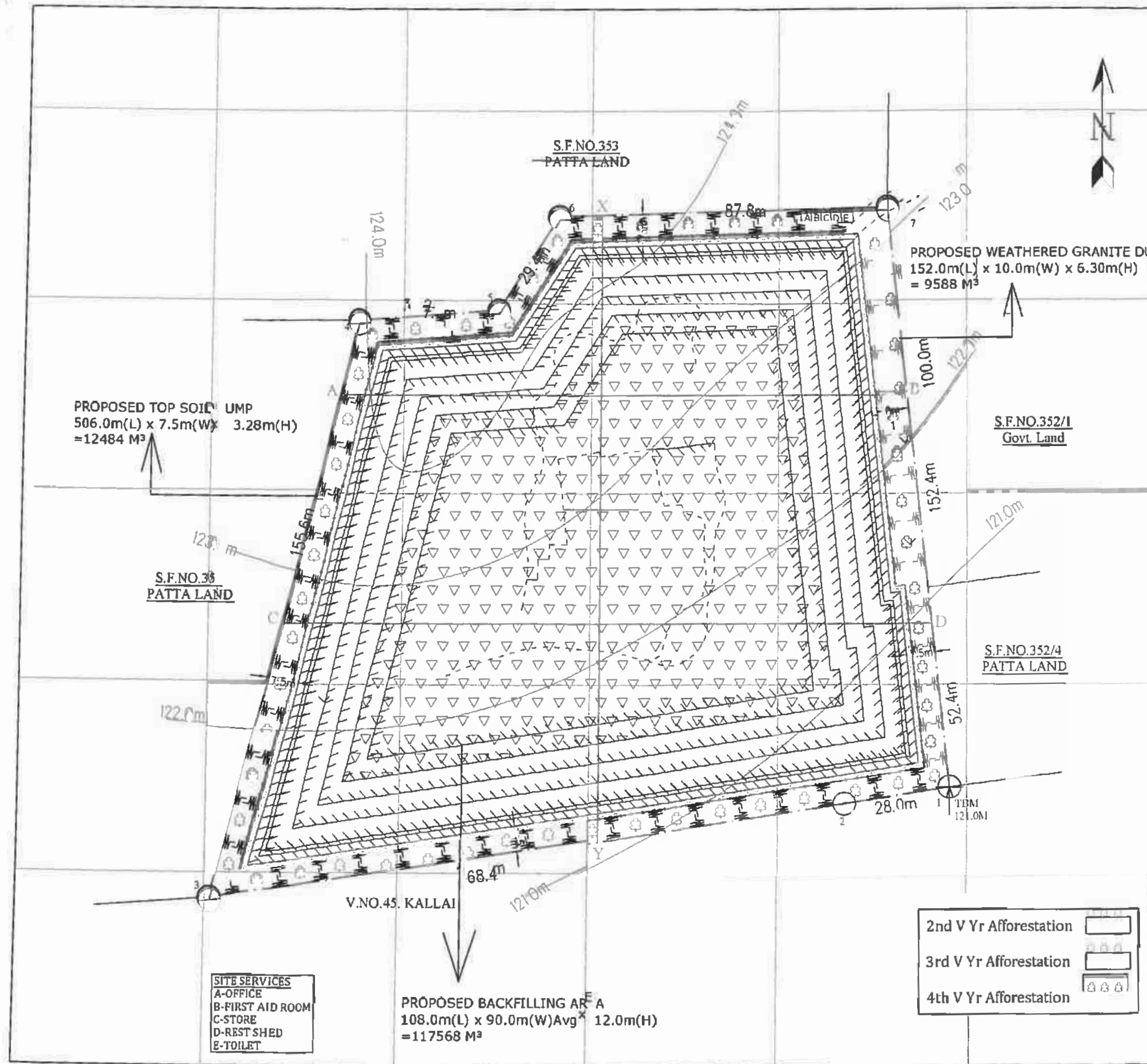
CONCEPTUAL/ FINAL MINE
CLOSURE PLAN

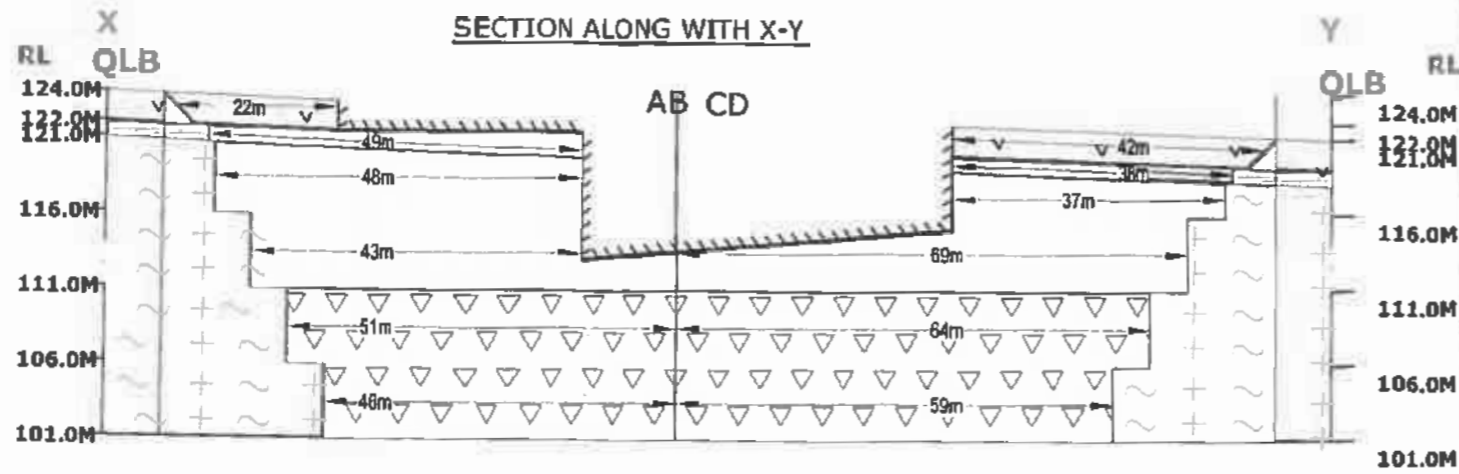
SCALE 1:1000

PREPARED BY:

