

Application Form (Draft EIA Report)

For

Thiru.V. Sivasubbu

Rough stone & Gravel Quarry – 0.50.58 Ha

at

S.F.No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk,
Tirunelveli District, Tamilnadu State

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

Category of the Project: B1 Cluster Mining

***Baseline Period: October, November & December
2021***

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



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

Proponent details:

Thiru. V. Sivasubbu,
S/o. Shri. Velu,
B4C, NGO B Colony,
Jawahar Nagar,
Palayamkottai Taluk,
Tirunelveli District.

Date:

From

Thiru. V. Sivasubbu
S/o. Shri. Velu,
B4C, NGO B Colony,
Jawahar Nagar, Palayamkottai Taluk
Tirunelveli District - 627 011

To

The District Environmental Engineer

Tamilnadu Pollution Control Board,
30/2 SIDCO Industrial Estate,
Pettai, Tirunelveli - 627 010.

Sir,

Sub: Request to conduct Public Hearing – Environmental Clearance for Thiru. V. Sivasubbu Rough Stone and Gravel Quarry over a total extent of 0.50.58 Ha at S.F. No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamilnadu State – Regarding.

Ref: Letter No. SEIAA-TN/F. No. 8658/SEAC/ToR-1076/2021 Dated: 01.03.2022

Please find enclosed herewith the application of Draft EIA Report along with necessary enclosures towards seeking environmental clearance for Thiru. V. Sivasubbu Rough Stone and Gravel Quarry over a total extent of 0.50.58 Ha at S.F. No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamil nadu State. In this regard, we had obtained the Terms of Reference from State Environmental Impact Assessment Authority (SEIAA) Tamil Nadu vide reference mentioned above for conducting EIA studies. We wish to inform that the draft EIA report complying with all the conditions mentioned in the TOR has been prepared and the copies of the same are enclosed with this letter. With reference to the above, we kindly request the TNPCB to make the necessary arrangements for **conducting the public hearing for the Rough Stone and Gravel Quarry**. With the above, we request the TNPCB to accept and process our application for conducting the Public Hearing at the earliest.

Thanking you

Yours Sincerely

Authorized Signatory

Enclosures: Draft EIA report

Thiru. V. Sivasubbu,
S/o. Shri. Velu,
B4C, NGO B Colony,
Jawahar Nagar,
Palayamkottai Taluk,
Tirunelveli District

UNDERTAKING

I, Thiru. V. Sivasubbu, undertaking that the Draft Environmental Impact Assessment (EIA) Report for Rough Stone & Gravel Quarry over an extent of 0.50.58 Ha at S.F.No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamilnadu State under project category B1 and Schedule S.No.1(a)

TOR issued by the State Expert Appraisal Committee, TN vide Letter No. SEIAA-TN/F. No. 8658/SEAC/ToR-1076/2021 Dated: 01.03.2022.

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

Place: Tirunelveli

Date:



Yours faithfully

Thiru. V. Sivasubbu

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



Eco Tech Labs Pvt Ltd

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Email : info@ecotechlabs.in
Website : www.ecotechlabs.in
CIN : U74900TN2014PTC094895

UNDERTAKING

I, Dr. A. Dhamodharan, Managing Director confirms that this Draft EIA Report of Rough Stone & Gravel Quarry over an extent of 0.50.58 Ha at S.F.No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamilnadu 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/2124/SA 0147

Date:

Place: Chennai

Declaration by Experts contributing to the EIA of Proposed Rough Stone & Gravel Quarry- 0.50.58 Ha by Thiru. V. Sivasubbu at S.F.No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamilnadu State

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

EIA Coordinator: Dr. A. Dhamodharan



Dr. A. DHAMODHARAN
(NABET APPROVED EIA COORDINATOR)
NABET/EIA/2124/SA 0147
Environmental Consultant
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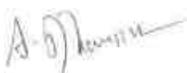
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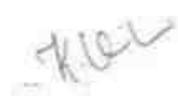
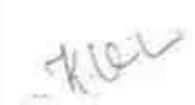
Period of involvement: 01.03.2022 to Till now

Contact information: M/s. Ecotech Labs Pvt Ltd.,
No. 48, 2nd Main road, Ram Nagar South Extension,
Pallikaranai

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: March 2022 - Till now	

2	WP	Dr. A. Dhamodharan	<p>1. Selection of baseline Monitoring Locations for Ground water analysis and also identifying nearest surface water to be studied.</p> <p>2. Interpretation of baseline data collected</p> <p>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</p> <p>4. Preparation of suitable and appropriate mitigation plan.</p> <p>Period: March 2022 – Till now</p>	
3	SHW	Dr. A. Dhamodharan	<p>1. Identification of nature of solid waste generated</p> <p>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</p> <p>3. Suggesting suitable mitigation measures by recommending appropriate disposal method for each category of waste generated</p> <p>4. Top soil and refuse management</p> <p>Period: March 2022 – Till now</p>	
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: March 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: March 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: March 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: March 2022 - Till now</p>	
8	SC	Dr. A. Dhamodharan	<p>1. Interpretation of baseline report</p> <p>2. Identification of possible impacts on soil, prediction of soil conservation and suggesting suitable mitigation measures.</p> <p>Period: March 2022 - Till now</p>	
9	AQ	Mrs. K. Vijayalakshmi	<p>1. Collection of Meteorological data for the baseline study period</p> <p>2. Plotting wind rose plot and thereby selecting the monitoring locations based on the wind pattern</p> <p>3. Estimation of sources of air emissions and air quality modeling is done</p> <p>4. Interpretation of the results obtained</p> <p>5. Identification of the impacts and suggesting suitable mitigation measures.</p> <p>Period: March 2022 - Till now</p>	

10	NV	Mrs. K. Vijayalakshmi	<ol style="list-style-type: none"> 1. Selection of monitoring locations 2. Interpretation of baseline data 3. Prediction of impacts due to noise pollution and suggestion of appropriate mitigation measures <p>Period: May 2022 - Till now</p>	
11	LU	Dr. T. P. Natesan	<ol style="list-style-type: none"> 1. Collection of Remote sensing satellite data to study the land use pattern. 2. Primary field survey and limited field verification for land categorization in the study area 3. Preparation of Land use map using Satellite data for 10km radius around the project site. <p>Period: March 2022 - Till now</p>	
12	RH	Mrs. K. Vijayalakshmi	<ol style="list-style-type: none"> 1. Identification of the risk 2. Interpreting consequence contours 3. Suggesting risk mitigation measures <p>Period: March 2022 - Till now</p>	

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

I, Dr. A. Dhamodharan, hereby, confirm that the above-mentioned experts prepared the EIA report of mining project at Survey Numbers. S.F.No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamilnadu 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. & Issue Date: NABET/EIA/2124/SA 0147

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Abbreviation

LU -Land use

AP - Air Pollution monitoring, prevention and control

AQ- Meterology, 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 -Soild and Hazardous waste management

SC- Soil conservation



EXECUTIVE SUMMARY

1. Project Background

The Rough stone and Gravel quarry is proposed over an extent of **0.50.58 Ha** in **S.F. No. 525/2(P)** of **Tharuvai** Village, **Palayamkottai** Taluk, **Tirunelveli** District. As per 500m Radius letter obtained from Assistant Director, Geology and Mining Tirunelveli vide letter Rc.No.M1/8960/2018 mines dated 05.10.2020, the total cluster area is **13.72.08 Ha**.

The category of project is B1 (cluster). The lease area for quarry lease is almost Plain terrain and the area is covered by massive charnockite rough stone formation. which does not sustain any type of vegetation. The quarry operation is proposed to carry out with conventional open cast semi mechanized mining with 5.0 meter vertical bench and with a bench width of 5.0 meter. The Quarry operation involves shallow jack hammer drilling, slurry blasting, loading and transportation.

The quarry operation is proposed up to depth for 13 m below ground level. The Total Geological reserve is about 1,17,760 m³ of Rough Stone and 17,664 m³ Top soil with Gravel. The Mineable Reserves is estimated at 18,250 m³ of Rough Stone and 18,250 m³ Gravel to be mined for (Sixty months) Five years only.

Mining Plan was approved by The Joint Director/Assistant Director (i/c), Geology & Mining, Tirunelveli vide letter R.c. No. M1/19947/2014 dated 18.01.2021. The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries, wild life sanctuaries as per Wild life protection Act 1972, within the radius of 15 km.

2. Nature & Size of the Project

The proposed Rough stone quarry over an extent of 0.50.58 Hectares land is located Tharuvai Village of Palayamkottai Taluk, Tirunelveli District.

Mineral intends to quarry	: Rough stone and Gravel
District	:Tirunelveli
Taluk	: Palayamkottai
Village	: Tharuvai village
S.F.Nos	: 525/2(P)



Extent : 0.50.58 hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	08°38'36.78"N to 08°38'40.47"N
2	Longitude	77°40'46.12"E to 77°40'50.76"E
3	Site Elevation above MSL	53 m from MSL
4	Topography	Plain terrain
5	Land use of the site	Own patta land and non-agricultural land
6	Extent of lease area	0.50.58 Ha
7	Nearest highway	NH 44 (Srinagar Kanyakumari)- 2.37 km, E SH 40 (Tirunelveli- Shencottai Road) – 2.79 km N
8	Nearest railway station	Tirunelveli Junction Railway Station- 10.14 km, NE
9	Nearest airport	Tuticorin Domestic Airport – 39.22 km, NE
10	Nearest town / city	Tirunelveli – 11.44 km, NE
11	Rivers / Canal	<ul style="list-style-type: none"> • Canal (Right of Tamilakurichi Dam) – 1.67 km SE • Pachaiyar River – 2.12 km, NW • Thamirabarani river- 2.95 km, NW • Canal (Left of Tamilkurichi Dam) – 3.44 km SW • Tirunelveli Channel – 4.97 km NW • Kodagan Channel – 7.17 km NW • Nainarkulam Channel – 7.36 km NW • Manimuthur canal – 9.71 km SE • Right Canal – 11.18 km SW • Canadian Canal – 12.13 km NW
12	Lakes/Dams	<ul style="list-style-type: none"> • Brothers Lake, 2.28 km, E • Tamilakurichi Dam, 3.15 km, SW • Ponmathithan Kulam- 3.75 km NE • Nainar Kulam Lake, 9.50 km, NE • Elanthakulam Lake, 9.64 km, NE
13	Hills / valleys	Nil within 15 km radius
14	Archaeologically places	Nil within 15 km radius
15	National parks /Wildlife sanctuaries	Nil within 15 km radius
16	Reserved / Protected Forests	<ul style="list-style-type: none"> • Muttur Malai (Wolf Hill) Reserve Forest – 8.55 km NE • Kolundumadai Reserve Forest- 11.82 km, SW



17	Seismicity	Proposed Lease area come under Seismic zone-II (low risk area)
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3. Need for the Project

- ❖ The mining activities as proposed are the backbone of all construction and infrastructure projects as the raw material for construction is available only from such mining. The Rough stone extracted will be transported to be Stone crusher of district Tirunelveli.
- ❖ The raw Rough stone as well as the crushed material of stone is in high demand in real estate, construction projects as well as in building construction projects.
- ❖ Rough stone is quarried for producing crusher aggregates to the nearby building contractors, road contractors and nearby villagers.
- ❖ After quarrying the entire reserves mined out, the area will be used as water reservoir to have an artificial recharge to the nearby wells.
- ❖ No damage to the land is caused, no reclamation or back filling is required.



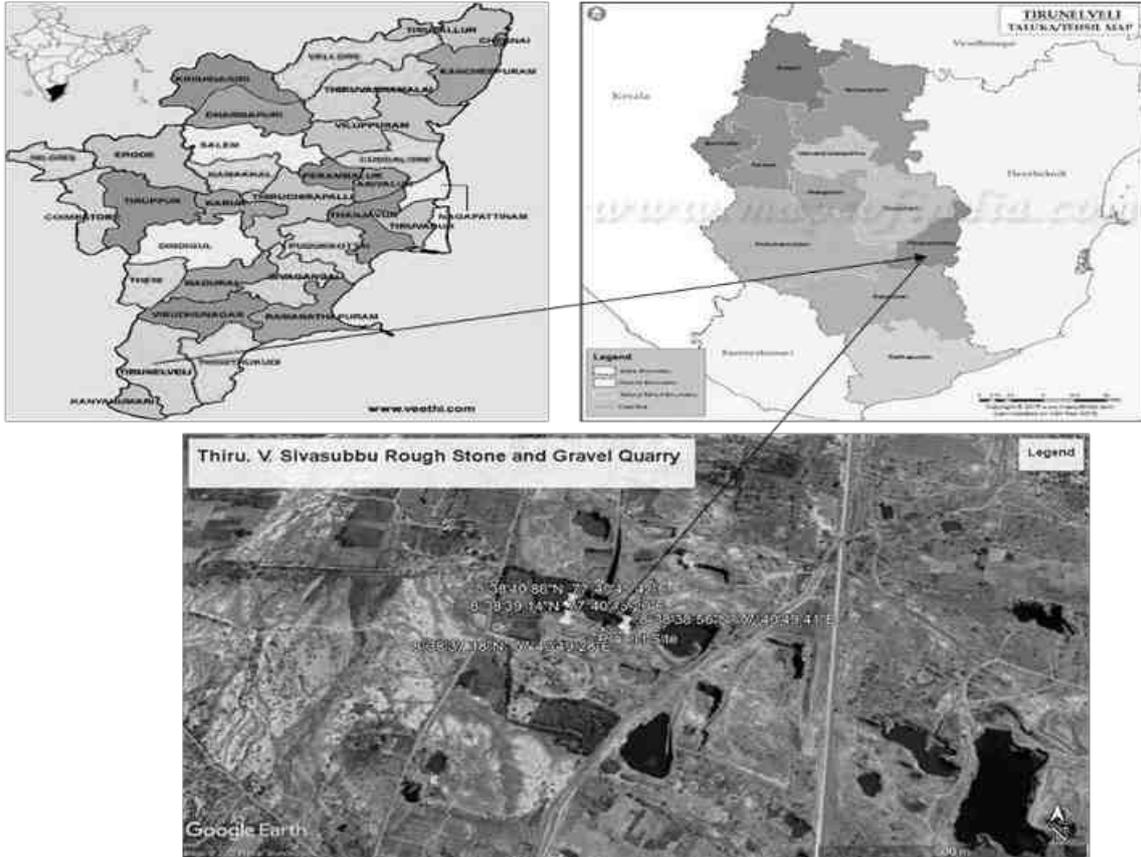


Figure 1: Location Map of the Project Site



Figure 2: Google Image of the Project Site

4. Charnokite

Generally, the Charnockite is grey to greenish colored, coarse to medium grained, greasy nature with or without garnet. Because of the limited outcrops, the quarry sections are studied to infer the various interrelationships between the litho units. Charnockite is interbanded nature with crystalline carbonate rocks are observed in most of the quarry in Tirunelveli, Weathering of the Charnockite on the surface gives a deceptive look of gneiss and in the quarry sections at depth the fresh charnockite is exposed, which are well exemplified in almost all the Charnockite quarry sections.

5. Geological Resources

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

Table 2. Geological resources

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL WITH GRAVEL VOLUME (M ³)
AA' & BB'	128	46	3.0	-	17,664
	128	46	20.0	1,17,760	-
TOTAL GEOLOGICAL RESERVES				1,17,760	17,664

Table 3. Year wise Production Plan

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL WITH GRAVEL VOLUME (M ³)
AA' & BB'	30	28	3.0	-	2,520
	23	21	5.0	2,415	-
	13	11	5.0	715	-
First Year Excavation				3,130	2,520
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
Second Year Excavation				3,780	1,890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
Third Year Excavation				3,780	1,890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-



IV YEAR EXCAVATION				3,780	1890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
V YEAR EXCAVATION				28,275	6,669
TOTAL FIVE YEARS PRODUCTION				18,250	10,080

6. Mining

Opencast mining

The quarry operation is proposed to carry 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 shallow jack hammer drilling, slurry blasting, loading and transportation.

Process Description

- The reserves and resource are arrived based upon the Geological investigation
- Removal of Topsoil by Excavators and directly Loaded Into Tippers.
- Removal of Rough Stone by Excavators by Drilling and Blasting.
- Shallow Drilling With Jackhammer of 32-36mm Dia.
- Minimum Blasting With Class 2 Explosives.
- Loading of Rough Stone By Excavators Into Tippers.

7. Water Requirement

Total water requirement for the mining project is 1.5 kLD. The 90% water will be required for the suspension of dust and green belt development domestic water will be sourced from nearby Tharuvai Village (NW) and other water will be source from nearby road tankers supply.

Table 4. Water Balance

Purpose	Quantity	Sources
Drinking Water	0.5KLD	Packaged Drinking water vendors available in Tharuvai village which is about 3.10 km NW from the
Green belt	0.5KLD	Other domestic activities through road tankers
Dust suppression	0.5KLD	From road tankers supply
Total	1.5 KLD	



8. Man Power

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

Table 5. Man Power Requirement

1.	Skilled	Operator	2 No.
		Mines Manager/Mate	1 No.
2.	Semi - skilled	Driver	2 No
3.	Unskilled	Musdoor / Labors	2 No
		Total	07 Nos

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

9. Solid Waste Management

Table .6 Solid Waste Management

S.No	Type	Quantity	Disposal Method
1	Organic	1.3 kg/day	Municipal bin including food waste
2	Inorganic	1.9 kg/day	TNPCB authorized recyclers

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

Table.7 500m Radius Cluster Mine

1) Existing quarries:

S. No.	Name of the lessee / Permit Holder	Village & SF.No.	Extent	Lease Period
1.	S. Shankar, S/o.Subramanian, 131/1, A.P.T Road, Erode-638 003.	Tharuvai (v) & SF.No.524(P)	1.60.0	Proceeding No.M1/43375/2015, dt.31.03.2018 for a period 5 years from 17.04.2018 to 16.04.2023
2.	P. Marimuthu, S/o.Petchithevar, Ponnakudi, Palayamkottai Taluk, Tirunelveli.	Tharuvai (v) & SF.Nos.522/1, 522/2, 534 & 535(P)	4.73.5	Proceeding No.M1/36802/2014, dt.22.03.2018 for a period 5 years from 19.04.2018 to 18.04.2023
3.	Sri Durgambika Blue Metals, Seevalaperi,	Tharuvai (v) & SF.No.570(P)	1.38.5	Proceeding No.M1/3390/2017, dt.18.07.2018 lease



	Palaymkottai Taluk, Tirunelveli District.			transferred to Sri Durgambika Blue Metals vide proceedings in M3/6065/2019, dated 02.03.2019 for a period of 5 years from 24.07.2018 to 23.07.2023
Total extent of existing quarries			7.72.0	

2) Abandoned Quarries:

S. No.	Name of the applicant	Village & SF.No.	Extent	Lease Period
1.	V. Sivasubbu, S/o. Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palaymkottai, Tirunelveli District.	Tharuvai (v) & SF.Nos. 525/1, 525/2, 530/2, 530/3B	1.40.0	Proceeding No.M1/84390/2008, dt.10.02.2009 for a period 5 years from 28.05.2009 to 27.05.2014
2.	S. Subbaiah, S/o. Sorna Thevar, Seevalaperi, Palaymkottai Taluk, Tirunelveli District.	Tharuvai (v) & SF.Nos. 568/1, 569/1B)	2.63.5	Proceeding No.M1/41558/2011, dt.02.01.2012 for a period 5 years from 07.02.2012 to 06.02.2017
3.	M. Murugaiah, S/o. Muthaiah Thevar, 2/72, West Street, Palaymkottai Taluk, Tirunelveli	Tharuvai (v) & SF.Nos. 527 (P), 528/1B, 529/1A & 529/3B	4.81.0	Proceeding No.M1/63874/2011, dt.22.07.2012 for a period 5 years from 22.07.2012 to 21.07.2017
Total extent of abandoned quarries			8.84.5	

3) Proposed Quarries:

S. No.	Name of the applicant	Village & SF.No.	Extent	Lease Period
1.	V. Sivasubbu, S/o. Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palaymkottai, Tirunelveli	Tharuvai (v) & SF.No. 525/2(P)	0.50.58	Proposed Quarry
2.	Sri Durgambika Blue Metals, Seevalaperi, Palaymkottai Taluk, Tirunelveli District.	Tharuvai (v) & SF.Nos. 570(P) & 571(P)	1.95.5	Proposed Quarry
3.	S. Satheesh, S/o.Subramanian, 133, Erode.	Tharuvai (v) & SF.No. 523	1.97.5	Proposed Quarry



4.	Murugaiah, S/o. Muthaiah, 2/72, Mela Theru, Thirumalaikozhunthupuram, Palayamkottai Taluk, Tirunelveli.	Tharuvai (v) & SF.No. 529/1A	1.56.50	Proposed Quarry
Total extent of proposed quarries			6.00.8	

10. Land Requirement

The total extent area of the Existing project is 0.50.58 Ha, Own patta land in Tharuvai Village of Palayamkottai Taluk, Tirunelveli District.

Table 8. Land Use Breakup

Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1.	Quarrying Pit	0.00.0	0.30.28
2.	Infrastructure	Nil	0.01.0
3.	Roads	0.00.0	0.02.0
4.	Green Belt	Nil	0.17.30
5.	Unutilized	0.50.58	0.00.0
Total		0.50.58	0.50.58

11. Human Settlement

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

Table.9 Habitation

S.No	Direction	Village	Distance	Population
1	North east	Araikulam	1.0 Km	800
2	South	Kandithankulam	2.0 Km	900
3	South west	Keela Omanallur	2.0 Km	600
4	North	Tharuvai	1.0 Km	1000

12. Power Requirement

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



16 Litre diesel per hour for excavator for mining and loading for Rough stone needed.

13.Scope of the Baseline Study

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

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

13.1 Micro – Meteorology

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

- i) Average Minimum Temperature : 32 °C
- ii) Average Maximum Temperature. : 36 °C
- iv) Average Annual Rainfall of the area : 700-800 mm

13.2 Air Environment

Ambient air monitoring was carried out on monthly basis in the surrounding areas of the Mine Lease area to assess the ambient air quality at the source. To know the ambient air quality at a larger distance i.e. in the study area of 5 km. radius, air quality survey has been conducted at 5 locations over a period of Post Monsoon Season. Major air pollutants like, Particulate Matter (PM10), Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂) were monitored and the results are summarized below,

The baseline levels of PM10 (39-63 µg/m³), PM2.5 (18-30 µg/m³), SO₂ (4-19µg/m³), NO₂ (9-32 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from October 2021 to December 2021.



13.3 Noise Environment

Ambient noise levels were measured at 5 locations around the proposed project site. The maximum Day noise and Night noise were found to be 65 dB(A) and 48 dB(A) respectively in the project site. The minimum Day Noise and Night noise were 55 dB(A) and 42 dB(A) respectively which was observed in CSI Christ Church, Moondradaippu. The observed values are all well within the Standards prescribed by CPCB.

13.4 Water Environment

- The average pH ranges from 6.65-8.15.
- TDS value varied from 115 mg/l to 705 mg/l
- Hardness varied from 60 to 296 mg/l
- Chloride varied from 21.5 to 225 mg/l

13.5 Land Environment

The analysis results show that soil is neutral in nature as pH value ranges from 6.56 to 8.05 with organic matter 0.07 % to 0.12 %. 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.

15. Greenbelt Development

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



2. Green belt has been recommended as one of the major component of environmental Management plan, which will improve ecology, environment and quality of the surrounding area.
3. Local trees like, Neem , Pungam, Naval etc will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 51 trees per annum with interval 5m.
- 4.The rate of survival expected to be 70% in this area.

Table.10 Plantation/ Afforestation Program

Name of the Species proposed	Survival	No. of species
Neem, Vilvam, Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila Maram, Poo Marudhu, Panai, Marudha maram, Thandri, Sengondrai, Poovarasu, Thethankottai Maram, Pungam	70%	255
Total		255

16. Anticipated Environmental Impacts

16.1 Air Environment and Mitigation Measures

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

16.2 Noise Environment and Mitigation Measures

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



17.Responsibilities for Environmental Management Cell (EMC)

The responsibilities of the EMC include the following:

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

18.Environmental Monitoring Program

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

19. Project Cost

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

Table .11 Project Cost details

S.No.	Description	Cost
1	Fixed Asset Cost	Rs. 50,000
2	Operational cost	Rs.9,85,080
	Total	Rs. 10,35,080/-

Environmental Management Cost : Rs. 20,68,885/-

20. Corporate Environmental Responsibility

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

Table 12 CER Cost

S.No.	CER Activity	CER project cost (Rs)
1.	Government School in Tharuvai Village <ul style="list-style-type: none"> ➤ RO Water facility ➤ Developing Sports facilities ➤ Environmental awareness books in Library for Students, ➤ Green belt development ➤ Toilet rooms and maintenance of Toilet rooms up to lease period 	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.



1 INTRODUCTION

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 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.

1.2 GENERAL INFORMATION ON MINING OF MINERALS

Crystalline Limestone, Multi color dimension stone, rough stone/gravel, garnet and ilmenite sand are notable economic importance minerals of found in Tirunelveli District. Minor occurrences of graphite, mica and gemstone are also reported in the district. Mining activities based on rough stone (mostly charnockite) are majorly concentrated in Alangulam, Radhapuram, Nanguneri, Manur and Sankarankovil Taluks in the district under operation for production of construction materials and earth fill as gravel.

Rich deposits of garnet and ilmenite sand occurs along the coast part of Radhapuram Taluk, in Tirunelveli district. Red garnet sand occurs along Nambiar River. Vijayapatti, Kuttankuzhi and Idindakarai areas show notable garnet and ilmenite sands occurrences which were exploited economically in recent times.

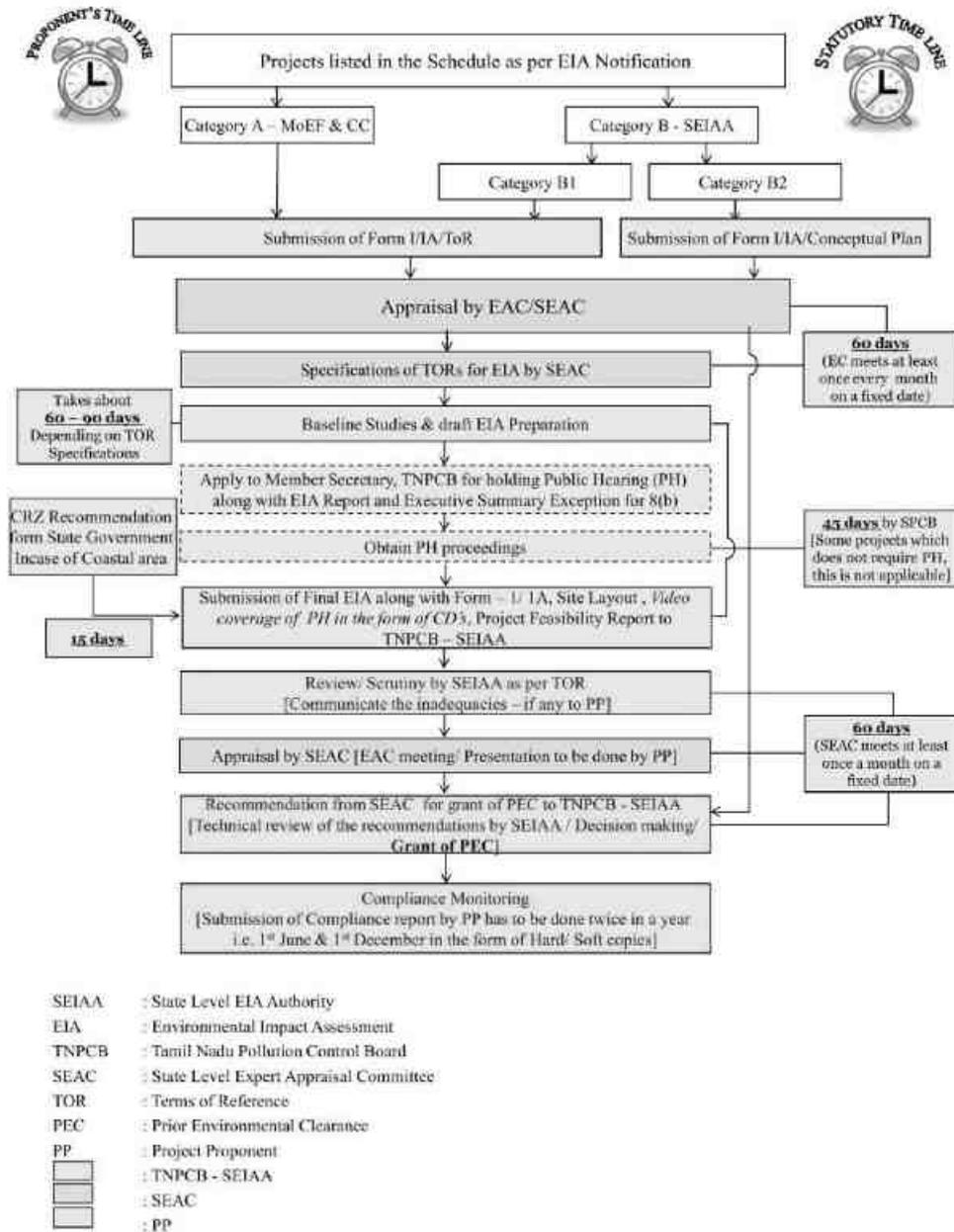
The main sources of the heavy minerals are found to garnetiferous quartzo-feldspathic gneiss and garnet biotite sillimanite gneiss of Khondalite Group of rocks. Occurrences of Limekankar are identified in Kasthuriengapuram village of Radhapuram Taluk.

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 500 m radius area is more than 5 Ha including the mine lease area. Hence, the project will be considered at SEAC, Tamil Nadu.



1.4 TERMS OF REFERENCE (TOR)

The Terms of Reference have been issued by SEAC TN vide Letter No. SEIAA-TN/F. No. 8658/SEAC/ToR-1076/2021 Dated: 01.03.2022. Additional ToR points were recommended by SEAC TN in addition to the Standard ToR Points. The replies for the same were addressed in this report and compliance is attached as Annexure.

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

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, the estimated cost of development as well as operation, etc., should be also included.

Chapter 3: Description of Environment This chapter should cover baseline data in the project area and study area.

Chapter 4: 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 5: 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 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, neighborhood, 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.

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.

1.7 DETAILS OF PROJECT PROPONENT

Project Proponent : Thiru. V. Sivasubbu
Status of the Proponent : Private & Individual
Proponent's Name & Address : S/o. Shri. Velu,
B4C, NGO B Colony,
Jawahar Nagar,
Palayamkottai Taluk,
Tirunelveli District - 627 011.

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 rough stone mining project by semi mechanized open cast method on allotted mine lease area at Tharuvai Village, Palayamkottai Taluk of Tirunelveli District, Tamil Nadu. It is a plain terrain. The total allotted mine lease for the proposed project is 0.5058 Ha with their maximum annual production capacity i.e. 18,250 m³ of Rough stone and 10,080 m³ of Gravel for (Sixty months) Five years only.



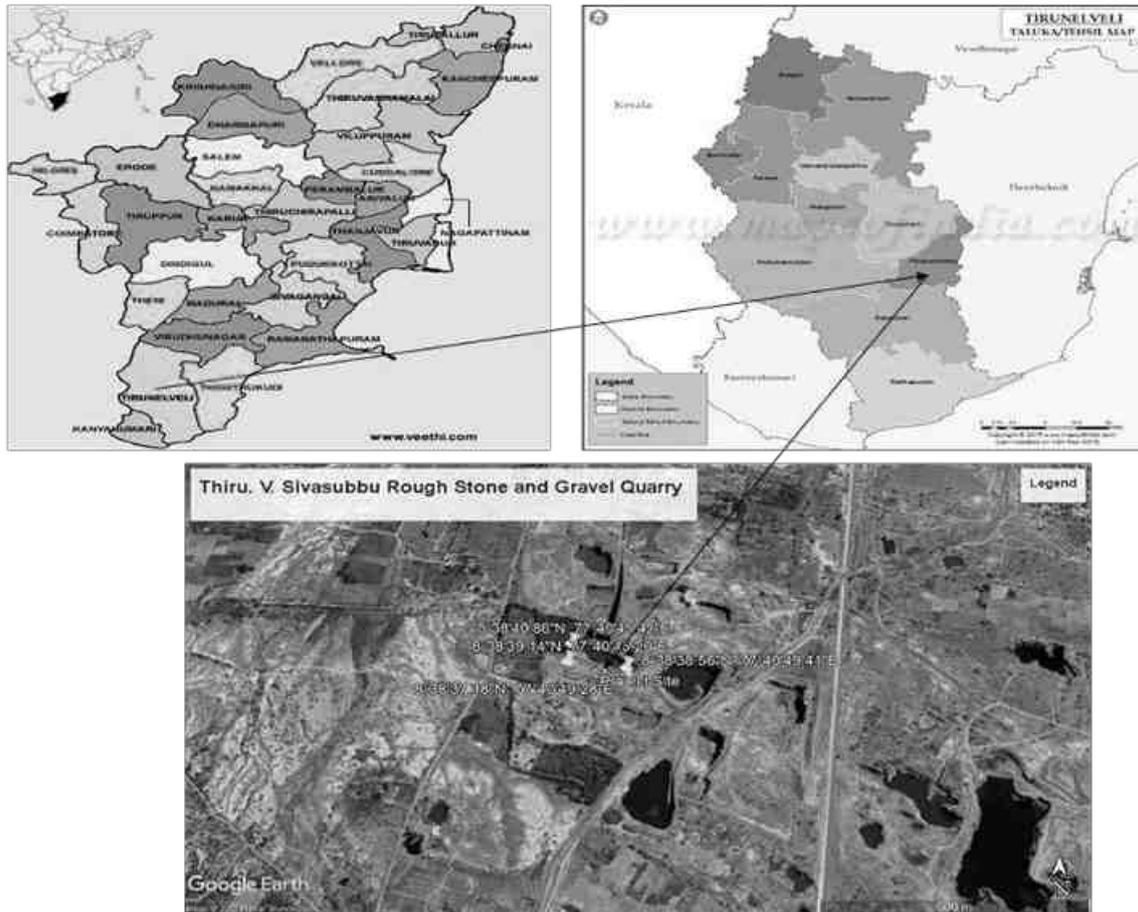


Figure 1-1: Location map of the Project Site

2 PROJECT DESCRIPTION

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

2.1 GENERAL

Proposed proposal pertains to rough stone and gravel mining project by open cast semi mechanized method on allotted mine lease area in Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamil Nadu. It is a plain terrain. We have obtained fresh mining plan from 2021 to 2026 from Geology and Mining, Tirunelveli District for 0.50.58 Ha land area in the S.F.No. 525/2(P) for a proposed mining depth of 13 m below ground level and five years production of 18,250 m³ of Rough Stone and 10,080 m³ of Gravel.

2.1.1 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 draft EIA report on the basis of baseline & impact assessment study is carried out. Also, before appraisal, under 7(III) of EIA notification 2006, the project involves the Public Consultation and the same will be conducted under SPCB (TN) in Madurai District. The proceedings of the same will be incorporated in the Final EIA Report.

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



Table 2-1: Quarry within 500m Radius**1) Existing quarries:**

S. No.	Name of the lessee / Permit Holder	Village & SF.No.	Extent	Lease Period
1.	S. Shankar, S/o.Subramanian, 131/1, A.P.T Road, Erode-638 003.	Tharuvai (v) & SF.No.524(P)	1.60.0	Proceeding No.M1/43375/2015, dt.31.03.2018 for a period 5 years from 17.04.2018 to 16.04.2023
2.	P. Marimuthu, S/o.Petchithevar, Ponnakudi, Palayamkottai Taluk, Tirunelveli.	Tharuvai (v) & SF.Nos.522/1, 522/2, 534 & 535(P)	4.73.5	Proceeding No.M1/36802/2014, dt.22.03.2018 for a period 5 years from 19.04.2018 to 18.04.2023
3.	Sri Durgambika Blue Metals, Seevalaperi, Palaymkottai Taluk, Tirunelveli District.	Tharuvai (v) & SF.No.570(P)	1.38.5	Proceeding No.M1/3390/2017, dt.18.07.2018 lease transferred to Sri Durgambika Blue Metals vide proceedings in M3/6065/2019, dated 02.03.2019 for a period of 5 years from 24.07.2018 to 23.07.2023
Total extent of existing quarries			7.72.0	

2) Abandoned Quarries:

S. No.	Name of the applicant	Village & SF.No.	Extent	Lease Period
1.	V. Sivasubbu, S/o. Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai, Tirunelveli District.	Tharuvai (v) & SF.Nos. 525/1, 525/2, 530/2, 530/3B	1.40.0	Proceeding No.M1/84390/2008, dt.10.02.2009 for a period 5 years from 28.05.2009 to 27.05.2014
2.	S. Subbaiah, S/o. Sorna Thevar, Seevalaperi, Palayamkottai Taluk, Tirunelveli District.	Tharuvai (v) & SF.Nos. 568/1, 569/1B)	2.63.5	Proceeding No.M1/41558/2011, dt.02.01.2012 for a period 5 years from 07.02.2012 to 06.02.2017



3.	M. Murugaiah, S/o. Muthaiah Thevar, 2/72, West Street, Palayamkottai Taluk, Tirunelveli	Tharuvai (v) & SF.Nos. 527 (P), 528/1B, 529/1A & 529/3B	4.81.0	Proceeding No.M1/63874/2011, dt.22.07.2012 for a period 5 years from 22.07.2012 to 21.07.2017
Total extent of abandoned quarries			8.84.5	

3) Proposed Quarries:

S. No.	Name of the applicant	Village & SF.No.	Extent	Lease Period
1.	V. Sivasubbu, S/o. Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai, Tirunelveli	Tharuvai (v) & SF.No. 525/2(P)	0.50.58	Proposed Quarry
2.	Sri Durgambika Blue Metals, Seevalaperi, Palayamkottai Taluk, Tirunelveli District.	Tharuvai (v) & SF.Nos. 570(P) & 571(P)	1.95.5	Proposed Quarry
3.	S. Satheesh, S/o.Subramanian, 133, Erode.	Tharuvai (v) & SF.No. 523	1.97.5	Proposed Quarry
4.	Murugaiah, S/o. Muthaiah, 2/72, Mela Theru, Thirumalaikozhuthupuram, Palayamkottai Taluk, Tirunelveli.	Tharuvai (v) & SF.No. 529/1A	1.56.50	Proposed Quarry
Total extent of proposed quarries			6.00.8	

The Total extent of the Existing and Proposed quarries is 13.72.08 Ha

2.1.2 Need for the 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 rough stone form the primary building material.

Rough stone 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 Tirunelveli 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 project area is dry lands showing only less chance for crop growth and development of vegetation. Rocks and minerals of economic importance found to occur in Tirunelveli District are Crystalline Limestone, Multi color dimension stone, Rough stone/Gravel, Beach sand mineral containing Garnet, Ilmenite, Rutile, etc. are notable economic importance minerals of found in Tirunelveli District. Minor occurrences of Graphite, Mica and Gemstone are also reported in the district. As a result of developmental activities and market demand for minor minerals, mining of minor mineral is vital. In addition to that, geological reserves of rough stone is abundant in the project area which is evident from the mine activities carried out in the nearby sites.

2.2 BRIEF DESCRIPTION OF THE PROJECT

Table 2-2 Salient Features of the Project

S. No.	Description	Details
1	Project Name	Proposed Rough Stone and Gravel Quarry-0.50.58 ha
2	Proponent	Thiru. V. Sivasubbu
3	Mining Lease Area Extent	0.50.58 Ha
4	Location	S.F. No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District.
5	Latitude	08°38'36.78"N to 08°38'40.47"N
6	Longitude	77°40'46.12"E to 77°40'50.76"E
7	Topography	Plain terrain
8	Site Elevation above MSL	53 m from MSL



9	Topo sheet No.	58H/15
10	Minerals of Mine	Rough Stone and Gravel
11	Proposed production of Mine	Proposed capacity of Rough stone: 18,250m ³ Proposed Capacity of Gravel: 10,080 m ³
12	Ultimate depth of Mining	13 m below ground level
13	Method of Mining	Open cast, semi-mechanized mining
14	Water demand	1.5 KLD
15	Source of water	Water will be supplied through tankers supply from Tharuvai which is about 3.10 km on North -west of the area.
16	Manpower	Skilled: 3 nos Semi-Skilled: 2 nos Unskilled: 2 nos
17	Mining Lease	Precise area communication letter received from District Collector, Geology and Mining, Tirunelveli letter vide Rc.No. M1/19947/2014- dated 11.01.2021.
18	Mining Plan Approval	Mining Plan was approved by The Joint Director/ Assistant Director (i/c), Geology & Mining, Tirunelveli letter Rc.No.M1/19947/2014 dated 18.01.2021
19	Production details	Geological reserves of Rough Stone: 1,17,760 m ³ Geological reserves of Gravel: 17,664 m ³ Proposed year wise recoverable



		reserves are 18,250 m ³ of Rough Stone & 10,080 m ³ Gravel.
20	Boundary Fencing	7.5m barrier all along the boundary Fencing will be provided.
21	Disposal of overburden	The overburden is in the form of topsoil, it will be removed while quarrying operation, the top soil will be preserved all along the boundary barrier for afforestation.
22	Ground water	The quarry operation is proposed up to a depth of 13 m below ground level. The water table is found at a depth of 55 m in summer and 50 m in rainy seasons 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 500m radius of the project site.
24	Drinking water	Water will be supplied through tankers supply from Tharuvai which is about 3.10 km on NW side of the area.



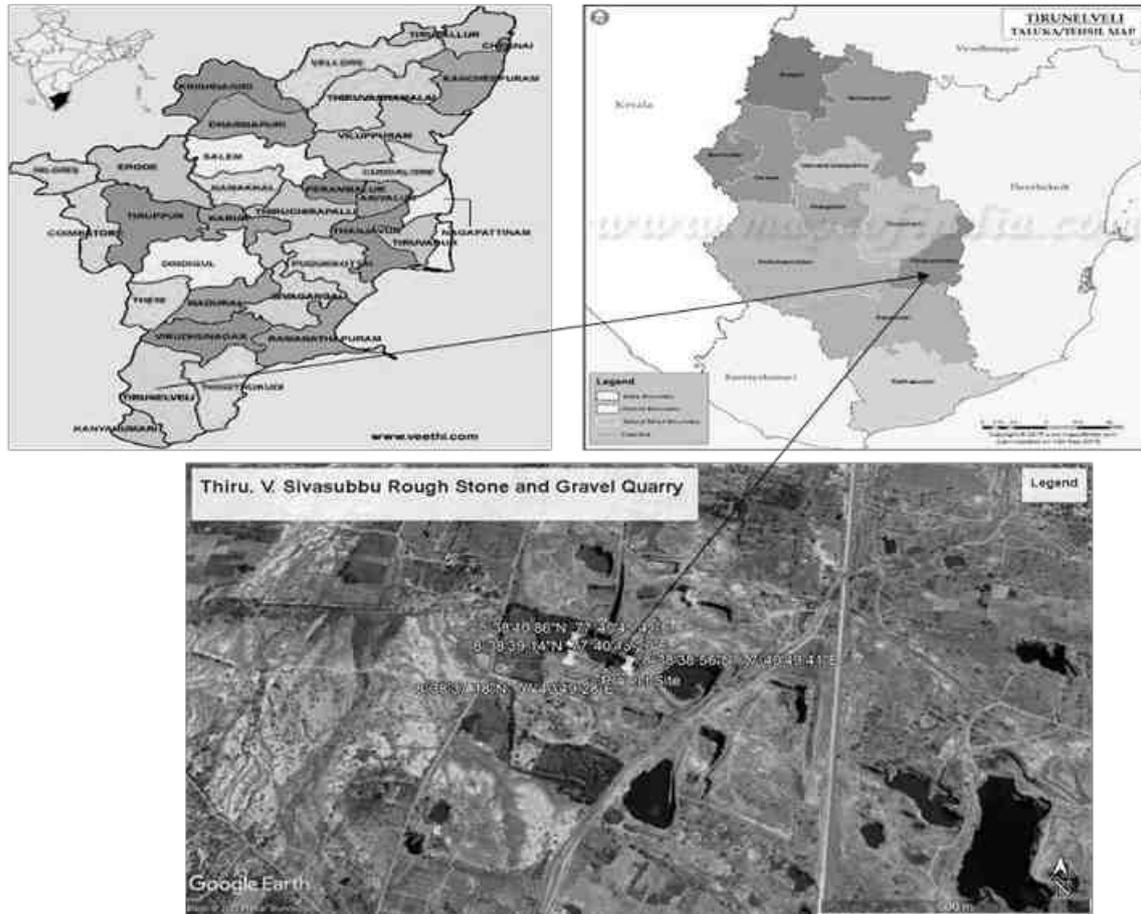


Figure 2-1: Location map of the Project Site



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

2.2.2 Site Connectivity:

The site is connected to SH 40 (Tirunelveli-Shencottai – 2.79 km,N) and NH 44 (Srinagar Kanyakumari- 2.37 km, East)



Figure 2-3: Site Connectivity

2.3 LOCATION DETAILS:

Table 2-3: Location Details

S. No	Particulars	Details
1.	Latitude	08°38'36.78"N to 08°38'40.47"N
2.	Longitude	77°40'46.12"E to 77°40'50.76"E
3.	Site Elevation above MSL	53 m from MSL
4.	Topography	Plain terrain
5.	Land use of the site	Own Patta land
6.	Extent of lease area	0.50.58 Ha



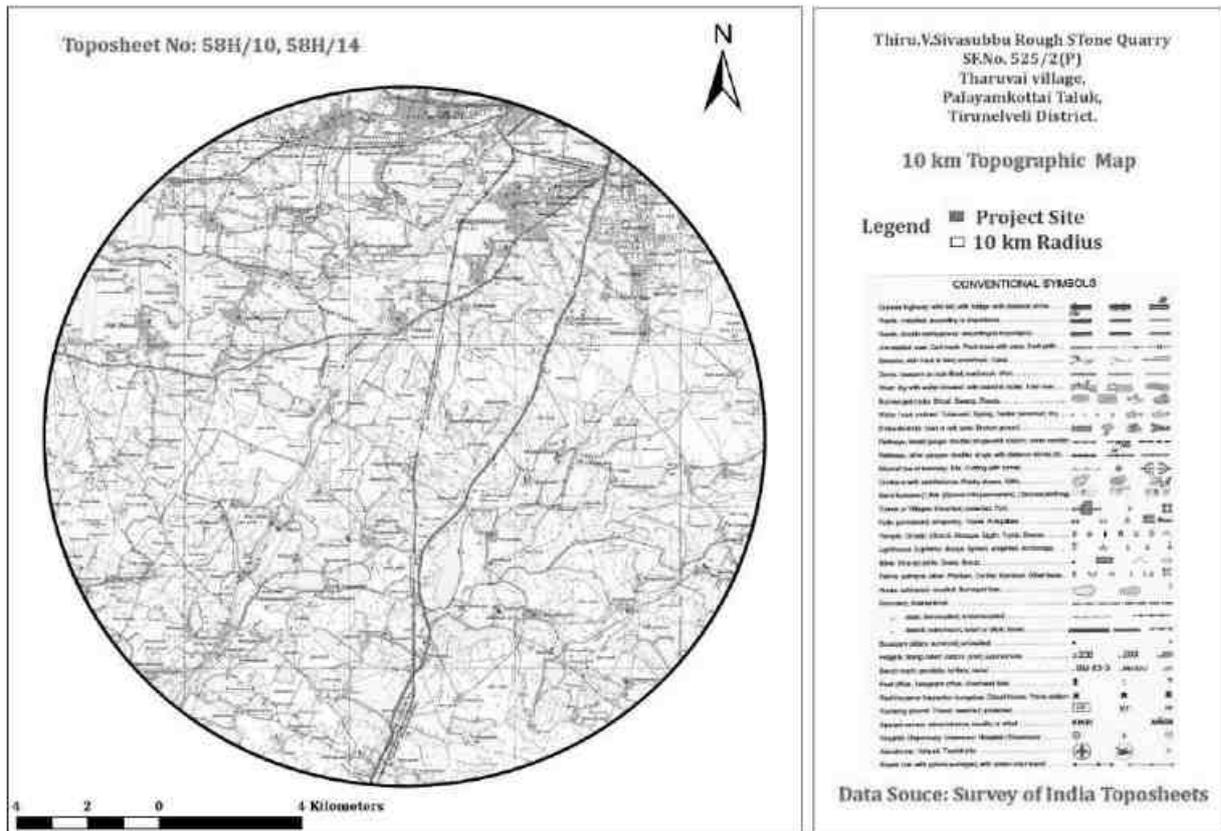


Figure 2-4: Topo Map of Project Site

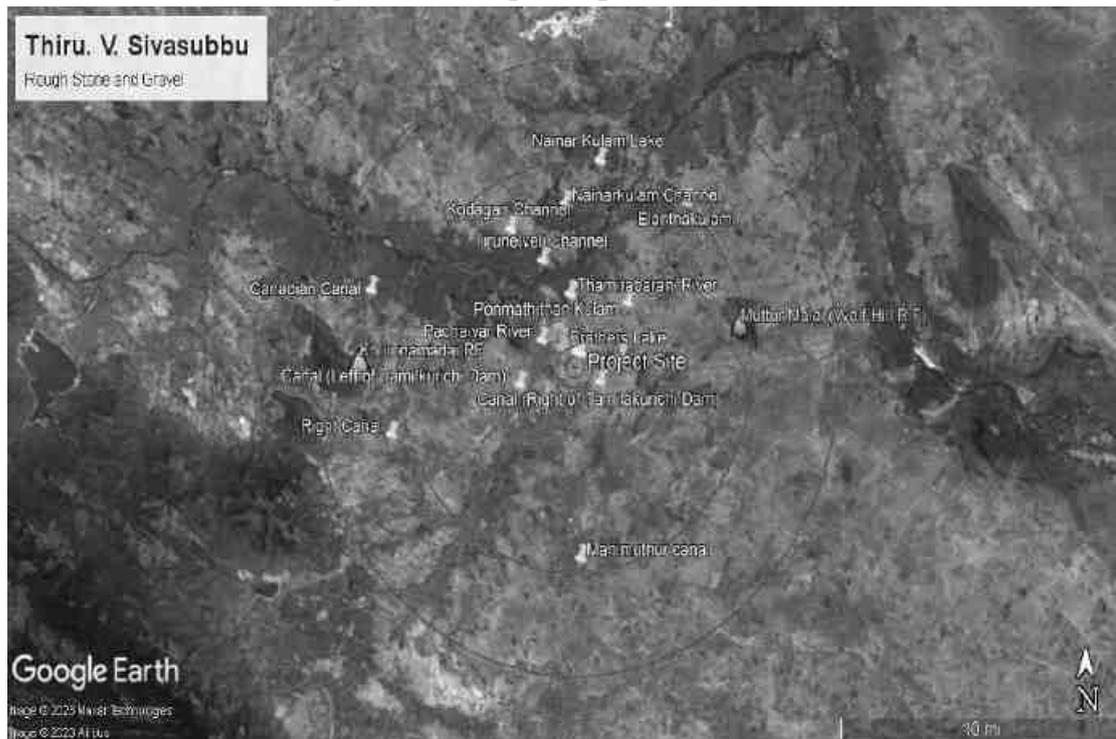


Figure 2-5: Environmental Sensitivity within 15 km radius

2.3.1 Site Photographs

The site photographs of the project site are as follows.