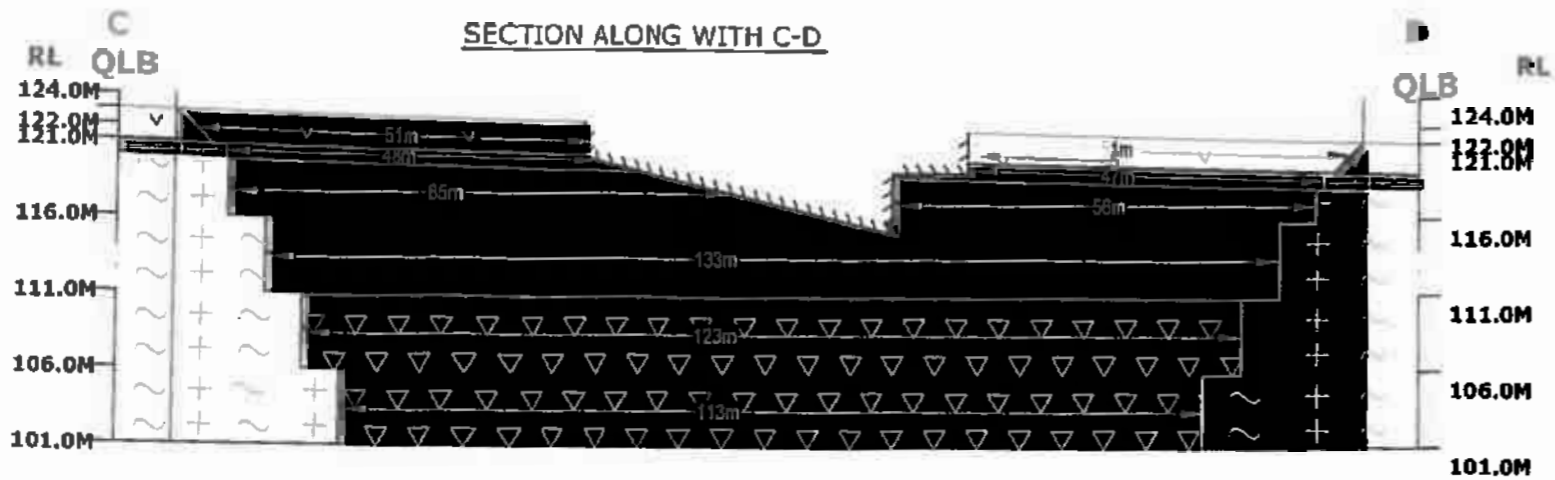
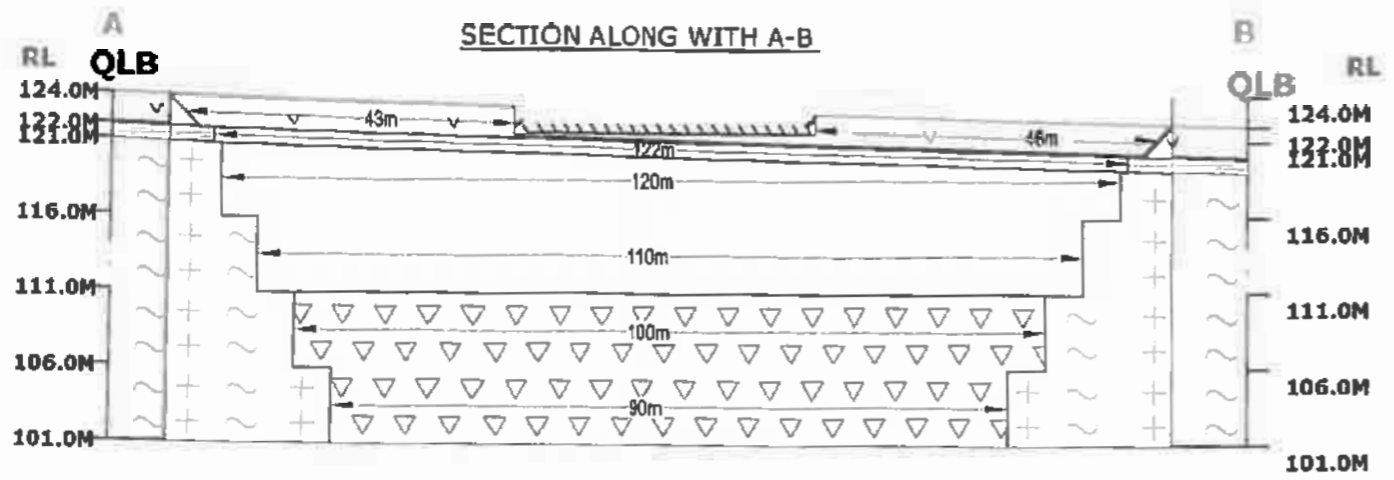
I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

S.DHANASEKAR.M.Sc.,
QUALIFIED PERSON





RAJAPET MINE RESERVES										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M3	Total Reserve in M3	Multi Colour Granite Recoverable Reserve @ 50%	Granite Waste @ 50%	Weathered Granite	Topsoil
XY AB	I	22	89	2						3916
	II	49	122	1					5978	
	III	48	120	5	28800	28800	14400	14400		
	IV	43	110	5	23650	23650	11825	11825		
	V	51	100	5	25500	25500	12750	12750		
	VI	46	90	5	20700	20700	10350	10350		
TOTAL					98650	98650	49325	49325	5978	3916
XY-CD	I	42	102	2						8568
	II	38	95	1					3610	
	III	37	121	4	17908	17908	8954	8954		
	IV	69	133	5	45885	45885	22943	22942		
	V	64	123	5	39360	39360	19680	19680		
	VI	59	113	5	33335	33335	16668	16667		
TOTAL					136488	136488	68245	68243	3610	8568
GRAND TOTAL					235138	235138	117570	117568	9588	12484



ULTIMATE PIT DIMENSION(Avg)
149m(L) X 145m(W)Avg X 23m(D)

LOCATION OF QUARRY:
 EXTENT : 2.51.5 Ha,
 S.F.NOs : 351,
 VILLAGE : NALLUR,
 TALUK : KULITHALAI,
 DISTRICT : KARUR.

PLATE NO.VIII-A

DATE OF SURVEY:09-12-2021

LESSEE ADDRESS:
 THIRU.K.SAKTHIVEL,
 S/o. KARUPPANNAN,
 PONNAMPATTI,
 PERUNTHALUR VILLAGE,
 KULITHALAI TALUK,
 KARUR DISTRICT.