08°38'36.40 N, 77°40'46.08 E

Tirunelveli



08°38'36.58 N, 77°40'42.45 E

Tirunelveli



08°38'38.17 N, 77°40'47.45 E

Tirunelveli



08°38'40.19 N, 77°40'49.15 E

Tirunelveli

Figure 2-6: Site Photographs

2.3.2 Land Use Breakup of the Mine Lease Area

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

Table 2-4: Land use pattern

S.No	Land Use	Present Area(Ha)	Area in use during the quarrying period (Ha)
1	Quarrying Pit	0.00.0	0.30.28



2	Infrastructure	Nil	0.01.0
3	Roads	0.00.0	0.02.0
4	Green Belt	Nil	0.17.30
5	Unutilized	0.50.58	0.00.0
	Total =	0.50.58	0.50.58

2.3.3 Human Settlement

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

Table 2-5: Habitation

S.No	Direction	Village	Distance	Population
1	North east	Araikulam	1 km	800
2	South	Kandithankulam	2 Km	900
3	South west	Keela omanallur	2 Km	600
4	North	Tharuvai	1 Km	1000

2.4 LEASEHOLD AREA

The Proposed Rough Stone and Gravel Quarry mine of 0.50.58 Ha is an Own Patta land of Thiru. V. Sivasubbu. The lease area falls in S.F No: 525/2(P) of Tharuvai Village, Palayamkottai Taluk and Tirunelveli District. There is no reserve forest or protected forest land within the lease area. There is neither human settlement within 500m radius from the lease area.

2.5 GEOLOGY

Southern Granulite Terrain (SGT) of Tamil Nadu lying south of Palaghat-Cauvery shear zone has been divided into two major tectonic blocks by the Madurai block and Nagercoil-Trivandrum Block in the south. It is separated by WNW-ESE trending Achankovil-Tambaraparani Lineament. Tirunelveli and Thoothukudi are significantly the only districts in the state to witness the geology and structure of both the blocks .

The area applied for quarry lease is plain terrain sloping towards Southwest side covered with Rough stone which does not sustain any type of vegetation.



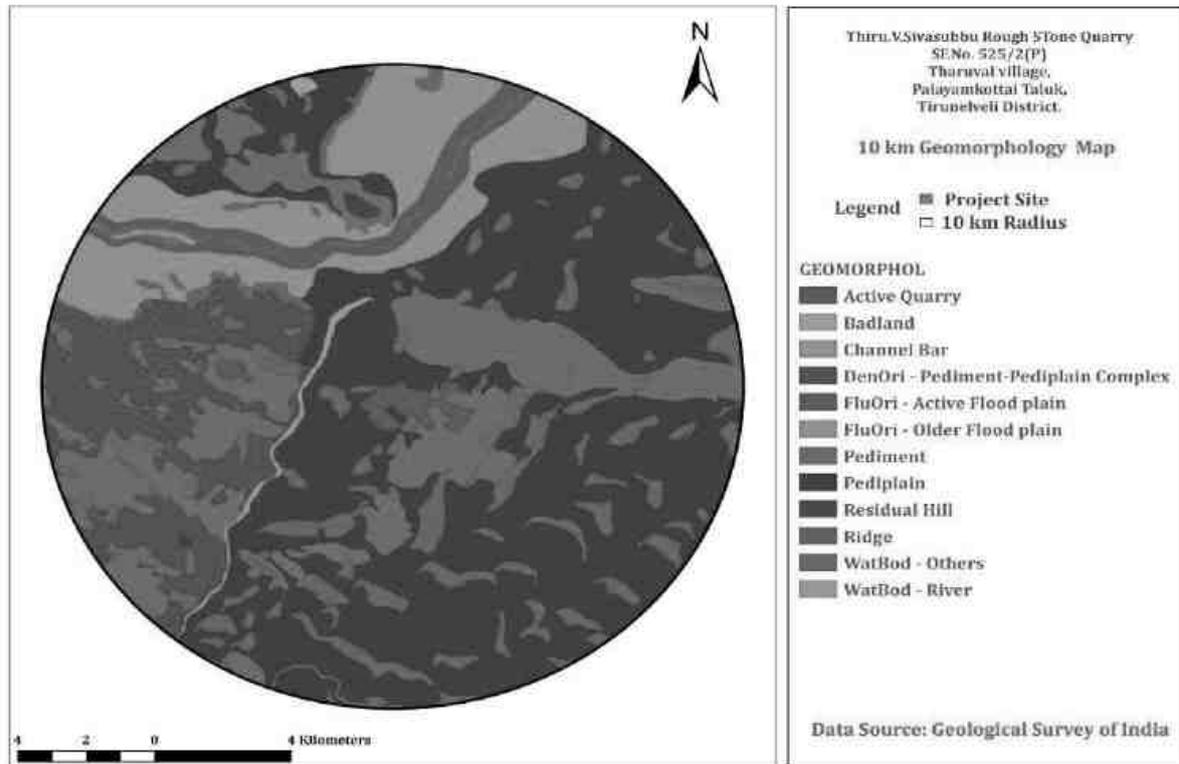


Figure 2-7:Geomorphology Map

Tirunelveli district represents a well-developed lithopackage of meta-sedimentary sequence inter banded with charnockite Group of rocks. The rock types exposed are of quartzite, calc-granulite, garnet-biotite-sillimanite gneiss, garnet quartzo-feldspathic gneiss and garnetbiotite-cordierite gneiss belonging to Khondalite Group of rock. Charnockite and pyroxene granulite are the Charnockite Group. Hornblende-biotite gneiss belongs to Migmatitic Complex. Besides, basic intrusive (pyroxenite) and acid intrusive (granite) are noticed. The younger intrusive are represented by pegmatite and quartz veins. Evidence of development of incipient / patchy charnockite along the shear plane is noticed in the district along the Western Ghat high hills.

The water table is 55 m BGL in summer and 50 m BGL in rainy seasons. Average annual rainfall is about 800mm to 900mm. Charnockites and gneissic rocks particularly around Koondankulam Rocks probably connected with the Deccan trap activity occur as thin veins and dykes within the gneissic rocks around Koondankulam.



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

AGE	FORMATION
Recent to Sub recent	- Quaternary weathered Rock Formation
Archean	- Peninsular Gneiss Complex and Charnockites

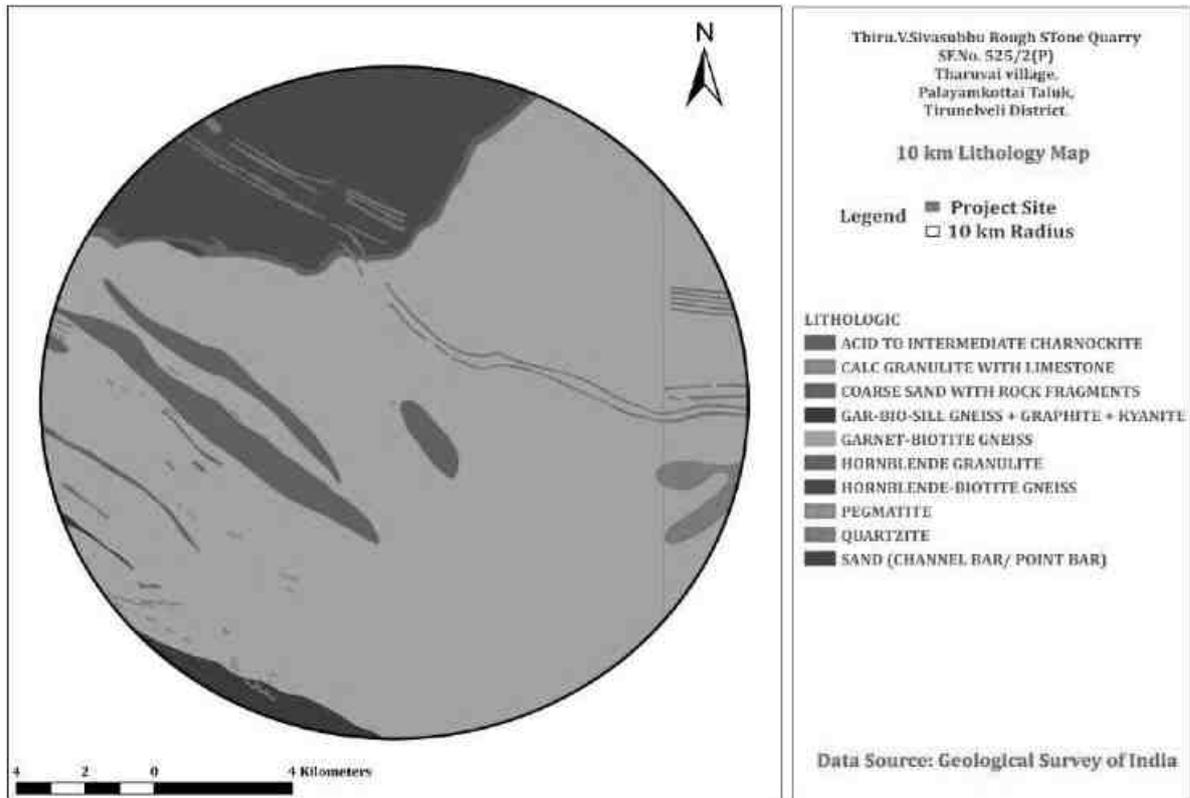


Figure 2-8 Lithology

2.6 QUALITY OF RESERVES:

The mining lease area is of 0.50.58 Ha, with production capacity of 18,250 m³ of Rough Stone and 10,080 m³ Gravel, 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 Semi-mechanized
2	Geological Reserves	Gravel – 17,664 m ³ Rough stone - 1,17,760 m ³
3	Recoverable Reserves	Gravel – 10,080 m ³ Rough stone – 18,250 m ³
4	Elevation Range of the Mine Site	53 m MSL

2.6.1 Estimation of Reserves

The practical method of the systematic geological mapping and delineation of Rough stone (Charnockite) within the field was done and careful evaluation of body luster, physical properties, engineering properties, commercial aspects, etc. The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in 1:1000 scale and the estimated balance Geological Reserves as 1,17,760 Cum of Rough Stone and Gravel 17,664 Cum.

2.6.2 Geological Reserves

Top Soil :

The Thickness of Top Soil with gravel in this area is 3 m and the total volume of Top Soil with gravel will be 17,664 m³.

Rough Stone:

The Available Geological Reserve is estimated as 17,664 m³ respectively upto the permissible depth. Top Soil is calculated upto a depth of 3 m and and rough stone upto a depth of 20 m , therefore the topsoil with gravel and rough stone is upto a depth is 23 m below ground level.

Table 2-7: Geological Reserves

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL WITH GRAVEL VOLUME (M ³)



AA' & BB'	128	46	3.0	-	17,664
	128	46	20.0	1,17,760	-
TOTAL GEOLOGICAL RESERVES				1,17,760	17,664

2.6.3 Mineable Reserves

The available mineable reserves are calculated for the proposed lease period of 5 years based on the total mineable reserves calculated by deducting 7.5m safety distances to the boundary.

Top Soil :

The Thickness of Top Soil with gravel in this area is 3 m and the total volume of Top Soil with gravel will be 10,080 m³.

Rough Stone:

The Available Geological Reserve is estimated as 18,250 m³ respectively upto the permissible depth. Top Soil is calculated upto a depth of 3 m and and rough stone upto a depth of 10 m , therefore the proposed depth of mining is 13 m below ground level.

Table 2-8: Mineable Reserves

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL WITH GRAVEL VOLUME (M ³)
AA' & BB'	112	30	3.0	-	10,080
	105	23	5.0	12,075	-
	95	15	5.0	6,175	-
Total Mineable Reserves				18,250	10,080

2.6.4 Year wise Production Plan

The year wise production to be carry out 18,250 m³ of Rough Stone & 10,080 m³ of Gravel for the period of five years. The depth of mining is 13 m below ground level.

Table 2-9: Year wise Production Plan

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE	TOP SOIL WITH GRAVEL VOLUME
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				VOLUME (M³)	(M³)
AA' & BB'	30	28	3.0	-	2,520
	23	21	5.0	2,415	
	13	11	5.0	715	
First Year Excavation				3,130	2,520
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
Second Year Excavation				3,780	1,890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
Third Year Excavation				3,780	1890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
IV YEAR EXCAVATION				3,780	1890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
V YEAR EXCAVATION				28,275	6,669
TOTAL FIVE YEARS PRODUCTION				18,250	10,080



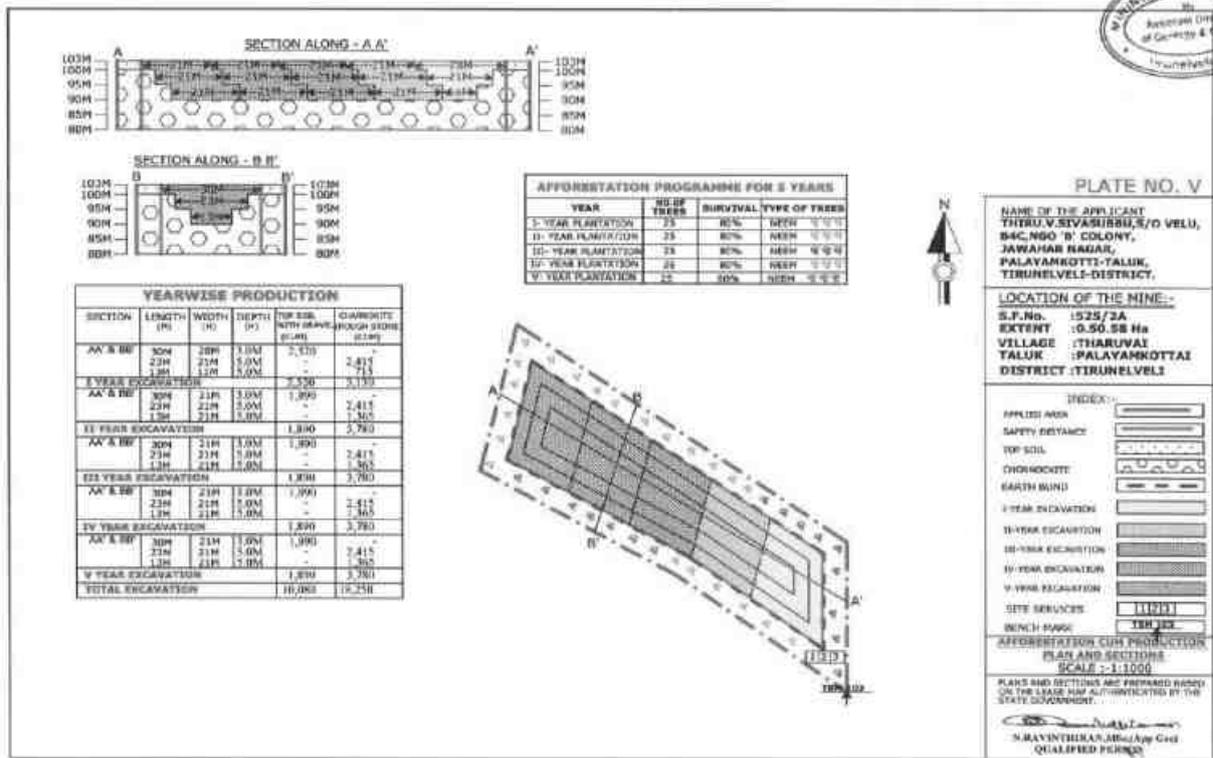


Figure 2-9 Year Wise Production Plan

2.7 TYPE OF MINING

The proposed project is an open cast semi mechanized mining with one 5.0 m bench for Top soil & Gravel followed by 5.0m vertical bench with a bench width not less than the bench height. However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of 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:

The rough stone is proposed to quarry at 5m bench height & width with conventional Open cast semi mechanized method. The quarry operation involves Shallow jack hammer drilling, Slurry Blasting, Loading & transportation of Rough Stone to the nearby crusher units/road

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

Splitting of rock mass of considerable volume from the parent rocks by jackhammer drilling and blasting by manually braking and loading the Rough Stone from pit head to the needy crushing units/civil works for the needy sectors.

2.7.2 Overburden

The overburden is in the form of top soil, it will be removed during the quarrying operation, the top soil preserved all along the boundary barrier for afforestation. Hence there is no waste anticipated during the Rough stone quarry operation, the excavated rough stone will be directly loaded into the tippers for selling purpose locally.

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

For Mining operation	Excavator of 0.90 cu.m bucket capacity Jack Hammer (32 mm dia) Tractor mounted compressor
Loading Equipment	Excavator of 0.90 cu.m bucket capacity
Transportation	Tipper 4Nos of 5/10 tons capacity (from quarry to nee people and local crushers)

2.7.4 Blasting:

2.7.4.1 Blasting Pattern:

The quarrying operation will be carried out by Semi Mechanized Opencast method in conjunction with conventional method of mining using jack hammer drilling and blasting for shattering effect and loosen the rough stone.

2.7.4.2 Drilling & Blasting:

Drilling and Blasting Parameters are as follows



Table 2-11: Drilling and Blasting Parameters

Parameters	Details
Depth of each hole	1.0m to 1.5m
Diameter of hole	32-36 mm
Spacing between holes	0.6 m
Pattern of hole	Zigzag
Charge/Hole	D.Cord with water or 70 gms of gun powder or Gelatine.
Inclination of holes	70° from horizontal
Use of delay detonators	25 milli seconds delays
Detonating fuse	"Detonating" Cord

2.7.4.3 Types of Explosives to be used:

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

2.7.4.4 Measures to minimize ground vibration due to blasting:

The quarry is situated more than 1.0 km from the nearby villages. Controlled blasting measures will be adopted for minimizing the ground vibration and fly of rocks. Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly of rock.

Table 2-12: Blasting Details

Parameters	Details
Diameter of holes	32-36 mm
Spacing	60 Cms
Powder factor	6 to 7 tons/kg of explosives
Pattern of hole	Zig Zag
Charge/hole	140 gms of 25 mm dia cartridge



2.7.4.5 Storage & Safety measures taken during blasting:

The project proponent “Thiru. V. Sivasubbu” will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by Permit Mines Manager. The copy of the explosive certificate is attached as Annexure.

2.8 MAN POWER REQUIREMENTS

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 2-13: Man Power Requirements

S.No	Name of the Employment	No. of Employee
1.	Skilled	
	Operator	2No.
	Mines Manager/Mate	1 No.
2.	Semi - skilled	
	Driver	2 Nos
3.	Unskilled	
	Musdoor / Labors	2 Nos
	Total	7 Nos

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

2.8.1 Water Requirement

Total water requirement for the mining project is 1.5 KLD. Domestic water will be sourced from nearby Ponnakudi Village and other water will be source from nearby road tankers supply.

Table 2-14: Water Requirement

Purpose	Quantity	Sources
Drinking Water	0.5KLD	Packaged Drinking water vendors available in Tharuvai Village which is about 3.10 km NW of the project site.
Green belt	0.5KLD	Other domestic activities through road tankers supply



Dust suppression	0.5KLD	From road tankers supply
Total	1.5 KLD	

2.9 PROJECT IMPLEMENTATION SCHEDULE

The tentative implementation schedule of the proposed Mine Lease of Thiru. V. Sivasubbu (0.50.58 ha) is as follows

MINING SCHEDULE					
Activity	Jan 24	Jan 25	Jan 26	Jan 27	Jan 28
Site Clearance					
Excavation - Top Soil Removal/Overburden					
I Year Production - (3,130 Cum - Rough Stone & 2,520 Cum - Gravel)					
II Year Production - (3,780 Cum - Rough Stone & 1,890 Cum - Gravel)					
III Year Production - (3,780 Cum - Rough Stone & 1890 Cum - Gravel)					
IV Year Production - (3,780 Cum - Rough Stone & 1890 cum-Gravel)					
V Year Production - (28,275 Cum - Rough Stone & 6,669 cum-Gravel)					

Figure 2-10: Mining Schedule

2.10 SOLID WASTE MANAGEMENT

Table 2-15: Solid Waste Management

S.No	Type	Quantity	Disposal Method
1	Biodegradable	1.3 kg/day	Municipal bin including food waste
2	Non-Biodegradable	1.9 kg/day	TNPCB authorized recyclers

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



2.11 PROJECT COST

The total project cost has been estimated as **INR. 10,35,080 /-**

S.NO	Particulars	Amount
1	Fixed asset Cost	50,000/-
2	Operational Cost	9,85,080 /-
Total		10,35,080/-

Environmental Management Cost : Rs. 20,68,885/-

2.12 GREENBELT DEVELOPMENT

Trees like tamarind, casuarinas etc. will be planted along the safety barrier of the lease boundary and avenues as well as over non active dumps at a rate 51 trees per annum with an interval of 5m. The rate of survival expected to be 70% in this area.

Table 2-16: Plantation/Afforestation Program

Name of the Species proposed	Survival	No. of species
Neem, Vilvam, Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila Maram, Poo Marudhu, Panai, Marudha maram, Thandri, Sengondrai, Poovarasu, Thethankottai Maram, Pungam	70%	255
Total		255



3 . DESCRIPTION OF THE ENVIRONMENT

3.1 GENERAL

The method of mining for extracting rough stone and gravel 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 10km 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 issued by SEIAA, Tamil Nadu Minutes of the 488th meeting vide letter no. SEIAA-TN/F.No.8658/SEAC/ToR-1076/2021 Dated: 01.03.2022,**



for Mining of Minor Minerals in the Mine of “Rough Stone & Gravel Quarry of Thiru. V. Sivasubbu- 0.50.58 Ha in S.F No. 525/2(P) of Tharuvai village, Palayamkottai Taluk, Tirunelveli District, Tamil Nadu. The baseline monitoring is carried out in October 2021 to December 2021 and the analysis is briefed in the EIA report. The proponent has engaged M/s. Eco Tech 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 October 2021 to December 2021.

3.1.4 Frequency of Monitoring

Table 3-1: Frequency of Sampling and Analysis

Attributes	Sampling	Frequency
Air environment – Meteorological (wind speed, wind direction, rainfall, humidity, temperature)	Project site	1 hourly continuous
Air environment – Pollutants PM 10 PM 2.5 SO ₂ NO _x Lead in PM	5 locations	24 hourly twice a week 4 hourly. Twice a week, One non- monsoon season 8 hourly, twice a week 24 hourly, twice a week



Noise	5 locations	24 hourly Once in 5 locations
Water (Ground water) pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Fluoride, Nitrate, Sodium, Potassium, Salinity, Total nitrogen, Total Coliforms, Fecal Coliforms	5 locations	Once in 5 locations
Water (surface water) 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
Soil (Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	5 locations	Once in 5 locations
Ecology and biodiversity Study	Study area covering 10 km radius	One-time Sampling
Socio- Economic study (Population, Literacy Level, employment, Infrastructure like school, hospitals & commercial establishments)	Villages around 10 km radius	One-time Sampling

3.1.5 Secondary data Collection

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

- Flora & Faunal Study



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

3.1.6 Study area details

Table 3-2 Study area details

S. No	Description	Details		Source
1.	Project Location	SF No. 525/2(P) of Tharuvai village, Palayamkottai Taluk, Tirunelveli District, Tamil Nadu		Field Study
2.	Latitude & Longitude	Latitude: 08° 38' 36.78" N to 08° 38' 40.47" N	Longitude: 77° 40' 46.12" E to 77° 40' 50.76" E	Topo Sheet
3.	Topo Sheet No.	58 H/15		Survey of India Toposheet
4.	Mine Lease Area	0.50.58 Ha		--
Demography in the study area (as per Census 2011)				
5.	Total Population	6126		Census Survey of India
6.	Total Number of Households	1574		
7.	Maximum Temperature (°C)	40		IMD
8.	Minimum Temperature (°C)	22		
9.	Ecological Sensitive Areas - Wetlands, watercourses or other waterbodies, coastal zone, biospheres, mountains, forests	Water bodies: <ul style="list-style-type: none"> • Canal (Right of Tamilakurichi Dam) - 1.67 km SE • Pachaiyar River - 2.12 km, NW • Thamirabarani river- 2.95 km, NW • Canal (Left of Tamilkurichi Dam) - 3.44 km SW • Tirunelveli Channel - 4.97 km NW • Kodagan Channel - 7.17 km NW • Nainarkulam Channel - 7.36 km NW • Manimuthur canal - 9.71 km SE • Right Canal - 11.18 km SW 		Survey of India Toposheet



		<ul style="list-style-type: none"> • Canadian Canal – 12.13 km NW • Brothers Lake, 2.28 km, E • Tamilakurichi Dam, 3.15 km, SW • Ponmathithan Kulam- 3.75 km NE • Nainar Kulam Lake, 9.50 km, NE • Elanthakulam Lake, 9.64 km, NE Reserve Forest: <ul style="list-style-type: none"> • Muttur Malai (Wolf Hill) Reserve Forest – 8.55 km NE • Kolundumadai Reserve Forest- 11.82 km, SW 	
10.	Densely Populated area	Palayamkottai –10.26 km, NE	
11.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	None within 500 m radius from site	Google Earth/ Field study

3.1.7 Site Connectivity:

The site is connected to SH 40 (Tirunelveli-Shencottai – 2.79 km,N) and NH 44 (Srinagar Kanyakumari- 2.37 km, East)





Figure 3.1: Site Connectivity

3.2 LAND USE ANALYSIS

3.2.1 Land Use Classification

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

3.2.2 Methodology

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



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

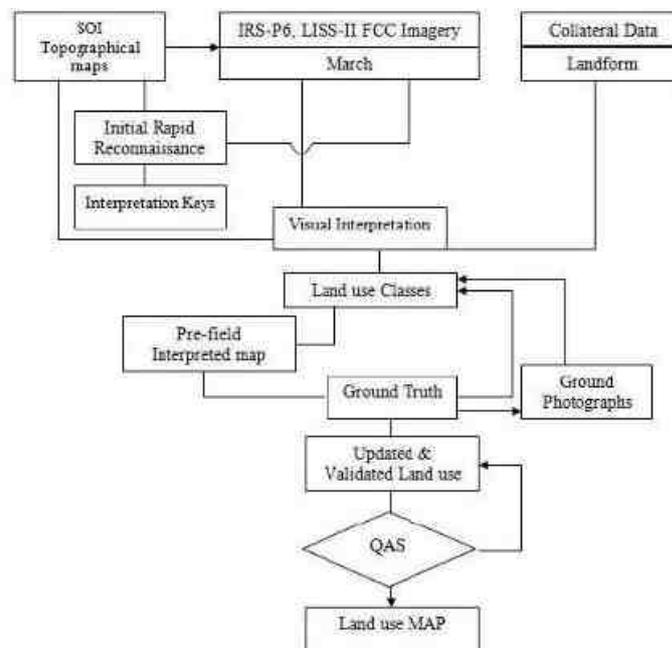


Figure 3.2 Flow Chart showing Methodology of Land use mapping

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.

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 vectorisation 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 -I 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 as Tamilakurichi s. 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. The SOI Topo map is presented in Annexure and Satellite imagery of 10 km radius from the project site is presented Annexure.

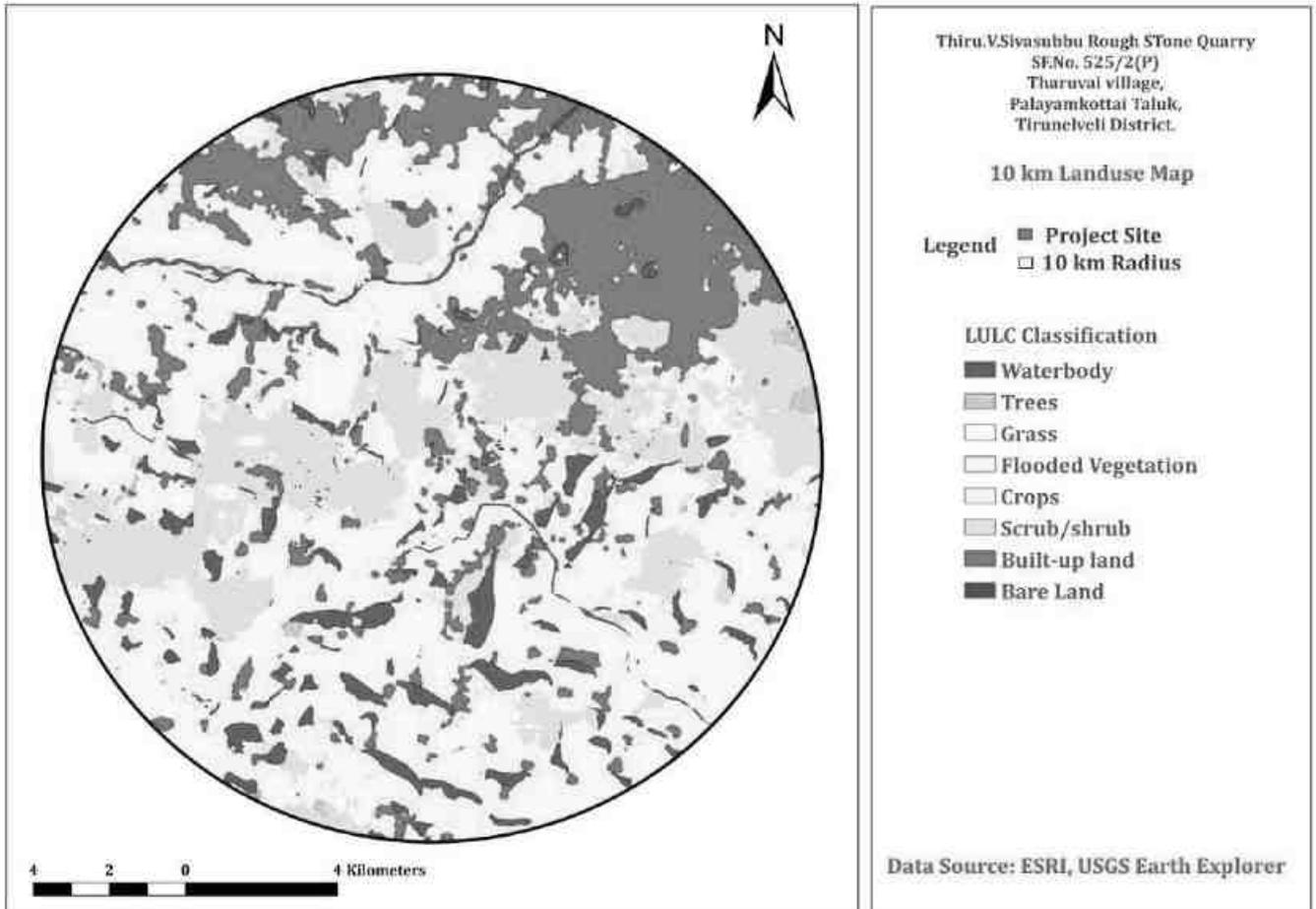


Figure 3.3 Land use classes around 10 km radius from the project site

3.2.6 Description of the Land Use / land cover classes

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

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

Sl No	LULC Description	Area in Sqkm	Percentage
1	Water Body	22.6	0.070247
2	Plantation	2.3	0.007149
3	Grass	1.42	0.004413

4	Flooded Vegetation	0.72	0.002237
5	Crops	174.91	0.543671
6	Scrub land/Shrub	59.91	0.186217
7	Built-up Area	59.83	0.185969
8	Barren Land	0.03	0.000093
Total Area		321.72	100

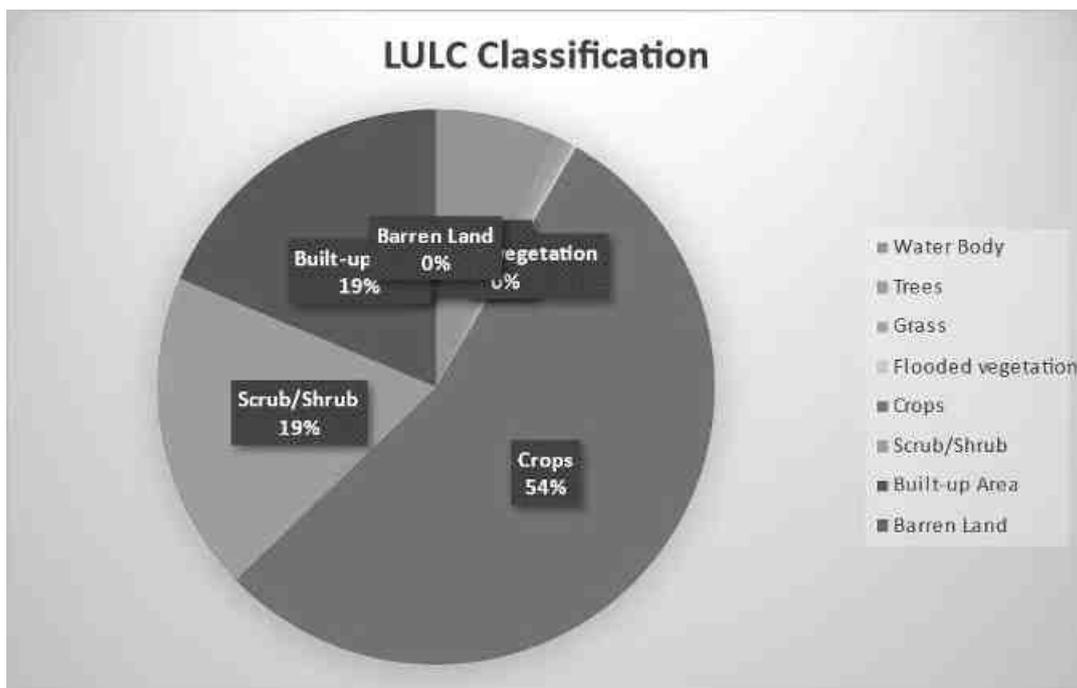


Figure 3.4 Land use Classification

3.2.7 Agricultural land

This category includes the land utilized for crops, vegetables, fodder and fruits. Existing cropland and current fallows are included in this category.

It is described as an area under agricultural tree crops, planted adopting certain agricultural management techniques. The Agricultural land in 10 km radius from the proposed project site is as follows.

Table 3-4 Agricultural land

S.No	Land use	Area in Sqkm	Percentage
1	Crops	174.91	0.543671
2	Plantation	2.3	0.007149

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

3.2.8 Wastelands

Wastelands are the degraded or underutilized lands most of which could be brought under productive use with proper soil and water management practices. Wasteland results from various environmental and human factors. The land, which is outside the forest boundary and not utilized for cultivation. Land with or without scrub usually associated with shallow, stony, rocky otherwise non-arable lands.

The Wasteland in 10 km radius from the proposed project site is as below.

Table 3.5 Wasteland

S. No	Land use	Area in Ha	Percentage
1	Scrub land/Shrub	59.91	0.186217
2	Barren Land	0.03	0.000093

3.2.9 Water bodies

The category comprises area of surface water, either impounded in the form of ponds, reservoirs or flowing as streams, rivers and canals. River channel is inland waterways used for irrigation and for flood control.

Table 3.6 water bodies

Sl. No	Land use	Area in Ha	Percentage
1	Water Body	22.6	0.070247



3.3 WATER ENVIRONMENT

3.3.1 Contour & Drainage

The project site is 55 m AMSL.

3.3.2 Geomorphology

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.

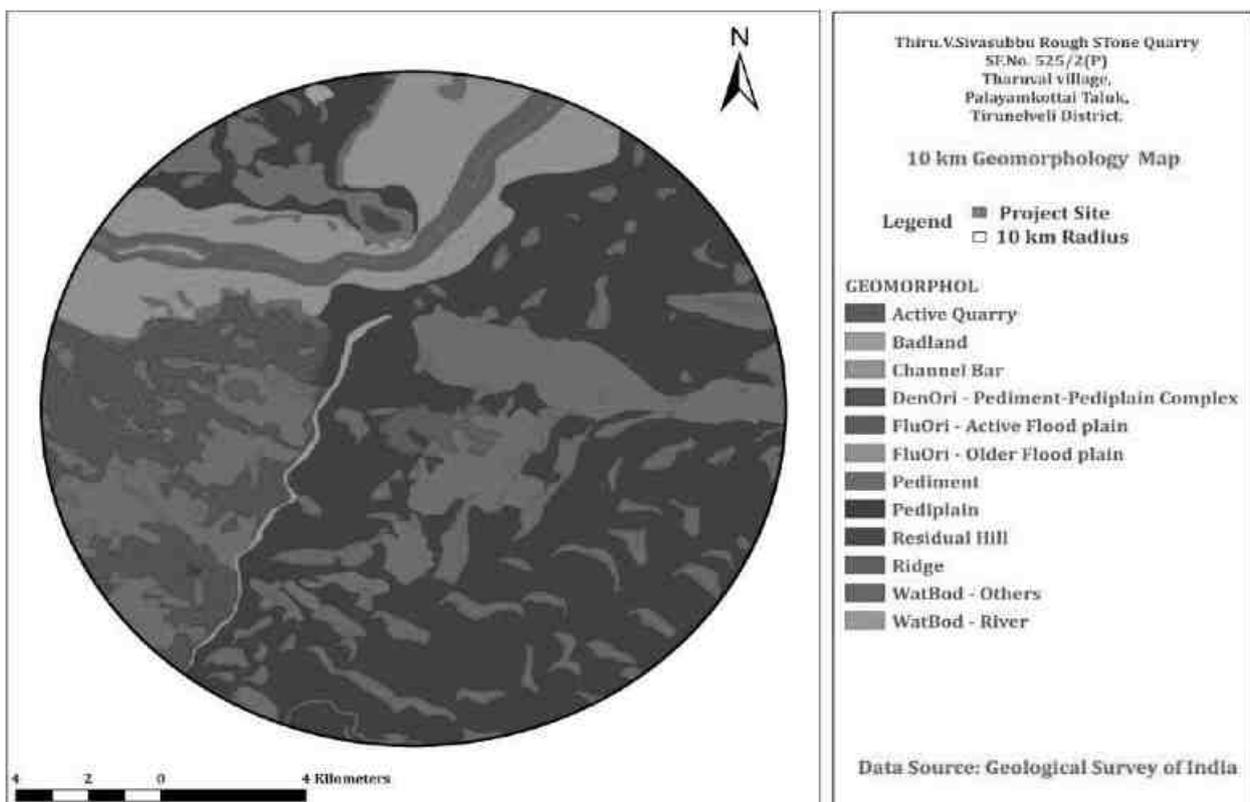


Figure 3-5 Geomorphology within 10km from the project site

3.3.3 Geology

Tirunelveli district is bordered by Western Ghats (Ridge and valley plain complex) in the West. A major part of the district constitutes a plain terrain with a gentle slope toward East and



Southeast, except for the hilly terrain in the west. The general elevation of the area varies from less than 10 to 1408 m amsl (Tulukkarparai hill range). The prominent geomorphic units identified in the district through interpretation of Satellite imagery are Structural Hill, Bazada Zone, Valley Fill, Flood Plain, Pediment, Shallow buried pediment, Deep buried pediment and Coastal Plain.

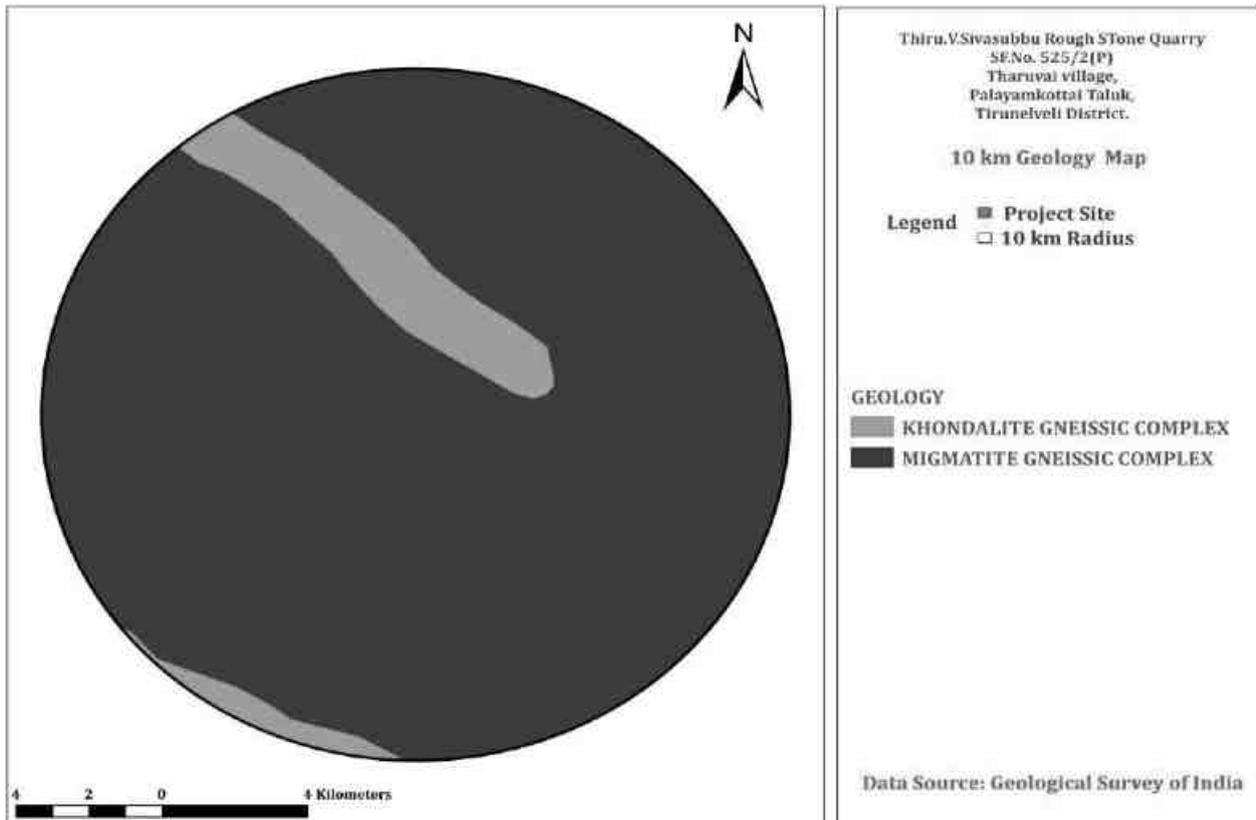


Figure 3-6 Geology within 10km from the project site

3.3.4 Hydrogeology

Ground water generally occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fissured and fractured zones at deeper levels. The thickness of weathered zone in the district is in the ranges up to 30m bgl. The groundwater exploration in the district down to a depth of 200m bgl has revealed that in the western part of the district potential fractures are encountered beyond 100m bgl while in the rest of the area, potential



fractures are restricted to 100m bgl. The yield of the wells varies from 1 to 3.6 lps. In general, the wells drilled by various State agencies mainly for domestic purposes have yield in the range of 63 to 270 lpm.

The depth to water level in the district varied between 1.19 to 13.35 m bgl during premonsoon depth to water level (May 2006) and varied between 0.18 to 7.97 m bgl during post monsoon depth to water level (Jan 2007). The seasonal fluctuation shows a fall in water level, which ranges from -0.12 to -2.14 m bgl, and rise in water level, which ranges from 0.33 to 11.24 m bgl. The piezometric head varied between 1.72 to 13.65 m bgl (May 2006) during pre monsoon and 0.47 to 13.25 m bgl during post monsoon.

Depth of ground water Level & Ground water prospects

The ground water near the project site is found to be around 80 m BGL (Source: CGWB)

The Ground water prospects within 5 km radius of the project site (**Source: Bhuvan**) is found to be > 80m Deep well – 50 to 100 LPM yield.

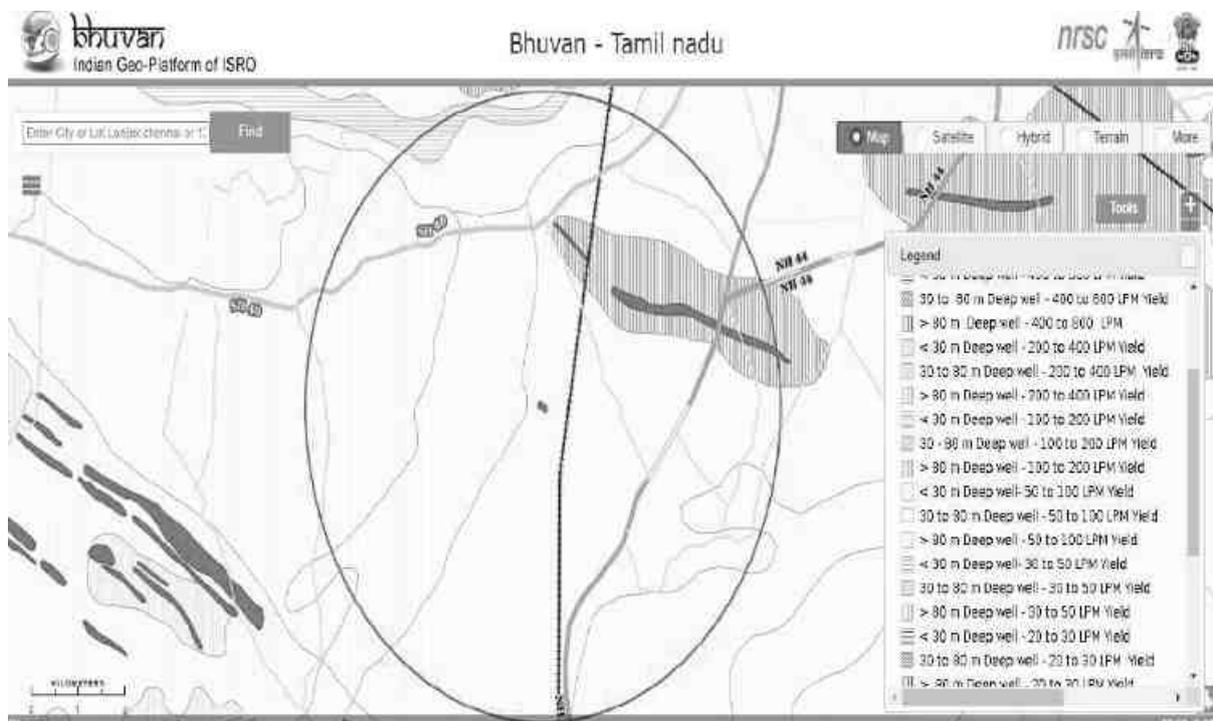


Figure 3-7 Ground water prospects within 5 km radius of the project site

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 3-7 Ground water Quality Analysis

Environmental Parameters: Ground water Quality Analysis	
Monitoring Period	October 2021 to December 2021
Design Criteria	Based on the Environmental settings in the study area
Monitoring Locations	GW 1- Project Site GW 2- PSN Engineering College, Melathediyoore (4.3 km, W) GW 3- SKODA Showroom and Service, KK Nagar (2.9 km, E) GW 4- Kunnathur CSI Church, Kunnathur (6.5 km, N) GW5- CSI Christ Church, Moondradaippu (5.3 km, S)
Methodology	Water Samples were collected in 5 Litre fresh cans as per 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 sample from five sampling locations in a 5-liter plastic jerry can and 250 ml sterilized clean glass/pet bottle for complete physico-chemical and bacteriological tests respectively. The samples were analyzed as per standard procedure / method given in IS: 3025 (Revised Part) and standard method for examination of water and wastewater Ed. 21st, published jointly by APHA.

Table 3.8: 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 22 nd Edn.2012-2540-C
6	Total Suspended Solids	IS:3025(P-17)-1984 RA:2012
7	Total Hardness as CaCO ₃	APHA 22 nd Edn.2012-2340-C
8	Calcium as Ca	APHA 22 nd Edn2012.3500 Ca-B
9	Magnesium as Mg	APHA 22 nd Edn.2012-3500 Mg-B



10	Chloride as Cl	IS:3025(P -32)-1988 RA: 2014
11	Sulphate as SO ₄	APHA 22 nd Edn.2012-4500 SO ₄ -E
12	Total Alkalinity as CaCO ₃	APHA 22 nd Edn.2012-2320-B
13	Iron as Fe	IS:3025(P -53):2003 RA: 2014
14	Silica as SiO ₂	IS:3025(P -35)1988 RA: 2014
15	Fluoride as F	APHA 22 nd Edn.2012-4500-F-D
16	Nitrate as NO ₃	IS:3025(P -34):1988 RA: 2014
17	Sodium as Na	IS:3025(P -45):1993 RA: 2014
18	Potassium as K	IS:3025(P -45):1993 RA: 2014
19	Coliform	IS:1622:1981:RA:2014
20	E.coli	IS:1622:1981:RA:2014

Table 3.9 Ground water sampling results

S.No	Parameters	Unit	Project Site (GW 1)	PSN Engineering College, Melathediyo or (GW 2)	SKODA Showroom and Service, KK Nagar (GW 3)	Kunnathur CSI Church, Kunnathur (GW 4)	CSI Christ Church, Moondraaippu (GW5)
1.	pH (at 25°C)	-	6.65	8.10	8.15	7.82	7.71
2.	Electrical Conductivity	µS/cm	430	1109	564	966	180
3.	Colour	Hazen Unit	4.0	2.0	1.0	80	125
4.	Turbidity	NTU	1.7	1.7	BQL(LOQ:1)	28	20
5.	Total Dissolved Solids	mg/L	265	705	385	598	115
6.	Total Suspended Solids	mg/L	2.3	2.5	BQL(LOQ:2)	35	31
7.	Total Hardness as CaCO ₃	mg/L	122	288	232	296	60
8.	Calcium Hardness as CaCO ₃	mg/L	78	230	162	194	50
9.	Magnesium Hardness as CaCO ₃	mg/L	44	58	70	102	10
10.	Calcium as Ca	mg/L	31.3	92.2	64.9	77.8	20.0
11.	Magnesium as Mg	mg/L	10.7	14.1	16.9	24.8	2.43



12.	Chloride as Cl	mg/L	27.3	225	29.3	174	21.5
13.	Sulphate as SO ₄	mg/L	91.0	74	49	1.06	1.01
14.	Total Alkalinity as CaCO ₃	mg/L	40	100	200	174	60
15.	Iron as Fe	mg/L	BQL(LOQ: 0.1)	BQL(LOQ:0.1)	BQL(LOQ:0.1)	4.98	3.01
16.	Silica as SiO ₂	mg/L	54.1	24.3	50.1	54.5	8.4
17.	Fluoride as F	mg/L	BQL(LOQ: 2)	BQL(LOQ:2)	BQL(LOQ:2)	BQL(LOQ:0.1)	0.45
18.	Nitrate as NO ₃	mg/L	1.49	3.73	26.20	25.5	3.18
19.	Potassium as K	mg/L	BQL(LOQ: 1)	7.21	4.98	5.34	BQL(LOQ:1)
20.	Sodium as Na	mg/L	22.8	205	22.4	132	20.5
21.	E coli	mg/L	14	<2	<2	11	17
22.	Coliform	mg/L	27	7	<2	33	22

3.3.5.2 Interpretation of results

Physical parameters of water:

Colour

Value observed in project site (True/ Apparent Color): 5 Hazel unit.

Acceptable and permissible limits: 5 Hazel units and 15 Hazel units respectively.

The value in the project site is below 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 mildly 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: 6.65.

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 neutral in nature.

Turbidity

Value observed in the project site: NTU 1.7.



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 project site: 265 mg/L.

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

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. As per the Guidelines of WHO, if the value of TDS is greater than 1200 mg/L, it is designated as unacceptable. Since the value of the TDS is very low, it is acceptable for use.

Chemical parameters of water:

The chemical parameters of the drinking water include

Calcium

Value observed in project site: 31.3 mg/L.

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

Calcium is the essential macronutrient. The value of the calcium is well below the prescribed permissible standards.

Magnesium

Value observed in project site: 10.7 mg/L.

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

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

Chloride

Value observed in project site: 27.3 mg/L.

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

The chloride level in the project site is well below the acceptable limit.

Total Alkalinity as CaCO₃:

Value observed in project site: 40 mg/L.



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

Total Alkalinity is the measure of the concentration of all alkaline substances dissolved in the water which includes carbonates, bicarbonates and hydroxides. The value of the total alkalinity is slightly greater than the acceptable limit in the project site, which will impart soda taste to the water.

Hardness:

Value observed in project site: 122 mg/L.

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

The value of Hardness in the project site is slightly higher than acceptable, but lower 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.

Biological parameters of water:

The biological parameters of water includes E- Coli & Coliform

Value observed in project site: E-coli: 14 mg/L and Coliform: 27 mg/L.

The E- coli and coliform shall not be detectable in any 100 ml sample as per the drinking water standards IS 10500:2012. E- coli is one of the fecal coliform bacteria.

3.3.6 Surface Water Quality monitoring

Surface water samples were taken from Brothers Lake which is 2.28 km towards the East from project site.

Table 3.10 surface water sample results

S.No	Parameters	Unit	Brothers Lake (SW 1)
1.	pH (at 25°C)	-	8.11
2.	Electrical Conductivity	µS/cm	298
3.	Colour	Hazen Unit	60
4.	Turbidity	NTU	17
5.	Total Dissolved Solids	mg/L	192
6.	Total Suspended Solids	mg/L	25
7.	Total Hardness as CaCO ₃	mg/L	100
8.	Calcium Hardness as CaCO ₃	mg/L	72
9.	Magnesium Hardness as CaCO ₃	mg/L	28
10.	Calcium as Ca	mg/L	28.9
11.	Magnesium as Mg	mg/L	6.89



12.	Chloride as Cl	mg/L	19.5
13.	Sulphate as SO ₄	mg/L	44
14.	Total Alkalinity as CaCO ₃	mg/L	84
15.	Iron as Fe	mg/L	2.97
16.	Silica as SiO ₂	mg/L	22.8
17.	Fluoride as F	mg/L	0.8
18.	Nitrate as NO ₃	mg/L	3.34
19.	Potassium as K	mg/L	4.64
20.	Sodium as Na	mg/L	13.13
21.	Total Kjeldahl Nitrogen as N	mg/L	0.85
22.	Biochemical oxygen Demand @ 27c	mg/L	7.66
23.	Chemical Oxygen Demand	mg/L	26.8
24.	Dissolved Oxygen	mg/L	7.3
25.	E coli	mg/L	<2
26.	Coliform	mg/L	<2

Inference: The surface water quality is compared with the CPCB Water Quality Criteria against A, B, C, D & E class of water. From the test result, it is found that the both the water does not fit Class A (Drinking Water Source without conventional treatment but after disinfection). But they can be used for outdoor bathing as it meets the requirements shown for class B water.

3.4 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 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



Like the rest of the state, Tirunelveli experiences hot weather between April and June and is relatively cooler in December and January. The South-west monsoon, which begins in June and lasts until August, brings little rain. Most of the rain is received during the North-east monsoon in the months of October, November and December.

ii) Temperature

The mean daily maximum temperature rises to 38° to 42° degree Celsius and during winter period it drops to 28° to 33° Celsius.

iii) Rainfall

The historical rainfall data of past years is collected. The maximum rainfall is observed in November 2017 with a rainfall of 344 mm.

Table 3-11: Historical rainfall data of past 5 years

Year	Jan	Feb	March	Apr	May	June	Aug	Sept	Oct	Nov	Dec
	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F
2016	5.3	6.8	14	15.4	81.7	75.7	1.2	0.4	47.3	105.3	33.8
2017	65.9	5.0	62.5	29.4	86.1	50.1	40.9	116.3	83.6	344	237.9
2018	5.1	20.7	105.3	88.6	53.9	78.4	147.5	65.9	251.2	197.6	71
2019	4.9	18.1	14.9	45.3	21.4	38.2	103.6	114.1	269.6	239.6	174.8
2020	14.0	6.9	0.3	28.9	36.8	12.2	81.3	46.7	70.2	271.6	135.6

Source: IMD, GoI

iv) Relative Humidity

The district enjoys a subtropical climate. The period from April to June is generally hot and dry. The weather is pleasant during the period from November to January. Usually mornings are more humid than afternoons. The relative humidity average was recorded as 66% for the three months monitoring period.

v) Wind Speed

The average wind speed during the monitoring period (October 2021 to December 2021), in the region was recorded as 3sm/sec. The wind speed was very stable during the whole study period.



Metrological Data

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

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. 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 October 2021 to December 2021. The wind rose is plotted using WR Plot.

The predominant wind direction is from SE to NW.

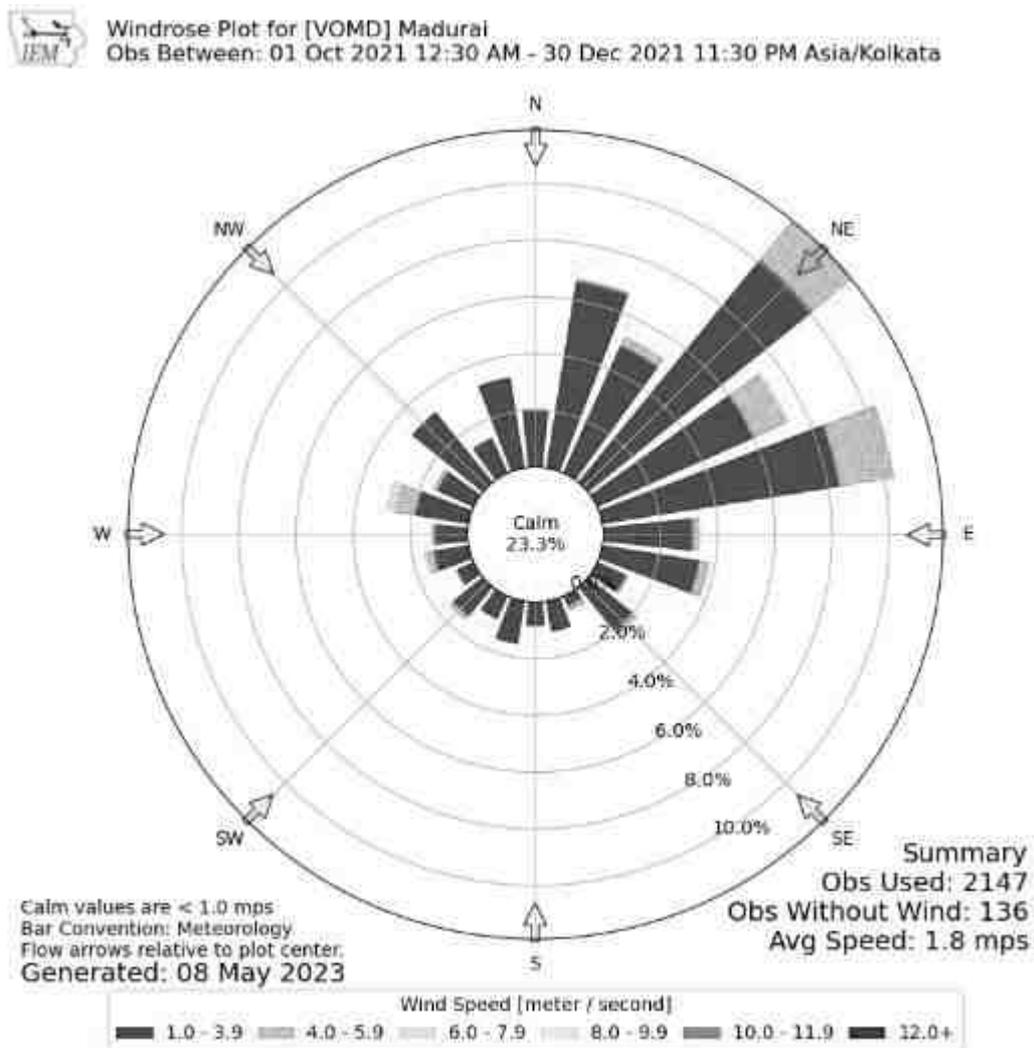


Figure 3-8 Windrose (Period: October 2021 to December 2021)

3.5 AMBIENT AIR QUALITY

Table 3-12: Selection of Sampling Location

Environmental Parameters: <i>Ambient Air</i>			
Monitoring Period	October 2021 to December 2021		
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 selection of air sampling stations. Based on these criteria, 5 air sampling stations were selected in the area as shown below.		
Monitoring Locations	Location	Distance (km)	Direction
	Project site	-	-
	PSN Engineering College, Melathediyoore	4.3	Upwind W
	SKODA Showroom and Service, KK Nagar	2.9	Downwind E
	Kunnathur CSI Church, Kunnathur	6.5	Crosswind N
	CSI Christ Church, Moondradaippu.	5.3	Crosswind 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 Monitoring	2 days in a week, 4 weeks in a month for 3 months in a season.		





Figure 3-9 Ambient Air Quality Monitoring Site Photographs

3.5.1 Ambient Air Quality: Results & Discussion

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



Table 3-13 Ambient Air Quality Monitoring Results

Code	Location	PM _{2.5} (µg/m ³)			PM ₁₀ (µg/m ³)			SO ₂ (µg/m ³)			NO _x (µg/m ³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
AAQ 1	Project site	23	30	26.4	52.0	63.0	58	4	9	7	9	20	14
AAQ 2	SKODA Showroom and Service, KK Nagar	22	28	26.0	52	59	55	8	19	13	17	32	25
AAQ 3	PSN Engineering College, Melathediyoore	20	27	23	50	58	54	7	10	13	15	26	20
AAQ 4	Kunnathur CSI Church, Kunnathur	18	25	22	44	53	48	4	10	7	9	20	15
AAQ 5	CSI Christ Church, Moondradaippu.	18	25	21	39	51	46	5	10	7	11	21	16
NAAQ Standards - Residential Area		60 (µg/m³)			100 (µg/m³)			80 (µg/m³)			80 (µg/m³)		

3.5.2 Interpretation of ambient air quality:

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

Inference:

The monitoring results for PM₁₀, PM_{2.5}, SO₂, and NO_x was found to be comparatively high in Downwind direction, i.e., at SKODA Showroom and Service KK Nagar which falls on the highway. The only contributing factor to the higher values is due to the vehicular movement.

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



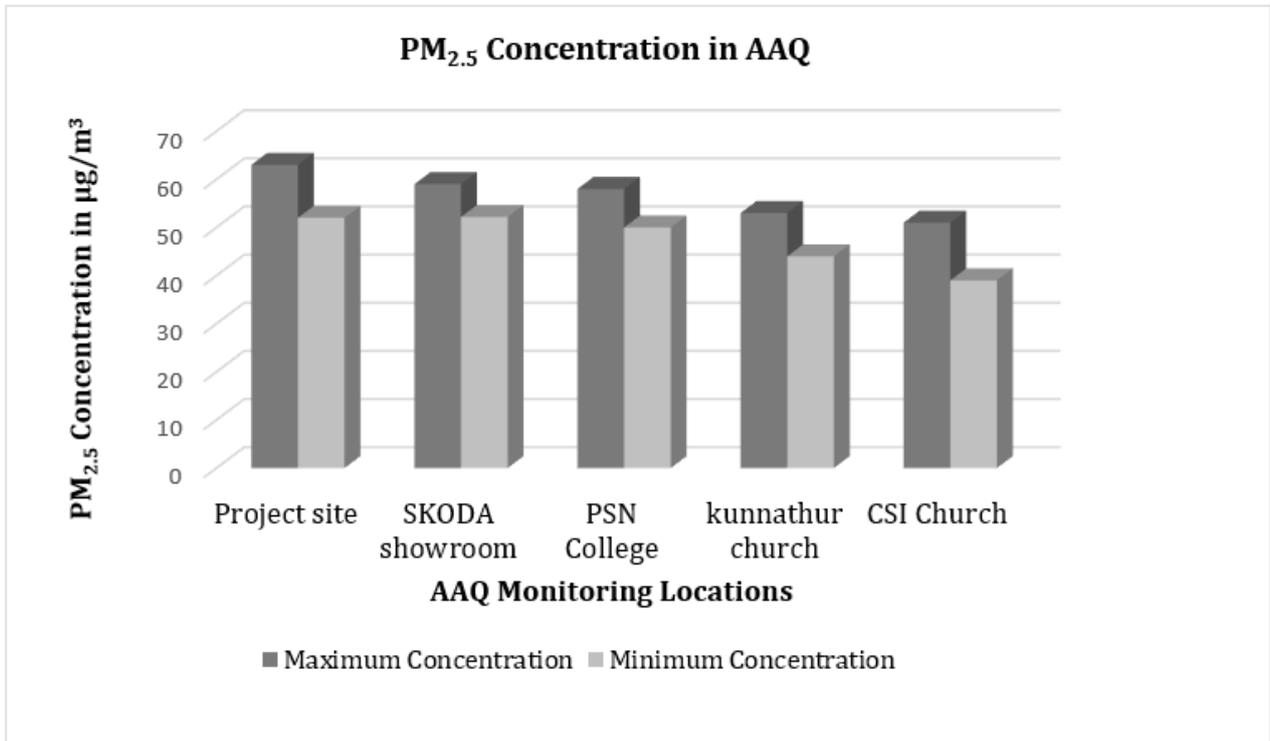


Figure 3-10 PM_{2.5} Concentration in AAQ

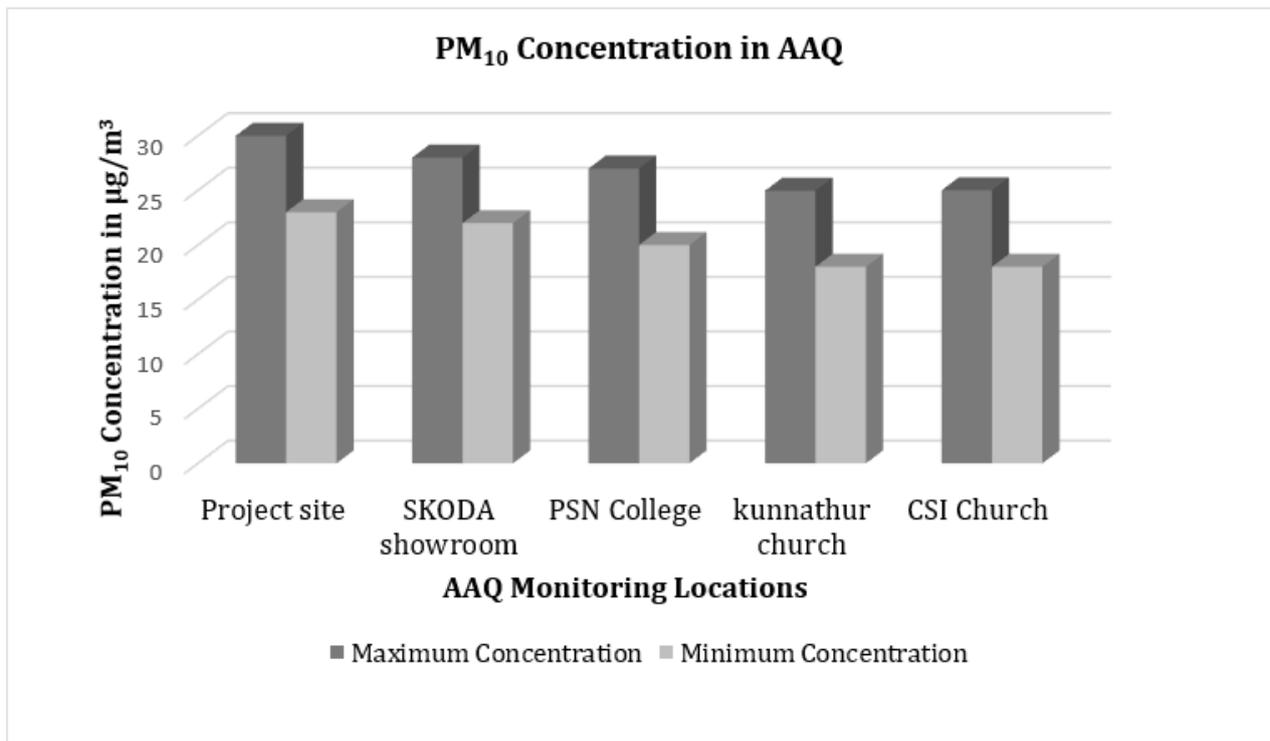


Figure 3-11 PM₁₀ Concentration in AAQ



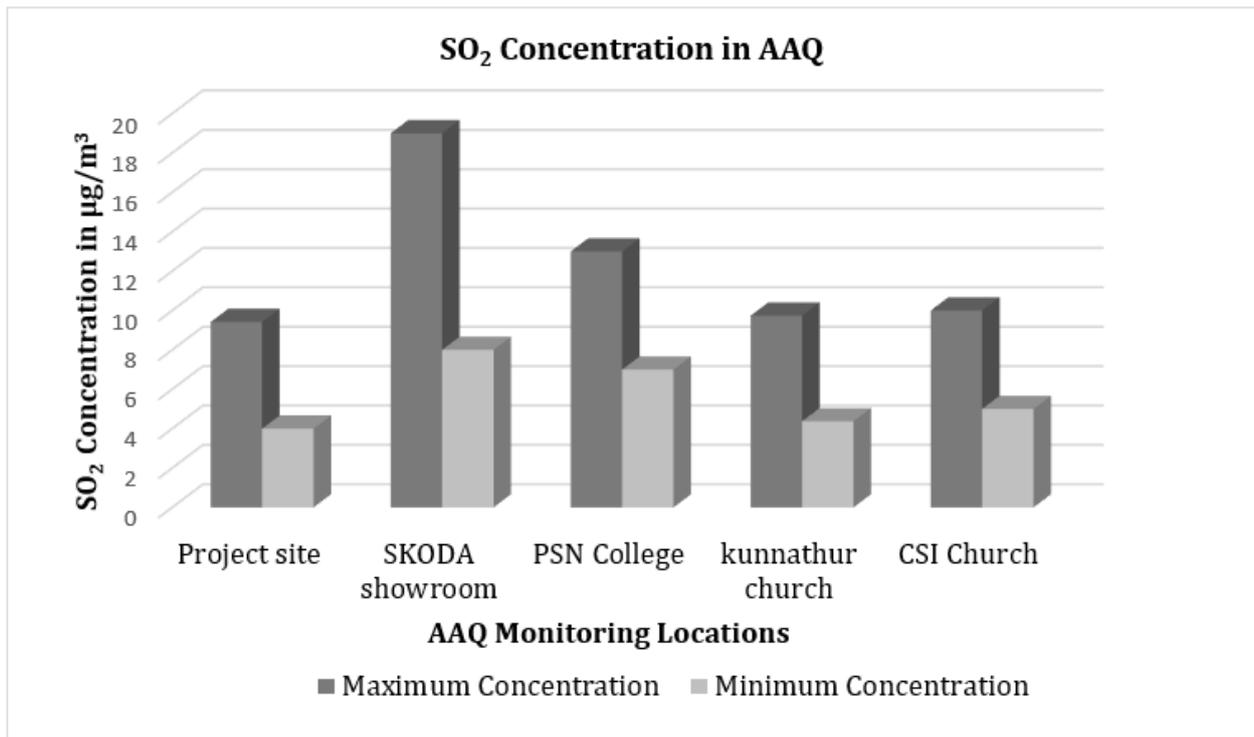


Figure 3-12 SO₂ Concentration in AAQ

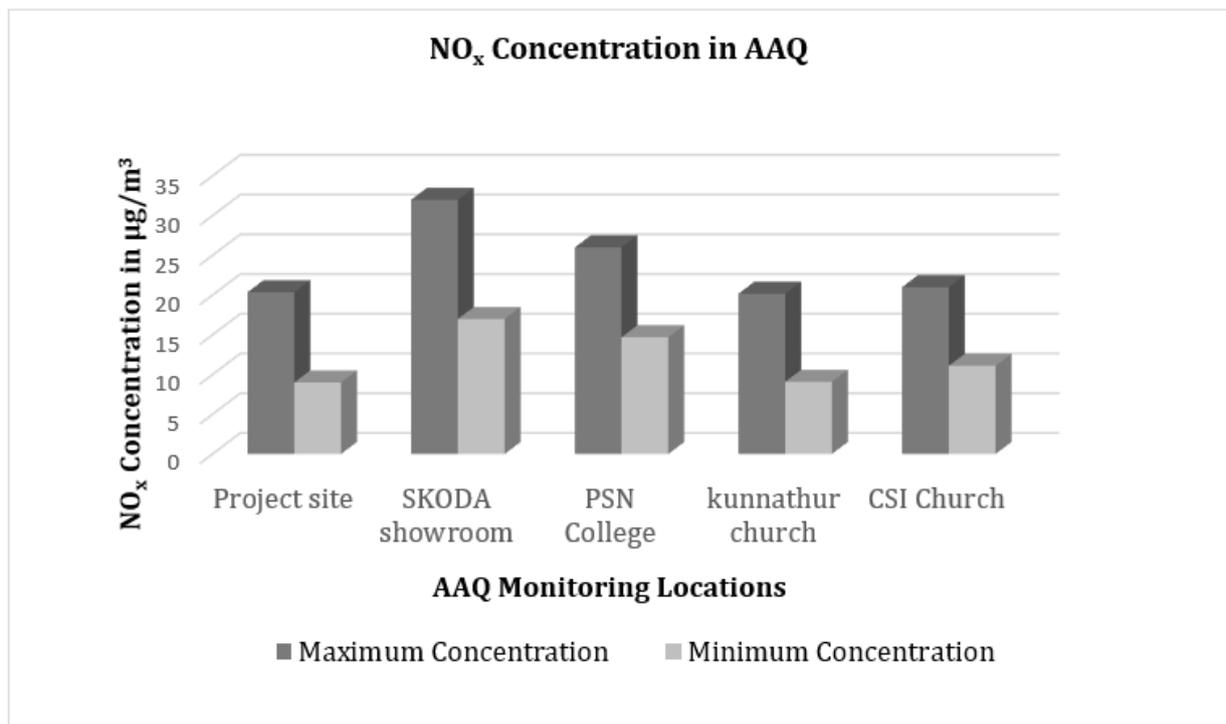


Figure 3-13 NO_x Concentration in AAQ



3.6 NOISE ENVIRONMENT

Table 3-14 Noise Analysis

Environmental Parameters: <i>Noise Analysis</i>			
Monitoring Period	October 2021 to December 2021		
Design Criteria	Based on the Sensitivity of the area		
Monitoring Locations	Location	Distance (km)	Direction
	Project site	-	-
	SKODA Showroom and Service, KK Nagar	4.3	Upwind W
	PSN Engineering College, Melathediyoor	2.9	Downwind E
	Kunnathur CSI Church, Kunnathur	6.5	Crosswind N
	CSI Christ Church, Moondradaippu.	5.3	Crosswind S
Methodology	Noise level measurements were taken at the selected locations using noise level meter both during day and night time. Noise level measurements were taken continuously for 24 hours at hourly intervals		
Frequency of Monitoring	Noise samples were collected from 5 locations - Once in a season		

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

Table 3-15 Noise Level (Day and night-time averages)

Location	Leq day in dB(A)		
	Day Time	Night Time	Average
Project site	65	48	56.5
SKODA Showroom and Service, KK Nagar	61	47	54
PSN Engineering College,	60	45	52.5



Melathediyoor			
Kunnathur CSI Church, Kunnathur	57	44	50.5
CSI Christ Church, Moondradaippu.	55	42	48.5

Inference:

The noise monitoring values were comparable in all five locations. The observed values are all well within the Standards prescribed by CPCB.

3.7 SOIL ENVIRONMENT

Soil environment is studied for 10 km radius from the project site. The saline nature of the soil within 10 km radius is studied.



Figure 3-14 Soil Erosion pattern within 5km radius from project site

3.7.1 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 3-16 Soil Quality Analysis

Environmental Parameters: <i>Soil Quality Analysis</i>			
Monitoring Period	October 2021 to December 2021		
Design Criteria	Based on the environmental settings of the study area		
Monitoring Locations	Location	Distance (km)	Direction
	Project site		
	SKODA Showroom and Service, KK Nagar	4.3	Upwind W
	PSN Engineering College, Melathediyoor	2.9	Downwind E
	Kunnathur CSI Church, Kunnathur	6.5	Crosswind N
	CSI Christ Church, Moondradaippu.	5.3	Crosswind S
Methodology	Composite soil samples using sampling augers and field capacity apparatus		
Frequency of Monitoring	Soil samples were collected from 5 locations Once in a season		

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

Table 3-17 Soil Quality Analysis

S.No	Parameters	Units	Test Method	Project Site	PSN Engineering College, Melathediyoor	SKODA Showroom and Service, KK Nagar	Kunnathur CSI Church, Kunnathur	CSI Christ Church, Moondradaippu
1	pH (at 25°C)	-	IS:2720(P-26)1987	7.23	6.56	8.05	7.46	7.81
2	Specific Electrical Conductivity	mS/cm	IS:14767:2016	0.54	0.38	0.16	0.33	0.51
3	Water Holding	ml/l	ICARDA Page	3.60	3.14	3.40	4.32	3.12



	Capacity		No:28					
4	Bulk Density	g/cm ³	FAO 2007 Page No:35	1.138	1.1314	1.1299	1.1417	1.1315
5	Calcium as Ca	mg/kg	FAO 2007 Page No:44	28.2	20.8	28.4	18.9	19.7
6	Sodium as Na	mg/kg	FAO 2007 Page No:44	242	148	198	140	144
7	Potassium as K	mg/kg	FAO 2007 Page No:44	36.2	6.36	14.2	7.80	6.56
8	Organic matter	%	IS:2720 (P-22) 1972, RA:2010	0.07	0.10	0.08	0.09	0.12
9	Magnesium as Mg	mg/kg	FAO 2007 - 44	10.1	BQLLOQ: 10	BQLLOQ :10	10.4	BQLLOQ :10
10	Total Nitrogen	%	IS 14864- 1999;RA: 2008	0.027	0.025	0.026	0.030	0.024
11	Available Phosphorous	mg/kg	FAO 2007 Page No:73	210	213	240	195	210
12	Sand	%	FAO 2007 Page No:25	55	52	58	53	54
13	Clay	%	FAO 2007 Page No:25	19	20	18	18	16
14	Silt	%	FAO 2007 Page No:25	26	28	24	29	30
15	Cation Exchange Capacity	meq/100g	IS:2720(P-24):1976 RA: 2010	9.27	7.72	8.98	8.40	8.42
16	SAR	meq/kg	ETL/CHL/ SOP/004	7.97	6.88	7.95	7.60	7.24
17	Silicon	%	ICARDA Page No:160	0.95	0.91	0.94	0.96	0.90
18	Chloride	mg/kg	FAO 2007 Page No:48	33.4	26.8	33.8	29.6	24.9



19	Total Soluble Sulphates	mg/kg	IS:2720(P-27):1977 RA: 2010	239	246	276	189	239
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3.7.1.1 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 1.129 to 1.41 meq/100g which indicates favorable physical condition for plant growth. The water holding capacity was found in the range of 3.12 ml/l to 4.32 ml/l.

3.7.1.2 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 is slightly alkaline and it ranges from 7.1 to 8.29. 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 0.3 to 0.5 %, which indicates the soil is slightly unfertile.

3.8 ECOLOGY AND BIODIVERSITY

Ecology and Biodiversity is studied for 5 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 5 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.

3.8.1 Methods available for floral analysis:

3.8.1.1 Plot Sampling Methods

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



➤ **Transect**

- Line transects feature only a length dimension, usually defined by a tape stretched across the area to be sampled.
- Belt transects have a width as well as length.
- Pace-transects are established when the observer strides along an imaginary line across the sample site and uses their foot placement to determine specific sampling points.

3.8.1.2 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.

3.8.2 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.

Table 3-18 Field study

S. No	Location	Latitude	Longitude	No of Quadrates		
				Trees (10m x 10m)	Shrubs (5m x 5m)	Herbs & grasses (1m x 1m)
1.	Project Site	8°38'38.99"N	77°40'47.44"E	1	4	5



2.	PSN Engineering College, Melathediyoor (4.3 km, W)	8°38'27.25"N	77°38'25.57"E	1	4	5
3.	SKODA Showroom and Service, KK Nagar (2.9 km, E)	8°38'37.55"N	77°42'27.76"E	1	4	5
4.	Kunnathur CSI Church, (6.5 km, N)	8°42'9.96"N	77°40'33.36"E	1	4	5
5.	CSI Christ Church, Moondradaippu (5.3 km, S)	8°35'33.52"N	77°40'32.71"E	1	4	5

3.8.3 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 quadrates 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 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 3-19 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 (%)	$(\text{Total No. of Quadrats in which species occur} / \text{Total No. of Quadrats studied}) * 100$
Dominance	Total Basal Area /Total area sampled
Abundance	Total No. of individuals of species/ No. of Quadrats in which they occur
Relative Density	$(\text{Total No. of individuals of species} / \text{Sum of all individuals of all species}) * 100$
Relative Frequency	$(\text{Total No. of Quadrats in which species occur} / \text{Total No. of Quadrats occupied by all species}) * 100$
Relative Dominance	Dominance of a given species/Total Dominance of all species
Important Value Index	Relative Density + Relative Frequency + Relative Dominance



Table 3-20 Tree Species in the core Zone

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Dominance	Relative Density	Relative Frequency	Relative Dominance	IVI	IUCN Conservation Status
1	<i>Azadirachta indica</i>	Vaepam	8	6	6	1.33	100.00	1.33	0.28	33.33	35.29	14.05	82.67	Least Concern
2	<i>Mangifera indica</i>	Mamaram	4	2	6	0.67	33.33	2	0.07	16.67	11.76	3.51	31.94	Data deficient
3	<i>Cocos nucifera</i>	Thennai	3	2	6	0.50	33.33	1.5	0.28	12.50	11.76	14.05	38.31	Not listed
4	<i>Morinda tinctoria</i>	Nuna	4	3	6	0.67	50.00	1.33	0.50	16.67	17.65	24.97	59.28	Not listed
5	<i>Pithecello biumdulce</i>	kodukkai	2	2	6	0.33	33.33	1	0.44	8.33	11.76	21.95	42.04	Least Concern
6	<i>Alstonia scholaris</i>	Elilaipalai	1	1	6	0.17	16.67	1	0.27	4.17	5.88	13.58	23.63	Least Concern
7	<i>Ficus religiosa</i>	Arasamaram	2	1	6	0.33	16.67	2	0.16	8.33	5.88	7.90	22.12	Not listed
Total			24	17					2.01					



Table 3-21 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	<i>Triumfetta rotundifolia</i>	Atayotti	26	17	24	1.08	0.71	1.529412	15.95	20.24	Not Listed
2	<i>Zizyphus nummularia</i>	korgodi	11	3	24	0.46	0.13	3.666667	6.75	3.57	Not Listed
3	<i>Stachytarpheta indica</i>	Seemainaayuruvi	18	5	24	0.75	0.21	3.6	11.04	5.95	Not Listed
4	<i>Cissus quadrangularis</i>	Pirandai	8	6	24	0.33	0.25	1.333333	4.91	7.14	Not Listed
5	<i>Calotropis gigantea</i>	Erukam	10	12	24	0.42	0.50	0.833333	6.13	14.29	Not Listed
6	<i>Lawsonia inermis</i>	Marudhani	15	9	24	0.63	0.38	1.67	9.20	10.71	Not Listed
7	<i>Euphorbia geniculata</i>	Amman Pacharisi	4	3	24	0.17	0.13	1.333333	2.45	3.57	Not Listed
8	<i>Acalypha indica</i>	Kuppaimeni	21	8	24	0.88	0.33	2.625	12.88	9.52	Not Listed
9	<i>Prosopis juliflora</i>	Karuvelam	50	21	24	2.08	0.88	2.38	30.67	25.00	Not Listed



Table 3-22 Herbs & Grasses in the core zone

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IUCN Conservation Status
1	<i>Cleome felina</i>	Thaivelai	5	3	30	0.17	0.10	1.666667	2.44	3.37	Not Listed
2	<i>Sida acuta</i>	Malaidangi	12	3	30	0.40	0.10	4	5.85	3.37	Not Listed
3	<i>Abutilon indicum</i>	Thuthikeerai	15	7	30	0.50	0.23	2.142857	7.32	7.87	Not Listed
4	<i>Tribulus terrestris</i>	Nerunji mull	4	2	30	0.13	0.07	2	1.95	2.25	Not Listed
5	<i>Cardiospermum halicacabum</i>	Kotravan	8	6	30	0.27	0.20	1.333333	3.90	6.74	Least concern
6	<i>Aeschyno meneaspera</i>	Netti	45	4	30	1.50	0.13	11.25	21.95	4.49	Least concern
7	<i>Alysicarpus monilifer</i>	Kaasukkodi	6	5	30	0.20	0.17	1.2	2.93	5.62	Not Listed
8	<i>Indigofera enneaphylla</i>	Seruppunerunji	20	10	30	0.67	0.33	2	9.76	11.24	Not Listed
9	<i>Oldenlandia umbellata</i>	Chayaver	15	11	30	0.50	0.37	1.363636	7.32	12.36	Not Listed
10	<i>Euphorbia hirta</i>	Amman Pacharisi	5	4	30	0.17	0.13	1.25	2.44	4.49	Not Listed
11	<i>Tridax procumbens</i>	Vettukaayathalai	5	4	30	0.17	0.13	1.25	2.44	4.49	Not Listed
12	<i>Parthenium hysterophorus</i>	Vishapoonda	20	4	30	0.67	0.13	5	9.76	4.49	Not Listed
13	<i>Sida cordifolia</i>	Maanikham	30	22	30	1.00	0.73	1.363636	14.63	24.72	Not Listed
15	<i>Tridax procumbens</i>	Cuminipachai	15	4	30	0.50	0.13	3.75	7.32	4.49	Not Listed



3.8.4 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 3-23 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

3.8.5 Calculation of species diversity by Shannon - wiener Index, Evenness and richness by Margalef for trees

i. Species Diversity

S. No.	Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
1	<i>Azadirachta indica</i>	Vaepam	8	0.333333	-1.09861	-0.3662
2	<i>Mangifera indica</i>	Mamaram	4	0.166667	-1.79176	-0.29863
3	<i>Cocos nucifera</i>	Thennai	3	0.125	-2.07944	-0.25993
4	<i>Morinda tinctoria</i>	Nuna	4	0.166667	-1.79176	-0.29863



5	<i>Pithecello biumdulce</i>	Kodukkai	2	0.083333	-2.48491	-0.20708
6	<i>Alstonia scholaris</i>	Elilaipalai	1	0.041667	-3.17805	-0.13242
7	<i>Ficus religiosa</i>	Arasamaram	2	0.083333	-2.48491	-0.20708
total			24			-1.76

H (Shannon Diversity Index) =1.76

Shrubs

S. No.	Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
1	<i>Triumfetta rotundifolia</i>	Atayotti	26	0.159509	-1.83565	-0.2928
2	<i>Zizyphus nummularia</i>	korgodi	11	0.067485	-2.69585	-0.18193
3	<i>Stachytarpheta indica</i>	Seemainaayuruvi	18	0.110429	-2.20338	-0.24332
4	<i>Cissus quadrangulari</i>	Pirandai	8	0.04908	-3.01431	-0.14794
5	<i>Calotropis gigantea</i>	Erukam	10	0.06135	-2.79117	-0.17124
6	<i>Lawsonia nermis</i>	Marudhani	15	0.092025	-2.3857	-0.21954
7	<i>Euphorbia geniculata</i>	Amman Pacharisi	4	0.02454	-3.70746	-0.09098
8	<i>Acalypha indica</i>	Kuppaimeni	21	0.128834	-2.04923	-0.26401
9	<i>Prosopis juliflora</i>	Karuvelam	50	0.306748	-1.18173	-0.36249
Total			163			-1.97

H (Shannon Diversity Index) =1.97

Herbs

S. No	Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
1	<i>Cleome felina</i>	Thaivelai	5	0.02439	-3.71357	-0.09057
2	<i>Sida acuta</i>	Malaidangi	12	0.058537	-2.8381	-0.16613
3	<i>Abutilon indicum</i>	Thuthikeerai	15	0.073171	-2.61496	-0.19134
4	<i>Tribulus terrestris</i>	Nerunji mull	4	0.019512	-3.93672	-0.07681
5	<i>Cardiospermum halicacabum</i>	Kotravan	8	0.039024	-3.24357	-0.12658
6	<i>Aeschyno meneaspera</i>	Netti	45	0.219512	-1.51635	-0.33286
7	<i>Alysicarpus monilifer</i>	Kaasukkodi	6	0.029268	-3.53125	-0.10335



8	<i>Indigofera enneaphylla</i>	Seruppunerunji	20	0.097561	-2.32728	-0.22705
9	<i>Oldenlandia umbellata</i>	Chayaver	15	0.073171	-2.61496	-0.19134
10	<i>Euphorbia hirta</i>	Amman Pacharisi	5	0.02439	-3.71357	-0.09057
11	<i>Tridax procumbens</i>	Vettukaayathalai	5	0.02439	-3.71357	-0.09057
12	<i>Parthenium hysterophorus</i>	Vishapoondu	20	0.097561	-2.32728	-0.22705
13	<i>Sida cordifolia</i>	Maanikham	30	0.146341	-1.92181	-0.28124
14	<i>Tridax procumbens</i>	Cuminipachai	15	0.073171	-2.61496	-0.19134
Total			205			-2.39

H (Shannon Diversity Index) =2.39

i. Evenness

Details	H	Hmax	Evenness	Species Richness (Margalef)
Trees	1.76	1.94	0.91	1.88
Shrubs	1.97	2.19	0.89	1.57
Herbs	2.39	2.63	0.91	2.44

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.



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

3.8.7 Faunal Communities

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

- Point Survey Method: Observations were made in each site for 15 minutes duration.
- Roadside 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 15 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 stripped Palm Squirrel, Common Indian Hare, Common mongoose, Common Mouse etc were observed during primary survey.