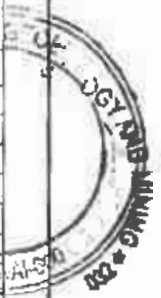
INDEX

- QUARRY LEASE BOUNDARY
- 7.5m & 10.0m SAFETY DISTANCE
- TOP SOIL
- WEATHERED GRANITE
- MULTI COLOUR GRANITE
- ULTIMATE PIT SLOPE
- PROPOSED BACKFILLING AREA

CONCEPTUAL SECTIONS
 SECTIONS: HOR :1:1000
 VER: 1:500

PREPARED BY:
 I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

S.DHANASEKAR,M.Sc.,
 QUALIFIED PERSON



LANDUSE PATTERN				
DESCRIPTION	PRESENT AREA (Ha)	AREA TO BE REQUIRED AT THE PRESENT MP PERIOD (Ha)	END OF LIFE OF QUARRYING PERIOD (Ha)	Color code
AREA UNDER QUARRY	0.22.0	0.88.0	2.00.0	
DUMPS	0.46.0	0.47.0	BACKFILLING	*****
STOCKYARD	NIL	NIL	NIL	
INFRASTRUCTURE	0.01.0	0.01.0	0.02.0	
ROADS	0.03.0	0.01.0	0.04.0	
GREEN BELT	NIL	0.18.0	0.45.5	
UNUTILIZED AREA	1.80.5	0.95.5	NIL	
TOTAL	2.51.5	2.51.5	2.51.5	

PROPOSED GRANITE WASTE DUMP
52.0m(L) x 30.0m(W) x 16.75m(H)
= 26142 M³

PROPOSED TOP SOIL DUMP
67.0m(L) x 22.0m(W) x 3.93m(H)
= 5796 M³

S.F.NO.350
PATTA LAND

S.F.NO.353
PATTA LAND

S.F.NO.352/1
Govt. Land

S.F.NO.352/4
PATTA LAND

V.NO.45. KALLAI

PROPOSED WEATHERED GRANITE DUMP
45.0m(L) x 38.0m(W) x 1.4m(H)
= 2394 M³

SITE SERVICES
A-OFFICE
B-FIRST AID ROOM
C-STORE
D-REST SHED
E-TOILET

05.09.2022 - 04.09.2023 YEAR PROPOSED PLANTATION	□ □ □ □
05.09.2023 - 04.09.2024 YEAR PROPOSED PLANTATION	□ □ □ □
05.09.2024 - 04.09.2025 YEAR PROPOSED PLANTATION	□ □ □ □
05.09.2025 - 04.09.2026 YEAR PROPOSED PLANTATION	□ □ □ □
05.09.2026 - 04.09.2027 YEAR PROPOSED PLANTATION	□ □ □ □

PLATE NO.IX

DATE OF SURVEY:09-12-2021

LESSEE ADDRESS:

THIRU.K.SAKTHIVEL,
S/o. KARUPPANNAN,
PONNAMPATTI,
PERUNTHALUR VILLAGE,
KULITHALAI TALUK,
KARUR DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.51.5 Ha,
S.F.Nos : 351,
VILLAGE : NALLUR,
TALUK : KULITHALAI,
DISTRICT : KARUR.

INDEX

QUARRY LEASE BOUNDARY	— — — —
7.5m & 10.0m SAFETY DISTANCE	— — — —
TEMPORARY BENCH MARK	TEMP 121M
TOP SOIL	∨ ∨
MULTI COLOUR GRANITE	+ +
QUARRY PIT	
CONTOUR LINE	121.0M 122.0M
QUARRY ROAD	- - - -
PROPOSED TOP SOIL DUMP	
PROPOSED WEATHERED GRANITE DUMP	
PROPOSED GRANITE WASTE DUMP	
MINE LAYOUT	

PROGRESSIVE MINE CLOSURE
PLAN

SCALE 1:1000

PREPARED BY:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE


S.DHANASEKAR,M.Sc.,
QUALIFIED PERSON

ANNEXURE-VII
VAO CERTIFICATE



JEVAN LABH

மே.மு.அ/4558/2023
நாள் 19.09.2023.

வட்டாட்சியர் அலுவலகம்,
குளித்தலை.

சான்று

கனூர் மாவட்டம், குளித்தலை வட்டம், பொருத்தஜூர் கிராமம், மஜ்ரா பொன்னம்பட்டி என்ற முகவரியைச் சேர்ந்த கே.சக்திவேல் த.பெ.கருப்பண்ணன் என்பவர் கனூர் மாவட்டம், குளித்தலை வட்டம், நகஜூர் கிராமம் புல எண் 351-ல் தொகை 25150 ஏர்ஸ் பரப்பில் பல வண்ண கிராணைட் கற்கள் வெட்டியெடுக்க மேற்படி முறையில் அருகில் 300 மீட்டர் சுற்றளவில் அங்கீகரிக்கப்பட்ட வீட்டுமனைகளோ, குடிமிகுப்புகளோ, வழிபாட்டுத்தலைங்களோ மற்றும் புறநாள் சின்னங்களோ ஏதும் இல்லை என குளித்தலை வருவாய் ஆய்வாளரின் அதிகாரகமின் படி சுற்றுமூலம் அனுமதி பெறுவதற்கு மட்டுமே இச்சான்று வழங்கப்படுகிறது.