Avifauna: Since birds are 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 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 3-24 List of fauna species

Scientific Name	Common Name	Schedule of wildlife protection act	IUCN conservation status
Mammals			
<i>Funambulus pennanti</i>	Palm Squirrel	IV	Least Concern
<i>Mus rattus</i>	Indian rat	IV	Not listed
<i>Bandicota bengalensis</i>	Indian mole rat	IV	Least Concern
<i>Funambulus palmarum</i>	Three stripped palm squirrel	IV	Least Concern
<i>Herestes edwardsii</i>	Common Mongoose	IV	Not listed
<i>Mus musculus</i>	Common Mouse	IV	Least Concern
<i>Bandicota indica</i>	Rat	IV	Least Concern
<i>Lepus nigricollis</i>	Indian Hare	IV	Least Concern
<i>Felis catus</i>	Cat	Not listed	Not listed
<i>Canis lupus familiaris</i>	Indian dog	Not listed	Not listed
<i>Bos Indicus</i>	Indian Cow	Not listed	Not listed
<i>Bubalus bubalis</i>	Buffalo	I	Not listed
<i>Sus scrofa domesticus</i>	Domestic pig	Not listed	Not listed
Birds			
<i>Milvus migrans</i>	Black kite	IV	Least concern
<i>Saxicoloides fulicatus</i>	Indian Robin	IV	Least concern
<i>Pycnonotus cafer</i>	Red vented Bulbul	IV	Least concern



<i>Phragamaticola aedon</i>	Thick billed warbler	IV	Least concern
<i>Pericrocotus cinnamomeus</i>	Small Minivet	IV	Least concern
<i>Eudynamys scolopaceus</i>	Koel	IV	Least concern
<i>Psittacula krameni</i>	Rose ringed parakeet	IV	Least concern
<i>Dicrurus marcocercus</i>	Black drongo	IV	Least concern
<i>Columba livia</i>	Rock pigeon	IV	Least concern
<i>Corvus splendens</i>	House crow	IV	Least concern
<i>Alcedo atthis</i>	Small blue kingfisher	IV	Least concern
<i>Cuculus canorus</i>	Common Cukoo	IV	Least concern
Reptiles & Amphibians			
<i>Chameleon zeylanicum</i>	Chameleon	IV	Not listed
<i>Calotes versicolor</i>	Common garden lizard	II	Not listed
<i>Bungarus caeruleus</i>	Common krait	IV	Not listed
<i>Ophisops leschenaultia</i>	Snake eyed lizard	--	Not listed
<i>Bufo melanostictus</i>	Toad	IV	Least concern
<i>Ptyas mucosa</i>	Rat snakes	IV	Least concern
<i>Hemidactylus sp.</i>	House lizard	--	Not listed
Butterflies			
<i>Danaus chrysippus</i>	Plain Tiger	--	Not listed
<i>Papilio demoleus</i>	Common lime	--	Not listed
<i>Euploea core</i>	Common crow	--	Least concern
<i>Danaus genutia</i>	Common tiger	--	Not listed
<i>Eurema brigitta</i>	Small grass yellow	--	Least concern

3.9 DEMOGRAPHY AND SOCIO ECONOMICS

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



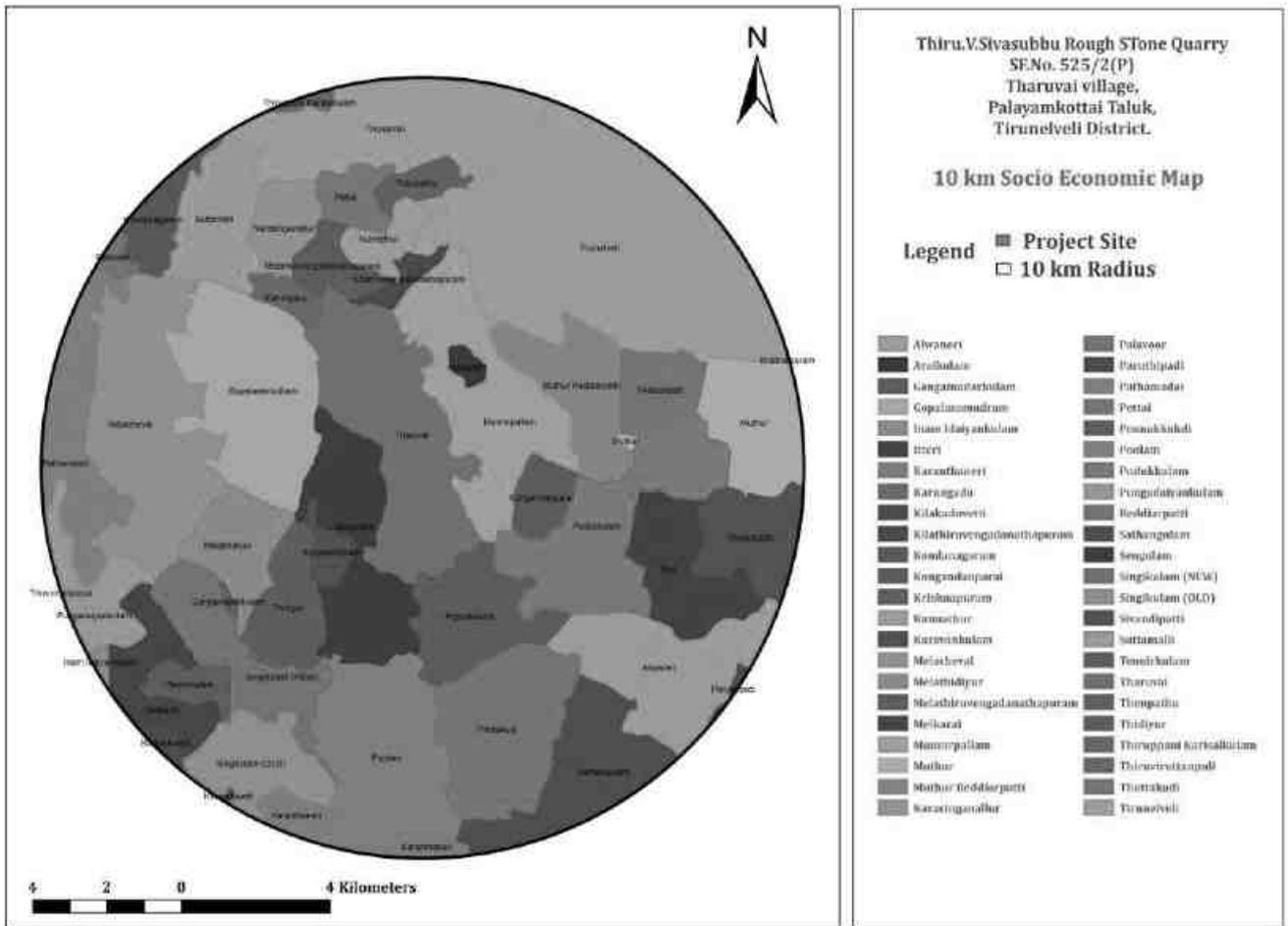


Figure 3-15 Socio Economic map surrounding the project site

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

Table 3-25: Demography Survey study

Villages	Household	Population	Sex Ratio		Literacy Rate		SC	ST
			Male	Female	Male	Female		
Sengulam	682	721	363	358	230	371	178	
Munnirpallam	1928	7183	3567	3616	811	1198	991	59
Araikulam	239	827	409	418	69	117	7	
Ponnakkukdi	435	1631	815	816	175	265	292	14
Kuravankulam	17	75	43	32	9	13	0	0
Gopalamudram	2890	10694	5338	5356	983	1442	2593	15
Kongandanparai	329	1203	581	622	82	85	180	
Kilathiruvengadanathapuram	67	279	143	136	34	73	269	
Karungadu	186	686	331	355	83	159	376	
Melathiruvengadanathapuram	717	2659	1315	1344	322	534	1706	

Source: Census of India, 2011

3.10 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.



Figure 3-16 Site Connectivity

Table 3-26: Number of Vehicles Per Day

Sl. No.	Vehicles Distribution	Number of Vehicles Distribution/Day	Passenger Car Unit (PCU)	Total Number of Vehicle in PCU
		SH-40		SH 40
1.	Cars	358	1	358
2.	Buses	203	3	609
3.	Trucks	139	3	417
4.	Two wheelers	457	0.5	228.5
5.	Three wheelers	173	1.5	259.5
	Total	1330		1872

Table 3-27: Existing Traffic Scenario and LOS

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

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

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



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



4.2 LAND ENVIRONMENT

Aspect	Impact	Mitigation Measures								
Mining rough stone	<p>The proposed 0.50.58 Ha mine located in Tharuvai Village, Palayamkottai Taluk, Tirunelveli District. It is proposed to produce 18,250 m³ of rough stone and 10,080 m³ of Gravel. The quarry operation is proposed to carry out with conventional open cast semi mechanized mining with 5 m vertical bench and bench width of 5 m. At the end of 5 years, mining lease area will be converted into ultimate pit.</p> <table border="1"> <thead> <tr> <th>Description</th> <th>Length (Max) (m)</th> <th>Width (Max) (m)</th> <th>Depth (Max) (m)</th> </tr> </thead> <tbody> <tr> <td>End of the lease period</td> <td>112</td> <td>30</td> <td>13</td> </tr> </tbody> </table> <p>The main impact of open cast mining on land-use is land degradation. The land is bound to be excavated for mining of Rough Stone 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>	Description	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)	End of the lease period	112	30	13	<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>Trees like tamarind, casuarinas etc will be planted along the safety barrier of the lease boundary and avenues as well as over non active dumps at a rate 51 trees per annum with an interval of 5m. The rate of survival expected to be 70 % in this area.</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.</p> <p>The overburden (Topsoil) will be stocked in the area allotted for safety distance and will be used for plantation.</p> <p>The source of dust generation is majorly due to drilling, blasting, loading & unloading of the mined out mineral, the impact will be mitigated by water sprinkling regularly once</p>
Description	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)							
End of the lease period	112	30	13							



		<p>in 3hrs.</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>The 100% recovery is achieved by extracting the entire mineable reserve. Hence there will be minimal 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
<p><i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i></p>	<p>The mining in the area may cause ground water contamination due to intersection of the water table and mine runoff.</p> <p>The ground water depletion may occur due to mining activity</p>	<p>The water table will not be intersected during mining, as the ultimate depth is limited upto 13 m below the ground level, whereas the ground water table is at 55 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</p>



	<p>Chemicals consisting of nitrate used for blasting may pollute the surface run off.</p> <p>Improper management of Domestic wastewater in the Mine lease may create unhygienic conditions in the site thereby causing health impacts to the labours.</p>	<p>depth of 55 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 be used in the mining operation for dust suppression.</p> <p>Provision of urinals/Latrines along with septic tank followed by soak pit arrangement will be provided in the Mine Lease area for the proper management of wastewater</p>
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4.4 AIR ENVIRONMENT

Aspect	Impact	Mitigation Measures
<p><i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i></p>	<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. 4 No of Tipper will be used for</p>	<p><i>Mitigation Measures during Operation Phase</i></p> <p>Trees like tamarind, casuarinas etc will be planted along the safety barrier of the lease boundary and avenues as well as over non active dumps at a rate 55 trees per annum with an interval of 5m. The rate of</p>



	<p>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><u>Effect on Human</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>Effect on Plants</u></p> <ul style="list-style-type: none"> • Stomatal index may be minimized due to dust deposit 	<p>survival expected to be 80% in this area.</p> <p>Planning transportation routes of the mined out mineral, so as to reach the nearest paved roads (an approach road) by shortest route, i.e., 2.37 km connecting to NH 44.</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 sheet to avoid dust dispersion in ambient air. Overloading will be avoided.</p> <p>Personal Protective Equipment (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>
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	on leaf.	0.5 KLD of water will be proposed for sprinkling on unpaved roads to avoid dust generation during transportation.
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4.4.1 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)

4.4.2 Source Characterization

A detailed listing of all emission sources and their corresponding modelling input release parameters and emission rates is listed 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 – 0.90Cum Bucket Capacity (with Rock Breaker Attachment)
2. Jack Hammer 32 mm Dia
3. Tipper
4. Tractor Mounted - Compressor
5. Drilling and excavation with Accessories

Road Sources:

A road network was developed to depict the anticipated haul truck routes and truck discharge locations during the mine operations. The anticipated emissions from the road sources and corresponding anticipated impact during the monitoring period of October 2021 to December

2021 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.

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.
- 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.

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 October 2021 to December 2021 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.

4.5 NOISE ENVIRONMENT

Aspect	Impact	Mitigation Measures
<i>Drilling, Blasting,</i>	Usage of Equipments	• The machinery will be

<p><i>Loading and unloading, Transportation of the excavated mineral.</i></p>	<p>(Excavator, Tipper, Jack Hammer), Machinery and trucks used for transportation will generate noise.</p> <p>Noise from the machinery can cause hypertension, high stress level, hearing loss, sleep disturbance etc due to prolonged exposure.</p> <p>Number of vehicles will be increased due to the proposed mining activity hence vehicle may 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>	<p>maintained in good running condition so that noise will be reduced to minimum possible level.</p> <ul style="list-style-type: none"> • 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. • Speed of trucks entering or leaving the mine will be limited to moderate speed (20km/hr) to prevent undue noise from empty vehicles. <p>The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments.</p> <ul style="list-style-type: none"> • It is proposed to plant local species (Neem, Mandharai, Athi, Tamarind, Ashoka, Casuarinas and Villam) to reduce the impact of noise in the study area. The development of green belts around the periphery of the mine will be implemented to attenuate noise. • Health check-up camps will be organized once in six month.
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		<ul style="list-style-type: none"> • Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas. • 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 0.17.30 Ha of land is utilized for greenbelt development (251 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	Land acquisition for the implementation of the project	The proposed project is a own patta land of Thiru. V.



Mining activity	may result in loss of assets, which in return will make the PAP to shift, losing their normal routine and livelihood	Sivasubbu and the land is vacant where there are no human settlement within 500m radius. Hence the project does not involve Rehabilitation and resettlement
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.
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 rough 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 Sports facilities and providing Toilet, RO Facilities Environmental awareness books in Library for Students, Green belt development, maintenance of Toilet rooms up to lease period to Government School in Tharuvai Village.



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 will be scheduled at particular time – 12 P.M to 2 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.



5 ANALYSIS OF ALTERNATIVES

5.1 GENERAL

Analysis of alternative is a significant aspect in planning and designing any project. Cost benefit analysis should be work out along with other parameters while choosing an alternative in such a way that the production is maximum and the mining operation is environment friendly and cost effective. The mine plan and mine closure plan has been approved by the Joint Director/Assistant Director (i/c), Geology & Mining, Tirunelveli prior to submission of the Form-1 and PFR.

5.1.1 Analysis for Alternative Sites and Mining Technology

5.1.1.1 Alternative Site

The proposed project is the mining of Rough Stone & Gravel 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 principle 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.



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 Ponnangalam 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 Tharuvai .



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.
- Identify unexpected changes.

Table 6-1: Environmental Monitoring Programme

Parameters	Sampling	Frequency	Location
Air environment – Pollutants PM 10	5 locations	24 hourly twice a week 4 hourly. Twice a week, One non	Project Site, PSN Engineering College, Melathediyoor (4.3



PM 2.5 SO ₂ NO _x Lead in PM		monsoon season 8 hourly, twice a week 24 hourly, twice a week	km, W), SKODA Showroom and Service, KK Nagar (2.9 km, E) Kunnathur CSI Church, Kunnathur (6.5 km, N), CSI Christ Church, Moondradaippu (5.3 km, S)
Noise	5 locations	24 hourly Once in 5 locations	Project Site, PSN Engineering College, Melathediyoore (4.3 km, W), SKODA Showroom and Service, KK Nagar (2.9 km, E) Kunnathur CSI Church, Kunnathur (6.5 km, N), CSI Christ Church, Moondradaippu (5.3 km, S)
Water (Ground water) • pH • Temperature • Turbidity • Magnesium • Hardness • Total Alkalinity • Chloride • Sulphate • Fluoride • Nitrate • Sodium • Potassium	5 locations	Once in 5 locations	Project Site, PSN Engineering College, Melathediyoore (4.3 km, W), SKODA Showroom and Service, KK Nagar (2.9 km, E) Kunnathur CSI Church, Kunnathur (6.5 km, N), CSI Christ Church, Moondradaippu (5.3 km, S)



<ul style="list-style-type: none"> • Salinity • Total nitrogen • Total Coliforms • Fecal Coliforms 			
<p>Water (surface water)</p> <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	Brothers Lake (2.51 km, E)
<p>Soil (Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)</p>	5 locations	Once in 5 locations	Project Site, PSN Engineering College, Melathediyoor (4.3 km, W), SKODA Showroom and Service, KK Nagar (2.9 km, E) Kunnathur CSI Church, Kunnathur



			(6.5 km, N), CSI Christ Church, Moondradaippu (5.3 km, S)
Ecology and biodiversity Study	Study area covering 5 km radius	One time Sampling	
Socio- Economic study (Population, Literacy Level, employment, Infrastructure like school, hospitals & commercial establishments)	Villages around 5 km radius	One time Sampling	

Table 6-2: Monitoring Schedule during Mining

Attributes	Parameters	Frequency	Location
Ambient Air Quality at Mine Site & Fugitive Dust Sampling	PM 10 PM 2.5 SO ₂ NO _x	Once in a Month	Project Site
Ground water Quality	Drinking Water Parameters, As per IS - 10500: 2012	Half yearly	Project Site
Surface Water Quality	Class will be assessed as per the CPCB Guidelines	Half yearly	Project Site
Soil Quality	(Organic matter, Texture, pH, Electrical Conductivity,	Half yearly	Project Site



	Permeability, Water holding capacity, Porosity)		
Noise Level Monitoring	Noise level in dB(A) Quaterly/half yearly	Half yearly	Project Site



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 S.Shankar -1.60.0Ha, P.Marimuthu – 4.73.5 Ha, Sri. Durgambika Blue Metals – 1.38.5Ha (*Existing Quarry*), V. Sivasubbu – 0.50.58 Ha, Sri. Durgambika Blue Metals -1.95.5Ha, S. Satheesh- 1.97.5 Ha, Murugaiah- 1.56.50 Ha (*Proposed Quarry*) and V. Sivasubbu- 1.40.0 Ha, S. Subbaiah - 2.63.5 Ha, M. Murugaiah - 4.81.0 (*Abandoned Quarry*).

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 Tirunelveli 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 several 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 for shattering effect and loosen the Rough Stone.

7.1.3.2 Drilling and Blasting:

Drilling and Blasting parameters are as follows:

Diameter of Hole	32-36 mm
Spacing between holes	60 cms
Depth	1 to 1.5 m
Pattern of hole	Zigzag
Inclination of holes	70° from Horizontal
Use of delay detonators	25 milli-second delays
Detonating fuse	"Detonating" Cord

a. Types of explosives to be used:

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

b. Measures proposed to minimize ground vibration due to Blasting:

The quarry is situated more than 1.0 km from the nearby villages. Controlled blasting measures will be adopted for minimizing ground vibration and fly of rock. Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give the shattering effect in rough stone for easy excavation and to control fly of rocks.

Diameter of Holes	=	32-36 mm
Powder factor	=	6 to 7 Tons/Kg of explosives
Depth	=	1 to 1.5 m



Charge/Hole = D.Cord with water or 70 gms of gun powder or Gelatine.

Blasted at day time = 12 PM to 2 PM (or whenever required)

Storage and safety measures to be taken while blasting: The proponent will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory Foreman/Permit Mines Manager.

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

- For Mining – Excavator of 0.09 Cum Bucket capacity (with Rock Breaker attachment), Jack Hammers .
- Loading Equipment – Excavator of 0.09 Cum Bucket Capacity (with Bucket attachment)
- Transportation (includes within the mine and mine to destination) – Tipper 4 No of 5/10 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.



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 (7 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 (common for 3 mines within 500m radius) 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 footwear 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 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)
- 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.
- 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 a own patta land of Thiru. V. Sivasubbu. There is no displacement of the population within the project area and adjacent nearby area and hence Rehabilitation & Resettlement is not applicable.



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 (Rough stone & Gravel) will sold in the market in the affordable price.
- b. Infrastructure:** The excavated rough stone will be used for Laying Roads, Building & Construction Projects, Bridges.
- c. Enhancement of Green Cover & Green Belt Development:** As a part of reclamation plan, native tree species will be planted along the safety boundary (0.17.30Ha) 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 255 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 rough stone for the infrastructural development in the area will be made available from the local markets at reasonably lower price.



As a part of CER, INR 5.0 Lakhs will be allocated. The detailed agenda, which is to be executed has been framed. The salient features of the programme are as follows:

Developing Sports facilities and providing Toilet, RO Facilities Environmental awareness books in Library for Students, Green belt development, maintenance of Toilet rooms up to lease period to Government School in Tharuvai Village..

8.3 PROJECT COST / INVESTMENT DETAILS

(a) Project cost / investment cost

S.NO	Particulars		Amount
1	Actual Land Cost		Own Land
2	Operational Cost	Machinery	9,85,080 /-
3	Infrastructure Development	First aid room and accessories	50,000/-
		Labour Shed	
		Sanitary Facility	
Total			10,35,080/-

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

(b) EMP Cost

Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per	5058	5058



Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
		hectare; and yearly maintenance @ Rs. 10,000/- per hectare		
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	100000	10000
	Air Quality will be regularly monitored as per norms within ML area and ambient area	Yearly Compliance as per CPCB norms	0	20000
	Muffle blasting - To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance	12500	2500
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will	Monitoring if trucks will	0	10000



Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
	be covered by tarpaulin	be covered by tarpaulin		
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs.5000/- per Tipper/Dumper deployed	20000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	10116
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	20000	10000
	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel	Provision made in Operating Cost	0	0



Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
	engines of vehicles.			
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Ambient Noise will be regularly monitored as per norms within ML area	Yearly Compliance as per CPCB norms	0	20000
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Competent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	25000	2000



Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	91250
Water Environment	Water Environment	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	5058	5000
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	5000	2500
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
Implementation of EC, Mining Plan & DGMS Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	7000	1000
	Workers will be provided with Personal Protective	Provision of PPE @ Rs. 4000/- per employee	28000	7000



Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
	Equipment's	with recurring based on wear and tear (say, @ Rs. 1000/- per employee)		
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	7000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	1012
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	5000	2000
	Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	101160	10000
Implementation of EC, Mining Plan & DGMS Condition	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	25290	10000
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000



Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1st Class / 2nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	40000
Greenbelt development	Green belt development - 550 trees for 1.10.0 hectare (220 Inside Lease Area & 330 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)	20400	3060
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	45900	4590



Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
Total			4,32,825	2,96,086
Total Cost			7,28,911	

Year	Cost (@ 5% per year inflation adjustment) in Rs.
1 st Year	7,28,911
2 nd Year	3,10,890
3 rd Year	3,26,434
4 th Year	3,42,756
5 th Year	3,59,894
Total	20,68,885

The total EMP Cost is 20,68,885/-



9 ENVIRONMENTAL MANAGEMENT PLAN

9.1 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.

9.2 SUBSIDENCE

Mining will be carried out by opencast semi mechanized mining method with drilling & blasting as per mining plan approved by Department of Mining and Geology, Madurai. 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.

9.3 MINE DRAINAGE

9.1.1 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.,



9.1.2 Drainage

Local workers will be deployed for the project. 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.

9.1.3 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. V. Sivasubbu will work in association with M/s. Ecotech Labs Pvt Ltd.

Table 9-1: Impacts and mitigation measures

S. No	Impacts on Environment	Activity /Aspect	Anticipated impacts	Mitigation measures
	Air	Fugitive Emission	During mining operation, fugitive dust and other air pollutants like particulate matter (PM ₁₀ & PM _{2.5}) will be generated.	<ul style="list-style-type: none"> Planting of trees along the safety distance of the Mine Lease Area Water will be sprinkled in the site as dust suppression measure.
	Water	Wastewater Generation	Improper management of Domestic wastewater in the Mine lease may create unhygienic conditions in the site thereby causing health impacts to the labors	<ul style="list-style-type: none"> Provision of urinals/ Latrines along with septic tank followed by soak pit arrangement will be provided in the Mine Lease area for the proper management of wastewater.



	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	<ul style="list-style-type: none"> • Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.
	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 equipment or machinery etc.
	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.



10 SUMMARY & CONCLUSION

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

10.1 INTRODUCTION

Thiru. V. Sivasubbu site is a cluster of four mining project. The individual mine lease area is 0.50.58 Ha of Rough Stone and Gravel Quarry located at S.F.No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk in Tirunelveli District.

10.2 PROJECT OVERVIEW

Table 10-1: Project Overview

S. No.	Description	Details
1	Project Name	Proposed Rough Stone & Gravel Quarry-0.50.58 ha
2	Proponent	Thiru. V. Sivasubbu
3	Mining Lease Area Extent	0.50.58 Ha
4	Location	S.F.No. 525/2(P) in Tharuvai Village, Palayamkottai Taluk, Tirunelveli District
5	Latitude	08° 38' 36.78" N to 08° 38' 40.47" N
6	Longitude	77° 40' 46.12" E to 77° 40' 50.76" E
7	Topography	Plain terrain
8	Site Elevation above MSL	53 m from MSL
9	Topo Sheet No.	58H/15
10	Minerals of Mine	Rough Stone & Gravel
11	Proposed production of Mine	Proposed capacity 18,250 m ³ of rough



		stone and 10,080 m ³ of Gravel
12	Ultimate depth of Mining	13 m below ground level
13	Method of Mining	Open cast, semi-mechanized mining
14	Water demand	1.5 KLD
15	Source of water	Water will be supplied through tankers supply
16	Man power	7 nos.
17	Mining Lease	Precise area communication letter received from District Collector, Geology and Mining, Tirunelveli letter vide Rc.No. M1/19947/2014- dated 11.01.2021.
18	Mining Plan Approval	Mining Plan was approved by The Joint Director/ Assistant Director (i/c), Geology & Mining, Tirunelveli letter Rc.No.M1/19947/2014 dated 18.01.2021
19	Boundary Fencing	7.5m barrier all along the boundary Fencing will be provided
20	Disposal of overburden	The overburden of the lease area is in form of Gravel. Topsoil formation will be removed and dumped in the North, South and West side 7.5m boundary barrier of the lease area and will be utilized for Afforestation purposes.
21	Ground water	The quarry operation is proposed up to a depth of 13 m below ground level. The water table is found at a depth of 55 m in summer and 50 m in rainy seasons 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.
22	Habitations within 500m radius of	There is no Habitation within 500m



	the Project Site	radius of the project site.
23	Drinking water	Water will be supplied through tankers from Tharuvai which is about 3.10 km on North -west of the area.

10.3 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 rough stone form the primary building material.

Rough stone 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 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 Tirunelveli is 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 rough stone is abundant in the lease area which is evident from the mine activities carried out in the nearby sites.



Table 10-2: 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, 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	Proper mitigation measures like water sprinkling on haul roads will be adopted to control dust emissions. To control the emissions regular preventive maintenance of equipment 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	Periodical monitoring of noise will be done. No other equipment except the transportation vehicles and Excavator (as & when required) for



	generation due to the movement of vehicles. This may impact the health condition of the workers by creating headache	loading will be allowed at site. Noise generated by these equipment shall be intermittent and does not cause much adverse impact. Plantation will be carried out along approach roads. The plantation minimizes propagation of noise and arrest dust.
4	Solid waste will be generated from the mining activity as there will be refuse after 98% recovery and also generation of domestic waste	The 100% recovery is achieved by extracting the entire mineable reserve. Hence there will be minimal 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 Worker health related problem if any, will be properly addressed.



11. DISCLOSURE OF CONSULTANT

11.1 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.

11.2 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.

11.2.1 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.



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



ANNEXURE-I

**STANDARD TOR CONDITIONS WITH
ADDITIONAL TOR POINTS**



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

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU

3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai-15.

Phone No. 044-24359973

Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.8658/SEAC/ToR-1076/2021 Dated:01.03.2022

To

Thiru.V.Sivasubbu
S/o.Velu
No.B4C, NGO Colony, Jawahar Nagar
Palayamkottai
Tirunelveli District-627011

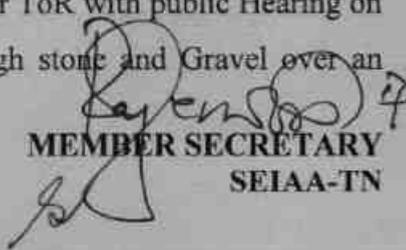
Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the proposed Rough stone and Gravel over an extent of 0.50.58 ha in S.F.Nos. 525/2(Part) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamil Nadu by Thiru V. Sivasubbu - under project category – “B1” and Schedule S.No. 1(a) – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No.SIA/TN/MIN/64201/2021, dated: 22.07.2021
 2. Your application submitted for Terms of Reference dated: 27.07.2021
 3. Minutes of the 245th meeting of SEAC held on 11.02.2022, minutes received on 24.02.2022
 4. Minutes of the 488th meeting of SEIAA held on 28.02.2022.

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

The proponent, Thiru.V.Sivasubbu has submitted application for ToR with public Hearing on 27.07.2021, in Form-I, Pre- Feasibility report for the proposed Rough stone and Gravel over an


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extent of 0.50.58 ha in S.F.Nos. 525/2 (Part) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

The proposal was placed in 245th SEAC meeting held on 11.2.2022. The project proponent has given a detailed presentation. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The project proponent gave detailed presentation. SEAC noted the following:

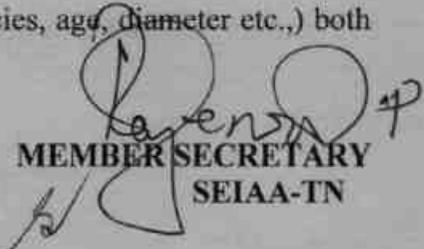
1. The Project Proponent, Thiru.V.Sivasubbu has applied for Terms for Reference for the proposed Rough stone & gravel quarry lease over an extent of 0.50.58 Ha in SF.No. 525/2(P), Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. The Production for the five years states that total quantity should not exceed 18250m³ of rough stone & 10080 m³ of gravel and ultimate depth of mining is 13m below ground level.

Based on the presentation made by the proponent and the documents furnished, SEAC decided to recommend the proposal for the grant of **Terms of Reference (TOR) with Public Hearing for the Production for the five years states that total quantity should not exceed 18250m³ of rough stone & 10080 m³ of gravel and ultimate depth of mining is 13m below ground level**, Subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

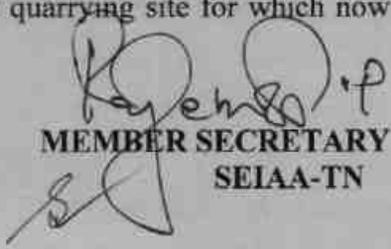
1. The Proponent shall carry out the Cumulative & comprehensive impact study due to mining operations carried out in the quarry specifically with reference to the environment in terms of air pollution, water pollution, impact on existing agricultural operations & health impacts, accordingly the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
2. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b) Quantity of minerals mined out.
 - c) Highest production achieved in any one year


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- d) Detail of approved depth of mining.
 - e) Actual depth of the mining achieved earlier.
 - f) Name of the person already mined in that leases area.
 - g) If EC and CTO already obtained, the copy of the same shall be submitted.
 - h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
3. 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).
 4. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
 5. The Project Proponent shall 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.
 6. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
 7. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
 8. 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.
 9. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both


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- within the mining lease applied area & 300m buffer zone and its management during mining activity.
10. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
 11. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
 12. The recommendation for the issue of "Terms of Reference" is subjected to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No. 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No.384/2017).
 13. 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** in consultation with the DFO, State Agriculture University and local school/college authorities. 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.
 14. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper spacing as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
 15. A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
 16. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.
 17. 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.
 18. If any quarrying operations were carried out in the proposed quarrying site for which now


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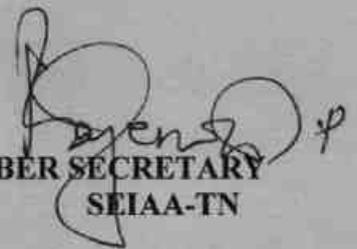
the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.

19. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Reference besides attracting penal provisions in the Environment (Protection) Act, 1986.

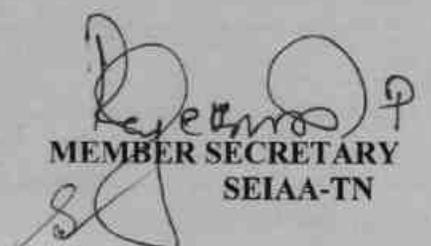
Appendix

List of Native Trees for Planting

1. Aegle marmelos – Vilvam
2. Adenaanthera pavonina - Manjadi
3. Albizia lebbeck – Vaagai
4. Albizia amara - Usil
5. Bauhinia purpurea - Mantharai
6. Bauhinia racemosa - Aathi
7. Bauhinia tomentosa – Iruvathi
8. Buchanania aillaris - Kattuma
9. Borassus flabellifer - Panai
10. Butea monosperma - Murukka maram
11. Bobax ceiba – Ilavu, Sevvilavu
12. Calophyllum inophyllum - Punnai
13. Cassia fistula - Sarakondrai
14. Cassia roxburghii- Sengondrai
15. Chloroxylon sweitenia - Purasa maram
16. Cochlospermum religiosum – Kongu, Manjal Ilavu
17. Cordia dichotoma – Mookuchali maram
18. Creteva adansonii – Mavalingum
19. Dillenia indica – Uva, Uzha
20. Dillenia pentagyna – Siru Uva, Sitruzha
21. Diospyros ebenum - Karungali
22. Diospyros chloroxylon – Vaganai
23. Ficus amplissima – Kal Itchi


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24. Hibiscus tiliaceus – Aatru poovarasu
25. Hardwickia binata – Aacha
26. Holoptelia integrifolia - Aayili
27. Lannea coromandelica - Odhiam
28. Lagerstroemia speciosa - Poo Marudhu
29. Lepisanthus tetraphylla - Neikottai maram
30. Limonia acidissima - Vila maram
31. Litsea glutinosa –Pisin pattai
32. Madhuca longifolia - Illuppai
33. Manilkara hexandra – Ulakkai Paalai
34. Mimusops elengi - Magizha maram
35. Mitragyna parvifolia - Kadambu
36. Morinda pubescens – Nuna
37. Morinda citrifolia – Vellai Nuna
38. Phoenix sylvestre - Eachai
39. Pongamia pinnata – Pungam
40. Premna mollissima – Munnai
41. Premna serratifolia – Narumunnai
42. Premna tomentosa - Purangai Naari, Pudanga Naari
43. Prosopis cinerea - Vanni maram
44. Pterocarpus marsupium - Vengai
45. Pterospermum canescens – Vennangu, Tada
46. Pterospermum xylocarpum - Polavu
47. Puthranjiva roxburghii – Puthranjivi
48. Salvadora persica – Uгаа Maram
49. Sapindus emarginatus - Manipungan, Soapu kai
50. Saraca asoca - Asoca
51. Streblus asper - Piraya maram
52. Strychnos nuxvomica – Yetti
53. Strychnos potatorum - Therthang Kottai
54. Syzygium cumini - Naval
55. Terminalia bellerica - Thandri

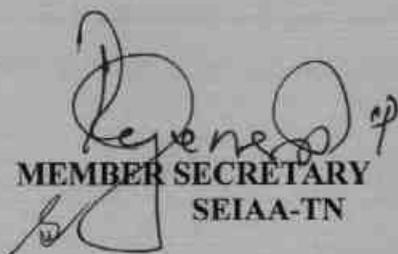

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56. Terminalia arjuna - Ven marudhu
57. Toona ciliate – Sandhana vembu
58. Thespesia populnea - Puvarasu
59. Walsura trifoliata – valsura
60. Wrightia tinctoria - Vep

Discussion by SEIAA and the Remarks:-

The subject was placed in the 488th Authority meeting held on 28.02.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal condition in addition to the following conditions:

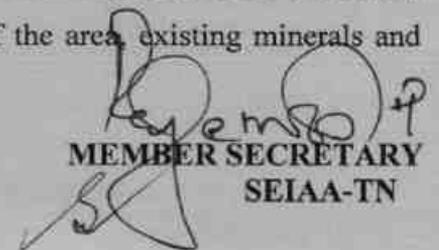
1. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
2. The Environmental Impact Assessment shall 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.
3. 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.
4. Action should specifically suggested for sustainable management of the area and restoration of ecosystem for flow of goods and services.
5. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
6. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
7. The Environmental Impact Assessment should study impact on biodiversity, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
8. The Environmental Impact Assessment should study impact on standing trees and the trees should be numbered.


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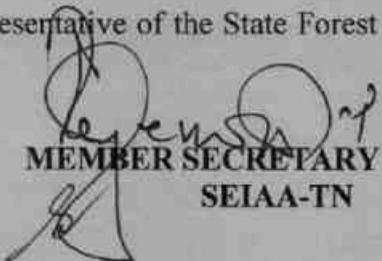
9. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
10. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
11. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
12. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways.
13. The project proponent shall conduct detail study of the project impact on the Tirunelveli – Ambasamudram State Highways is located close to the project site. The blasting impact and falling of flyover rocks, dust clouds and broken rock pieces on the passing traffic on the roadways.
14. The project proponent shall conduct detailed study on the preventive measures to be taken to control vibration, noise pollution.
15. The Environmental Impact Assessment should study impact of blasting on Agriculture land, Animal husbandry and plantations and farm lands.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and

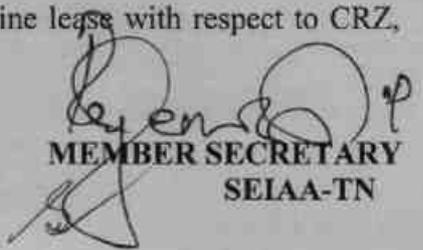

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- mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
 - 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
 - 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
 - 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
 - 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
 - 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
 - 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest


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Department to assist the Expert Appraisal Committees.

- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ,


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coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).

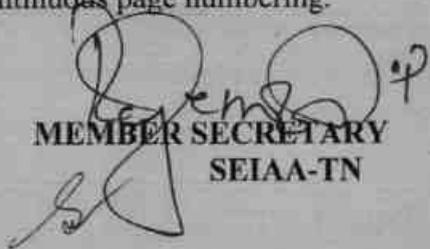
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.


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- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.


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- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.


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- c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
- d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
- e) Where the documents provided are in a language other than English, an English translation should be provided.
- f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
- g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
- h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

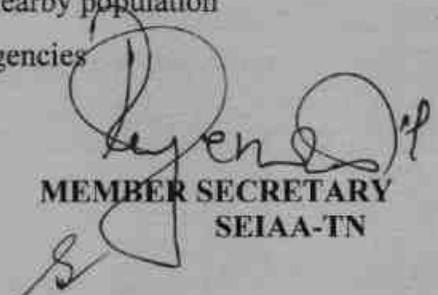
In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.


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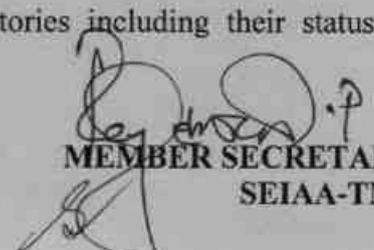
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies


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22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

Besides the above, the below mentioned general points should also be followed:-

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of


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approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.

- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
- The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
- The TORs 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.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & 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 110032.
3. The Member Secretary, 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 110003
6. The District Collector, Tirunelveli District.
7. Stock File.

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

COMPLIANCE OF TOR CONDITIONS

Point wise compliance of ToR points issued by SEIAA, TN vide letter No. SEIAA-TN/F. No. 8658/SEAC/ToR-1076/2021 Dated: 01.03.2022 for Mining of Minor Minerals in the Mine of "Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha at S.F.No. 525/2 (Part) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, Tamilnadu State.

ToR Ref.	Description	Response	Page Ref. in EIA Report
1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification, 1994 came into force w.r.t. the highest production achieved prior to 1994.	<p>Precise area communication letter received from District Collector, Geology and Mining, Tirunelveli letter vide Rc.No. M1/19947/2014- dated 11.01.2021.</p> <p>Mining Plan was approved by The Joint Director/ Assistant Director (i/c), Geology & Mining, Tirunelveli letter Rc.No.M1/19947/2014 dated 18.01.2021.</p> <p>As area is being exploited for the first time hence Year-wise production details since 1994 and before 1994 are not relevant or applicable.</p> <p>Proposed Production of Rough Stone & Gravel for five years is proposed in the EIA/EMP in chapter no-2.</p>	<p>Chapter-2</p> <p>Table No.2.2</p> <p>Page No.32</p>
2.	A copy of document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	The mine lease area of 0.50.58 hectare in Tharuvai Village for Rough stone and Gravel quarry approved by The Joint Director/ Assistant Director (i/c), Geology & Mining,	Annexure-

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

		Tirunelveli letter Rc.No.M1/19947/2014 dated 18.01.2021	III
3	All documents including approved mine plan, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology and should be in the name of the lessee.	All the documents i.e., Mining Plan, EIA and public hearing are compatible with each other in terms of ML area production levels, waste generation and its management and mining technology are compatible with one another. The mining plan of the project site has been submitted to The Joint Director/ Assistant Director (i/c), Geology & Mining, Tirunelveli	Annexure-III
4	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/toposheet should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Details of coordinates of all corners of proposed mining lease area have been incorporated in mining plan and Chapter 2 of EIA/ EMP Report.	Chapter-2, Fig no. 2.2 Page. no. 35
5	Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, important water bodies, streams and rivers and soil characteristics	Topo map as attached in Chapter-2	Chapter-2, Fig no. 2.4 Page. no. 37

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6.	<p>Details about the land proposed for mining activities should be given with information as to whether conforms to the land use policy of the state; land diversion for mining should have approval from State land use board or the concerned authority</p>	<p>Details about the land proposed for mining activities should be given Chapter 2.</p>	<p>Chapter-2 Page no. 29</p>
7	<p>It should be clearly stated whether the proponent company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions?</p> <p>The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non- compliances /</p>	<p>Noted.</p>	

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	violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large may also be detailed in the EIA report.		
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	It is an open cast mining project. Blasting details are incorporated in chapter 2	Chapter-2, Page no.46
9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc should be for the life of the mine / lease period.	Study area comprises of 10 km radius from the mine lease boundary. Key Plan showing core zone (ML area).	Chapter-2 Fig no. 2.5 Page no.37
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be	Land Use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, National park, migratory routes of fauna, water bodies, human settlements and other ecological features has been prepared and incorporated in Chapter-3 of EIA/ EMP Report.	Chapter-2, Table no. 2.4 Page no.38

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	<p>indicated.</p> <p>Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p>	<p>There is no wildlife sanctuary and national park, migratory routes of fauna in the study area.</p>	
11	<p>Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.</p>	<p>The overburden is in the form of top soil; it will be removed during the quarrying operation, the same will be preserved all along the 7.5m safety boundary barrier for afforestation. Hence there is no waste anticipated during the Rough stone quarry operation</p>	<p>Chapter-2, Page no.46</p>
12	<p>A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area.</p> <p>In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with</p>	<p>Complied.</p> <p>The proposed mining lease area is not falling under forest land.</p>	

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	<p>the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.</p>		
13	<p>Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.</p>	<p>The proposed mining lease area is not falling under forest land.</p>	
14	<p>Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006</p>	<p>Not Applicable. There is no involvement of forest land in the project area.</p>	
15	<p>The vegetation in the RF / PF areas in the study area, with necessary details, should be</p>	<p>Details of flora have been discussed in Chapter-3 of the EIA/EMP Report.</p>	<p>Chapter-3 Pg No. 82</p>

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16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly detailed mitigative measures required, should be worked out with cost implications and submitted.	There is a relatively poor sighting of animals in the core and buffer areas of the mining lease. No significant impact is anticipated	
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger/Elephant Reserves/ (existing as well as proposed), if any, within 10km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the State Wildlife Department/Chief	There is no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger / Elephant Reserves / Critically Polluted areas within 10 km radius of the mining lease area.	
18	A detailed biological study of	Details biological study (flora & fauna)	

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	<p>the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.</p>	<p>within 10 km radius of the project site have been incorporated in Chapter-3 of EIA/ EMP Report.</p> <p>No flora & fauna listed in scheduled I have been found in study area so there is no need of conservation plan. However, all care will be taken for protection of flora & fauna, if any in the lease hold area.</p>	<p>Chapter – 3 Pg No. 93</p>
<p>19</p>	<p>Proximity to Areas declared as ‘Critically Polluted’ or the Project areas likely to come under the ‘Aravali Range’, (attracting court restrictions for mining operations), should also be indicated and where so</p>	<p>The proposed mining lease area is not falling under critically polluted area.</p>	

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	required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.		
20	Similarly, for coastal projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)	There is no Coastal Zone within 15km radius of the project site.	
21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should	There is no Rehabilitation and resettlement is involved. Land classified as Patta land	

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	<p>be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village located in the mine lease area will be shifted or not. The issues relating to shifting of Village including their R&R and socio-economic aspects should be discussed in the report.</p>		
22	<p>One season (non-monsoon) and (Summer Season), (Post monsoon) primary baseline data on ambient air quality CPCB Notification of 2009 water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the</p>	<p>Baseline data collected during Post-Monsoon Season (October to December 2021) has been incorporated in EIA/EMP report.</p> <p>The key plan of monitoring station has been discussed in Chapter-4. Locations of the monitoring stations have been selected keeping in view the pre- dominant downwind direction and location of the</p>	Chapter 3

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	<p>EIA and EMP Report.</p> <p>Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre- dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500m of the mine lease in the pre- dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p>	<p>sensitive receptors and also that they represent whole of the study area.</p>	
23	<p>Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be</p>	<p>Air quality modelling & Impact of Air quality will be furnished in Final EIA report</p> <p>Transportation of mineral during operation of mines will be done by road & SH 40 through dumpers and the impact of movement of vehicles are incorporated in EIA/EMP report.</p> <p>Air quality modelling & Impact of Air quality will be furnished in Final EIA report</p>	<p>Chapter-4</p> <p>Page No. 104</p>

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	<p>provided.</p> <p>The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing predominant wind direction may also be indicated on the map.</p>		
24	<p>The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.</p>	<p>Total water requirement: 1.5 KLD Dust Suppression: 0.5 KLD Domestic Purpose: 0.5 KLD Plantation :0.5 KLD Domestic Water will be sourced from nearby Tharuvai which is about 3.10 km NW of the area.</p>	<p>Chapter-2 Page no.48</p>
25	<p>Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.</p>	<p>Not Applicable Water will be taken from nearby villages</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>At the last stage of mining operation, almost complete area will be worked to restore the land to its optimum reclamation for future use as water reservoir.</p>	

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27	Impact of the project on the water quality, both surface and groundwater should be assessed and necessary safeguard measures, if any required, should be provided.	Impact of the project on the water quality & its mitigation measures has been incorporated in Chapter-4 of EIA/EMP report.	Chapter-4 Page No.101
28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	Maximum working depth: 13 m BGL The ground water table is reported as 55 m below surface ground level in nearby wells of this area. Now, the present quarry shall be proposed above the water table and hence, quarrying may not affect the ground water So mine working will not be intersecting the ground water table.	Chapter-2 Page no. 33
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on	There is no any stream crossing in the proposed quarry	Executive Summary

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	the hydrology should be brought out.		
30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	Highest elevation: 53 m AMSL Depth: 13 m Below Ground Level	Chapter-2 Table no. 2.2 Page no. 32
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and	Green Belt Development plan is proved given in Chapter 2.	Chapter-2

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	the species which are tolerant pollution		
32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project proponent shall conduct impact of Transportation study as per Indian Road Congress Guidelines	Impact on local transport infrastructure due to the project has been assessed. There shall not be much impact on local transport. Traffic density from the proposed mining activity has been incorporated in EIA/EMP report.	Chapter-3 Page No.96
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA report.	Adequate infrastructure & other facilities shall be provided to the mine workers. Details are given in chapter-2 of EIA/EMP	Chapter-2

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34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Conceptual post mining land use and Reclamation and restoration sectional plates are given in Mining Plan followed by Scheme of mining.	Mining plates Annexure VI
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project in the mining area may be detailed.	Suitable measure will be adopted to minimize occupational health impacts of the project. The project shall have positive impact on local environment. Details are given in chapter-9 of EIA/EMP.	Chapter-9 Pg No. 134
36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Suitable measure will be adopted to minimize occupational health impacts of the project.	Chapter-9 Pg No. 134
37	Measures of socio-economic significance and influence to the local community proposed to be provided by the Project	Suitable measures has been discussed in Chapter 4	Chapter-4 Pg No. 107

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	Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.		
38	Detailed environmental management plan to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Environment Management Plan has been described in detail in Chapter-9 of the EIA/EMP Report.	Chapter-9 Pg No. 134
39	Public hearing points raised and commitment of the project proponent on the same along with time bound action plan to implement the same should be provided and incorporated in the final EIA/EMP Report of the Project.	Public Hearing proceedings will be furnished in Final EIA report	
40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the project should be given.	Not applicable No. litigation is pending against the project in any court.	

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41	The cost of the project (capital cost and recurring cost) as well as the cost towards implementation of EMP should clearly be spelt out.	S. No	Description	Cost	Chapter-8 Pg No. 126
		1	Fixed Asset Cost	50,000/-	
		2	Operational Cost	9,85,080 /-	
			Total	10,35,080/-	
		EMP Cost: 169,70,946/-			
42	Disaster Management Plan shall be prepared and included in the EIA/EMP Report.	Disaster Management and Risk Assessment has been incorporated in Chapter-7			Chapter-7 Pg No. 122
43	Benefits of the project if the project is implemented should be spelt out. The benefits of the project shall clearly indicate environmental, social economic, employment potential etc.	Benefits of the project has incorporated			Chapter-8 Pg No. 125
44	Besides the above, the below mentioned general points are also to be followed:				
(a)	Executive Summary of the EIA/EMP report	Executive Summary of EIA Report is given from page No. 9-22			
(b)	All documents to be properly referenced with index and continuous page numbering.	Complied			
(c)	Where data are presented in the report especially in tables, the period in which the data were collected and the sources	Complied			

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	should be indicated.		
(d)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the project.	Complied	
(e)	Where the documents provided are in a language other than English, an English translation should be provided.	Complied	
(f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The complete questionnaire has been prepared	
(g)	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF vide O.M. No. J- 11013/41/2006-IA. II(I) dated 4th August 2009, which are available on the website of this Ministry, should also be followed.	The EIA report has been prepared and complying with the circular issued by MoEF vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August 2009.	
(h)	Changes, if any made in the	There are no changes in prepared EIA as per	

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<p>)</p>	<p>basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation</p>	<p>submitted Form-1 & PFR</p>	
<p>(i)</p>	<p>As per the circular no. J- 11011/618/2010-IA. II(I) dated 30.5.2012, report on the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project by the Regional Office of Ministry of Environment & Forests, if applicable.</p>	<p>Will be complied after grant environment clearance from SEIAA, Tamilnadu</p>	
<p>(j)</p>	<p>The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii)</p>	<p>All Sectional Plates of Quarry is enclosed in Mining Plan.</p>	

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

	geological maps and sections (iii) sections of mine pit and external dumps, if any clearly showing the features of the adjoining area.		
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TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

Additional TOR by SEAC

S.No.	Condition	Compliance
1.	<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 concerned quarry and the surrounding habitations in the mind.</p>	<p>Noted. Agree to comply.</p>
2.	<p>If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <ul style="list-style-type: none"> a. What was the period of the operation and stoppage of the earlier mines with the last work permit issued by the AD/DD mines? b. Quantity of minerals mines out. c. Highest production achieved in any one year. d. Details of approved depth of mining. e. Actual depth of the mining achieved earlier. f. Name of the person already mined in that leases area. g. If EC and CTO already obtained, the copy of the same shall be submitted. <p>Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</p>	<p>Agreed to comply</p>

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

3.	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 feature of the study area (core and buffer zone)	Complied. All corners with coordinates of the mine lease area has attached with EIA report in chapter 2
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.	The proponent will furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
5.	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justification, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same	The details of Geological reserves, Mineable reserves and Yearwise production reserves are tabulated in Chapter 2. The mining methodology and impacts are follow as on prescribed norms by Government.
6.	The PP shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the	Complied. Manpower requirements table attached in EIA report chapter 2

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

	environment.	
7.	The PP shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface Water bodies such as rivers, tanks, canals, ponds etc., within 1km (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.	Hydro geological study report will be submitted along final EIA report.
8.	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.	The proponent has furnished 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 details attached in EIA report chapter 3
9.	A tree survey study shall be carried out (nos., name of the species, diameter, etc.) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	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.
10.	A detailed mine closure plan for the proposed	Noted. The mine plan and mine

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

	project shall be included in EIA/EMP report which should be site-specific.	closure plan has been approved by the Joint Director/ Assistant Director (i/c), Geology & Mining, Tirunelveli
11.	The Public hearing advertisement shall be published in on major National daily and one most circulated vernacular daily	Noted. Agree to comply.
12.	The recommendation for the issue of "Terms of Reference" is subjected to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.118212016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 1581201.6, M.A.No.920/2016, M.A.No.112212016, M.A.No.1212017 & M.A. No. 843/2017) and O.A.No.40512016 and O.A.No.520 of 2016 (M.A.No. 981 1201 6, M.A.No.982/201 6 & M.A.No.3841201,7).	Noted
13.	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 and local school/college authorities. 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

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

14.	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly 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 arca with GPS coordinates all along the boundary of the project site with at least 3 meter wide and in between blocks in an organized manner.	The green belt plan enclosed with mining plates in Annexure VI
15.	A Disaster management Plan shall be prepared and included in the EIA/EMP Report	Disaster management plan has prepared and enclosed in Chapter 7.
16.	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report	Risk assessment and management plan has prepared and enclosed in chapter 7.
17.	The Socio-economic studies should be carried out within a 5km 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.
18.	If any quarrying operations were caried 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.