[Handwritten Signature]
19/09/2023

வட்டாட்சியர்,
குளித்தலை.



பெறும்
திரு.கே.சக்திவேல்,
த.பெ.கருப்பண்ணன்,
பொன்னம்பட்டி,
பொருத்தஜூர் கிராமம்,
குளித்தலை வட்டம்,
கனூர் மாவட்டம்.

19-09-2023

**ANNEXURE-VIII AFFIDAVIT AND
CER DETAILS**



தமிழ்நாடு தமில்நாடு TAMILNADU :- 6 NOV 2023

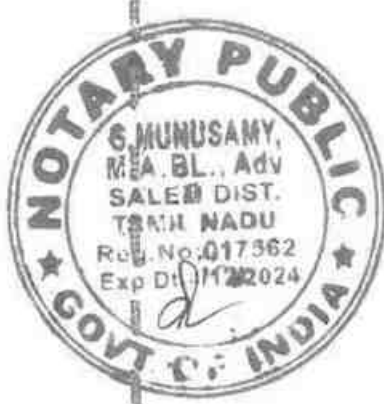
K. SAKTHIVEL
KARUR

BH 521642
R. RAJAN
STAMP VENDOR
L.No.6424-5/97.1
SURAMANGALAM, SALEM-5
TAMILNADU.

AFFIDAVIT TO SEIAA, TAMIL NADU

I, **K. Sakthivel**, S/o. Karuppannan residing at Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District, do hereby solemnly declare and sincerely affirm that, I have applied for getting environment clearance to SEIAA, Tamil Nadu for quarry lease for Multi Colour Granite quarry over an extent of 2.51.5 Ha with Survey No.351 in Nallur village, Kulithalai Taluk, Karur District, Tamil Nadu.

1. I swear to state and confirm that none of the following is situated within 10km radius of the quarry site for which, I have applied for environmental clearance,
 - a. Notified Protected areas under the wild life (Protection) Act, 1972 (NBWL).
 - b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and control of Pollution) Act 1974.
 - c. Eco sensitive area as notified.



SIGNED BEFORE ME

G. Munusamy
07/11/23

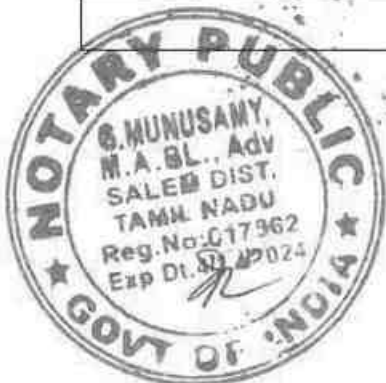
2. The following Corporate Environment Responsibility (CER) activities will be completed before commencement of the quarrying activities.

CER Activity	Project cost (Rs)	CER cost (Rs)
Carrying out various developmental works in the nearby region based on the need of the locals.	Rs.1,29,70,000/-	Rs.10,00,000/-
Total cost Allocation	Rs. 1,29,70,000/-	Rs.10,00,000/-

3. Details of quarry within 500m radius from the applied area:

Details of Existing Quarries						
S.No	Name of the Lessee/ firm it holder	Village & Taluk	SF.Nos.	Extent in Hectare	Lease Period	Remarks
1	Thiru. K. Sakthivel, S/o. Karuppannan Ponnampatti, Perunthalur Village, Kulithalai Taluk, Karur District	Nallur Village Kulithalai Taluk	351	2.51.5 Ha.	05.09.2017 to 04.09.2037	Scheme of Mining plan Approved and Proposal sent for Environmental Clearance
2	M/s. Apple Granites, S.F.No.299/1, 2, Kallai Village, Kulithalai Taluk, Karur District.	Kallai Village Kulithalai Taluk	299/1(P), 299/2A (P), 299/2B (P), 301/1 (P), 302/2 (P), 302/3 (P).	2.97.0 Ha.	21.02.2018 To 20.02.2038	Scheme of Mining plan Approved and Proposal sent for Environmental Clearance
3	M/s. V.B.S. Exports, No.38, Srinivasa Nagar, 1 st Street, Thiran Nagar, Madurai District	Kallai Village Kulithalai Taluk	349 (P), 303/2A (P), 302//1(P)	2.80.5 Ha.	21.02.2018 To 20.02.2038	Last Permit Obtained on 21.07.2022.

Details of Proposed Quarries					
S.No	Name of the Lessee/ firm it holder	Village & Taluk	SF.Nos.	Extent in Hectare	Lease Period
		Nil			



SIGNED BEFORE ME

G. Vellayudhan
07/11/23

x 12 21/02

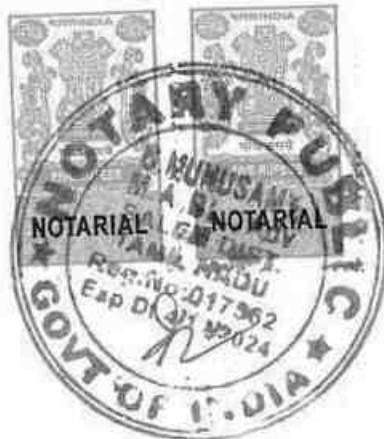
Details of Lease Expired Quarries					
S.No	Name of the Lessee/ firm it holder	Village & Taluk	SF.Nos.	Extent in Hectare	Lease Period
Nil					

Details of Abandoned Quarries					
S.No	Name of the Lessee/ firm it holder	Village & Taluk	SF.Nos.	Extent in Hectare	Lease Period
Nil					

4. There will not be hindrance or disturbance to the people living on enrooted/ nearby my quarry site while transporting the mineral and due to quarrying activities.
5. There is no approved habitation within 300m radius from the periphery of my applied quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. Insurance coverage will be arranged for the laborers working in my quarry site.
8. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Multi Colour Granite.
9. I will not engage any child labor in my quarry site and I am aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided and used by all the laborers working in my quarry.
11. No permanent structures, temple etc., are located within 500m radius from the periphery of my quarry.

I ensure to do the social and Environment commitment as mentioned in the Mining plan to the best of my knowledge.

K. Sakthivel
K. Sakthivel
(Deponent)



SIGNED BEFORE ME:
G. Munusamy 07/11/23
G. MUNUSAMY, M.A., B.L.,
NOTARY PUBLIC, RNo: 017562 GOI
ADVOCATE, Enroll No: MS.624/02
229/4, New Ambadkar Nagar, Reddipatty,
SALEM - 636 004. Cell: 94432 55122
munusamyadvsim@gmail.com

**ANNEXURE-IX EXISTING PIT
DETAILS**

V. Details of production quantity:

- a. Details of approved quantity of Multicoloured Granite as per EC and approved mining plan : 25138 cbm
- b. Details of permit issued quantity for Multicoloured Granite as on date : 379.713 cbm
- c. Validity period mining plan : 5 years

VI. Details of existing Depth:

As per the scheme of Mining approved by the Commissioner of Geology and Mining, Chennai, dated:21.01.2023 submitted by the applicant, it reveals the average dimensions of pits as follows; -

Sl No.	Description	Length	Width	Depth
1	Pit	50	45	10

[Signature]
27/07/23
Deputy Director,
Geology and Mining,
Karur.

[Signature]
27/07/2023

**ANNEXURE-X PREVIOUS
ENVIRONMENTAL
CLEARANCE**

**THIRU.G.GOVINDARAJ, I.A.S.,
CHAIRMAN/
DISTRICT COLLECTOR.**

**Karur District Environment
Impact Assessment Authority,
Room No.302,Collectorate,
Karur.**

ENVIRONMENTAL CLEARANCE

Lr.No.DEIAA-DIA/TN/MIN/5852/2017-KRR Ec.No.17/2017/Mines, Dated: 02.08.2017

To,

Thiru.K.Sakthivel,
S/o.Karuppannan,
Ponnampatti, Porunthalur Village,
Kulithalai Taluk,
Karur District.

Sir,

**Sub: DEIAA - Proposed - Multicoloured Granite - quarry at
S.F.No.351 - Nallur Village - Kulithalai Taluk - Karur
District by Thiru.K.Sakthivel - Environmental
Clearance - Reg.**

- Ref: 1. Your Application for Environment Clearance
transferred from SEIAA, Dated.10.11.2016, Date of
online application submitted to DEIAA,
Dated:06.4.2017 and the date of receipt of application
11.7.2017.**
- 2. Minutes of the DEAC meeting No.2 DEAC held on
DEAC meeting date 26.7.2017.**
- 3. Minutes of the DEIAA meeting held on DEIAA meeting
date 31.7.2017.**