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

19.	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the Condition mentioned above may result in withdrawal of this Terms of conditions besides attracting penal provisions in the Environment (Protection) Act, 1986	Noted.
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Additional TOR by SEIAA

1.	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 will be included along with final EIA report.
2.	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 will be complied in Final EIA report.
3.	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.	The biodiversity has been studied and discussed in chapter 3 – Pg No. 82
4.	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted. Agree to comply.
5.	The project proponent shall study impact on fish habitats and the food WEB/food chain in the	There is no water bodies within 1 km radius, Hence there won't be much

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

	water body and reservoir.	impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
6.	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 5 km 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
7.	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The biological environment impacts, and its mitigation measures has been given in Chapter 4
8.	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered	There is no existing trees in the project site and surrounding the project site. Only thorny shrubs were present.
9.	The Environmental Impact Assessment should study on wetlands, water bodies, river streams, lakes and farmer sites.	The water environment impacts and its mitigation measures has been given in Chapter 4
10.	The EIA 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
11.	The EIA should study impact on climate change, temperature rise, pollution and above soil carbon stock.	Noted and will be complied in Final EIA report.

TOR Reply of Proposed Rough stone Quarry Over an Extent of 0.50.58 Ha

12.	<p>The EIA should study impact on protected areas, Reserve forests, National parks, Corridors and Wildlife pathways.</p>	<p>There is no Reserve Forest within 1 km radius of the Project Site. Hence our project will not cause any damage to reserve forest.</p> <p>There is no protected areas, National Parks, Corridors and Wildlife pathways near project site.</p>
13.	<p>The project proponent shall conduct detail study of the project impact on the Tirunelveli - Ambasamudram State Highways is located close to the project site. The blasting impact and falling of flyover rocks, dust clouds and broken rock pieces on the passing traffic on the roadways.</p>	<p>The traffic impact assessment study has been conducted and the same is detailed in Chapter 3</p>
14.	<p>The project proponent shall conduct detailed study on the preventive measures to be taken to control vibration, noise pollution.</p>	<p>The preventive measures on control vibration, noise pollution has been given in Chapter 4</p>
15.	<p>The Environmental Impact Assessment should study impact of blasting on Agriculture land, Animal husbandry and plantations and farm lands.</p>	<p>There is no Agriculture land, Animal husbandry, plantations and farm lands within 300 m of the project site.</p> <p>The environment impacts and its mitigation measures has been given in Chapter 4</p>

ANNEXURE-II
PRECISE AREA COMMUNICATION LETTER

Rc. No.M1/19947/2014

District Collector's Office,
Geology and Mining,
Tirunelveli.



Dated.11.01.2021

Notice

Sub: Mines and Quarries - Minor Mineral - Roughstone - Tirunelveli District - Palayamkottai Taluk - Tharuvai Village - SF. Nos. 525/2 (1.00.0), 530/2 (0.24.0) & 533/2 (0.50.5) - over an extent of 1.74.5 hectares of patta lands - Quarry lease application preferred by Thiru.V.Sivasubbu, S/o.Velu - Precise area communicated - Approved Mining Plan and Environmental clearance - Called for - Reg.

- Ref:**
1. Quarry lease application preferred by Thiru.V.Sivasubbu, S/o.Velu dated. 30.04.2014.
 2. The Assistant Collector, Tirunelveli Letter No. A5/6238/2017, Dated: 13.05.2019.
 3. Inspection report of the Assistant Geologist of Geology and Mining Dated.30.05.2020.
 4. G.O (Ms) No. 169, Industries (MMC-1) Department dated. 04.08.2020.

Thiru.V.Sivasubbu, S/o.Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai Taluk, Tirunelveli District has applied on 30.04.2014 for grant of quarry lease for quarrying Roughstone, Jelly and Gravel over an extent of 1.74.5 hectares of patta lands in SF. Nos. 525/2 (1.00.0), 530/2 (0.24.0) & 533/2 (0.50.5) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District for a period of 5 years under

Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959 vide reference 1st cited.



2. The Assistant Collector, Tirunelveli and the Assistant Geologist of Geology and Mining, Tirunelveli furnished their reports in the reference 2nd and 3rd cited respectively and recommended for grant of quarry lease in the applied area subject to certain conditions.

3. Based on the recommendations of the Assistant Collector, Tirunelveli and the Assistant Geologist of Geology and Mining, Tirunelveli the application preferred by Thiru.V.Sivasubbu, S/o.Velu for grant of quarry lease for quarrying and transportation of Roughstone, Jelly and Gravel in the subject area has been considered to grant for a period of 5 years and precise area is hereby communicated over an extent of 0.50.58 hectares of patta land in SF. No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District under amended Rule 41 (4) Tamil Nadu Minor Mineral Concession Rules, 1959 with a direction to the applicant to produce mining plan for approval of the Joint Director / Assistant Director(i/c) of Geology and Mining subject to the following conditions.

- i. A safety distance of 7.5 meters should be provided to the adjoining patta lands.
- ii. No hindrance shall be caused to the adjoining pattadars' lands while carrying out quarrying operations.
- iii. No dimensional blocks with a size of 30c.m x 30c.m x 30c.m suitable for polishing shall be produced.

- iv. Environmental Clearance should be obtained from the State Level Environment Impact Assessment Authority, Chennai.



4. In view of the above, you are hereby directed to submit mining plan duly prepared by a Recognized Qualified Person in respect of the precise area communicated for approval of the Assistant Director(i/c) of Geology and Mining, Tirunelveli within a period of 90 days from the date of receipt of this notice as required under rule 41 (5) of Tamil Nadu Minor Mineral Concession Rules, 1959.

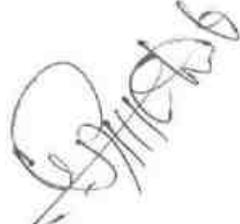
5. You are further directed to produce Approved Mining Plan and Environmental Clearance obtained from the State Level Impact Assessment Authority (SEIAA) as required under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 for grant of quarry lease for quarrying Roughstone, Jelly and Gravel in respect of the precise area communicated.


 Joint Director/
 Assistant Director(i/c),
 Geology and Mining,
 Tirunelveli.

To

Thiru.V.Sivasubbu,
 S/o.Velu,
 B4C, N.G.O 'B' Colony,
 Jawahar Nagar,
 Palayamkottai,
 Tirunelveli.


 11.1.2024



ANNEXURE-III
MINING PLAN APPROVED LETTER

From

Thiru.A.Arumuganainar, M.Sc.,
Joint Director/
Assistant Director(i/c)
Geology and Mining,
Tirunelveli.

To

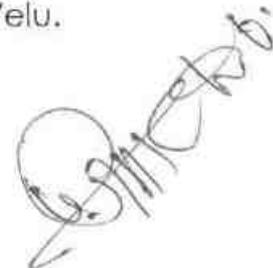
Thiru.V.Sivasubbu, S/o.Velu,
B4C, N.G.O 'B' Colony,
Jawahar Nagar,
Palayamkottai,
Tirunelveli.

Rc.No.M1/19947/2014, dated. 18.01.2021

Sir,

Sub : **Mines and Minerals** - Minor Mineral - Roughstone - Tirunelveli District - Palayamkottai Taluk - Tharuvai Village - SF. Nos. 525/2 (1.00.0), 530/2 (0.24.0) & 533/2 (0.50.5) - over an extent of 1.74.5 hectares of patta lands - Quarry lease application preferred by Thiru.V.Sivasubbu, S/o.Velu - precise area communicated - draft - mining plan submitted - Approval accorded - Reg.

- Ref :**
1. Quarry lease application preferred by Thiru.V.Sivasubbu, S/o.Velu dated. 30.04.2014.
 2. Ministry of Environment and Forest, Government of India, Office Memorandum No. L-1011/47/20112 -IA-11(M), dated: 18.05.2012.
 3. Commissioner of Geology and Mining, Chennai letter Rc.No.3868/LC/2012, dated: 19.11.2012 & 07.11.2014.
 4. G.O. (Ms). No. 79, Industries (MMC1), Department, dated: 06.04.2015.
 5. This office Notice No.M1/19947/2014, dated 11.01.2021.
 6. Letter dated. 13.01.2021 from the applicant Thiru.V.Sivasubbu, S/o.Velu.



Thiru.V.Sivasubbu, S/o.Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai Taluk, Tirunelveli District has applied on 30.04.2014 for grant of quarry lease for quarrying Roughstone, Jelly and Gravel over an extent of 1.74.5 hectares of patta lands in SF. Nos. 525/2 (1.00.0), 530/2 (0.24.0) & 533/2 (0.50.5) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District for a period of 5 years under Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959 vide reference 1st cited.

2. In the reference 5th cited, above precise area has been communicated based on the recommendations of the Assistant Collector, Tirunelveli and the Assistant Geologist of Geology and Mining, Tirunelveli the application preferred by Thiru.V.Sivasubbu, S/o.Velu for grant of quarry lease for quarrying and transportation of Roughstone, Jelly and Gravel in the subject area has been considered to grant for a period of 5 years and precise area is hereby communicated over an extent of 0.50.58 hectares of patta land in SF. No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District.

3. In response to the precise area communicated, the applicant has submitted three copies of draft Mining Plan duly prepared by a Qualified Person and requested for approval of the same vide reference 6th cited.

4. The contents of the draft Mining Plan submitted in respect of the precise area communicated have been verified with reference to field conditions. The co-ordinates of all the corners of the lease applied

area were verified with the Global Positioning System (GPS) and the same are found to be correct. All the conditions stipulated in the precise area communicated have been incorporated in the Mining Plan. The required safety distance of 7.5 metres for the adjacent patta lands have been clearly demarcated.

5. In exercise of the powers vested under sub rule (2) and (5) of Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan subject to the following conditions:-

- i. The mining plan is approved without prejudice to any other order or direction from any court of contempt jurisdiction.
- ii. 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.
- iii. The approval of the mining 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, 1980, Indian Explosives Act, 1884 (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- iv. Quarrying operations should be carried out in accordance with the Approved Mining Plan.
- v. The applicant is entitled for production of 18,250 cubic meters of Roughstone and 10,080 Cubic Meters of Gravel for a period of 5 years as per the Approved Mining Plan.
- vi. A safety distance of 7.5 metres should be provided to the adjoining pattadars' lands.



- vii. No hindrance shall be caused to the adjacent pattadars, lands and while carrying out quarrying operations.
- viii. No dimensional blocks with a size of 30c.m x 30c.m x 30cm suitable for polishing shall be produced.
- ix. Environmental clearance should be obtained from the State Level Environment Impact Assessment Authority, Chennai.

6. As directed by the Assistant Director(i/c) of Geology and Mining, Tirunelveli in the reference 5th cited, you are hereby requested to produce Environmental Clearance obtained from the State Level Environment Impact Assessment Authority (SEIAA), Chennai as applicable under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 for grant of quarry lease, in respect of the precise area communicated.

Encl: Approved Mining Plan.


Joint Director/
Assistant Director(i/c),
Geology and Mining,
Tirunelveli.



Copy submitted to:

The Chairman
State Level Environmental
Impact Assessment Authority,
Chennai.

ANNEXURE-IV
500M Radius letter

From

Thiru.A.Arumuganainar, M. Sc.,
Joint Director/
Assistant Director(i/c),
Geology and Mining,
Tirunelveli.

To

The Chairperson,
SEIAA, Tamil Nadu,
3rd, Floor, Panagal Maligai,
No. 1, Jeenis Road,
Saidapet, Chennai - 15.

Rc. No.M1/19947/2014, dated. 18.01.2021

Sir,

Sub: Mines and Minerals - Minor Mineral - Roughstone - Tirunelveli District - Palayamkottai Taluk - Tharuvai Village - SF. Nos. 525/2 (1.00.0), 530/2 (0.24.0) & 533/2 (0.50.5) - over an extent of 1.74.5 hectares of patta lands - Quarry lease application preferred by Thiru.V.Sivasubbu, S/o.Velu - Certain Particulars requested - for obtaining Environmental Clearance - furnished - reg.

- Ref:**
- 1 Quarry lease application preferred by Thiru.V.Sivasubbu, S/o.Velu dated. 30.04.2014.
 - 2 Ministry of Environment and Forest, Government of India, Office Memorandum No. L-11011/47/20112 - IA - 11(M), dated. 18.05.2012.
 - 3 This office Notice No.M1/19947/2014, dated 11.01.2021.
 - 4 Mining Plan Approval letter No. M1/19947/2014, dated. 18.01.2021.
 - 5 Letter dated. 13.01.2021 from the applicant Thiru.V.Sivasubbu, S/o.Velu.
 - 6 G.O (Ms) No. 169, Industries (MMC-1) Department dated. 04.08.2020.



Thiru.V.Sivasubbu, S/o.Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai Taluk, Tirunelveli District has applied on 30.04.2014 for grant of quarry lease for quarrying Roughstone, Jelly and Gravel over an extent of 1.74.5 hectares of patta lands in SF. Nos. 525/2 (1.00.0), 530/2 (0.24.0) & 533/2 (0.50.5) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District for a period of 5 years under Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959 vide reference 1st cited.

2. In the reference 3rd cited, above precise area has been communicated based on the recommendations of the Assistant Collector, Tirunelveli and the Assistant Geologist of Geology and Mining, Tirunelveli the application preferred by Thiru.V.Sivasubbu, S/o.Velu for grant of quarry lease for quarrying and transportation of Roughstone, Jelly and Gravel in the subject area has been considered to grant for a period of 5 years and precise area is hereby communicated over an extent of 0.50.58 hectares of patta land in SF. No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District.

3. The Mining Plan submitted by the lessee, Thiru.V.Sivasubbu, S/o.Velu for quarrying roughstone has been approved vide this office letter No.M1/19947/2014, dated.18.01.2021 for obtaining Environmental Clearance as per the newly introduced Rule Number 41 and 42 of Mineral Concession Rules 1959.

4. In the reference 5th cited, Thiru.V.Sivasubbu, S/o.Velu has requested to furnish certain particulars such as existing / proposed / abandoned mines within a radial distance of 500 meters from the periphery of the existing mining lease hold area for obtaining environmental clearance from the State Level Environment Impact Assessment Authority, Chennai.

5. The details of quarry leases granted for Roughstone falling within a radial distance of 500 meters from the subject leasehold area are furnished below:-

Sl. No	Name of the Lessee	Village & SF. No.	Extent - Hects	Lease status
1. Existing quarries				
1	S.Shankar, S/o.Subramanian, 131/1, A.P.T Road, Erode - 638 003.	Tharuvai(v) & SF.No. 524(P)	1.60.0	Proceeding No. M1/43375/2015, dt.31.03.2018 for a period 5 years from 17.04.2018 to 16.04.2023
2	P.Marimuthu, S/o.Petchithevar, Ponnakudi, Palayamkottai Taluk, Tirunelveli.	Tharuvai(v) & SF.Nos. 522/1, 522/2, 534 & 535(P)	4.73.5	Proceeding No. M1/36802/2014, dt.22.03.2018 for a period 5 years from 19.04.2018 to 18.04.2023
3	Sri Durgambika Blue Metals, Seevalaperi, Palayamkottai Taluk, Tirunelveli District.	Tharuvai(v) & SF.No.570(P)	1.38.5	Proceeding No. M1/3390/2017, dt.18.07.2018 lease transferred to Sri Durgambika Blue Metals vide proceedings in Rc.No.

				M3/6065/2019, dated.02.03.2019 for a period of 5 years from 24.07.2018 to 23.07.2023
Total extent of existing quarries			7.72.0	
2. Abandoned quarries				
1	V.Sivasubbu, S/o.Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai, Tirunelveli.	Tharuvai(v) & SF. Nos. 525/1, 525/2, 530/2, 530/3B	1.40.0	Proceeding No. M1/84390/2008, dt.10.02.2009 for a period 5 years from 28.05.2009 to 27.05.2014
2	S.Subbaiah, S/o.Sorna Thevar, Seevalaperi, Palayamkottai Taluk, Tirunelveli District.	Tharuvai(v) & SF. Nos. 568/1, 569/1B	2.63.5	Proceeding No. M1/41558/2011, dt.02.01.2012 for a period 5 years from 07.02.2012 to 06.02.2017
3	M.Murugaiah, S/o. Muthaiah Thevar, 2/72, West Street, Palayamkottai Taluk, Tirunelveli.	Tharuvai(v) & SF. Nos. 527(P), 528/1B, 529/1A & 529/3B	4.81.0	Proceeding No. M1/63874/2011, dt.22.07.2012 for a period 5 years from 22.07.2012 to 21.07.2017
Total extent of abandoned quarries			8.84.5	
3. proposed quarries				
1	V.Sivasubbu, S/o.Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai, Tirunelveli.	Tharuvai(v) & SF. No. 525/2(P)	0.50.58	Proposed Quarry

2	Sri Durgambika Blue Metals, Seevalaperi, Palayamkottai Taluk, Tirunelveli District.	Tharuvai(v) & SF. Nos. 570(P) & 571(P)	1.95.5	Proposed Quarry
3	S.Satheesh, S/o.Subramanian, 133, Erode.	Tharuvai(v) & SF. No. 523	1.97.5	Proposed Quarry
4	Murugaiah, S/o.Muthaiah, 2/72, Mela Theru, Thirumalaikozhunthupuram, Palayamkottai Taluk, Tirunelveli.	Tharuvai(v) & SF. No. 529/1A	1.56.50	Proposed Quarry
Total extent of proposed quarries			6.00.08	

6. In view of the above it is recommended that Environmental Clearance may be issued in favour of the applicant subject to the usual terms and conditions.


**Joint Director/
Assistant Director(i/c),
Geology and Mining,
Tirunelveli.**


18/1/21



ANNEXURE-V
FMB, A REGISTER, VILLAGE MAP AND
DEED OF AGREEMENT

மாண்புமிகு : திருநெல்வேலி

புல எண் : 525

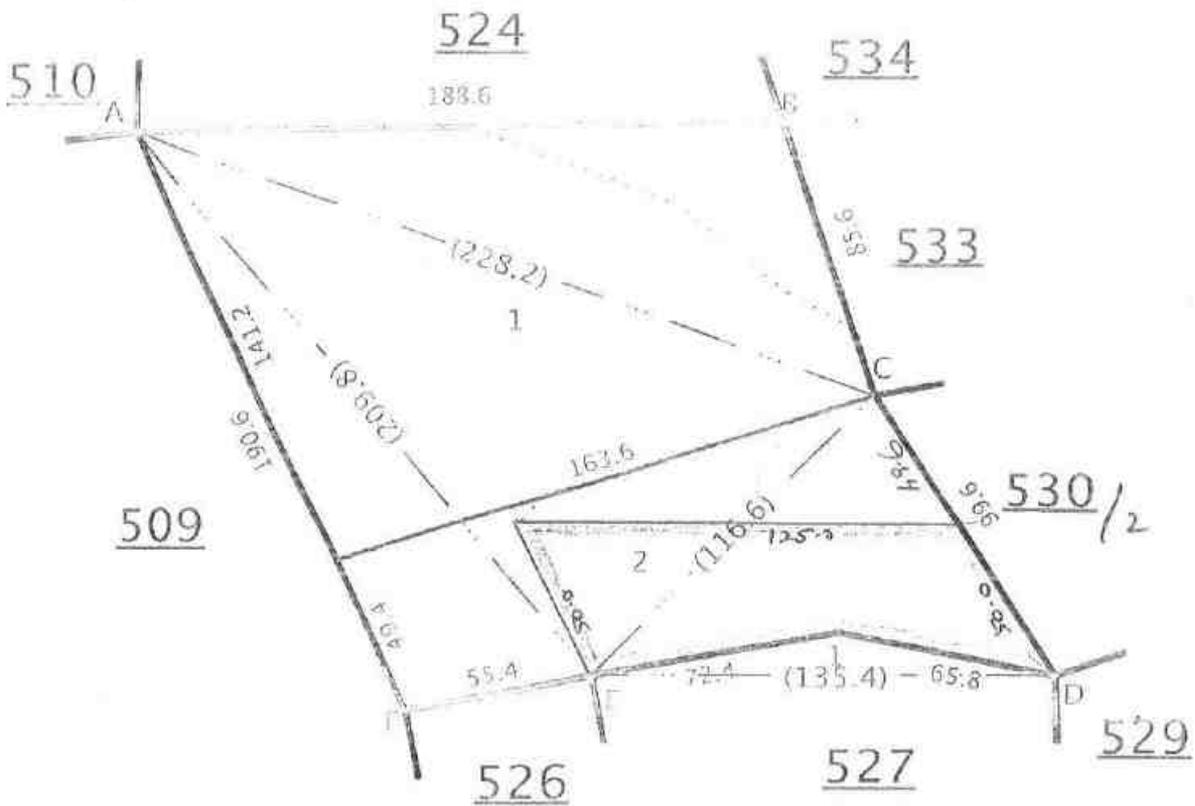


வட்டம் : பாளையங்கோட்டை [2] பரப்பளவு : எக்.டி. 03.811.330

கிராமம் : தருவை [47]

அளவு : 1 : 2000

525/2 வெந்தி அளவு : 1.1000
கிணம் வெய்தி எடுக்க உரிமை கோரும் பகுதி : 0.5058



கிணம் வெய்தி எடுக்க உரிமை கோரும் பகுதி
(நெட்டை 05058)

சு. சிவசுப்பிரமணியன்
வட்டாளியர்
21/12/18

பாளையங்கோட்டை

21.12.18

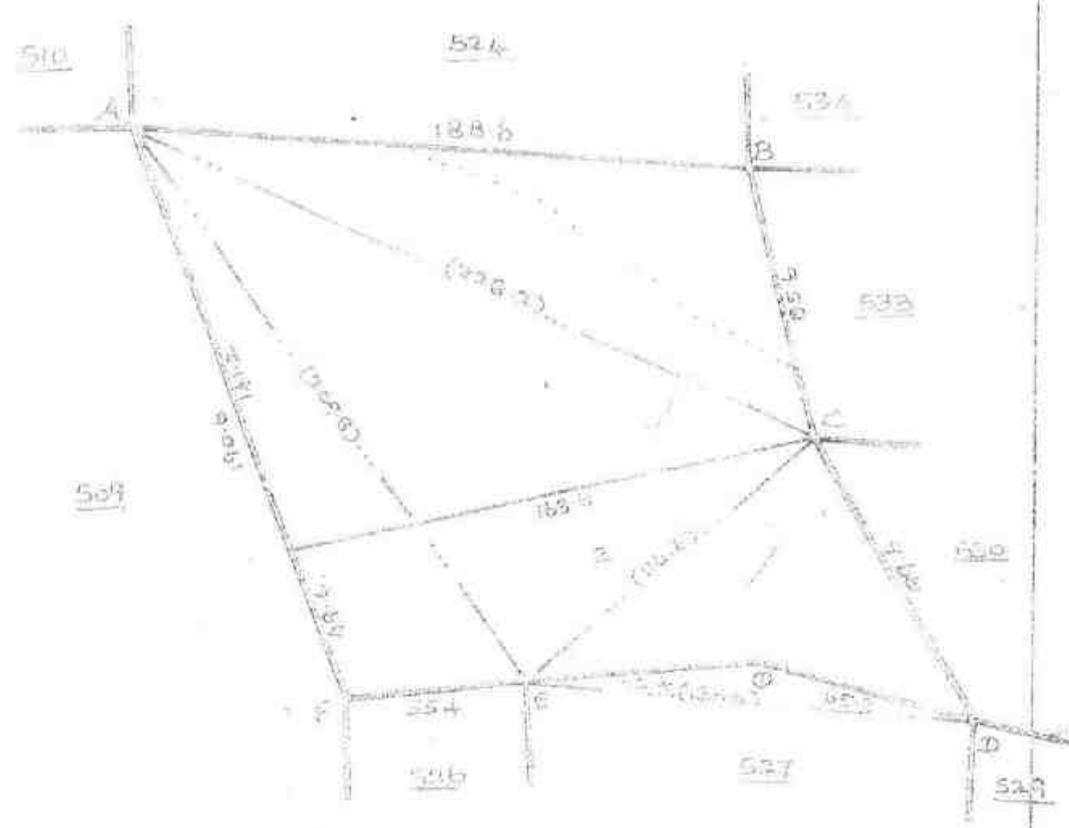


1. Name of the mine

2. District

3. State

4. Block



1. Name of the mine

2. District

3. State

	185.8		
	66.0	13.2	
	25		

4/12/51
1/12/51
2/12/51

4. Block

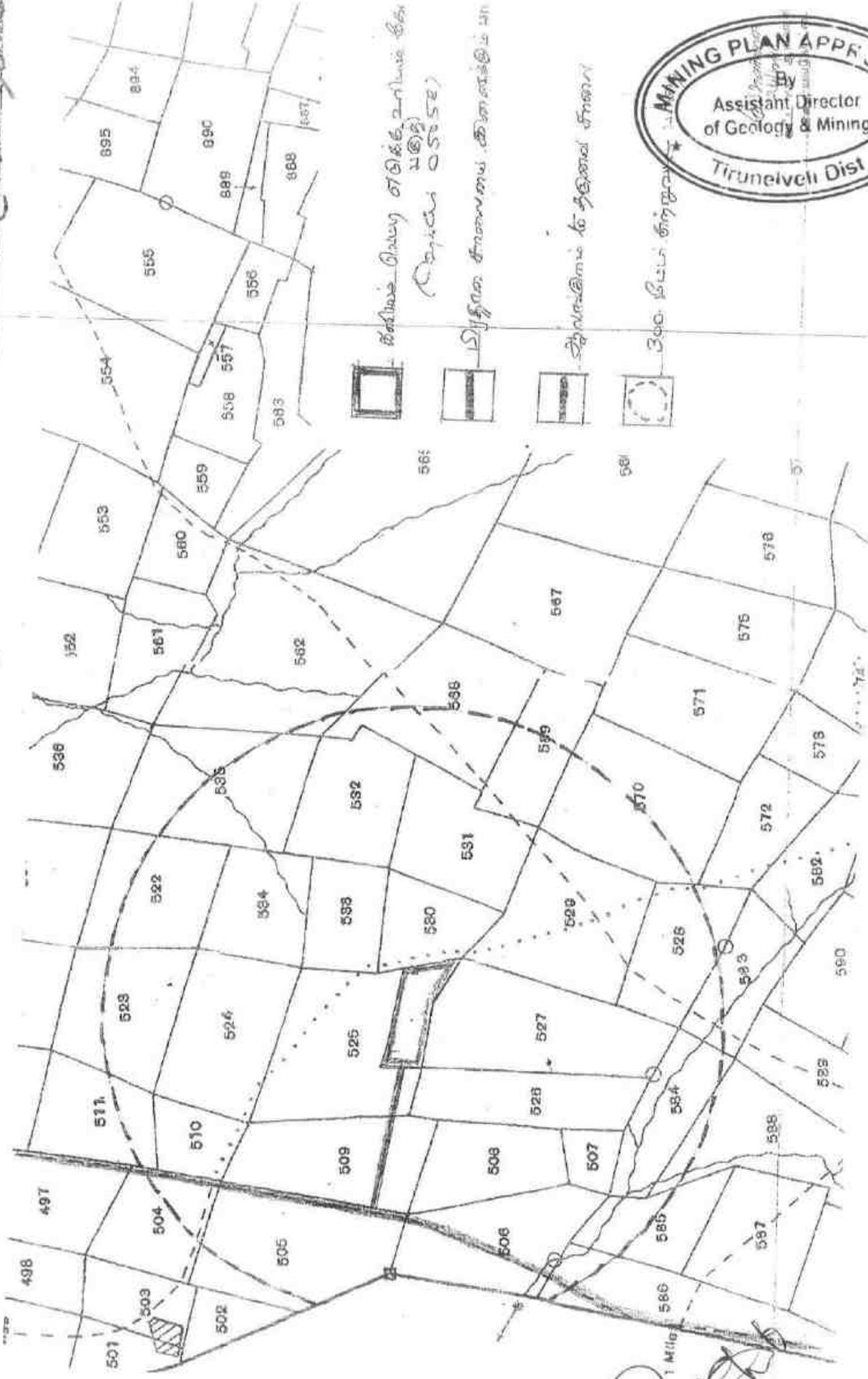
[Handwritten signature]

காடல்பட்டி துறைமுகம்

புதுச்சேரி துறைமுகம்

கடல் மட்டம்

பெரிய சாலை : A7
சாலை : துறைமுகம்



-  தனியாக வரைய எடுக்கப்பட்டிருக்கிற பாதை (பாதை 05552)
-  பித்திர சாலைகள் கட்டப்பட்டிருக்கிற பாதை
-  சாலைகளைக் கட்டவேண்டிய பாதை
-  300 பிடிப் பாதை



(Handwritten signature)
1 Mile



1	2	3	4	5	6	7	8	9	10		
519	...	519	ர	4	...	8-5	7	0 91	1 43.5	1 31	1848 இ. வெங்கட ராமய்யா மற்றும் ஒன்பது பேர்களும்.*
520	...	520	ர	4	...	8-5	7	0 91	2 02.5	1 85	1848 இ. வெங்கட ராமய்யா மற்றும் ஒன்பது பேர்களும்.*
521	...	521	ர	4	...	8-5	7	0 91	2 48.5	2 27	1411 ச. கோமதி நாயகம் பிள்ளை (1), யணிகண்டூர் (2)
522	1	522-1	ர	4	...	8-5	7	0 91	0 93.0	0 84	1222 மு. ஆர். சங்கரன் (1), மு. ஆர். நீலகண்டன் (2).
	2	-2	ர	4	...	8-5	7	0 04	0 91.5	0 31	1413 இ. சி. கவிச்சாரா பிச்சையா (1), மு. எஸ். வெங்கடைய்யா அய்யர் (2).
									1 83.5	1 68	
523	...	523	ர	4	...	8-5	7	0 91	1 97.5	1 81	1818 இ. வெங்கட ராமய்யா மற்றும் ஒன்பது பேர்களும்.*
524	...	524	ர	4	...	8-5	7	0 63	2 12.5	1 51	1848 இ. வெங்கட ராமய்யா மற்றும் ஒன்பது பேர்களும்.*
525	1	525-1	ர	4	...	8-5	7	0 91	1 93.5	1 77	1412 இ. வள்ளியம்மாள் (1), இ. வெங்கடைய்யா (2).
	2	-2	ர	4	...	8-5	7	0 63	1 10.0	0 65	257 மு. அருமை நாயகம்நாடார்
									3 03.5	2 45	
526	...	526	ர	4	...	8-5	7	0 91	1 56.0	1 43	1415 ச. குந்தலாங்குளையார் (1), இ. வெங்கடைய்யா சலங்கோயர் (2).
527	...	527	ர	4	...	8-5	7	0 91	2 70.5	2 47	47 மு. அருமை நாயகம்நாடார்
528	1A	528-1A	ர	4	...	8-5	7	0 91	0 04.5	0 06	47 மு. அருமை நாயகம்நாடார்

* விவரப்பட்டியலைப் பாரா்கவும்.

சீராம பிச்சையார்
 47, தஞ்சாவூர்
 2018

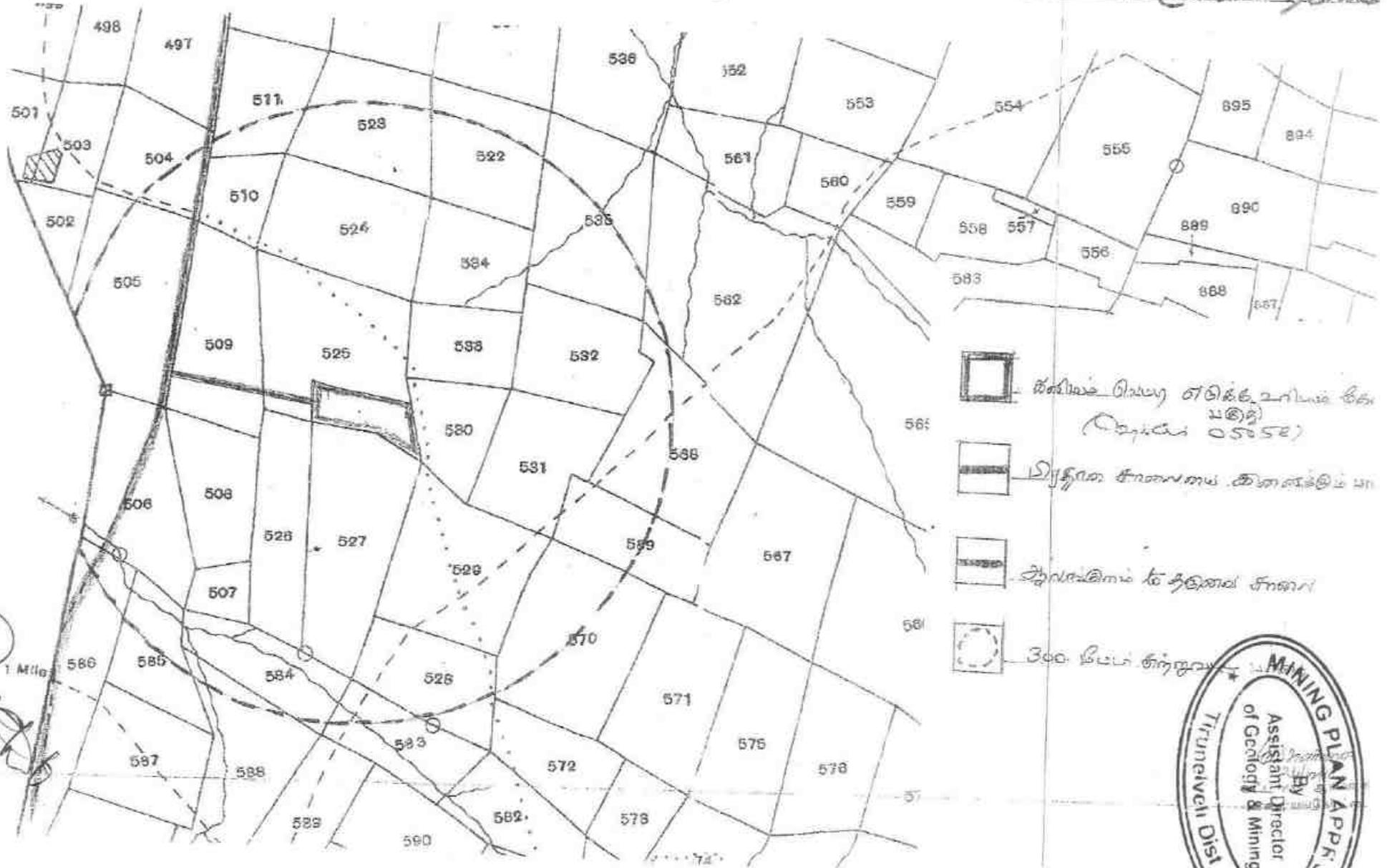
தலைநகரம் : திருநெல்வேலி

பகுதி : 111 மாவட்டம்

பகுதி : 111 மாவட்டம்

பகுதி : 111

பகுதி : 111





தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : திருநெல்வேலி

பாளையங்கோட்டை

வருவாய் கிராமம் : தருவை

வட்டம் :

பட்டா எண் : 2469

உரிமையாளர்கள் பெயர்

L.	வேலு	மகன்		சிவசுப்பு			
		நன்செய்		புன்செய்		மற்றவை	
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
525	1	--	--	1 - 93.50	1.77	--	--
525	2	--	--	1 - 10.00	0.68	--	--
530	3B	--	--	0 - 15.50	0.15	--	--
				3 - 19.00	2.60		

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 29/02/047/02469/30711 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 27-12-2018 அன்று 04:00:51 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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



MINING PLAN FOR QUARRYING

ROUGH STONE/GRAVEL

(PREPARED UNDER RULE 19 (1)& 20 and as per Amendment under rule no41 & 42of TAMILNADU MINOR MINERAL CONCESSION RULES, 1959)

(Lease Period – Five years)

IN

LOCATION OF THE QUARRY LEASE AREA

EXTENT	:	0.50.58 Hectares
SURVEY NO	:	525/2 (P)
VILLAGE	:	THARUVAI
TALUK	:	PALAYAMKOTTAI
DISTRICT	:	TIRUNELVELI

FOR APPLICANT :

Mr.V.Sivasubbu, S/o Shri.Velu,
B4C,NGO B Colony,
Jawahar Nagar,
Palayamkottai – 627 011.
TIRUNELVELI DISTRICT.

PREPARED BY

N.RAVINTHIRAN, M.Sc.,(App.Geo)

Qualified Person

1699 / 1 – Madurai Road,
Opp. ABCOY GARDEN,
Sankar Nagar& (Po) – 627357.
Tirunelveli District.
Cell : 9842126699
email : jpr.industry@gmail.com



Mr. V,Sivasubbu, S/o Shri Velu
B4C, NGO Colony,
Jawahar Nagar
Palayamkottai - 627 011.
Tirunelveli District.

CONSENT LETTER FROM THE APPLICANT

I, hereby give my consent to prepare the Mining Plan for the quarry lease approval of Rough stone /Gravel over a total extent of 0.50.58 Hectares in S.F.No: 525 /2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, vide District Collector & Assistant Director, Geology & Mines, Tirunelveli, letter Rc. No. M.1/19947/2014- dated 11.01.2021 and submit by

Mr. .Ravinthiran, M.Sc(App.Geo).,RQP/MAS/130/98/A,,

I request the Assistant Director, Geology & Mines, Tirunelveli to make further correspondence regarding the modification of the Mining Plan with said Recognized Qualified Person at his following address :

Shri. N. Ravinthiran, M.Sc.,(App.Geo)
1699 / 1 - Madurai Road,
Opp. ABCOY GARDEN,
Sankar Nagar& (Po) - 627357. Tirunelveli District.
Cell : 9842126699 email : jpr.industry@gmail.com

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

Place : Palayamkottai
Date :

Signature of the Applicant.

V.Sivasubbu



Mr. V,Sivasubbu, S/o Shri Velu
B4C, NGO Colony,
Jawahar Nagar
Palayamkottai - 627 011.
Tirunelveli District.

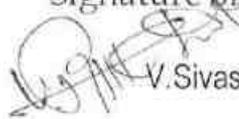
DECLARATION OF THE APPLICANT

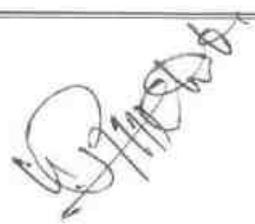
The Mining Plan in respect of the quarry lease approval of Roughstone /Gravel over a total extent of 0.50.58 Hectares in S.F.No: 525 / 2 (P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District, has been prepared in full consultation with me.

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

Place : Palayamkottai
Date :

Signature of the Applicant.


V.Sivasubbu





CERTIFICATE FROM THE QUALIFIED PERSON

Certify that I, N.Ravinthiran M.Sc., (App.Geo)., having an office at 1699/1- Madurai Road, Sankar Nagar & (Po) - 627357, Tirunelveli District. I am a Post Graduate in Applied Geology from Madras University, AC tech Campus,

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

Accordingly I prepare this Mining Plan for Rough stone and Gravel quarry for **Mr. V.Sivasubbu, S/o.Velu** over an extent of 0.50.58 Hectares in S.F.No: 525 / 2 (P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District

Place : Tirunelveli

Date :

N.Ravinthiran M.Sc.,(App.Geo)

Qualified Person

N. Ravinthiran , M.Sc., (App. Geo)
1699/1-Madurai Road
Sankar Nagar & (Po) - 627357.
Tirunelveli District.
Cell : 98421 26699.



CERTIFICATE FROM THE RECOGNIZED QUALIFIED PERSON

This is to certify that the provisions of the Mines Act, Rules and Regulations, Minor Mineral Conservation and Development Rules, 2010 & as per Amendment Rules under Tamil Nadu Minor Mineral Concession Rules, 1959 etc., made there under have been observed in the preparation of Mining Plan for Rough stone and Gravel quarry for **Mr. V.Sivasubbu, S/o.Velu** over an extent of **0.50.58 Hectares** in **S.F.No: 525 / 2 (P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District.**

Where ever the necessary permissions / exemptions / relaxations and approvals are required, the applicant would approach the concerned authorities of State and Central Governments for granting such permissions etc..

Place : Tirunelveli
Date :


N.Ravinthiran M.Sc.,(App.Geo)
Qualified Person



LIST OF CONTENTS

S.NO.	CHAPTER	PAGE NO.
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3.0	LOCATION	12
PART – A		
4.0	GEOLOGY & MINERAL RESERVES	13
5.0	MINING	16
6.0	BLASTING	18
7.0	MINING DRAINAGE	21
8.0	OTHER PERMANENT STRUCTURES	22
9.0	EMPLOYMENT POTENTIAL & WELFARE MEASURES	23
PART – B		
10.0	ENVIRONMENT MANAGEMENT PLAN	25
11.0	MINE CLOSURE PLAN	30
12.0	ANY OTHER INFORMATION	31



LIST OF ANNEXURES

Sl.No.	DESCRIPTION	ANNEXURE
1	COPY OF PRECISE AREA COMMUNICATION	I
2	COPIES OF FMB,	II
3	COPIES OF PATTA ,CHITTA,	III
4	SALE DEED	IV
5	A1 NOTICE	V
6	ID PROOF	VI
7	COPY OF DEGREE & EXPERIENCE CERTIFICATE	VII

LIST OF PLATES

S.NO	DESCRIPTION	PLATE No.	SCALE
1	LOCATION PLAN	I	Not to Scale
2	KEY MAP	I A	Not to Scale
3	KEY PLAN	II	1 : 100000
4	MINING LEASE PLAN	III	1 : 1000
5	SURFACE & GEOLOGICAL PLAN & SECTIONS	IV	1 : 1000
6	YEARWISE PRODUCTION PLAN & ECTIONS	V	1 : 1000
7	CONCEPTUAL PLAN & SECTIONS	VI	1 : 1000
8	ENVIRONMENTAL PLAN	VII	1 : 5000
9	VILLAGE MAP SHOWING ENVIRONMENTAL FEATURES	VII A	1 : 5000
10	ENVIRONMENTAL AND LAND USE PLAN	VII B	1 : 10000
11	PROGRESSIVE MINE CLOSURE PLAN	VIII	1 : 1000



**MINING PLAN FOR ROUGH STONE QUARRY
OVER AN EXTENT OF 0.50.58 Ha IN THARUVAI VILLAGE,
PALAYAMKOTTAI TALUK & TIRUNELVELI DISTRICT, TAMILNADU**
(Prepared Under Rule 19 (1) & 20 and as per Amendment under rule no 41 &
42 Tamilnadu Minor Mineral Concession Rules, 1959)

1.0 Introduction and Executive Summary;

1. The present mining plan is prepared for **Mr. V.Sivasubbu, S/o Shri Velu**, residing at **B4C, NGO B Colony, Jawahar Nagar, Palayamkottai -627 011**.
2. The application was processed by the District Collector, Tirunelveli and The Joint Director/ Assistant Director(I/c), Geology & Mines, Tirunelveli passed an order vide **Re. No. M.1/19947/2014- dated 11.01.2021** directing the applicant to produce approved Mining Plan and Environmental Clearance certificate from the State Level Environmental Impact Assessment Authority(SEIAA)for the grant of quarry lease to quarry **Rough Stone / Gravel** over an extent **0.50.58 Hectares** of patta lands in **S.F.No. 525/2(P)** of **Tharuvai Village, Palayamkottai Taluk, Tirunelveli District** of Tamil Nadu State for a period of **Five** years.
3. Accordingly, Mining Plan is prepared under the provisions of rule 19 & 20 , 41 and 42 as per the amendments under Tamil Nadu Minor Mineral Concession Rules, 1959 by incorporating the conditions imposed in the precise area communication letter.
4. Geological Resources is estimated at **1,17,760 m³** of **Rough Stone 17,664 m³** Top soil and Gravel and Mineable Reserves is estimated at **18,250 m³** of **Rough Stone and 10,080 Gravel** after leaving necessary safety distance from the lease boundary as indicated in the precise area letter and relevant mining laws in force.
5. Production Schedule is proposed an average production of **18,250 m³** of **Rough Stone and 10,080 m³** **Gravel** for the period of five years.



6. Environmental parameters,

- i) The area does not attract the Forest Conservation Act, 1980 as there is no forest around 10 Km radius.
- ii) There is no interstate boundary around 10Kms radius.
- iii) There is no wild life animal sanctuary within 10Kms radius form the project site area under the Wildlife (Protection) Act, 1972.

Therefore the project seeks clearance only from State Level Environmental Impact Assessment Authority (SEIAA) under B2 Category.

7. Environmental measures to be adopted shall be,

- i) Dust Control at source while drilling and blasting,
- ii) Dust suppression at loading point and transport haul roads,
- iii) Noise Control in blasting, control of fly rock missiles and vibration by doing peak particle velocity with in standard as prescribed by the DGMS and MOEF.
- iv) Unnecessary land degradation should be avoided or damaged land should be reclaimed or rehabilitated.
- v) Avoid uneven rat hole mining and follow scientific and systematic mining by safe bench system of open cast mining.
- vi) Mining near major fracture zones if any should be avoided to control ground water fluctuation in the adjacent agricultural lands.
- vii) Emission test of vehicles should be in tack to maintain minimum emission level of flue gases.
- viii) Noise level should not exceed 80db and the vehicles should use only permitted Air Horn while on road near residential areas.
- ix) Safety zones as prescribed by the Department of Geology and Mining from adjacent infrastructures should be strictly adhere to.



- x) And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

EXECUTIVE SUMMARY:

a.	Name of the Village Panchayat	:	Tharuvai
b.	Name of the Panchayat Union	:	Palayamkottai
c.	The proposed total Mineable Reserves	:	18,250 m³ of Rough Stone & 10,080 m³ Gravel
d.	The proposed quantity of reserves (level of production) for five years to be mined is (Recoverable reserves)	:	18,250m³ of Rough Stone & 10,080 m³ Gravel
e.	Total extent of the area	:	0.50.58 Ha
f.	Proposed Period of mining	:	Five years
g.	Existing depth	:	It is new lease applied area
h.	Proposed Depth of mining	:	13 m below ground level
i.	Method of mining / level of mechanization	:	Opencast, Semi-mechanized Mining with a bench height of 5m and bench width of 5m is proposed.
j.	Types of Machineries used in the quarry	:	Machineries like Tractor mounted compressor attached with Jack hammers, Excavators are proposed to deploy for quarrying operation.
k.	Cost of the Project		
	A. Fixed Assets Cost		Rs. 50,000/-
	B. Operational Cost		Rs. 9,85,080 /-
	C. EMP Cost		Rs. 90,000/-
			Total Project cost(A+B+C)=11,25,080/-



1. The area applied for lease is bounded by six corners and the coordinates are clearly marked in plate no II.

Corners	Co-ordinates		Distance between the corners
	Latitude	Longitude	
1	8°38'36.78"N	77°40'50.23"E	1 - 2 = 138.2 m
2	8°38'38.27"N	77°40'49.22"E	2 - 3 = 50 m
3	8°38'40.47"N	77°40'46.12"E	3 - 4 = 125 m
4	8°38'38.20"N	77°40'50.76"E	4 - 5 = 50m

2.0 General Information:

2.1	a.	Name of the Applicant	: Mr.V.Sivasubbu
	b.	Address of the Applicant with phone No and e-mail id if any	: S/o Shri.Velu B4C, NGO B Colony, Jawahar Nagar Palayamkottai – 627 011. Tirunelveli District Cell No.: 9843195015 Mail Id: mhvinaygabluemetals@gmail.com
	c.	Status of the Applicant	: Individual
2.2	a.	Mineral Which the applicant intends to mine	: Rough Stone / Gravel.
	b.	Precise area communication letter No.	: Precise area communication letter received from Joint Director/Assistant Director(I/c), Tirunelveli letter vide Rc.No. M.I/19947/2014- dated 11.01.2021.
	c.	Period of permission / lease granted	: The District Collector & Assistant Director, Geology & Mines, Tirunelveli consider for grant of lease period of Five years. ..

Handwritten signature



d.	Name and Address of the RQP preparing Mining Plan	: N.Ravinthiran, M.Sc.,(App.Geo) 1699 / 1 – Madurai Road, Opp. ABCOY GARDEN, SankarNagar& (Po) – 627357, Tirunelveli District. Cell : 98421 26699 .
----	---	--

3.LOCATION:

a. Details of the Area:

State	District	Taluk	Village	S.F.No	Extent in hectares
Tamil Nadu	Tirunelveli	Palayamkottai	Tharuvai	525/2(P)	0.50.58
<i>Total</i>					<i>0.50.58</i>

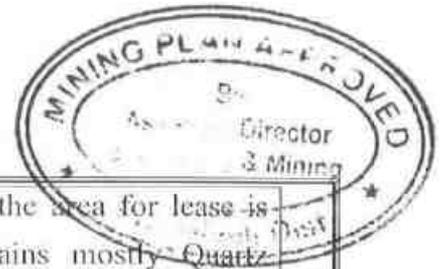
b.	Classification of the Area (Ryotwari/poramboke/ others)	: Applicant own patta land
c.	Ownership / Occupancy of the Applied area (Surface rights)	: Applicant own patta land
d.	Toposheet No. with Latitude and Longitude	: Topo Sheet No: 58/H/15 : Latitude :08°38'36.78"N to 08°38'40.47"N : Longitude:77°40'46.12"E to 77°40'50.76"E
e.	Existence of Public Road / Railway line if any nearby the area and approximate distance	: The area applied for quarry lease lies in 0.5 km south of Tirunelveli to Ambasamuthram state highway. The road from the quarry to main road is already in existence, the same road will be maintained & utilized for transportation. The nearest Rail head is at Tirunelveli at a distance of 8 Km. The nearest airport is at Thoothukudi in 30 Km distance.



PART - A

4.0 Geology and Mineral Reserves:

4.1	a.	Topography	<p>: The lease area plain terrain which is covered by weathered rock formation, The massive formation is clearly inferred followed by the 5 m (Avg) weathered rock formation. The slope is gentle towards Southern side.</p> <p>Peninsular gneiss forms the oldest rock formations of Archean age, in which rich accumulation of recent quaternary formation.</p> <p>The general geological sequences of the rocks in this area are given below.</p> <table border="0"> <tr> <td>AGE</td> <td>FORMATION</td> </tr> <tr> <td>Recent</td> <td>- Quaternary weathered Rock Formation</td> </tr> <tr> <td colspan="2">.....Unconformity</td> </tr> <tr> <td>Archaean</td> <td>- Charnockite Peninsular Gneiss complex.</td> </tr> </table> <p>. No major river is found nearby the applied area.</p> <p>Water table is found at a depth of 50m in summer and 55 m in rainy seasons.</p> <p>Temperature of the area is reported to be 18⁰C to a maximum of 42⁰C during summer.</p> <p>Rainfall of this area is about 700mm to 800mm during the both NE & SW monsoons.</p>	AGE	FORMATION	Recent	- Quaternary weathered Rock FormationUnconformity		Archaean	- Charnockite Peninsular Gneiss complex.
AGE	FORMATION										
Recent	- Quaternary weathered Rock Formation										
.....Unconformity											
Archaean	- Charnockite Peninsular Gneiss complex.										
	b.	General Geology of the Area	<p>: The area is underlain by the wide range of metamorphic rocks of peninsular gneissic complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The geological formations found in the district are Archaean rocks like Gneisses, Granites, Charnockites basic granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite.</p>								



			<p>The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock.</p> <p>The strike of the Charnockite formation is N45⁰E-S45⁰W with almost vertical dipping.</p> <p>The general geological succession of the area is given as under.</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;">AGE</th> <th style="text-align: center;">-</th> <th style="text-align: left;">FORMATION</th> </tr> </thead> <tbody> <tr> <td>Recent</td> <td></td> <td>Quaternary weathered Rock Formation</td> </tr> <tr> <td></td> <td></td> <td>.....Unconformity.....</td> </tr> <tr> <td>Archaean</td> <td></td> <td>Charnockite Peninsular Gneiss complex</td> </tr> </tbody> </table>	AGE	-	FORMATION	Recent		Quaternary weathered Rock Formation		Unconformity.....	Archaean		Charnockite Peninsular Gneiss complex
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	Unconformity.....													
Archaean		Charnockite Peninsular Gneiss complex													
4.2		Details of Exploration already carried out if any	: No exploration was carried out, the rough stone formation are clearly visible from near by existing quarries.												
4.3	a.	Estimation of Reserves	: The Geological and Recoverable reserves are estimated by cross sectional method. <p>Totally two sections have been drawn, one section drawn length wise as (A-A'), and another section drawn width wise as (B-B') to cover maximum area considered for lease. The Plans and Sections have been drawn with a scale of 1:1000 .. Please refer plate no.IV.</p>												

a. Geological Resources

The quarrying is restricted up to a depth of 23m below ground level only. Availability of Resources is given below.

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Table No-1

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL with GRAVEL VOLUME (M ³)
AA' & BB'	128	46	3.0	-	17,664
	128	46	20.0	1,17,760	-
TOTAL GEOLOGICAL RESERVES				1,17,760	17,664

The Geological Resources have been computed as 1,17,760 m³ of rough stone, 17,664 m³ Topsoil with gravel up to depth of 23 m from the below ground level.

b. Mineable Reserves :

The available mineable reserves are calculated by leaving 7.5 m safety distance from all remaining sides of applied lease area and bench loss.

Table-2

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL WITH GRAVEL VOLUME (M ³)
AA' & BB'	112	30	3.0	-	10,080
	105	23	5.0	12,075	-
	95	15	5.0	6,175	-
Total Mineable Reserves				18,250	10,080

The mineable reserve is computed as 18,250 m³ of Rough stone and 10,080 m³ of gravel up to a depth of 13 m below ground level.

5.0 Mining:

5.1	Method of Mining	of	:	<ol style="list-style-type: none"> 1. Opencast method of semi mechanized mining with 5.0m vertical bench width of the bench is not less than bench height. 2. However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106(2) (b) as above is seldom possible due to various inherent petrogenetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of mines safety for which necessary provision is available with the regulation 106 (2) (b) of MMR-1961, under Mine Act-1952.
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		3.
5.2	Mode of Working	<p>The rough stone is proposed to quarry 5m bench height and width with conventional opencast semi-Mechanized method.</p> <p>The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough stone to the needy crusher/other buyers. The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining. Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the own crusher unit and /other buyers. Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast semi mechanized method of mining.</p>
5.3	Proposed bench height & Width	Quarrying of Rough Stone is proposed bench height of 5m and bench width of 5m.
5.4	Details of Overburden / Mineral Production proposed for the 5 years.	The overburden is in the form of topsoil & weathered rock formation, it has been removed while quarrying operation, the top soil was preserved all along the boundary barrier for afforestation, the weathered rock will be used for level filling and road lying purpose.

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The Yearwise Production and Development Table :

Table No -3

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL WITH GRAVEL VOLUME (M ³)
AA' & BB'	30	28	3.0	-	2,520
	23	21	5.0	2,415	
	13	11	5.0	715	
First Year Excavation				3,130	2,520
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
Second Year Excavation				3,780	1,890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
Third Year Excavation				3,780	1890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
IV YEAR EXCAVATION				3,780	1890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
V YEAR EXCAVATION				28,275	6,669
TOTAL FIVE YEARS PRODUCTION				18,250	10,080

The applicant has proposed to carry out 18,250m³ of Rough Stone and 10,080m³ Gravel up to a depth of 13 m below ground level for the period of five years.

5.5		Machineries to be used	
	a.	Mining	: It is proposed to use following machineries for quarrying rough stone 1) Tractor mounted compressor with jack hammer 2) Excavator of 0.90m ³ bucket capacity



			(with Rock breaker attachment).												
	b.	Loading	: Excavator of 0.90m ³ bucket capacity (with Rock breaker attachment).												
	c.	Transportation	: Tipper 4Nos 5/10T's capacity												
5.6		Disposal of Overburden	: The entire overburden anticipated during rough stone quarrying operation has been sold out.												
5.7		Brief Note on Conceptual Mining Plan for the entire lease period	<p>: Conceptual Mining Plan is prepared with an object of five years of systematic development of bench lay outs, selection of ultimate pit limit, depth of quarrying, ultimate pit slope, selection of sites for construction of infrastructures etc.</p> <p>Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc.</p> <p>Ultimate Pit dimension is given as under,</p> <table border="1"> <thead> <tr> <th>Description</th> <th>Length (Max) (m)</th> <th>Width (Max) (m)</th> <th>Depth (Max) (m)</th> </tr> </thead> <tbody> <tr> <td>End of the lease period</td> <td></td> <td></td> <td></td> </tr> <tr> <td>AA' & BB'</td> <td>112</td> <td>30</td> <td>13</td> </tr> </tbody> </table> <p>Afforestation has been proposed on all along the boundary barrier by planting trees.</p> <p>All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be carried out every year as per the MOEF norms.</p>	Description	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)	End of the lease period				AA' & BB'	112	30	13
Description	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)												
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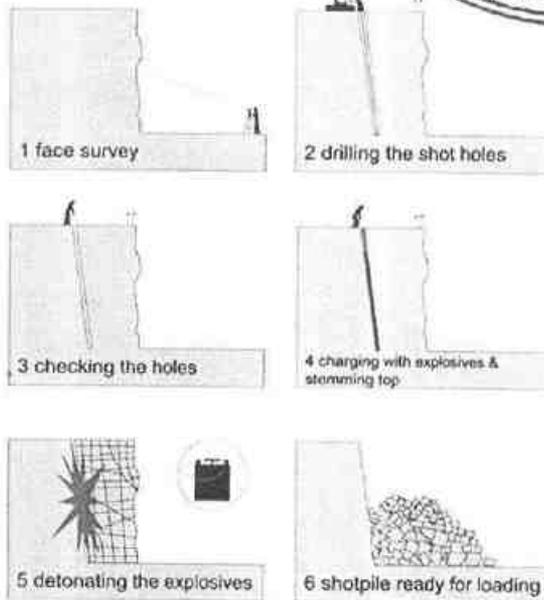


6.0 Blasting:

6.1	Blasting Pattern	: The massive formation shall be broken into pieces of portable size by drilling and blasting using jack hammers and shot hole blasting. Powder factor of explosives for breaking such hard rock shall be in the order of 6 to 7 Tonnes per K.g of explosives. Blasting parameters are as follows. <table border="1"><tr><td>Diameter of the hole</td><td>:</td><td>32-36 mm</td></tr><tr><td>Spacing</td><td>:</td><td>0.6m</td></tr><tr><td>Depth</td><td>:</td><td>1 to 1.5m</td></tr><tr><td>Burden for hole</td><td>:</td><td>0.6m</td></tr><tr><td>Pattern of hole</td><td>:</td><td>ZigZag</td></tr><tr><td>Inclination of hole</td><td>:</td><td>70⁰ from the horizontal.</td></tr></table>	Diameter of the hole	:	32-36 mm	Spacing	:	0.6m	Depth	:	1 to 1.5m	Burden for hole	:	0.6m	Pattern of hole	:	ZigZag	Inclination of hole	:	70 ⁰ from the horizontal.
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ROCK BLASTING



6.2 Types of Explosives : Small dia, 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Roughstone. No deep hole drilling or primary blasting is proposed.

6.3 Measures proposed to minimize ground vibration due to blasting : Controlled blasting measures will be adopted for minimizing ground vibration and fly rock. Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly rock.

Number of holes	:	40
Powder factor	:	6Ts/Kg of explosives
Total explosive required	:	50 Kg slurry explosives
Charge / hole	:	0.5Kg
Blasting time	:	12-2 Pm

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6.4	Storage of Explosives and safety measures to be taken while blasting.	: The applicant will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/ mines manager.
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7.0 Mine Drainage:

7.1	Depth of Water table	: The quarry operation is upto a depth of 13 m below the ground level. The water table is at 55m BGL in rainy season and 50m BGL in summer season which is observed from the nearby wells and the data obtained from existing Government and private boreholes. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire life period.
7.2	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. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water stored in the old pit will also be used for plantation purposes



8.0 Other Permanent Structures:

8.1	Habitations / Village	:	There are no habitations within a radius of 300 m
8.2	Power lines (HT/LT)	:	There is no LT/HT power lines within a radius of 50 m.
8.3	Water bodies (River, Pond, Lake, Odai, Channel etc)	:	There is no water bodies with in 50 m radius.
8.4	Archeological / Historical Monuments	:	There are no Archeological / Historical Monuments within a radius of 500 m.
8.5	Road (NH, SH, Village Road etc)	:	The road runs in the eastern side of the lease applied area. A safety distance of 10 m should be provided. NH – 44, Kanyakumari to Maduai lies in 7 km south east of lease applied area.
8.6	Places of Worship	:	There are no Places of Worship within a radius of 500 m.
8.7	Reserved Forest / Forest / Social Forest / Wild Life Sanctuary etc.,	:	There are no Reserved Forest / Forest / Social Forest / Wild Life Sanctuary etc within a radius of 10 km.
8.8	Any Interstate Border, Protected areas under the Wild Life (Protection) Act, 1972, Critically Polluted Areas as Identified by Central Pollution Control Board and Notified Eco sensitive areas	:	There are No inter State border within a radius of 10 km.
8.9	Any Other Structures	:	Nil

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9.0 Employment Potential & Welfare Measures:

9.1	Employment Potential & Supervisory personal)	:	1.	Skilled	Operator	2No.
					Mines manager /Mate	1 No.
			2.	Semi – skilled	Driver	2 No
			3.	Unskilled	Musdoor Labours	2 Nos
						Total =

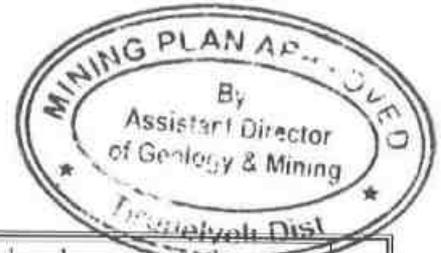
Allowing 10% absenteeism, the no. of men of roll will be around 10.

The above man power is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply the statutory provisions of Mines Safety Regulations.

It is been ensured that, child labours under than 18 years of age will not be engaged for quarrying operation.

Necessary life insurance policies will be taken by the applicant to all the employees up to the end of the lease period.

9.2	Welfare Measures	
a.	Drinking Water	: Packaged drinking water is available from the nearby approved water vendors in Ponnakudi which is about 7.0 km on eastern side of the area
b.	Sanitary facilities	: Semi permanent latrines & urinals shall be maintained at convenient places for use of labours as per the provisions of Rule (33), of the Mines Rules, 1960 separately for males and females.



			Washing facilities shall also be arranged as per rule (36) of the Mines Rules, 1960.
	e.	First Aid Facility	: First aid kits are kept in Mines office room, in case of such eventualities the victim will be given first aid immediately at the site and injured person will be taken to the hospital. Hospital is available at distance of 7 km (East) in Ponnakudi the competent and Statutory foreman/ permit manager will be in charge of first aid.
	d.	Labour Health	: As per Mines Rule, Periodic medical examination related to occupational health safety will be conducted to all the workers in applicants own cost.
	e.	Precautionary safety measures to the Labourers	: Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation. Necessary training will be conducted once in a year to all the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation.



PART - B

10.0 Environmental Management Plan:

10.1	Existing Land Use Pattern	<p>: 1. The lease applied area is plain terrain covered by massive rough stone formation.</p> <p>2. Quarrying is proposed up to a depth of 13 m below ground level.</p> <p>3. Fluctuation of Water table in this area is in between 50 m and 55 m during a year.</p> <p>4. This region receives the average annual rainfall of 700mm to 800mm. The surrounding area is practiced by the seasonal cultivation.</p> <p>The existing land use pattern is given as under.</p> <p align="center">Table No-5</p> <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Land Use</th> <th>Present Area (Hect)</th> <th>Area in use during the quarrying period (Hect)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Quarrying Pit</td> <td>0.00.0</td> <td>0.30.28</td> </tr> <tr> <td>2.</td> <td>Infrastructure</td> <td>Nil</td> <td>0.01.0</td> </tr> <tr> <td>3.</td> <td>Roads</td> <td>0.00.0</td> <td>0.02.0</td> </tr> <tr> <td>4.</td> <td>Green Belt</td> <td>Nil</td> <td>0.17.30</td> </tr> <tr> <td>5.</td> <td>Unutilized</td> <td>0.50.58</td> <td>0.00.0</td> </tr> <tr> <td></td> <td>Total =</td> <td>0.50.58</td> <td>0.50.58</td> </tr> </tbody> </table>	Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)	1.	Quarrying Pit	0.00.0	0.30.28	2.	Infrastructure	Nil	0.01.0	3.	Roads	0.00.0	0.02.0	4.	Green Belt	Nil	0.17.30	5.	Unutilized	0.50.58	0.00.0		Total =	0.50.58	0.50.58
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5.	Unutilized	0.50.58	0.00.0																											
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10.2	Water Regime	<p>: Water table in this area is noticed at a depth of 55 m and presently, the quarrying of Rough Stone quarry is proposed up to a depth of 13 m below ground level and hence, it will not affect the ground water depletion of this area.</p>																												
10.3	Flora and Fauna	<p>: Except acacia bushes, no other valuable trees are noticed in the applied area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.</p>																												
10.4	Climatic conditions	<p>: Generally subtropical climatic condition prevails throughout the year and there is no sharp variation in</p>																												



		<p>climate. This District receives rain both in south west and north east monsoon.</p> <p>The average rainfall is about 700 mm to 800 mm and the temperature ranges from 18^oC during winter and to a maximum of 42^oC during the summer.</p>																				
10.5	Human Settlement	<p>: The nearest habitations with the population is given as under</p> <p style="text-align: center;">Table No-6</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>DIRECTION</th> <th>VILLAGE</th> <th>POPULATION</th> <th>DISTANCE</th> </tr> </thead> <tbody> <tr> <td>North east</td> <td>Araikulam</td> <td>800</td> <td>1 km</td> </tr> <tr> <td>South</td> <td>Kandithankulam</td> <td>900</td> <td>2 Km</td> </tr> <tr> <td>South west</td> <td>Keela omanallur</td> <td>600</td> <td>2 Km</td> </tr> <tr> <td>North</td> <td>Tharuvai</td> <td>1000</td> <td>1 Km</td> </tr> </tbody> </table>	DIRECTION	VILLAGE	POPULATION	DISTANCE	North east	Araikulam	800	1 km	South	Kandithankulam	900	2 Km	South west	Keela omanallur	600	2 Km	North	Tharuvai	1000	1 Km
DIRECTION	VILLAGE	POPULATION	DISTANCE																			
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South	Kandithankulam	900	2 Km																			
South west	Keela omanallur	600	2 Km																			
North	Tharuvai	1000	1 Km																			
10.6	Plan for Air, Dust Suppression	<p>: Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying.</p> <p>Wet drilling and dust extractor arrangements will be provided to drilling units so as to control raise of dust from the site of drilling.</p> <p>Operators, those exposed directly to such conditions will be provide such protective equipments like mask, ear plug, helmet, gloze etc., as per the Mines Act.</p>																				
10.7	Plan for Noise Control	<p>: Quarrying of Rough Stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out to check the noise level in and around the quarry site. Nowhere the noise level should exceed the permissible limit of 80 db during the quarry working hours.</p>																				
10.8	Environmental Impact Assessment Statement Describing Impact on mining on the next	<p>: The mining plan proposed is for a small production of Rough stone without involving deep hole drilling and heavy blasting. Such limited mining activity is not likely</p>																				



	five years		to cause any impact adversely on environment as far as pollution of air, water and noise is concerned, anyhow environmental impact studies will be conducted as per EIA notification issued by MOEF. It is B2 Category mine.
10.9	Proposal for Waste Management	:	There is no waste anticipated in this rough stone quarry operation.
10.10	Proposal of Reclamation of Land affected during mining activities and at the end of mining.	:	In the proposed mining plan only a maximum depth of 13 m below ground level and has been envisaged as workable depth for safe & economic mining during the lease period. Hence, after quarry reaches ultimate pit limit (for this mining plan period) of 13m depth, fencing will be constructed around the quarried pits to prevent inherent entry of the public and cattle.
10.11	Program for Afforestation	:	The 7.5m, safety distance along the lease boundary has been identified to be utilized for afforestation Appropriate native species of neem trees will be planted in a phased manner as described below.



Table - 7

Year	No. of trees proposed to be planted	Survival %	Area to be covered Sq.m	Name of the species	No. of trees expected to be grown
I	25	80%	150	Neem	20
II	25	80%	150	Neem	20
III	25	80%	150	Neem	20
IV	25	80%	150	Neem	20
V	25	80%	150	Neem	20

Nearly 750 Sqm area is proposed to use under afforestation by planting 40nos. of neem trees during every year with an anticipated survival rate of 80%. The Quarry land use, layout and afforestation plan is shown in Plate No.III.

10.12 Proposed Financial Estimate / Budget for (EMP) Environment Management

A.Fixed Asset Cost:

1. Land Cost	Own land
2. First aid room and accessories	: Rs.10,000
3. Labour Shed	: Rs.20,000
4. Sanitary Facility	Rs.20,000
Total=	: Rs. 50,000/-



11.0 Mine Closure Plan:

11.1	Steps proposed for phased restoration, reclamation of already mined out area.	: There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of the life of lease will be fenced to prevent inherent entry of public and cattles.
11.2	Measures to be undertaken on mine closure as per Act & Rules	: Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by using Barbed wire fencing to prevent inherent entry of public and cattle.
11.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	: Mitigation measures: Drilling will be carried out by wet drilling mode to control the dust propagation into the air. Blasting will be carried out on limited scale. Mist Water spraying on haul road is proposed to prevent the dust propagation into the air.



12.0 Any Other Details Intend to Furnish by the Applicant:

- (i) Permission will be obtained from the District Mines Office to extract the Rough Stone from the Boundary barriers and for slopes.
- (ii) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (iii) The applicant will endeavor every attempt to quarry the Rough Stone economically without any wastage and to improve the environment and ecology.
- (iv) The Mining Plan is prepared by incorporating the conditions stipulated in the precise area communication issued and relevant mining laws in force.
- (v) Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Department.

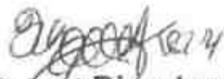
Prepared by

Place : Tirunelveli
Date :

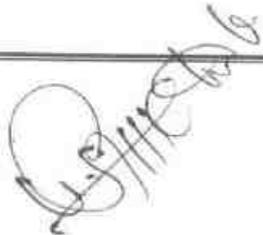

N. Ravinthiran, M.Sc., (App. Geo)
Qualified Person

This Mining Plan is approved Subject to the Conditions / Stipulation Indicated in the Mining Plan Approval

Letter Roc. No. *W11/17347/2021* Dated *18-01-2021*


Assistant Director i/c
Dept. of Geology & Mining
Tirunelveli.

OK
12/1/21



Rc. No.M1/19947/2014

District Collector's Office,
Geology and Mining,
Tirunelveli.



Dated.11.01.2021

Notice

Sub: Mines and Quarries - Minor Mineral - Roughstone - Tirunelveli District - Palayamkottai Taluk - Tharuvai Village - SF. Nos. 525/2 (1.00.0), 530/2 (0.24.0) & 533/2 (0.50.5) - over an extent of 1.74.5 hectares of patta lands - Quarry lease application preferred by Thiru.V.Sivasubbu, S/o.Velu - Precise area communicated - Approved Mining Plan and Environmental clearance - Called for - Reg.

- Ref:**
1. Quarry lease application preferred by Thiru.V.Sivasubbu, S/o.Velu dated. 30.04.2014.
 2. The Assistant Collector, Tirunelveli Letter No. A5/6238/2017, Dated: 13.05.2019.
 3. Inspection report of the Assistant Geologist of Geology and Mining Dated.30.05.2020.
 4. G.O (Ms) No. 169, Industries (MMC-1) Department dated. 04.08.2020.

Thiru.V.Sivasubbu, S/o.Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai Taluk, Tirunelveli District has applied on 30.04.2014 for grant of quarry lease for quarrying Roughstone, Jelly and Gravel over an extent of 1.74.5 hectares of patta lands in SF. Nos. 525/2 (1.00.0), 530/2 (0.24.0) & 533/2 (0.50.5) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District for a period of 5 years under

Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959 vide reference 1st cited.



2. The Assistant Collector, Tirunelveli and the Assistant Geologist of Geology and Mining, Tirunelveli furnished their reports in the reference 2nd and 3rd cited respectively and recommended for grant of quarry lease in the applied area subject to certain conditions.

3. Based on the recommendations of the Assistant Collector, Tirunelveli and the Assistant Geologist of Geology and Mining, Tirunelveli the application preferred by Thiru.V.Sivasubbu, S/o.Velu for grant of quarry lease for quarrying and transportation of Roughstone, Jelly and Gravel in the subject area has been considered to grant for a period of 5 years and precise area is hereby communicated over an extent of 0.50.58 hectares of patta land in SF. No. 525/2(P) of Tharuvai Village, Palayamkottai Taluk, Tirunelveli District under amended Rule 41 (4) Tamil Nadu Minor Mineral Concession Rules, 1959 with a direction to the applicant to produce mining plan for approval of the Joint Director / Assistant Director(i/c) of Geology and Mining subject to the following conditions.

- i. A safety distance of 7.5 meters should be provided to the adjoining patta lands.
- ii. No hindrance shall be caused to the adjoining pattadars' lands while carrying out quarrying operations.
- iii. No dimensional blocks with a size of 30c.m x 30c.m x 30c.m suitable for polishing shall be produced.

- iv. Environmental Clearance should be obtained from the State Level Environment Impact Assessment Authority, Chennai.



4. In view of the above, you are hereby directed to submit mining plan duly prepared by a Recognized Qualified Person in respect of the precise area communicated for approval of the Assistant Director(i/c) of Geology and Mining, Tirunelveli within a period of 90 days from the date of receipt of this notice as required under rule 41 (5) of Tamil Nadu Minor Mineral Concession Rules, 1959.

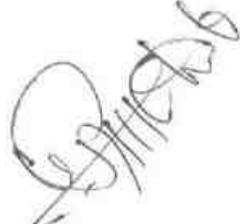
5. You are further directed to produce Approved Mining Plan and Environmental Clearance obtained from the State Level Impact Assessment Authority (SEIAA) as required under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 for grant of quarry lease for quarrying Roughstone, Jelly and Gravel in respect of the precise area communicated.


 Joint Director/
 Assistant Director(i/c),
 Geology and Mining,
 Tirunelveli.

To

Thiru.V.Sivasubbu,
 S/o.Velu,
 B4C, N.G.O 'B' Colony,
 Jawahar Nagar,
 Palayamkottai,
 Tirunelveli.


 11.1.2024



மாண்புமிகு : திருநெல்வேலி

புல எண் : 525



வட்டம் : பாளையங்கோட்டை [2] பரப்பளவு : எக்.டி. 03.811.330

கிராமம் : தருவை [47]

அளவு : 1 : 2000

525/2 வெந்தி அளவு : 1.1000
கிணம் வெய்தி எடுக்க உரிமை கோரும் பகுதி : 05058



கிணம் வெய்தி எடுக்க உரிமை கோரும் பகுதி
(பெர்செ 05058)

சு. சிவசுப்பிரமணியன்
வட்டாளியர்
21/12/18

பாளையங்கோட்டை

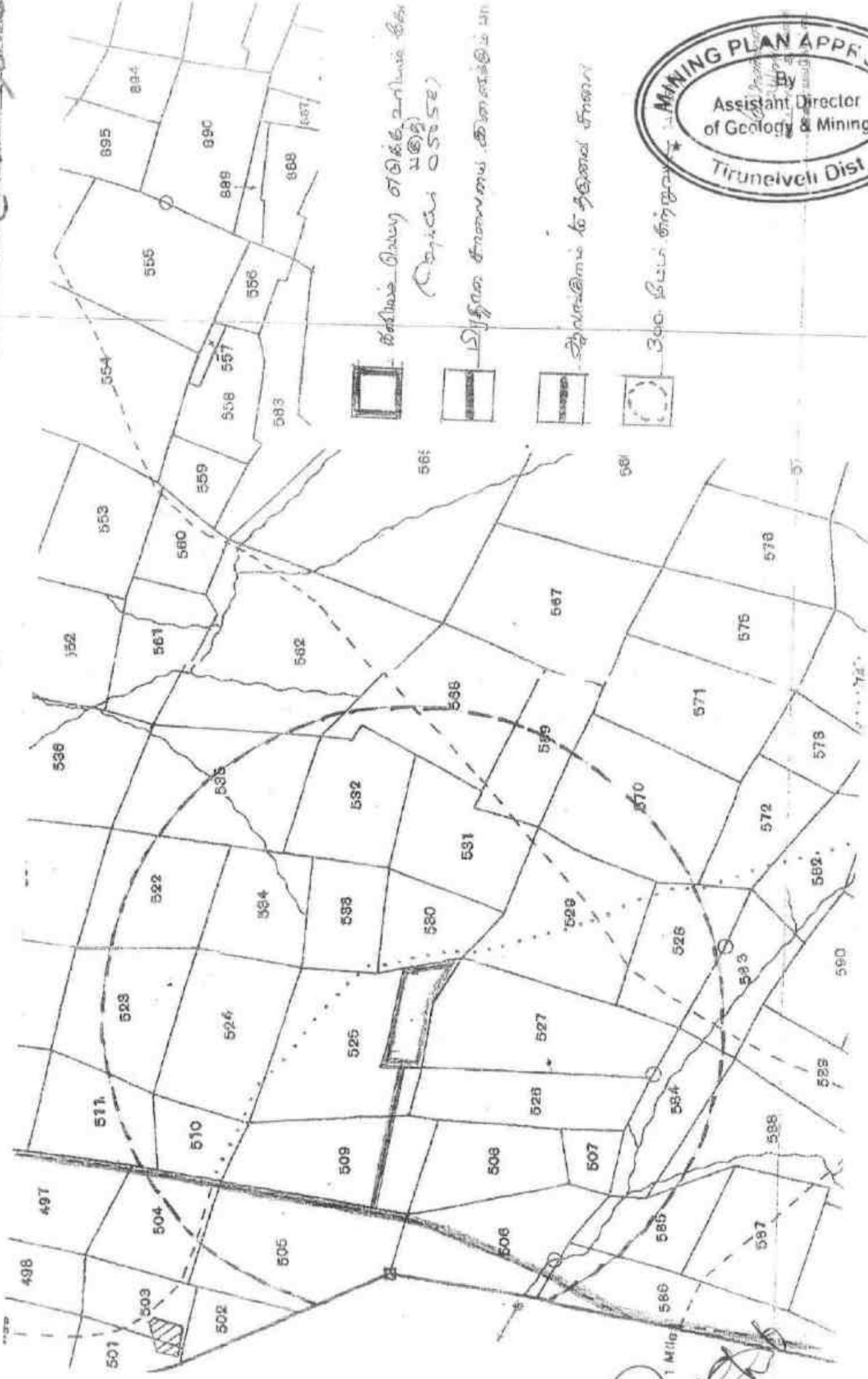
21.12.18

காடல்பட்டி துறைமுகம்

புதுச்சேரி துறைமுகம்

கடல் மட்டம்

பெரிய சாலை : A7
சாலை : திருச்சி





தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : திருநெல்வேலி

பாளையங்கோட்டை

வருவாய் கிராமம் : தருவை

வட்டம் :

பட்டா எண் : 2469

உரிமையாளர்கள் பெயர்

L.	வேலு	மகன்		சிவசுப்பு			
		நன்செய்	புன்செய்	மற்றவை	மற்றவை		
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
525	1	--	--	1 - 93.50	1.77	--	--
525	2	--	--	1 - 10.00	0.68	--	--
530	3B	--	--	0 - 15.50	0.15	--	--
				3 - 19.00	2.60		

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 29/02/047/02469/30711 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 27-12-2018 அன்று 04:00:51 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

(Handwritten signature)

பிரதம அமைச்சர் கருத்து
 மாண்புமிகு திட்டமிடல், திட்டமிடல், திட்டமிடல்
 மாண்புமிகு திட்டமிடல், திட்டமிடல், திட்டமிடல்
 மாண்புமிகு திட்டமிடல், திட்டமிடல், திட்டமிடல்

பிளான் நம்பர்	பிளான் பெயர்	பிளான் பரப்பளவு (ஹெக்டேர்)	பிளான் வகை	பிளான் விவரம்				பிளான் நிலை
				பிளான் நம்பர்	பிளான் பெயர்	பிளான் பரப்பளவு (ஹெக்டேர்)	பிளான் வகை	
535	1. 1000-62	2169	பிளான்	5	பிளான்	0.010	பிளான்	பிளான்
536	2. 1000-62	2169	பிளான்	7	பிளான்	0.005	பிளான்	பிளான்
537	3. 1000-62	2169	பிளான்					
538	4. 1000-62	2169	பிளான்					
539	5. 1000-62	2169	பிளான்					

380/MT-MS, III-A-10-9000,000 CPM-GSP, MOU-7, 2017.

பிரதம அமைச்சர் கருத்து
 மாண்புமிகு திட்டமிடல், திட்டமிடல், திட்டமிடல்
 மாண்புமிகு திட்டமிடல், திட்டமிடல், திட்டமிடல்

பிளான் நம்பர்	பிளான் பெயர்	பிளான் பரப்பளவு (ஹெக்டேர்)	பிளான் வகை	பிளான் விவரம்				பிளான் நிலை
				பிளான் நம்பர்	பிளான் பெயர்	பிளான் பரப்பளவு (ஹெக்டேர்)	பிளான் வகை	
535	1. 1000-62	2169	பிளான்	5	பிளான்	0.010	பிளான்	பிளான்
536	2. 1000-62	2169	பிளான்	7	பிளான்	0.005	பிளான்	பிளான்
537	3. 1000-62	2169	பிளான்					
538	4. 1000-62	2169	பிளான்					
539	5. 1000-62	2169	பிளான்					

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1	2	3	4	5	6	7	8	9	10		
519	...	519	ர	4	...	8-5	7	0 91	1 43.5	1 31	1848 இ. வெங்கட ராமய்யர் மற்றும் ஒன்பது பேர்களும்.*
520	...	520	ர	4	...	8-5	7	0 91	2 02.5	1 85	1848 இ. வெங்கட ராமய்யர் மற்றும் ஒன்பது பேர்களும்.*
521	...	521	ர	4	...	8-5	7	0 91	2 48.5	2 27	1411 ச. கோமதி நாயகம் பிள்ளை (1), யணிகண்டூர் (2)
522	1	522-1	ர	4	...	8-5	7	0 91	0 93.0	0 84	1222 மு. ஆர். சங்கரன் (1), மு. ஆர். நீலகண்டன் (2).
	2	-2	ர	4	...	8-5	7	0 04	0 91.5	0 31	1413 இ. வி. கவிச்சாரி பிச்சாண்டி (1), மு. எஸ். வெங்கடைய்யர் (2).
									1 83.5	1 68	
523	...	523	ர	4	...	8-5	7	0 91	1 97.5	1 81	1818 இ. வெங்கட ராமய்யர் மற்றும் ஒன்பது பேர்களும்.*
524	...	524	ர	4	...	8-5	7	0 63	2 12.5	1 51	1848 இ. வெங்கட ராமய்யர் மற்றும் ஒன்பது பேர்களும்.*
525	1	525-1	ர	4	...	8-5	7	0 91	1 93.5	1 77	1412 இ. வள்ளியம்மாள் (1), இ. வெங்கடைய்யர் (2).
	2	-2	ர	4	...	8-5	7	0 63	1 10.0	0 65	257 மு. அருமை நாயகம்நாடார்
									3 03.5	2 45	
526	...	526	ர	4	...	8-5	7	0 91	1 56.0	1 43	1415 ச. குந்தலிங்கசேகரன் (1), இ. வெங்கடைய்யர் (2).
527	...	527	ர	4	...	8-5	7	0 91	2 70.5	2 47	47 மு. அருமை நாயகம்நாடார்
528	1A	528-1A	ர	4	...	8-5	7	0 91	0 04.5	0 06	47 மு. அருமை நாயகம்நாடார்

* விவரப்பட்டியலைப் பார்ப்பதற்கு.

சீராம பிச்சாண்டி அய்யர்
 47, தஞ்சாவூர்
 [Handwritten Signature]



S.T.O. PCO.

ரூபாய்: 1000
 நாள்: 18.4.2005

S.M. MURUGU
 என். என். குமாரன்
 சா. ப. அ. வெண்டர்
 மேலப்பாளையம்
 உ. எ. இ. 4 / 23279 / 73

சிவசம்பு
 இயக்குநர்



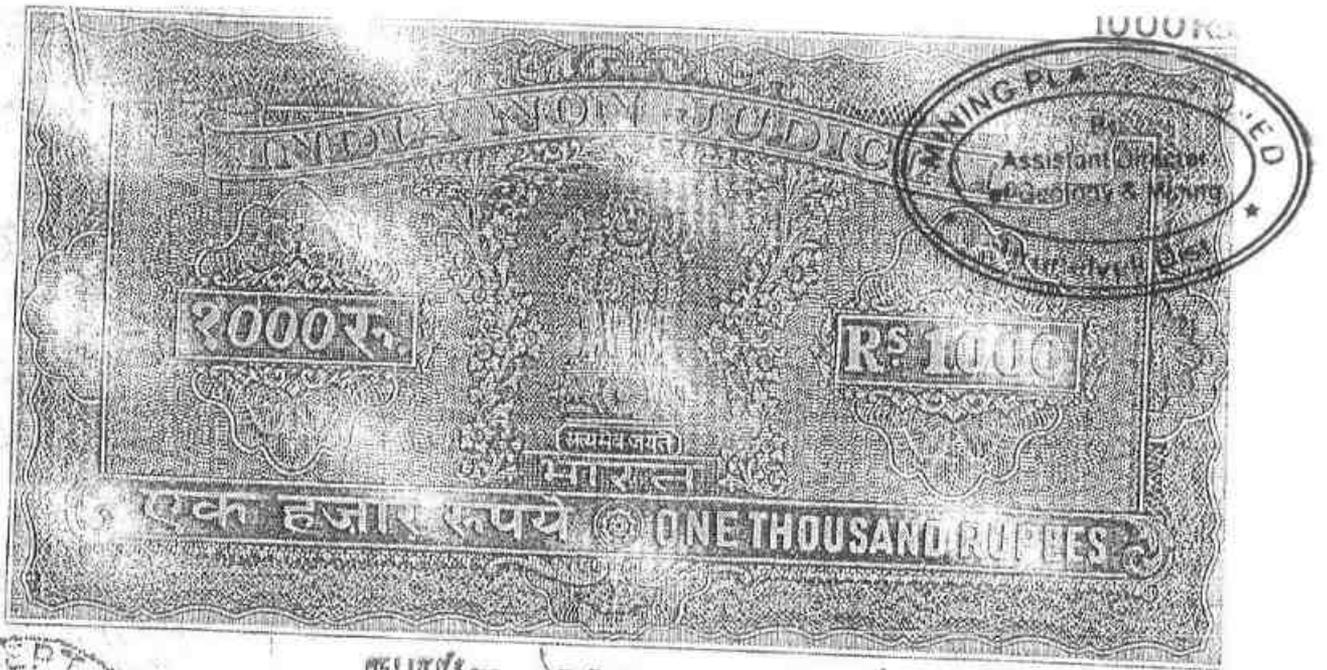
ரூபாய். 40,800/-க்கு கிரையம்

2005ம் வருடம் ஏப்ரல் மாதம் 18ம் தேதி
 திருநெல்வேலி தாதுகா, நாரணம்மான்புரம் பஞ்சாயத்தி, சங்கீரர்
 நகர், குழிச்சி குளம், நடுத்தெரு, கதவு என். 99எ.ல் வசிக்கும்
 எம். வேலத்தேவர் அவர்கள் குமாரசர் திரு. வெ. சிவசம்பு அவர்களுக்கு
 பானையங்கோட்டை தாதுகா, திருவணந்தபுரம் ரோடு, கதவு
 என். 72ல் வசிக்கும் திரு. கார்த்தீசன் பி. ஏ. பி. எல். அவர்கள் மனைவி
 திருமதி. கணகரத்தினம்மாள் ஆகிய நாள் எழுதிக்கொடுத்த பஞ்சாயத்தி
 கிரையப் பத்திரம் எண்ணெய்க்கறால்,

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More transcription

(Large handwritten signature)



S.T.O.
PCO.



ரூபாய்: 1000
 த.எண்: 699.
 நாள்: 18-4-1965

சிவசங்கர்
 இன்ஜினியர்

S. M. Muralidhar
 எஸ். எம். முரலீதரர்
 ஊ. ப. ஊ. இன்ஜினியர்
 கோலப்பாடு
 உ. எ. இ. 4 / 23279 / 70

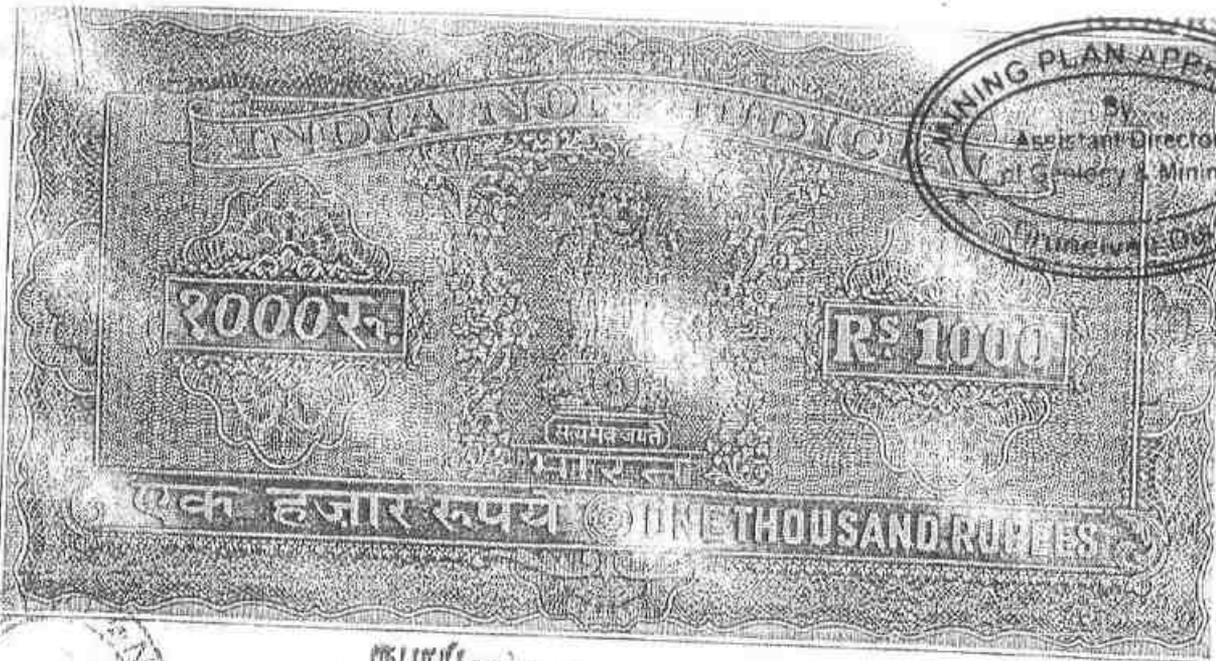
- 2 -

இதன் தபசில் கன்ட் புத்ஸை நிலமாணா, செல்வையாபிள்ளை என்பவரையிருந்து என் பெயருக்கு பாளையங்கோட்டை மாவட்டப் பதிவுகம் 1-1342-219-1860/1968ம் நம்பர் பத்திரப்படி சிரையம் மூலம் பாத்தியப்பட்ட, நாளா தேதி வரை எனது அனுபவத்திற் ஆளுகையிற் இருந்த நாள் சரிவ சுதந்திரப் பாத்தியமாணா நிர்மாட்சேபவையாகவும் ஆண்டுவளவென்ற வருகின்ற இதன் தபசில் கன்ட் புத்ஸை நிலத்தை நாள் நாளா தேதியில் தக்களுக்கு ரூபாய். 40,800/-க்கு இதன் மூலம் சிரையம் செய்து கொடுத்த, ஸ் சிரையத் தொகை -

[Handwritten signature]

Kan. Managastan

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MINING PLAN APPROVED
By
Assistant Director
of Geology & Mining
Mines Deptt.

₹ 1000

RS 1000

एक हजार रुपये ONE THOUSAND RUPEES

STAMP
5
MUTIGORINI

S.T.O.
PCO.

1594/05
3

ரூபாய்: 1000
த.எ.எண்: 1700
தாள்: 18-4-02205
கிவசியு
இயிசீஇயி

S.M. Muralidhar
எஸ். எம். முருகுதாசு
கி. ப. சி. கோட்டம்
கேள்பாணியம்
உ. எ. பி. 4 / 23279 / 72

- 3 -

ரூபாய். 40,800/-ம் இசைப் பணப்பற்ற விவரப்படி தான் தய்கண்டம் இருந்து ரொக்கம் பெறக்க கொண்டு, இப்பொழுதே இசைப் தபலில் கண்ட புத்தசை நிலத்தை தங்கலில் அனுபவத்திற்கும் ஆளுகைக்கும் ஒப்படைத்து விட்டபடியாலும், தாய்களும் தபலில் புத்தசை நிலத்தை எக்ஸ்டீம் இருந்து கவாத்தீல்திற்கு எடுக்கக் கொள்ளப்படியாலும், தாய்கள் தாய்களே தேலி முதல் தபலில் புத்தசை நிலத்தை சரிவு சுதந்திரக் கிரைய பாத்தியமாகவும், புத்திரப் பெணத்திரப் பரம்பரையாகவும் தாய்கள் ஆண்டுவலித்து கொள்லீர்களாகவும்.

[Handwritten signature]

Mr. Kanagaratnam

[Handwritten signature]



100Rs.

WIRING PLAN APPROVED
 Assistant Director
 of Ganology & Mined
 Kuvempur Dist.