-oOo-

Details of Minor mineral Activity:-

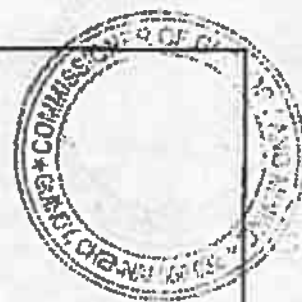
This has reference to your application first cited. The proposal is for obtaining Environmental Clearance for mining / quarrying of category 'B2' minor minerals based on the particulars furnished in your application as shown below:

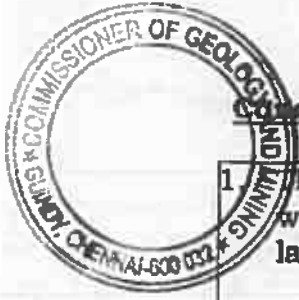
1.	Name of Project Proponent and address	:	Thiru.K.Sakthivel, S/o.Karuppannan, Ponnampatti, Porunthalur Village, Kulithalai Taluk, Karur District.
2.	Location of the Proposed Activity	:	
	Survey Number	:	351
	Latitude and Longitude	:	10°47'34.84"N 78°27'00.25"E



	Village	:	Nallur
	Taluk	:	Kulithalai
	District	:	Karur
3.	Proposed Activity		
	i. Minor mineral	:	Multicoloured Granite
	ii. Mining Lease Area	:	2.51.5 hecets
	iii. Approved quantity	:	Multicoloured Granite-25,138 M ³ for first 5 years
	iv. Depth of quarrying	:	13M below ground level
	v. Type of quarrying	:	Open cast Semi-mechanized
	vi. Category (B1/B2)	:	"B2" category.
	vii. Precise Area Communication	:	Government letter No.11329/MMB2/16-1/Industries department dated:17.10.2016.
	viii. Mining Plan approval	:	Commissioner of Geology and Mining, Chennai Letter No.5369/MM2/2016, Dated:03.11.2016
	ix. Quarrying lease period	:	20 Years Environment Clearance is granted for first 5 years only.
4.	Whether Project area attracts any general conditions specified in the EIA notification, 2006 as amended:-	:	Not attracted. Affidavit furnished.
5.	Man Power requirement per day	:	40 Nos.
6.	Utilities		
	i. Source of Water	:	Water vendors / Existing borehole

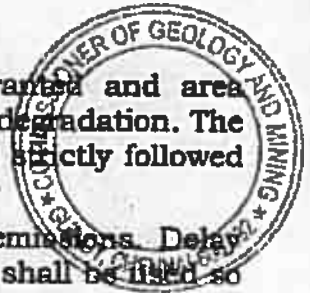
	ii.	Water requirement*	:	
		1. Drinking & domestic purposes (in KLD)		0.3 KLD
		2. Dust suppression (in KLD)		0.3 KLD
		3. Afforestation		0.4 KLD
	iii.	Power requirement		
		a. Domestic purpose	:	Fuel is used for operating machineries and vehicles during quarrying process and electricity will be used only for mines office.
		b. Industrial purpose	:	
7.		Cost		
	i.	Project Cost	:	Rs.73,64,000/-
	ii.	EMP Cost	:	Rs.2,55,000/-
8.		Public Consultation:-	:	Not required as per O.M. dated 24.12.2013 of MoEF, GOI
9.		Date of Appraisal by DEAC:	:	26.7.2017
		Agenda No.	:	2 nd Meeting -01
10.		Date of review / discussion by DEIAA and the Remarks:-		
		The proposal was placed before the DEIAA in its DEIAA meeting No.2 held on 31.7.2017 and the Authority after careful consideration, decided to grant Environmental Clearance to the said project Mining of "Multicoloured Granite" subject to the terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.		
11.		Validity:		
		This Environmental Clearance is granted to Mining of "Multicoloured Granite" for the production quantity of production for the period of "five years" from the date of execution of the mining lease period.		





Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the DEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the DEIAA.
2. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
3. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
4. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
5. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
6. The proponent shall ensure that First Aid Box is available at site.
7. The excavation activity shall not alter the natural drainage pattern of the area.
8. The excavated pit shall be restored by the project proponent for useful purposes.
9. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
10. The quarrying operation shall be restricted between 7AM and 5 PM.
11. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
12. A minimum distance of 15 mts. from any civil structure shall be kept from the periphery of any excavation area.
13. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.



14. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
15. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
16. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
17. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
18. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
19. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
20. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
21. The following measures are to be implemented to reduce Air Pollution during transportation of mineral]
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
22. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
23. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.
24. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
25. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.



26. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
27. The following measures are to be adopted to control erosion of dumps:-

- i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
28. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCE.
 29. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
 30. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
 31. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
 32. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
 33. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
 34. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
 35. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 25 hectares within the mining lease period of this application.
 36. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.

37. Ground water quality monitoring should be conducted once in 6 Months.
38. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
39. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
40. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
41. Bunds to be provided at the boundary of the project site.
42. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place and progress report shall be submitted once in 3 months.
43. At least 10 Neem trees should be planted around the boundary of the quarry site.
44. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
45. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity.
46. The Project Proponent shall provide solar lighting system to the nearby villages.
47. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
48. Rainwater shall be pumped out Via Settling Tank only.
49. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
50. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from standing committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
51. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
52. Safety equipments to be provided to all the employees.
53. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai.
54. The Deputy Superintendent of Police, Revenue Divisional Officer, and the Tahsildar concerned shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
55. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
56. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining lease.





57. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before commencing mining operation.
58. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
59. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
60. Blasting shall be carried out after announcing to the public through adequate public address system to avoid any accident.
61. Proper sanitation measures, first aid kit and protected drinking water should be provided to the labourers.
62. The Environmental norms shall be monitored by the District Environmental Engineer, Tamil Nadu Pollution Control Board, Karur.
63. Periodical medical examination of the quarry workers should be carried out by a registered medical practitioner and the report should be filed in the quarry office in a separate file and copy should be sent to the Deputy Director, Health Services, Karur.
64. Artificial recharge structure should be constructed nearby the lease area to harvest the rain water.

General Conditions:

- 1) EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
- 2) The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
- 3) No change in mining technology and scope of working should be made without prior approval of the DEIAA, Karur District, Tamil Nadu.
- 4) No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
- 5) Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- 6) Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
- 7) A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
- 8) Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
- 9) Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.



- 10) Access and haul roads to the quarrying area should be repaired in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
- 11) All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
- 12) Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
- 13) Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
- 14) The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
- 15) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
- 16) The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
- 17) This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance.
- 18) The DEIAA, Karur District may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
- 19) The DEIAA, Karur District may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this DEIAA, Karur District that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
- 20) Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
- 21) The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National



Commission for protection of Child Right Rules,2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.

- 22) Any other conditions stipulated by other Statutory/Government authorities shall be complied.
- 23) Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

S/d G.Govindaraj
CHAIRMAN
DEIAA

/ True copy / By Order /


2.8.17
MEMBER SECRETARY
DEIAA

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Copy to:-

1. The Secretary, Ministry of Mines, Government of India , Shastri Bhawan, New Delhi
2. The Principal Secretary, Environment and Forest Department, Government of Tamil Nadu, Tamil Nadu.
3. The Principal Secretary to Government, Industries Department, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai-34.
5. The Chairman, Tamil Nadu Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex East Arjun Nagar, New Delhi 110 032.
6. The Chairman Tamil Nadu Pollution Control Board, 76 Mount Salai (Cuindy, Chennai-32).
7. The Chairman, SEIAA, Panagal Building, Chennai.
8. The Commissioner of Geology and Mining, Guindy, Chennai-32
9. E1 Division, Ministry of Environment and Forests Paryavaran Bhawan, New Delhi.
10. Spare.


S.DHANASEKAR, M.Sc. (Geo)
Qualified Person

ANNEXURE-XI
NABET CERTIFICATE

National Accreditation Board for Education and Training

Certificate of Accreditation

Eco Tech Labs Pvt Ltd., Chennai

48, 2nd main road, Ram Nagar South Extension, Pallikaranai, Chennai-600100, Tamil Nadu

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 opencast / underground mining	1	1 (a) (i)	A
2.	Thermal power plants	4	1 (d)	A
3.	Metallurgical industries-Ferrous only	8	3 (a)	B
4.	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
5.	Airports	29	7 (a)	A
6.	Industrial estates/ parks/ complexes/ Areas, export processing zones (EPZs), Special economic zones (SEZs), Biotech parks, Leather complexes	31	7 (c)	A
7.	Building and construction projects	38	8 (a)	B
8.	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 March 07, 2024, 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/24/3202 dated Apr. 23, 2024. The accreditation needs to be renewed before the expiry date by Eco Tech Labs Pvt. Ltd., Chennai following due process of assessment.

Issue Date
Apr. 23, 2024

Valid up to
Apr. 10, 2025



Mr. Ajay Kumar Jha
Sr. Director - NABET

Certificate No.
NABET/EIA/22-25/SA 0222

Prof (Dr) Varinder S Kanwar
CEO - NABET