ரூபாய்:- 100
 திகதி:- 18-4-2005
 சிவசுப்ப
 சிவசுப்ப

ச. ம. சுவாமிநாதன்
 எம். எம். குமாரசாமி
 ச. ப. அ. வெள்ளை
 சென்னை-1
 டி. எ. 123279



-4-

இதன் தபசில் கண்ட புத்திசை நிலத்தைப் பொருத்த எந்தவிதமான விலங்க விவகாரம் யாதொன்றும் இல்லை என்ற இதன் மூலம் உறுதியாக கருகின்றேன். தவறி ஏதேனும் இருந்தால் அதற்கு நானும் என் இதரக் சொத்துக்களும் பொறுப்பதாரியாக இருந்து உத்தரவாதம் செய்துகொடுக்கக் கூடமைப்பட்டுள்ளேன்.

பணப்பற்றற்கு விபரம்

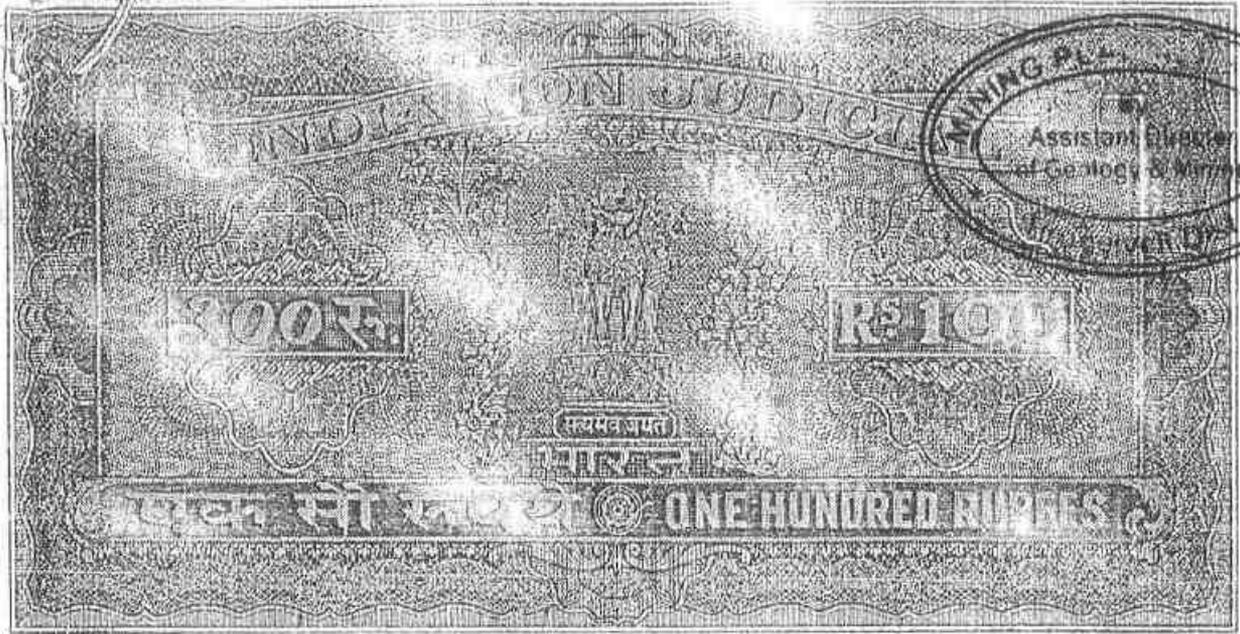
தபசில் புத்திசை நிலத்தை தங்களுக்கு நான் சிரமம் செய்து கொடுத்த, ஏற்கெனவே தங்கடீம் இருந்து நான் சிரமம் தொகையாக ரொக்கம் பெற்றது கொட்டி ரூபாய். 40,800/- மட்டும்.

(ரூபாய் நாற்பதாயிரத்தி எண்ணூறுக்கும்) பணப்பற்றற்கு விபரம் சரி.

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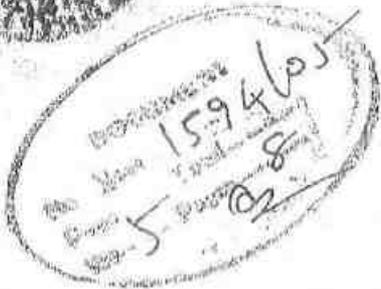
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100Rs.



குபாய்: 100
ந.எண்: 102
நாள்: 18-4-2005
சிலகியு
சென்னை

S. Narasimhan
எஸ். எம். முஸ்தபா
எஸ். பி. என். சென்னை
கேள்வியை
உ. எ. எ. 4 / 23279 / 78



-5-

தபசில் சொத்த விற்பனை

பாண நிர. மேலப்பாணயம் சார்பிடி சரகம்,
பாணயங்கோட்டை தாலுகா, தருவை கிராமம், ஆயன்
புத்தூர் சர்வே எண், 525/2 லட்டர் ஏக்கர் 2, சென்னை 72,
மட்டும். அந்நிலத்தில் உள்ள காவல்குட்டை உள்படவும்.

150/

U. J. M. Subramanian

Mrs. Kanagaratnam

[Handwritten signature]

50 Rs.



ரூபாய்: 50
நி.எண்:- 703
நாள் :- 18-4-2005

5 ரூபாய்க்கு
எஸ். எம். முஸ்தபா
சா. ப. அ. வெண்டர்
கேள்யாபாளையம்
வ.க.சி.312373170

சிலசம்பு
சென்னை



-6-

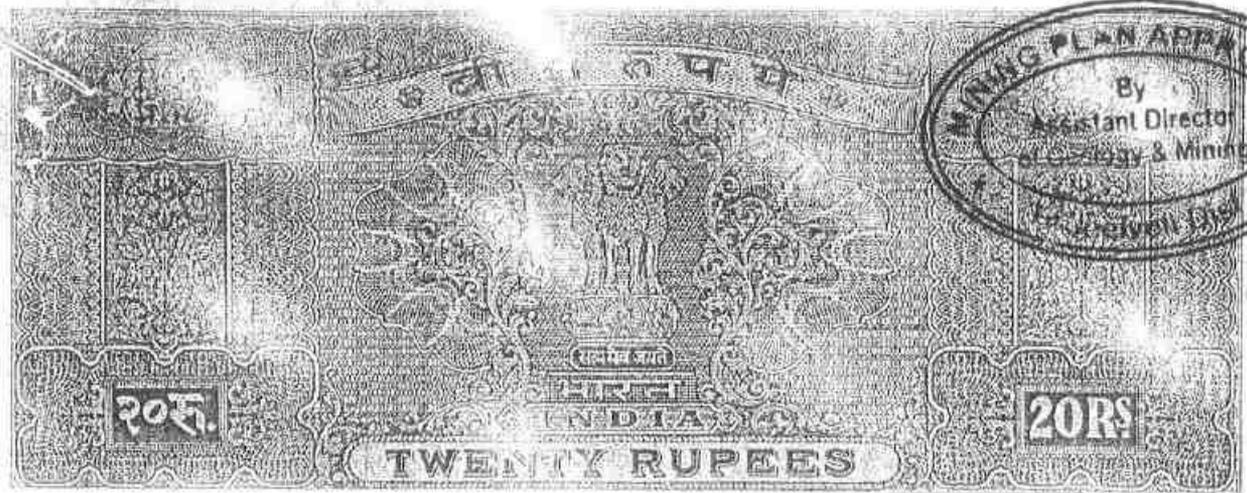
மேற்படி ஏக்கர் 2, சென்னை 72க்கு மால்:

- வடக்கே..... தங்களுக்கு பாத்தியப்பட்ட புஞ்சை நிலம்,
- தெற்கே..... முருகையா என்ற கப்பையாவுக்கு
பாத்தியப்பட்ட புஞ்சை நிலம்,
- விற்கே..... தங்களுக்கு பாத்தியப்பட்ட புஞ்சை நிலம்,
- மேற்கே..... ஆவுடையப்பன் புஞ்சை நிலம்.

ஆக இந்நாக்கு எல்கைக்குப்பட்டது.

தபசில் விபரம் சரி.

தபசில் புஞ்சை நிலத்திற்கு தங்கன் பெயருக்கு பட்டா தீர்வை
ஏற்பட புன்மீறலும் இதுடன் கொருத்தல்களும்.



MINING PLAN APPROVED
By
Assistant Director
Geology & Mining
Chennai

Handwritten notes and stamps on the left side of the page, including a circular stamp with the number '151/10'.

சூபாய் :- 20
ந.எண் :- 704
நாள் :- 18-4-2005
சென்னை
கி.என்.சி.என்.சி.

S M Muralidharan
எஸ். எம். முருகேசன்
P. M. செல்வன்
சென்னை
23279 / 7

-7-

தபசியில் புகுதல் நிலம், தருவை கிராமம், தருவை பஞ்சாயத்து
எல்லைக்குட்பட்டது.

மார்க்கெட் மதிப்பு சூபாய், 40,800/- பெறும்.

Handwritten signature: Mrs. Kanaganathan

சாட்சிகள் :-

1. சி.என்.சி.என்.சி. அலுவலர் அலுவலகம் 10, சி.என்.சி.என்.சி. அலுவலகம்.

2. V. பரமசிவன் அலுவலர் சி.என்.சி.என்.சி. அலுவலகம், 54/6, சி.என்.சி.என்.சி. அலுவலகம்.

தயாரித்தவர் :- A. சிவசுப்பிரமணியன் (எ. ரத்தினசாமி) த/பெ. எ. டி. அரசு,
அம்பிகாபுரம், மேலப்பாளையம், உரிமம் எண். 472/92, பி. எம். எம்.

Handwritten signatures and dates at the bottom of the page, including '18.1.19' and a large signature.

மாண்புமிகு அமைச்சர் அலுவலகம்



மாண்புமிகு அமைச்சர் அலுவலகம்

மாண்புமிகு அமைச்சர் அலுவலகம்... தலைவர் தலைவர்... 525/2 part... தலைவர் தலைவர்... தலைவர் தலைவர்...

மாண்புமிகு அமைச்சர் அலுவலகம்

மாண்புமிகு அமைச்சர் அலுவலகம்

மாண்புமிகு அமைச்சர் அலுவலகம்... மாண்புமிகு அமைச்சர் அலுவலகம்...

மாண்புமிகு அமைச்சர் அலுவலகம்... மாண்புமிகு அமைச்சர் அலுவலகம்...

Handwritten signature

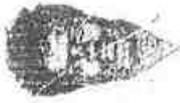
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மாண்புமிகு அமைச்சர் அலுவலகம்

Handwritten signature



29 / W / 0004736



குடும்ப அட்டை Family Card

2005 - 2009

உணவுபொருள் வழங்கல் மற்றும் தீர்மானப் பாதுகாப்புத்துறை

Civil Supplies and Consumer Protection Department

மணி கோவிந்தசாமி

மருமகன் (ப)

சமூக அடையாள எண்	3587	பகுதி எண்	027
பெண் அடையாள எண்	3587	பகுதி எண்	027
பெண் அடையாள எண்	3587	பகுதி எண்	027

1. குடும்பத்தின் தலைவர் / குடும்பத் தலைவர்
Name of the Head of Family/Address

பெயர்: Sivasubbu V
பேரக: B-4C
முகவரி: N.G.O.B.Colony
பெயர்: Palayamkottai
பி.செ.எண்: 627007
பெயர்: Palayamkottai (Z)
பெயர்: Tirunelveli

2. குடும்பத்தின் உறுப்பினர்கள்

3. குடும்பத்தின் உறுப்பினர்கள்

குடும்பத்தின் உறுப்பினர்கள்

பெயர்: []
பெயர்: []
பெயர்: []
பெயர்: []

4. குடும்பத்தின் உறுப்பினர்கள்

பெயர்: []
பெயர்: []
பெயர்: []
பெயர்: []

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870899

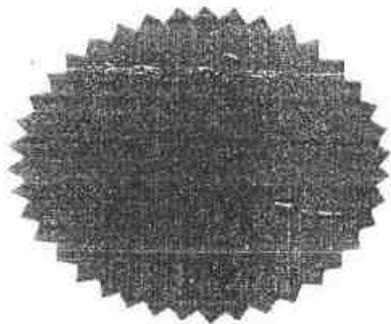


அறிவியல் புலம்
FACULTY OF SCIENCE

சென்னைப் பல்கலைக் கழகம் மேலவ 1989 ஆம் ஆண்டு

குறிப்பு - நான் 2024 பயன்படுத்தக் கடைபிடிப்பீன்
மேலவ - நா. ரவிநாதன்
முதல் - அறிவியல் இயக்குநர் அலுவலகம், சென்னைப் பல்கலைக் கழகம், சென்னை 600 095

The Senate of the UNIVERSITY OF MADRAS hereby makes known that N. Ravinathan has been admitted to the Degree of Master of Science, he/she having been certified by duly appointed Examiners to be qualified to receive the same in Applied Geology and was placed in the First Class, at the Examination held in April 1989



Given under the Seal of the University.

செயலகம், சேபாட்,
சென்னை, மாடிரஸ்.
திகதி - 19.12.1991

[Signature]
Registrar.

[Signature]
Vice-Chancellor

[Signature]

T. N. G. S. T. No. 6040126
C. S. T. No. 488148 dt. 30-5-73



Tel : JANATHACEM
P. B. No. 45
Phone : 30710
(4 lines)
Quarry : 84761

Janathacem Industries Limited

Factory & Adm :
488/1, Sankarankoil Road,
RAJAPALAYAM - 626 117.

Mfrs : Janathacem Wall Coat

30.09.2006

TO WHOMSOEVER IT MAY CONCERN

This is to certify that SRI M. PAVINTHIRAN, M.Sc. (Applied Geologist) S/O. P. NARAYANASAMY residing at 3-105 Kannithevanpatti village, Keelaraajogularam an (Post) Rajapalayam (Taluk) Virudhunagar Dist. Pin code 626136, was employed as a Geologist from 01.09.1993 to 30.09.2006 at Our THENNALAI LIMESTONE MINES of M/S. JANATHACEM INDUSTRIES LIMITED (formerly M/S. LIMENAPH CHEMICALS) RAJAPALAYAM.

He has been vested with the work involving prospecting Collecting samples, knowing the chemicals analysis etc. He was also Supervising various Mining operation including drilling, blasting and excavation by powershoevel. He has been successfully carrying out his duties and has proven himself a quite efficient, competent, sincere and hard working official in the company.

He has got a total of seven years post graduate experience in the Mechanised mining field.

He deserves all the encouragement and I wish him all the success in his carrier.



For JANATHACEM INDUSTRIES LIMITED,
(FORMERLY LIMENAPH CHEMICALS)

(R. SAREUNAM)

DEPUTY GENERAL MANAGER (MINES)
THENNALAI LIMESTONE MINE



(Handwritten signature)

MINISTRY OF LABOUR & EMPLOYMENT
DEPARTMENT GENERAL OF MINES SAFETY



Candidates of practical experience granted by P.M. Manager to
 candidates for a **MANAGER'S/SURVEYOR'S/FOREMAN'S/MATE'S**
 Department of respective examination under the Madras Mines
 Regulations 1961.

R.SANKHARAT - Ex. Manager of **THERMALAI LIMESTONE
 MINES, S.PUDUR** belonging to **M/S.LIMENAPH CHEMICALS,
 KADAPALAYAM** is hereby notified that **SH.M.RAVINTHARAN
 S/O.R.KARAYARASAMY** (whose signature appended) worked in the above
 Mine from 01.09.93 to 08.04.94 and is still working. During his term of
 work he acquired a lot of practical experience as detailed hereunder. The
 above mentioned work has been done under his continuous supervision of the
 P.M. and has been duly performed by him.

It is hereby notified that of good character and fit and proper
 person to be engaged in the conduct of operations.

[Signature] 10/8/96

**SIGNATURE OF THE
 MANAGER (MINES),
 Thermalai Limestone Mines
 (Owners: Limenaph Chemicals)
 Senthathiapuram Pudur
 THERMALAI POST-627770.**

[Signature]
 Signature of the candidate
 Name: **Sankharat** is not applicable

State name of Mine: **LIMESTONE**

Sl. No.	Particulars	Place of	Period of practical Experience (C)		Total Experience		
			From	To	Y	M	D
1.	Drilling (Rock drills)	Mechanised open cast	01.09.93	15.04.94	7	14	
2.	Blasting (small dia)	"	10.04.94	20.11.94	7	14	
3.	Wagon drilling	"	21.11.94	10.08.95	8	19	
4.	Blasting (long dia open dia holes)	"	11.08.95	08.03.96	6	26	
5.	Supervision (All mining activities)	"	09.02.96	09.08.96	-	5	-
(Still working) Grand total							
					02	11	13

Two years eleven months and thirteen days only.

- a. Average monthly output during the above period : 5000 Tons
- b. Average daily employment of Men & Machinery in H.P. during the period is given below:

In below ground working	In open cast working	In all
Men	12617	143
Machinery	1559 H.P.	

[Signature]
 Signature of the candidate

[Signature] 10/8/96
**SIGNATURE OF THE
 MANAGER (MINES),
 Thermalai Limestone Mines
 (Owners: Limenaph Chemicals)
 Senthathiapuram Pudur
 THERMALAI POST-627770.**

[Large handwritten signature]

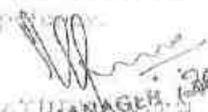


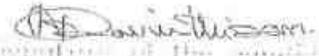
GOVERNMENT OF INDIA
 MINISTRY OF LABOUR & EMPLOYMENT
 DIRECTORATE GENERAL OF MINES SAFETY

Candidates of practical experience granted by the Manager to a candidate for a **MANAGER'S/SURVEYOR'S/FOREMAN'S/MATE'S** Certificate of competency administered under the Metalliferous Mines Regulation 1951.

R.SARGUNAM being the Manager of **THENMALAI LIMESTONE MINES, SUDUR** belonging to **M/S LIMENAPH CHEMICALS, KADAPALAYAM** do hereby certify that **SRI R.RAVINTHIRAN S/O R. MARAYANASAMY** whose registration appointed worked in the above mine for a period of 4 years and 1 month working during the term of work whereas he has obtained practical experience as detailed hereunder. The duties assigned with him are all being done and his continuous attendance in the mine and have been efficiently performed by him.

I believe however that of great benefit and skill and sound reason to be assigned the certificate of competency.


 MANAGER, MINES
 Thenmalai Limestone Mines
 (Owners: Limenaph Chemicals)
 Senthattapuram Pudur
 THENMALAI POST-627770.

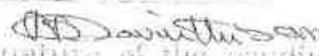

 Signature of the candidate
 Notar Public if not applicable
 State of Madhya Pradesh Limestone

Sl. No.	Description of practical Experience	Period of practical Experience (C)	Total Experience		
			From	To	Y M D
1.	Mining mate Semi-Mechanised open cast working	10.08.96 - 15.06.99	3	10	5
2.	Mining Foreman	16.06.99 - 30.09.2000	1	3	14

Four years One month Nineteen days Grand total 04.01.19

d. Average monthly output during the above period : 4000 Tons
 e. Average daily employment of Men & Machinery in R.P. during the period is given below:

In below ground working	In open cast working	In all
Nil	Men 102+13 Machinery 1559 H.P.	115


 Signature of the candidate


 MANAGER, MINES
 Thenmalai Limestone Mines
 (Owners: Limenaph Chemicals)
 Senthattapuram Pudur
 THENMALAI POST-627770.

Signature



T. N. G. S. T. No. 6040126
C. S. T. No. 488148 dt. 30-5-73

Tel : "JANATHACEM"
P. B. No. 45
Phone : 30710
(4 lines)
Quarry : 84761

Janathacem Industries Limited

Factory & Adm :
488 / 1, Sankarankoil Road,
RAJAPALAYAM - 626 117.

Mfrs : Janathacem Wall Coat

30 09 2000

TO WHOMEVER IT MAY CONCERN.

This is to certify that Sri K RAVINTHIRAN, M.Sc., (Applied Geology) S/O R. Narayanasamy, joined in our Organisation as Geologist on 01.09.1993. Due to his personal reasons he submitted his resignation and the same was accepted with regret. He was relieved from his duties with effect from 30.09.2000.

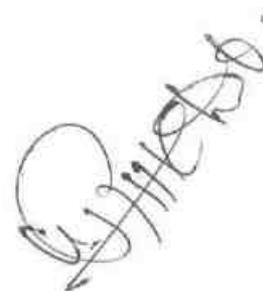
During his tenure his conduct and character was good, and he carried out his duties to the best satisfaction of his superiors and Management.

We wish him all success in his life.

For JANATHACEM INDUSTRIES LTD.


(K VENKATARAJAGOPALAN)
GENERAL MANAGER

 Janathacem®



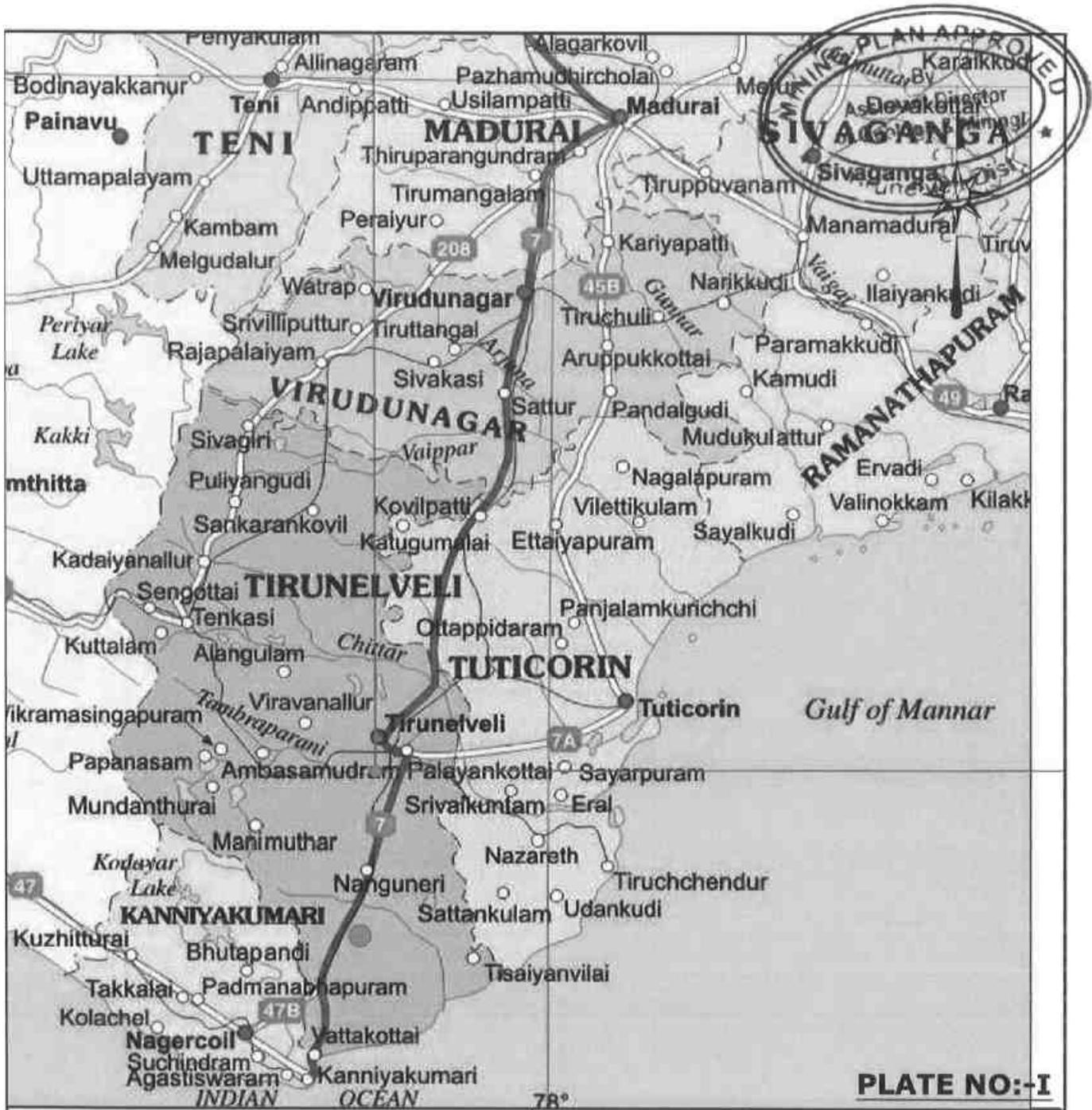


PLATE NO:-I

LOCATION OF THE MINE:-
S.F.No. :525/2A
EXTENT :0.50.58 Ha
VILLAGE :THARUVAI
TALUK :PALAYAMKOTTAI
DISTRICT :TIRUNELVELI

NAME OF THE APPLICANT
THIRU.V.SIVASUBBU,S/O VELU,
B4C,NGO 'B' COLONY,
JAWAHAR NAGAR,
PALAYAMKOTTI-TALUK,
TIRUNELVELI-DISTRICT.

M.L .AREA ●

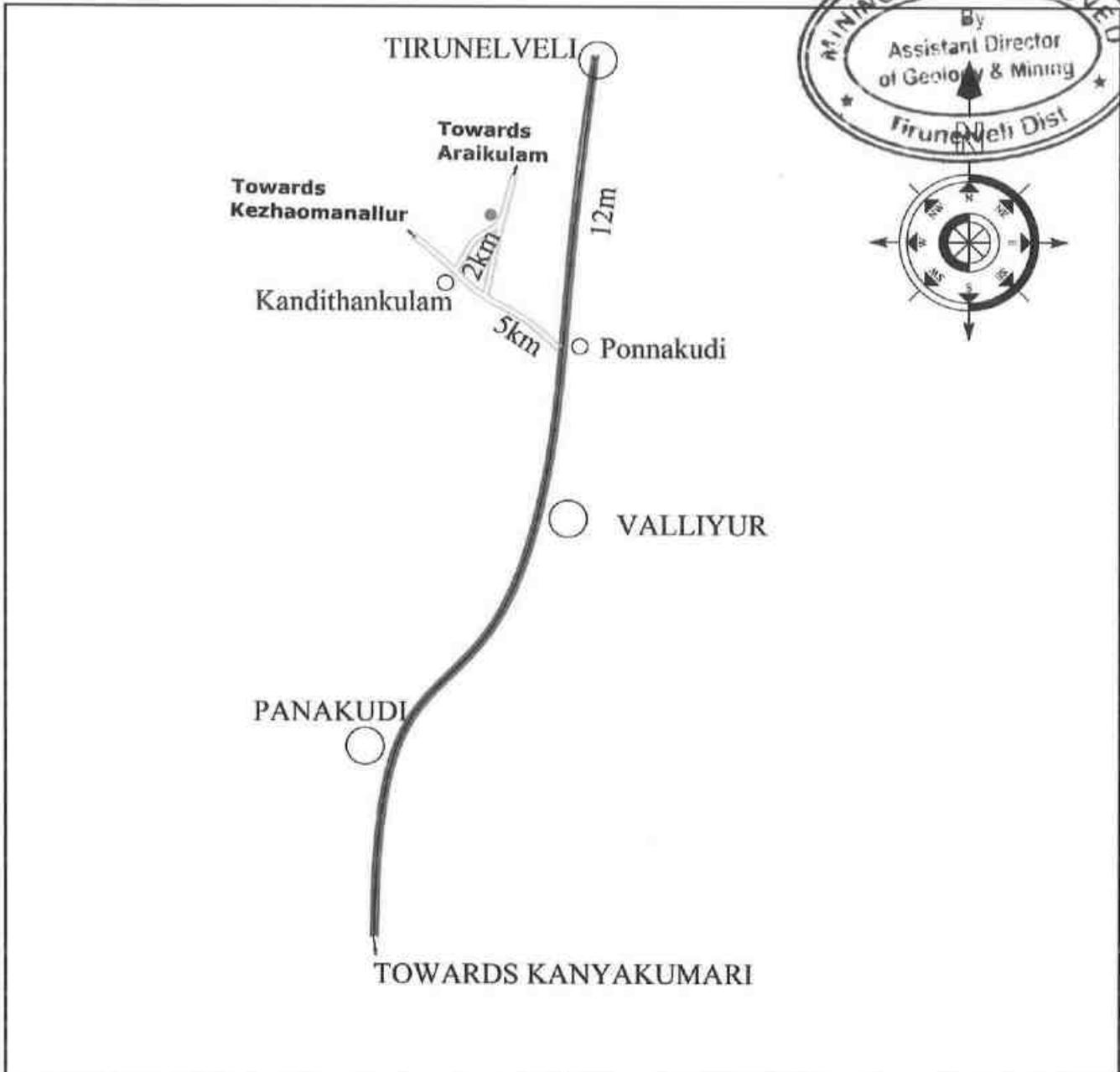
LOCATION PLAN

(NOT TO SCALE)

- State capital
- District headquarters
- Other town
- 45 National Highway number
- Golden Quadrilateral
- North-South & East-West Corridors
- National Highway
- Railway

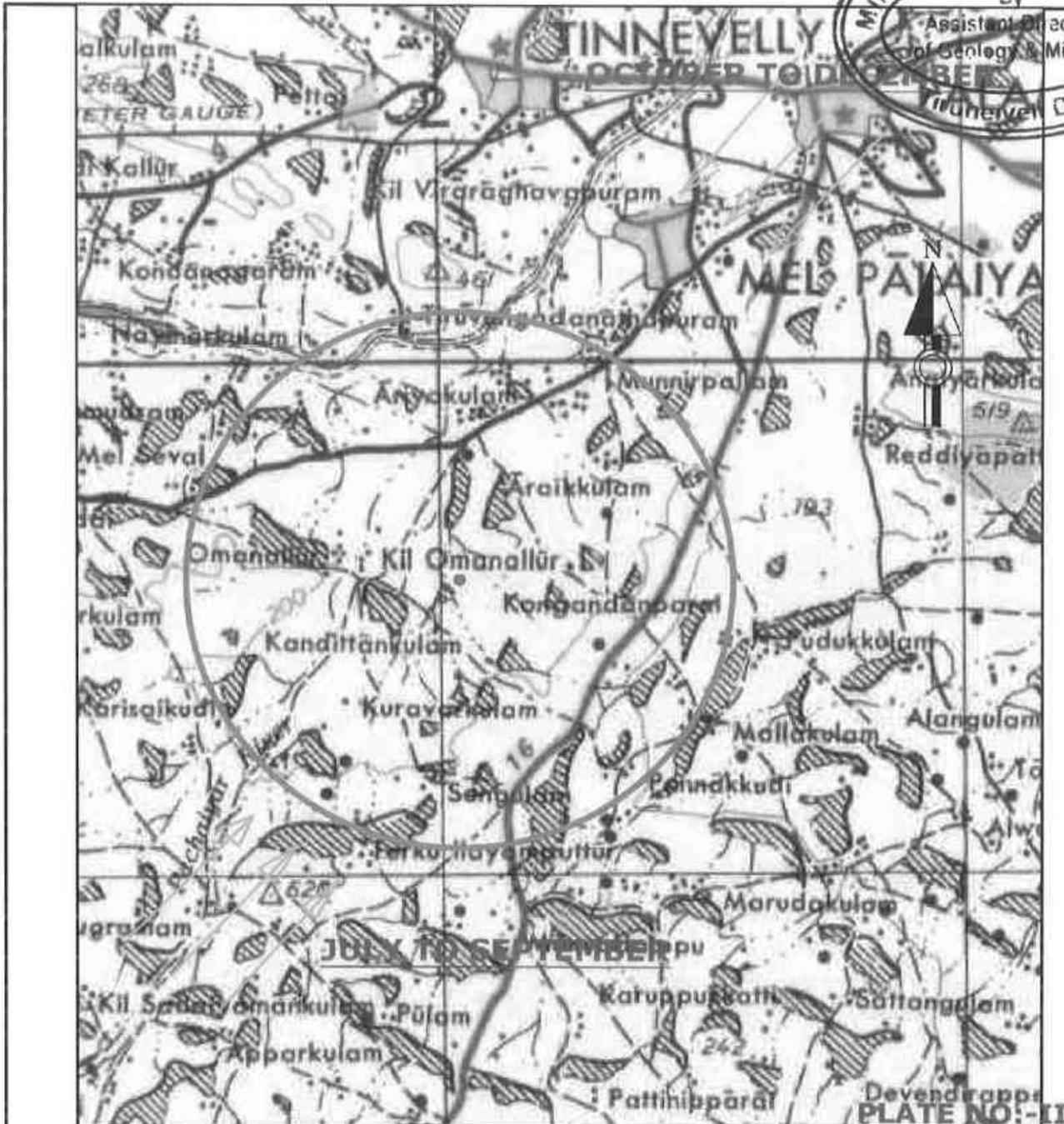
PREPARED BY:-

N. Ravinthiran
N.RAVINTHIRAN,MSc,(App.Geo)
QUALIFIED PERSON



<p>LOCATION OF THE MINE:-</p> <p>S.F.No. :525/2A EXTENT :0.50.58 Ha VILLAGE :THARUVAI TALUK :PALAYAMKOTTAI DISTRICT :TIRUNELVELI</p>	<p align="right">PLATE NO:-IA</p> <p>NAME OF THE APPLICANT THIRU.V.SIVASUBBU,S/O VELU, B4C,NGO 'B' COLONY, JAWAHAR NAGAR, PALAYAMKOTTI-TALUK, TIRUNELVELI-DISTRICT.</p>								
<table border="0"> <tr> <td>M.L AREA</td> <td></td> </tr> <tr> <td>NATIONAL HIGH WAY</td> <td></td> </tr> <tr> <td>APPROACH ROAD</td> <td></td> </tr> <tr> <td>OTHER MAJOR ROAD</td> <td></td> </tr> </table>	M.L AREA		NATIONAL HIGH WAY		APPROACH ROAD		OTHER MAJOR ROAD		<p align="center">KEY MAP</p> <p align="center">(NOT TO SCALE)</p> <p>PREPARED BY:-</p> <p align="center">  N.RAVINTHIRAN, MSc, (App. Geo) QUALIFIED PERSON </p>
M.L AREA									
NATIONAL HIGH WAY									
APPROACH ROAD									
OTHER MAJOR ROAD									

(Handwritten signature)



DEVEDRAPPET PLATE NO: - II

APPLIED AREA 
TOPO SHEET No. 58H/15
LATITUDE : 08° 38' 36.78" TO 08° 38' 40.47"
LONGITUDE : 77° 40' 46.12" TO 77° 40' 50.76"
WIND DIRECTION 
5 KM RADIUS 

LEGEND																	
<table border="0"> <tr> <td>POPULATED PLACE</td> <td>Symbol</td> </tr> <tr> <td>RAILWAY</td> <td>Symbol</td> </tr> <tr> <td>ROAD</td> <td>Symbol</td> </tr> <tr> <td>...</td> <td>...</td> </tr> </table>	POPULATED PLACE	Symbol	RAILWAY	Symbol	ROAD	Symbol	<table border="0"> <tr> <td>...</td> <td>Symbol</td> </tr> <tr> <td>...</td> <td>Symbol</td> </tr> <tr> <td>...</td> <td>Symbol</td> </tr> <tr> <td>...</td> <td>Symbol</td> </tr> </table>	...	Symbol	...	Symbol	...	Symbol	...	Symbol
POPULATED PLACE	Symbol																
RAILWAY	Symbol																
ROAD	Symbol																
...	...																
...	Symbol																
...	Symbol																
...	Symbol																
...	Symbol																

NAME OF THE APPLICANT
THIRU.M.MURUGAIAH,
S/O MUTHAIAH THEVAR,
2/72 MELA THERU,
THIRUMALAIKOZHUNTHUPURAM,
PALAYAMKOTTI-TALUK,
TIRUNELVELI-DISTRICT.

KEY PLAN
 SCALE :- 1:1,00,000

PREPARED BY:-


N.RAVINTHIRAN, MSc, (App. Geo)
QUALIFIED PERSON

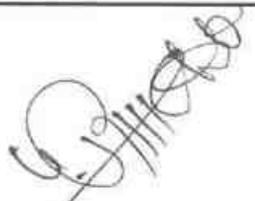
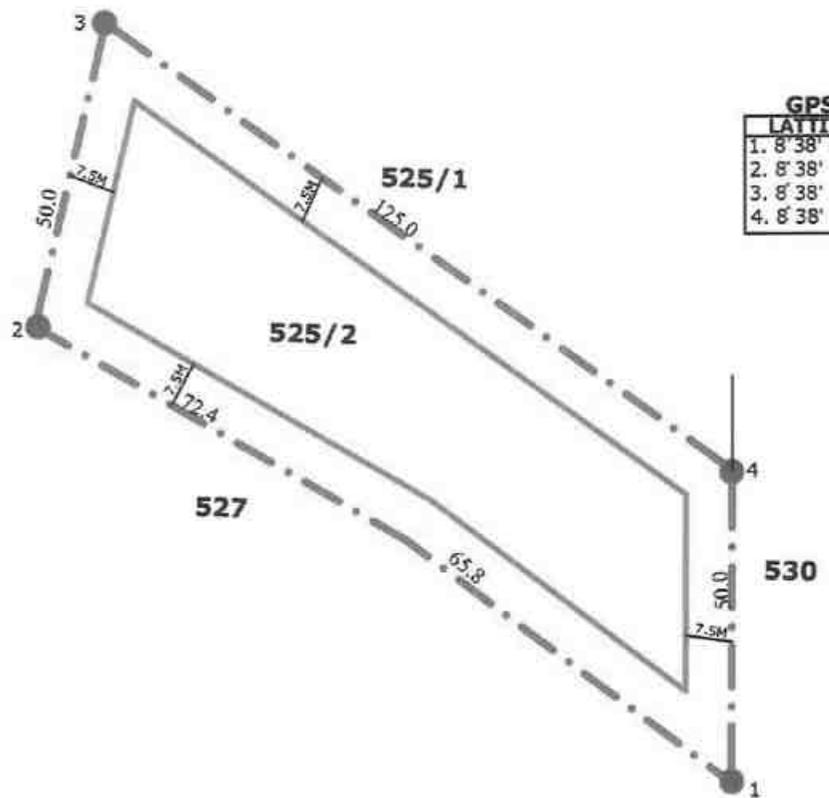




PLATE NO. III



GPS CO-ORDINATES

LATITUDE	LONGITUDE
1. 8° 38' 36.78"N	77° 40' 50.23"E
2. 8° 38' 38.27"N	77° 40' 49.22"E
3. 8° 38' 40.47"N	77° 40' 46.12"E
4. 8° 38' 38.20"N	77° 40' 50.76"E

NAME OF THE APPLICANT
**THIRU.V.SIVASUBBU,S/O VELU,
 B4C,NGO 'B' COLONY,
 JAWAHAR NAGAR,
 PALAYAMKOTTI-TALUK,
 TIRUNELVELI-DISTRICT.**

LOCATION OF THE MINE:-
**S.F.No. :525/2A
 EXTENT :0.5058 Ha
 VILLAGE :THARUVAI
 TALUK :PALAYAMKOTTAI
 DISTRICT :TIRUNELVELI**

INDEX:-
 LEASE HOLD BOUNDARY
 BOUNDARY PILLARS
 SAFETY LINE

MINING LEASE PLAN
 SCALE:- 1: 1000

ALL PLANS AND SECTIONS ARE PREPARED
 BASED ON THE LEASE MAP AUTHENTICATED
 BY STATE GOVERNMENT.

N.RAVINTHIRAN, MSc, (App. Geo)
QUALIFIED PERSON



Handwritten signature/initials.

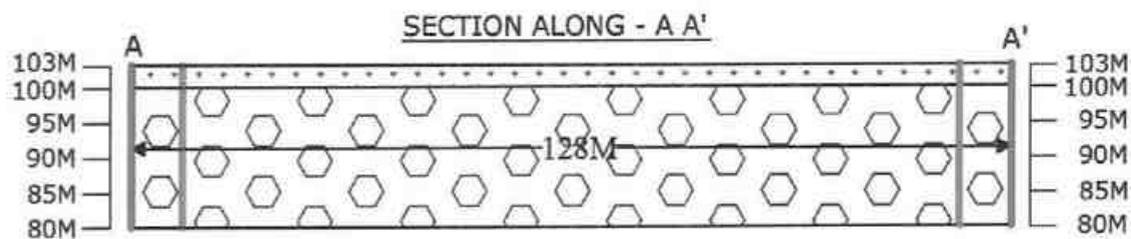
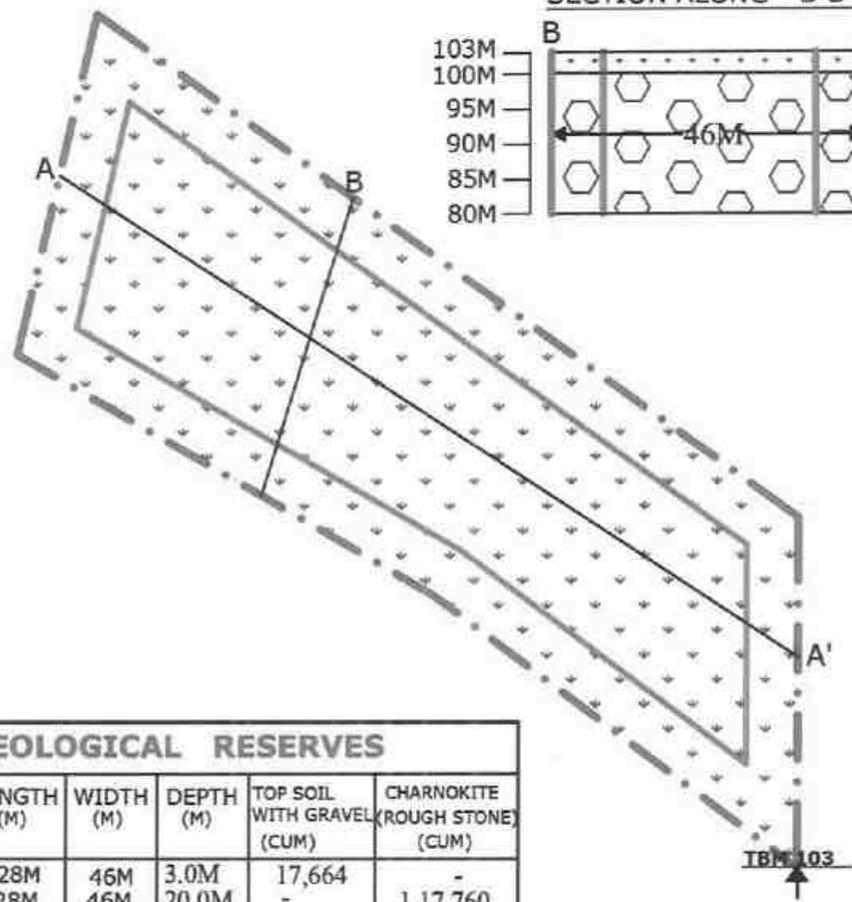
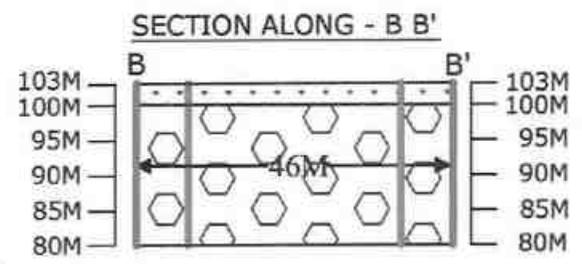


PLATE NO. IV

NAME OF THE APPLICANT
THIRU.V.SIVASUBBU,S/O VELU,
B4C,NGO 'B' COLONY,
JAWAHAR NAGAR,
PALAYAMKOTTI-TALUK,
TIRUNELVELI-DISTRICT.

LOCATION OF THE MINE:-
S.F.No. :525/2A
EXTENT :0.50.58 Ha
VILLAGE :THARUVAI
TALUK :PALAYAMKOTTAI
DISTRICT :TIRUNELVELI



INDEX:-

- APPLIED AREA
- SAFETY LINE
- TOP SOIL
- CHORNOCKITE
- BENCH MARK

SURFACE CUM GEOLOGICAL PLAN AND SECTIONS

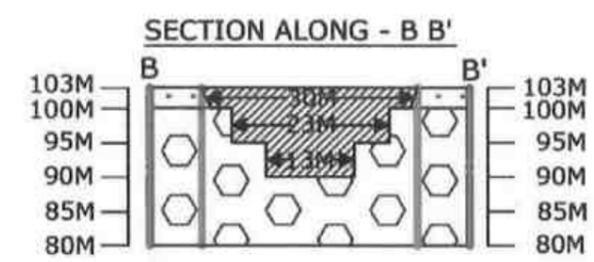
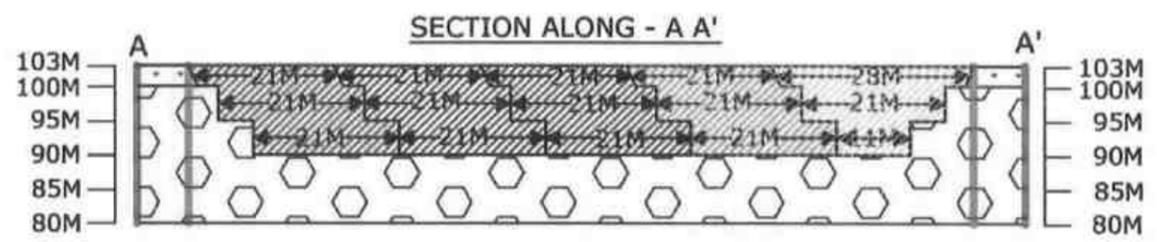
SCALE :-1:1000

PLANS AND SECTIONS ARE PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT.

N.RAVINTHIRAN, MSc, (App. Geo)
QUALIFIED PERSON



GEOLOGICAL RESERVES					
SECTION	LENGTH (M)	WIDTH (M)	DEPTH (M)	TOP SOIL WITH GRAVEL (ROUGH STONE) (CUM)	CHARNOKITE (CUM)
AA' & BB'	128M	46M	3.0M	17,664	-
	128M	46M	20.0M	-	1,17,760
TOTAL GEOLOGICAL RESERVES				17,664	1,17,760

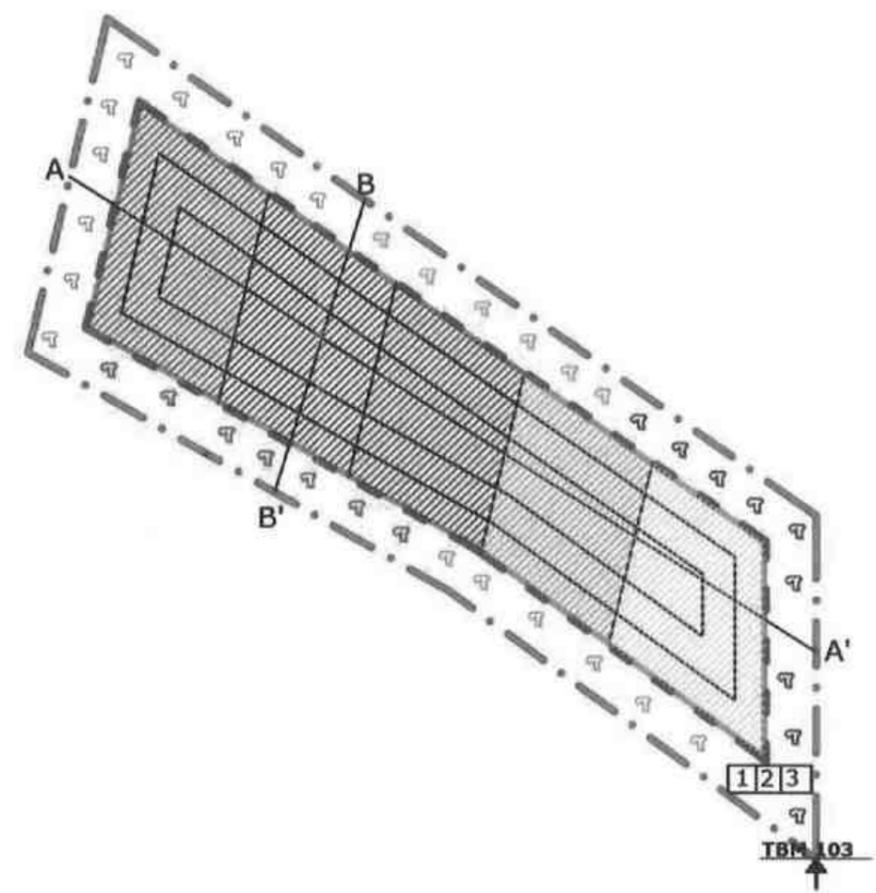


AFFORESTATION PROGRAMME FOR 5 YEARS			
YEAR	NO.OF TREES	SURVIVAL	TYPE OF TREES
I- YEAR PLANTATION	25	80%	NEEM
II- YEAR PLANTATION	25	80%	NEEM
III- YEAR PLANTATION	25	80%	NEEM
IV- YEAR PLANTATION	25	80%	NEEM
V- YEAR PLANTATION	25	80%	NEEM



PLATE NO. V

YEARWISE PRODUCTION					
SECTION	LENGTH (M)	WIDTH (M)	DEPTH (M)	TOP SOIL WITH GRAVEL (CUM)	CHARNOCKITE (ROUGH STONE) (CUM)
AA' & BB'	30M	28M	3.0M	2,520	-
	23M	21M	5.0M	-	2,415
	13M	11M	5.0M	-	715
I YEAR EXCAVATION				2,520	3,130
AA' & BB'	30M	21M	3.0M	1,890	-
	23M	21M	5.0M	-	2,415
	13M	21M	5.0M	-	1,365
II YEAR EXCAVATION				1,890	3,780
AA' & BB'	30M	21M	3.0M	1,890	-
	23M	21M	5.0M	-	2,415
	13M	21M	5.0M	-	1,365
III YEAR EXCAVATION				1,890	3,780
AA' & BB'	30M	21M	3.0M	1,890	-
	23M	21M	5.0M	-	2,415
	13M	21M	5.0M	-	1,365
IV YEAR EXCAVATION				1,890	3,780
AA' & BB'	30M	21M	3.0M	1,890	-
	23M	21M	5.0M	-	2,415
	13M	21M	5.0M	-	1,365
V YEAR EXCAVATION				1,890	3,780
TOTAL EXCAVATION				10,080	18,250



NAME OF THE APPLICANT
THIRU.V.SIVASUBBU,S/O VELU,
B4C,NGO 'B' COLONY,
JAWAHAR NAGAR,
PALAYAMKOTTI-TALUK,
TIRUNELVELI-DISTRICT.

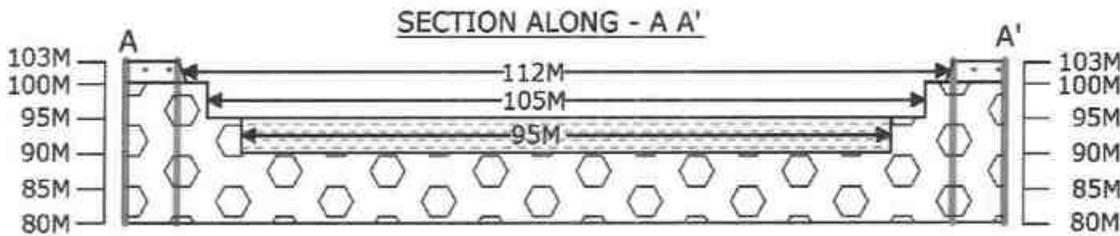
LOCATION OF THE MINE:-
S.F.No. :525/2A
EXTENT :0.50.58 Ha
VILLAGE :THARUVAI
TALUK :PALAYAMKOTTAI
DISTRICT :TIRUNELVELI

INDEX:-	
APPLIED AREA	
SAFETY DISTANCE	
TOP SOIL	
CHORNOCKITE	
EARTH BUND	
I-YEAR EXCAVATION	
II-YEAR EXCAVATION	
III-YEAR EXCAVATION	
IV-YEAR EXCAVATION	
V-YEAR EXCAVATION	
SITE SERVICES	
BENCH MARK	

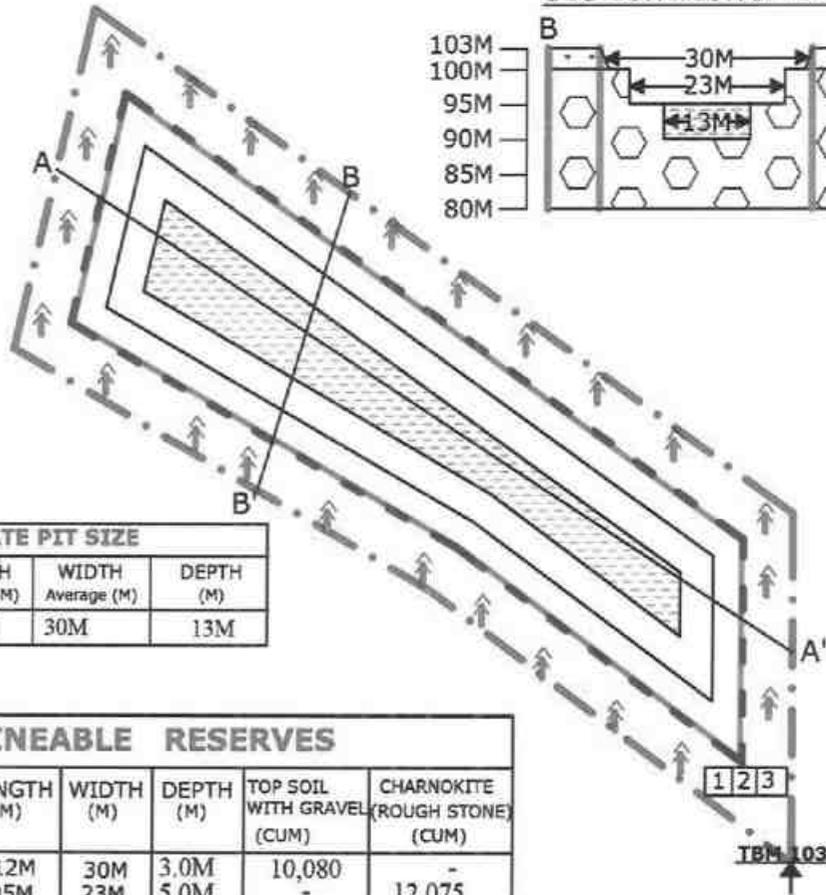
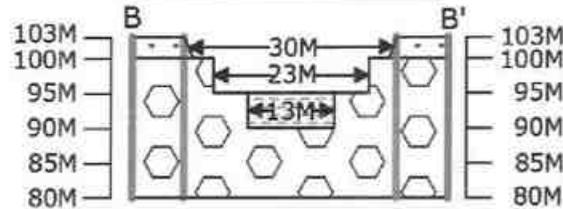
AFFORESTATION CUM PRODUCTION PLAN AND SECTIONS
SCALE :-1:1000

PLANS AND SECTIONS ARE PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT.

N.RAVINTHIRAN,MSc,(App Geo)
QUALIFIED PERSON



SECTION ALONG - B B'



ULTIMATE PIT SIZE			
SECTION	LENGTH Average (M)	WIDTH Average (M)	DEPTH (M)
AA' & BB'	112M	30M	13M

MINEABLE RESERVES					
SECTION	LENGTH (M)	WIDTH (M)	DEPTH (M)	TOP SOIL WITH GRAVEL (CUM)	CHARNOKITE (ROUGH STONE) (CUM)
AA' & BB'	112M	30M	3.0M	10,080	-
	105M	23M	5.0M	-	12,075
	95M	13M	5.0M	-	6,175
TOTAL MINEABLE RESERVES				10,080	18,250

NAME OF THE APPLICANT
THIRU.V.SIVASUBBU,S/O VELU,
 B4C,NGO 'B' COLONY,
 JAWAHAR NAGAR,
 PALAYAMKOTTI-TALUK,
 TIRUNELVELI-DISTRICT.

LOCATION OF THE MINE:-

S.F.No. :525/2A
 EXTENT :0.50.58 Ha
 VILLAGE :THARUVAI
 TALUK :PALAYAMKOTTAI
 DISTRICT :TIRUNELVELI

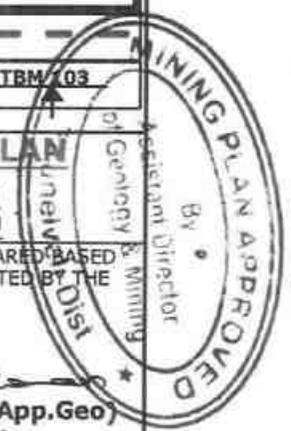
INDEX:-

LEASE APPLIED AREA	
SAFETY DISTANCE	
GREEN BELT	
SITE SERVICES	
WATER RESERVOIR	
TOP SOIL	
CHORNOCKITE	
PROPOSED BENCHES	
EARTH BUND	
BENCH MARK	

**CONCEPTUAL PLAN
 AND SECTIONS**
 SCALE :-1:1000

PLANS AND SECTIONS ARE PREPARED BASED
 ON THE LEASE MAP AUTHENTICATED BY THE
 STATE GOVERNMENT.

N.RAVINTHIRAN, MSc, (App. Geo)
 QUALIFIED PERSON





MINE PLAN APPROVED
 By
 Director
 Assistant
 of Geology & Mining
 Tirunelveli Dist

NAME OF THE APPLICANT
THIRU.V.SIVASUBBU,S/O VELU,
B4C,NGO 'B' COLONY,
JAWAHAR NAGAR,
PALAYAMKOTTI-TALUK,
TIRUNELVELI-DISTRICT.

LOCATION OF THE MINE:-
S.F.No. :525/2A
EXTENT :0.50.58 Ha
VILLAGE :THARUVAI
TALUK :PALAYAMKOTTAI
DISTRICT :TIRUNELVELI

INDEX:-

APPLIED AREA	
500 M RADIUS	
300 M RADIUS	
SAFETY LINE	
OTHER ROADS	
PLANTATION	
OLD WORKINGS	
APPROACH ROAD	
WIND DIRECTION	
CRUSHER UNIT	

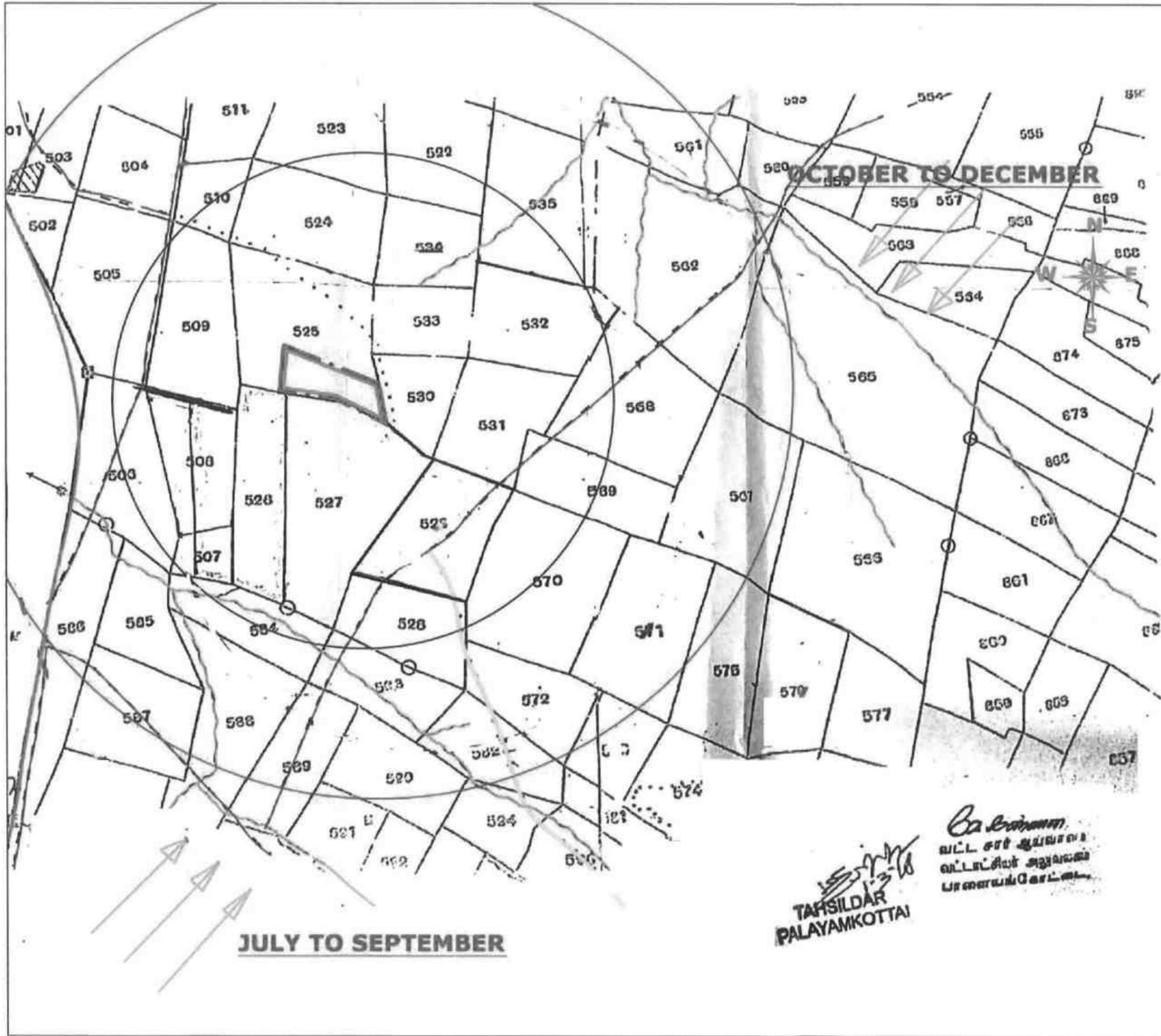
ENVIRONMENT PLAN
SCALE:-1:5,000

ALL PLANS AND SECTIONS ARE PREPARED
 BASED ON THE LEASE MAP AUTHENTICATED
 BY STATE GOVERNMENT

N.RAVINTHIRAN, MSc, (App. Geo)
QUALIFIED PERSON



PLATE No. VIIA



NAME OF THE APPLICANT
THIRU.V.SIVASUBBU,S/O VELU,
B4C,NGO 'B' COLONY,
JAWAHAR NAGAR,
PALAYAMKOTTI-TALUK,
TIRUNELVELI-DISTRICT.

LOCATION OF THE MINE:-

S.F.No. :525/2A
EXTENT :0.50.58 Ha
VILLAGE :THARUVAI
TALUK :PALAYAMKOTTAI
DISTRICT :TIRUNELVELI

INDEX:-

APPLIED AREA	
1000 M RADIUS	
500 M RADIUS	
VILLAGE BOUNDARY	
CART TRACK	
WIND DIRECTION	
FOOT PATH	
ODAI	
SAFETY LINE	
VILLAGE BOUNDARY	
WELL	

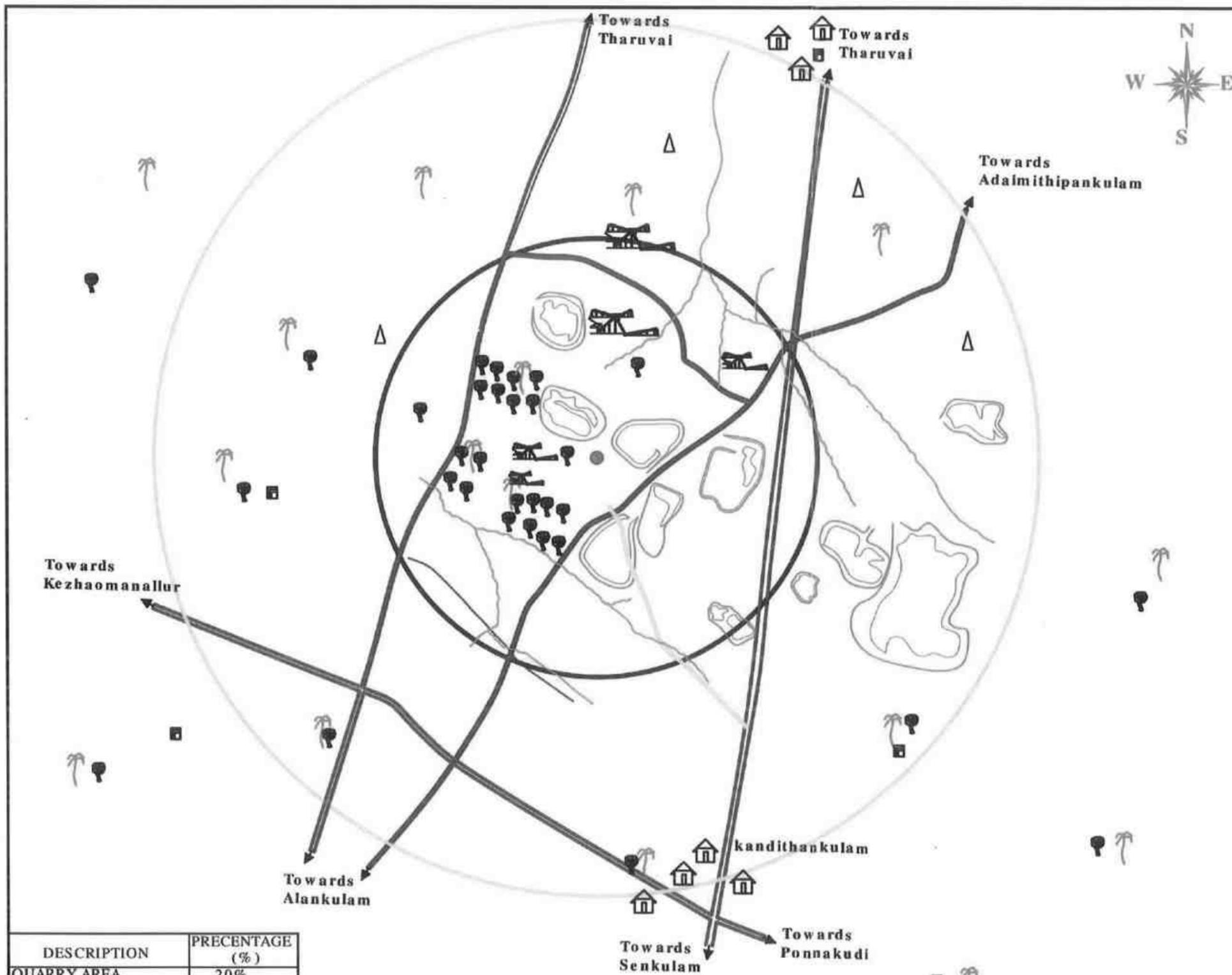
VILLAGE MAP SHOWING ENVIRONMENTAL FEATURES

SCALE:-1:5,000

ALL PLANS AND SECTIONS ARE PREPARED
 BASED ON THE LEASE MAP AUTHENTICATED
 BY STATE GOVERNMENT

N.RAVINTHIRAN,MSc,(App.Geo)
QUALIFIED PERSON

TALSILDAR
PALAYAMKOTTAI



NAME OF THE APPLICANT
THIRU.V.SIVASUBBU,S/ O VELU,
B4C,NGO 'B' COLONY,
JAWAHAR NAGAR,
PALAYAMKOTTI-TALUK,
TIRUNELVELI-DISTRICT.

LOCATION OF THE MINE: -
S.F.No. :525/ 2A
EXTENT :0.50.58 Ha
VILLAGE :THARUVAI
TALUK :PALAYAMKOTTAI
DISTRICT :TIRUNELVELI

INDEX:-

APPLIED AREA	
1000 M RADIUS	
500 M RADIUS	
INFRA STRUCTURE	
APPROACH ROAD	
ODAI	
CART TRACK	
OPEN WELL/TUBE WELL	
FOOT PATH	
EXISTING TREES	
CRUSHER UNIT	
OLD WORKINGS	

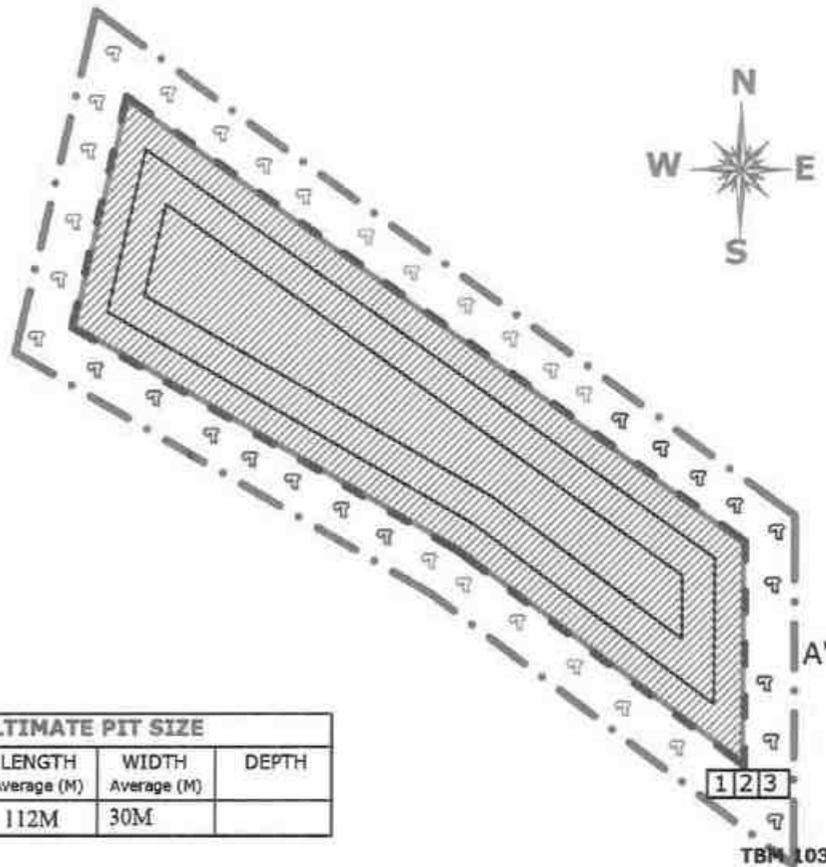
ENVIRONMENTAL AND LAND USE PLAN
SCALE:-1:10,000

PLANS AND SECTIONS ARE PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT.

N.RAVINTHIRAN, MSc, (App. Geo)
QUALIFIED PERSON

DESCRIPTION	PERCENTAGE (%)
QUARRY AREA	20%
CRUSHER UNIT	12%
ROADS/CART TRACK	10%
GREEN BELT	7%
ODAI/URANI	2%
DRY LANDS	39%
SEASONAL CROPS	10%

PLATE NO. VIII



ULTIMATE PIT SIZE			
SECTION	LENGTH Average (M)	WIDTH Average (M)	DEPTH
AA' & BB'	112M	30M	

MINE CLOSURE PLAN WITH LAND USE PATTERN

MINING / EXCAVATION	=	0.00.00 Ha
FUTURE MINING	=	0.30.28 Ha
STOCKING & MINERAL DRESSING YARD	=	0.00.00 Ha
INFRASTRUCTURE	=	0.01.00 Ha
MINE ROAD	=	0.02.00 Ha
AFFORESTATION /SAFETY	=	0.17.30 Ha
UNDISTURBED AREA	=	0.00.00 Ha
TOTAL	=	0.50.58 Ha

NAME OF THE APPLICANT
THIRU.V.SIVASUBBU,S/O VELU,
B4C,NGO 'B' COLONY,
JAWAHAR NAGAR,
PALAYAMKOTTI-TALUK,
TIRUNELVELI-DISTRICT.

LOCATION OF THE MINE:-

S.F.No. :525/2A
EXTENT :0.50.58 Ha
VILLAGE :THARUVAI
TALUK :PALAYAMKOTTAI
DISTRICT :TIRUNELVELI

LEGEND

APPLIED AREA	—————
LAYOUT OF MINE WORKING	▨▨▨▨▨
EARTH BUND	- - - - -
SAFETY DISTANCE	□
BENCH MARK	↑

PROGRESSIVE MINE CLOSURE PLAN
 SCALE 1:2,000

ALL PLANS AND SECTIONS ARE PREPARED
 BASED ON THE LEASE MAP AUTHENTICATED
 BY STATE GOVERNMENT

N.RAVINTHIRAN,MSc,(App.Geo)
QUALIFIED PERSON



ANNEXURE-VII
VAO CERTIFICATE

**TOPOGRAPHICAL VIEW OF
THARUVAI VILLAGE V.SIVASBBU ROUGHSTONE/
GRAVEL QUARRY LEASE APPLIED AREA**



LOCATION DETAILS

Name and Address of the Applicant

:

V.Sivasubbu
S/o Shri.Velu
B4C,NGO B Colony ,
Jawahar Nagar
Palayamkottai Taluk.
Tirunelveli-627 011.

S.F.No : 525/2(P)
Extent : 0.50.58 Ha
Village : Tharuvai
Taluk : Palayamkottai
District : Tirunelveli
State : Tamilnadu.

Attestation of the Village
Administrative officer
பாளையங்கோட்டை வட்டம்

M. S. S.
02/03/2021

V. Sivasubbu

Signature of the Applicant

சான்றி.

பாளையங்கோட்டை வட்டம், 47, திருவையங்கோட்டை
 பஞ்சாயத்து 525/2, கீழ்க்கண்ட இடத்தில் 1.10.05
 பாய்ப்புள்ள பட்டினம் 2469ல் அளவுகண்ட சிவசூய கீழ்க்கண்ட
 இடத்தில் கிண்கிணியும். மேற்படி கீழ்க்கண்ட தற்புறம் ஒரு
 பட்டினத்தின் இடத்தில் உள்ளது. குடியில் தரிசாக உள்ளது.
 மேற்படி படித்தல் கீழ்க்கண்ட உயர்/தரம் இன்மையால் அது
 இல்லை. அதுபற்றி 300 ரூபாய் தற்புறம் இடத்தில்
 கீழ்க்கண்ட, பட்டினம் கீழ்க்கண்ட, அதுபற்றி தற்புறம்
 உயர்/தரம், அதுபற்றி தற்புறம் கீழ்க்கண்ட அளவு
 இல்லை. மேற்படி கீழ்க்கண்ட கீழ்க்கண்ட
 அதுபற்றி கீழ்க்கண்ட அதுபற்றி கீழ்க்கண்ட
 அதுபற்றி கீழ்க்கண்ட அதுபற்றி கீழ்க்கண்ட
 அதுபற்றி கீழ்க்கண்ட அதுபற்றி கீழ்க்கண்ட


 M. S. S. V. S.
 கிராம நிர்வாகி இலுவலர்
 47, திருவையங்கோட்டை வட்டம்
 பாளையங்கோட்டை வட்டம்

ANNEXURE-VIII BLASTING AGREEMENT



தமிழ்நாடு தமில்நாடு TAMIL NADU

சுவாமி

Rs. 20/-

6 MAR 2021

89AB 262095
M. VELMURUGAN
STAMP VENDOR L.No.2/2003
2, Thirupugal Street,
PALAYAMKOTTAI,
TAMIL NADU.

AGREEMENT

This Agreement made this day of 06.03.2021 (06th March 2021) Thiru.V.Sivasubbu, S/o.ThiruVelu, V4C NGO B Colony, Jawahar Nager, Palayamkottai Taluk, Tirunelveli District, Tamil Nadu (hereinafter called the owner of quarry) Mr.S.Ramachandran son of Subbiah, aged 63, Occupier, M/s N.T.C. Trading Company, 14, KovalanStreet, Palayamkottai, Tirunelveli District-627002. Licence No: E/HQ/TN/22/430(E80761) in Form 22. Hereinafter called as Dealer of Explosives.

Whereas the owner of the quarry having licence No.M.1/19947/2014, 18.01.2021 quarry Survey no.525/2 (1.00.0 Hects), 530/2 (1.24.0 Hects) and 533/2(0.50.5 Hects)- over an extent of 1.74.5 Hectares the Survey Number are within Tharuvai Village of palayamkottai Taluk, Tirunelveli District.

And whereas the dealer of Explosives have agree to carry out the blasting operation in skillful scientific shot firer till the valid date.

For N.T.C. TRADING COMPANY

S. Ramachandran
PARTNER

(Signature)

Whereas the Party of the Second Part has decided to entrust the work of conducting blasting operation in his /their quarry work to the party of the first part on contract basis as per mutually agreed terms and conditions.

Whereas the Party of the first part is responsible for blasting operations and also making his own agreements for the explosives and exploding machines/equipments required for the work. The entire blasting in the above quarry and the possession of blasting equipments will be handled by the party of the first part having valid licence and short firer permits under the Explosives Rules, 2008 issued by the Department of Explosives and hereby undertake the responsibility for the work entrusted.

Whereas payments will be made periodically by the party of the second part for the quantity of explosives used and hours and time of the exploding equipments put into use calculations will be made and element will be arrived at on the completion of blasting operations.

For N.T.C. TRADING COMPANY


PARTNER



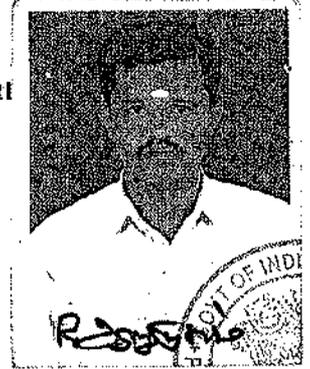
Witness:-

① S. Arunachal - S/O G. Govind Suresh, 10/312, Kalikama Nagar, SE,
Palayamkottai. Telephone: 637 000.

* P. Manikandan S/O Petchi devar. 1/3A Kaspam Meelapagan,
Ponnakudi Palayamkottai Thaluk.

अनुमति प्रकरण एल.ई -10 | Form LE-10
 शॉट फायर कर्ता प्रमाण-पत्र | Shot Firer's Certificate
 (अनुसूची IV के भाग 1 का अनुच्छेद 10 देखें | See article 10 of Part 1 of Schedule IV)
 [विस्फोटक नियम, 2008 का नियम 107(5) देखें | see rule 107(5) of Explosives Rules, 2008]

(खान अधिनियम, 1952 के अधीन न आने वाले क्षेत्र में विस्फोट करने के लिए सक्षमता प्रमाणपत्र)
 (Certificate of competency to carry out blasting of explosives in area not coming under the)



संख्या | No.: E/SS/TN/30/271(E77481)

प्रमाणित किया जाता है कि श्री R. Arumugam S/o K. RamaKrishna pillai, जिनका जन्म 05/06/1975 को हुआ था, जो 51/93, Chetti Pillai mar street, Kallidaikurichi, THIRUNELVELI, Tamil Nadu - 627416 के निवासी हैं, ने चेन्नै द्वारा तारीख को आयोजित शॉट फायर की परीक्षा तारीख को उत्तीर्ण कर ली है और यह विस्फोटक अधिनियम, 1884 और उसके अधीन विरचित नियमों के उपबंधों के अधीन रहते हुए खान अधिनियम, 1952 की परिधि के अधीन आनेवाले खानों से अन्यथा क्षेत्र में नीचे यथा उल्लिखित विस्फोटकों का उपयोग करते हुए विस्फोट प्रचालन करने के लिए प्राधिकृत है।

This is to certify that Shri R. Arumugam S/o K. RamaKrishna pillai, born on 05/06/1975, resident of 51/93, Chetti Pillai mar street, Kallidaikurichi, THIRUNELVELI, Tamil Nadu - 627416 passed the shotfirer's examination held on conducted by Sivakasi and is authorised to conduct blasting operations as mentioned below using explosives in areas other than mines coming under the purview of the Mines Act 1952, subject to the provisions of the Explosives Act, 1884 and the rules framed thereunder.

विस्फोट करने के प्राधिकृत वर्ग, प्रवर्ग और प्रकार :

वर्ग: (ख), श्रेणी: सामान्य जमीन के ऊपर, जमीन के ऊपर क्लास्टिंग आपरेशन

Authorised class, category and type of blasting :

Class : (B), Category : General aboveground, All phases of aboveground blasting operation

[नियम 107 का उप-नियम (5) का स्पष्टीकरण देखें | See explanation of sub-rule (5) of rule 107]

यह प्रमाणपत्र 29/08/2018 (जारी करने की तारीख से पांच वर्षों) तक विधिमान्य होगा |
 This certificate shall remain valid till 29/08/2018 (five years from the date of issue)

यह प्रमाण-पत्र, अधिनियम या उसके अधीन विरचित नियमों अथवा इस प्रमाण-पत्र की शर्तों का कोई उल्लंघन करने पर या यदि आवेदक द्वारा आवेदन प्रारूप में दी गई सूचना में कोई फर्क या विचलन होता है तो निलम्बित या अधिलक्षित कर दिया जाएगा।

This certificate is liable to be suspended or revoked for any violation of the Act or rules framed thereunder or the conditions of this certificate or if there is any discrepancy or deviation in the information or suppression of facts furnished by the applicant in his application form.

Sd/-

स्थान | Place : सिवाकासी | Sivakasi

दिनांक | Date: 29/08/2013

उप मुख्य विस्फोटक नियंत्रक | Dy. Chief Controller of Explosives

सिवाकासी | Sivakasi

Amendments :

- Change in Postal Address/Purpose/Attached to Magazine dated : 06/01/2015

पूर्वविधिमामूल्यकरण के लिए पुनः
 Endorsement for revalidation

पूर्वविधिमामूल्यकरण की तारीख Date of Revalidation	समाप्ति की तिथि Date of Expiry	अनुमति प्राधिकारी के हस्ताक्षर Signature of Licensing authority
18/06/2018	29/08/2023	Jt. Chief Controller of Explosives, South Circle, Chennai

कानूनी चेतावनी : विस्फोटकों को गलत रूप से चलाये या उनका दुरुपयोग विधि के अधीन गंभीर दण्डित अपराध होगा।

Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

Licence Endorsed under Rule 107(3) of Explosives Rules, 2008
By Sh. Dr. P. K. Rana, Controller of Explosives, Chennai on 22/07/2015

अनुज्ञप्ति प्ररूप एनई - 7 | LICENCE FORM LE-7
(विस्फोटक नियम 2008 की अनुसूची 4 के भाग 1 का अनुच्छेद 7 देखें)
(See article no 7 of Part 1 of Schedule IV of Explosives Rules, 2008)

अनुज्ञप्ति : सड़क वैन में विस्फोटकों के परिवहन के लिए
Licence to : transport explosives in a road van

अनुज्ञप्ति संख्या / Licence No. : E/SC/TN/25/990(E88062)
वार्षिक फीस रूप / Annual Fee Rs : 2500/-



- अनुज्ञप्ति एतद्वारा जारी की जाती है
Licence is hereby granted to : N.T.C TRADING COMPANY (Occupier : S.Ramachandran)
14,Kovalan Street, Palayamkottai, TIRUNELVELL PIN 627002,
District-THIRUNELVELL, State-Tamil Nadu, Pincode-627002
- अनुज्ञप्तिधारी की प्रास्थिति / Status of licensee : Partnership Firm
- सड़क वैन की विशिष्टियाँ / Particulars of the road van:

पंजीकरण संख्या / Registration No.	TN72 AF2772
यान का मेक एवं मॉडल / Make and model of vehicle	TATA MOTORS LTD/407/27 EX
नदान रहित वजन / Unladen weight	2170 Kg(s)
नदान सहित अधिकतम वजन / Maximum laden weight	6250 Kg(s)
परिवहन के लिए अनुज्ञेय विस्फोटकों की अधिकतम मात्रा Maximum quantity of explosives permitted for transport	4080 Kg(s)
इंजिन संख्या / Engine No.	497SPTC35DZY619486
चैसिस संख्या / Chassis No.	MAT357611A8D17984
अन्य फिटिंग्स का विवरण / Description of Other Fittings	As per the approved plan attached
वाहन के लिए अनुमत्य विस्फोटकों की मात्रा / Quantity of Explosives permitted to carry	4080 Kg(s)

- अनुज्ञप्ति परिसर निम्नलिखित आरेखण (आरेखणों) के अनुरूप होना चाहिए / The licensed premises shall conform to the following drawing(s):
आरेखण संख्या / Drawing No : E/SC/TN/25/990(E88062) दिनांक / dated : 22/07/2015
- समय समय पर यथा संशोधित विस्फोटक अधिनियम, 1884 और उसके अधीन बनाए गए विस्फोटक नियम, 2008 के उपबन्धों और शर्तों एवं निम्नलिखित अनुलग्नकों के अधीन अनुज्ञप्ति प्रदान की जाती है।
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed thereunder and the conditions and the following annexures....
(क) उपर्युक्त क्रम संख्या 4 में यथाकथित सड़क वैन का आरेखण / (a) Drawings of the road van as stated in serial no.4 above.
(ख) अनुज्ञापन प्राधिकारी द्वारा हस्ताक्षरित शर्तें / (b) Conditions signed by the licensing authority.
- यह अनुज्ञप्ति तारीख 31 मार्च 2020 तक विधिमान्य रहेगी / This licence shall remain valid till 31st day of March 2020

यह अनुज्ञप्ति, अधिनियम या उसके अधीन विरचित नियमों या इस अनुज्ञप्ति की शर्तों के उल्लंघन, अनुसूची 5 के भाग 4 में सन्दर्भित, जहाँ भी लागू हो, या यदि अनुज्ञप्ति परिसर आरेखण या उससे संलग्न उपायों में दर्शाए गए विवरण के अनुरूप नहीं पाए जाने पर निलम्बित या प्रतिसंज्ञित की जा सकती है।
This licence is liable to be suspended or revoked for any violation of the Act or rules framed there under or the conditions of this licence as set forth under, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and annexure attached hereto.

दिनांक / Date: 22/07/2015

Sd/-
संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives
दक्षिणचल, चेन्नई | South Circle, Chennai

अनुज्ञप्ति के नवीनीकरण हेतु पृष्ठांकन / Endorsement for renewal of licence:

नवीनीकरण की तिथि Date of Renewal	वैधता समाप्ति की तिथि Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर Signature of licensing authority
10/02/2020	31/03/2025	Jt. Chief Controller of Explosives, South Circle, Chennai

वैधानिक चेतावनी : विस्फोटकों का लापरवाही से प्रयोग या दुरुपयोग, विधि के अधीन गम्भीर दण्डनीय अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

शर्तें / Conditions

1. यह अनुज्ञप्ति किसी अन्य सड़क वैन को अंतरणीय नहीं है।
This licence is not transferable to any other explosives van.
2. यान, उसकी बॉडी और अन्य फिटिंग्स में कोई भी परिवर्तन, अनुज्ञापन प्राधिकारी के अनुमोदन के बिना नहीं किया जाना चाहिए।
No alterations should be made to the vehicle, its body and other fittings without approval from the licensing authority.
3. यह अनुज्ञप्ति या उसकी अभिप्रमाणित प्रति सदैव वैन में रखी जाएगी एवं निरीक्षण अधिकारी के मांगे जाने पर उसे प्रस्तुत किया जाएगा।
This licence or its authenticated copy shall at all times be kept in the van and produced on demand by an inspecting officer.
4. सड़क यान का, विस्फोटकों के परिवहन के लिए तब तक प्रयोग नहीं किया जाएगा जब तक कि यह ठीक हालत में नहीं है और विस्फोटक नियम 2008 का अनुपालन नहीं करती है।
The road van shall not be used for transport of explosives unless it is in a fit condition and complies with the Explosives Rules, 2008.
5. सड़क यान का प्रयोग, इस अनुज्ञप्ति द्वारा प्राधिकृत सामग्री से भिन्न किसी सामग्री के लिए तब तक नहीं किया जाएगा जब तक कि अनुज्ञापन प्राधिकारी द्वारा इसकी लिखित अनुमति न दे दी हो।
The road van shall not be used for transport of any material other than that authorised by this licence, unless permitted by licensing authority in writing.
6. सड़क यान में धूम्रपान नहीं किया जाएगा न उसमें अग्नि या कृत्रिम प्रकाश या कोई ऐसे वस्तु जिससे अग्न लग सकती हो, की अनुमति दी जाएगी।
No smoking and no fire or artificial light or any article capable of causing fire shall be allowed on the explosives van.
7. यान का प्रयोग यात्रियों के वहन के लिए नहीं किया जाएगा।
The vehicle shall not be used for carrying passenger.
8. जिस समय सड़क यान पर विस्फोटकों की लदाई या उतराई या परिवहन किया जा रहा हो, उस समय सड़क यान ऐसे किसी सक्षम व्यक्ति के प्रभार में होगी जिसे विस्फोटकों की धरा-उठाई करने का अनुभव है और उनसे पूर्णतः परिचित है। जहाँ यान अनुज्ञप्तिधारी द्वारा न चलाया जा रहा हो वहाँ एक ऐसा दस्तावेज, जिस पर अनुज्ञप्तिधारी के हस्ताक्षर हों और उन व्यक्तियों का नाम दर्ज हो जिन्हें यान को चलाने के लिए प्राधिकृत किया गया हो, वैन के साथ ले जाया जाएगा और किसी निरीक्षण अधिकारी द्वारा मांग की जाने पर उसे पेश किया जाएगा।
Road van, while explosives are being loaded or unloaded or transported shall always be under the charge of competent person who shall be experienced in handling of explosives and fully conversant there under. Where the vehicle is not driven by the licensee holder, a document signed by the licensee naming persons authorised to drive and accompany the vehicle shall be carried in the van and produced on demand to an inspecting officer.
9. सड़क यान में किसी भी विस्फोटक का परिवहन तब तक नहीं किया जाएगा जब तक कि वे विस्फोटक नियमों के अनुसार या मुख्य विस्फोटक नियंत्रक द्वारा विनिर्दिष्ट रीति से पैक न कर दिए गए हों।
No explosives unless they are packed in accordance with the Explosives Rules or in a manner specified by the Chief Controller shall be transported in the explosives van.
10. विस्फोटकों के साथ डिटोनेटर्स का परिवहन नहीं किया जाएगा।
Detonators shall not be transported with any other explosives.
11. यदि सड़क यान में कोई टूट फूट हो जाती है या उसमें अग्न लग जाती है या विस्फोट हो जाता है अथवा सड़क यान इनमें किसी से अंतर्ग्रस्त हो जाती है तो ऐसी टूट फूट, दुर्घटना, अग्नि या विस्फोट की पूरी रिपोर्ट के साथ इस तथ्य की जानकारी अनुज्ञापन प्राधिकारी को तुरन्त दी जाएगी। यदि ऐसी दुर्घटना, अग्नि या विस्फोट में किसी व्यक्ति की मृत्यु हो जाती है या किसी व्यक्ति या सम्पत्ति को गम्भीर क्षति पहुँचती है तो उसकी रिपोर्ट निकटतम पुलिस स्टेशन को तुरन्त की जाएगी।
Any breakdown, accident, fire or explosion occurring in or involving the road van, shall be immediately reported to the licensing authority together with a full report of such breakdown, accident, fire or explosion. If such accident, fire or explosion is attended with loss of human life or serious injury to person or property, a report shall also be made immediately to the nearest Police Station.
12. विस्फोटकों को यान में परेषक के अनुज्ञप्त परिसर में ही लादा जाएगा और परेषिता के अनुज्ञप्त परिसर पर ही यान से उतारा जाएगा।
The explosives shall be loaded into the van only at the licensed premises of consignor and unloaded from the van at the licensed premises of the consignee.
13. अनुज्ञप्तिधारी, परिवहन किए जाने वाले विस्फोटकों का लेखाजोखा प्रारूप आरई-6 में रखेगा और निरीक्षण अधिकारी द्वारा मांगे जाने पर प्रस्तुत करेगा।
The licensee shall maintain account of explosives transported in Form RE-6 and present the same on demand by an inspecting officer.
14. अनुज्ञप्तिधारी और कर्मचारी परिसर के भीतर आपदा के दौरान की जाने वाली प्रक्रिया से अवगत होंगे।
The licensee and the employee shall be conversant with procedure to be taken during the emergency within the premises.
15. किसी निरीक्षण करने या नमूने लेने वाले अधिकारी को सभी युक्तियुक्त समय पर अनुज्ञप्त परिसर में अबाध पहुँच प्रदान की जाएगी और यह अभिनिश्चित करने के लिए कि अधिनियम और इन नियमों के उपबन्धों तथा सुरक्षा सम्बन्धी शर्तों का सख्त रूप से पालन किया जाता है, उस अधिकारी को प्रत्येक सुविधा उपलब्ध कराई जाएगी।
Free access shall be given at all reasonable times to any inspecting or sampling officer and every facility shall be afforded to the officer for ascertaining that the provisions of the Act or these rules and these conditions are duly observed.
16. यदि अनुज्ञापन प्राधिकारी या विस्फोटक नियंत्रक, लिखित में अनुज्ञप्तिधारक को ऐसी संस्तुतियों को क्रियान्वित करने के लिए, जो ऐसे प्राधिकारी की राय में अमान्य जोखिम उत्पन्न कर सकता है और स्थल पर या स्थल से बाहर व्यक्तियों की सुरक्षा के लिए आवश्यक है, सूचित करता है तो अनुज्ञप्तिधारी उन संस्तुतियों को निष्पादित करेगा और ऐसे प्राधिकारी द्वारा विनिर्दिष्ट अवधि के भीतर अनुपालन की रिपोर्ट देगा।
If the licensing authority or a Controller of Explosives informs in writing, the holder of the licence to carry out recommendations, which are in the opinion of such authority may pose unacceptable risk and so necessary for the safety of either on-site or off-site persons, the holder of the license shall execute the recommendations and report compliance within the period specified by such authority.
17. अग्नि या विस्फोटक के कारण होने वाली दुर्घटना और विस्फोटकों की हानि, कमी या चोरी के बारे में निकटतम पुलिस स्टेशन और अनुज्ञापन प्राधिकारी तथा अनुज्ञापन प्राधिकारी के स्थानीय कार्यालय को तुरन्त रिपोर्ट की जाएगी।
Accidents by fire or explosion and losses, shortage or theft of explosives shall be immediately reported to the nearest police station and the licensing authority and local office of the licensing authority

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives
दक्षिणार्ध, चैन्नै | South Circle, Chennai

Licence Endorsed under Rule 107(3) of Explosives Rules, 2008
By Shri. M. P. K. Rana, Controller of Explosives, Chennai on 30/07/2015

अनुज्ञति प्रारूप एनई - 7 | LICENCE FORM LE-7
(विस्फोटक नियम 2008 की अनुसूची 4 के भाग 1 का अनुच्छेद 7 देखें)
(See article no 7 of Part 1 of Schedule IV of Explosives Rules, 2008)

अनुज्ञति : सड़क वैन में विस्फोटकों के परिवहन के लिए
Licence to : transport explosives in a road van



अनुज्ञति संख्या / Licence No. : E/SC/TN/25/994(E88194)
वार्षिक फीस रूपए / Annual Fee Rs : 2500/-

- अनुज्ञति एतद्वारा जारी की जाती है
Licence is hereby granted to : **N.T.C. TRADING COMPANY (Occupier : S Ramachandran)**
14, Kovalan Street, Palayamkottai,
District-THIRUNELVELI, State-Tamil Nadu, Pincode-627002
- अनुज्ञतिधारी की प्रास्थिति / Status of licensee : Partnership Firm
- सड़क वैन की विशिष्टियाँ / Particulars of the road van:



पंजीकरण संख्या / Registration No.	TN 72 J5506
यान का मेक एवं मॉडल / Make and model of vehicle	MAHINDRA AND MAHINDRA LTD
लदान रहित वजन / Unladen weight	1310 Kg(s)
लदान सहित अधिकतम वजन / Maximum laden weight	2750 Kg(s)
परिवहन के लिए अनुज्ञेय विस्फोटकों की अधिकतम मात्रा Maximum quantity of explosives permitted for transport	1440 Kg(s)
इंजिन संख्या / Engine No.	AB31B24920
चैसिस संख्या / Chassis No.	MAIRC2ABA31B12750
अन्य फिटिंग्स का विवरण / Description of Other Fittings	As per the approved plan attached
वाहन के लिए अनुमत्य विस्फोटकों की मात्रा / Quantity of Explosives permitted to carry	1440 Kg(s)

- अनुज्ञत परिसर निम्नलिखित आरेखण (आरेखणों) के अनुरूप होना चाहिए / The licensed premises shall conform to the following drawing(s):
आरेखण संख्या / Drawing No : E/SC/TN/25/994(E88194) दिनांक / dated : 30/07/2015
- समय समय पर यथा संशोधित विस्फोटक अधिनियम, 1884 और उसके अधीन बनाए गए विस्फोटक नियम, 2008 के उपबन्धों और शर्तों एवं निम्नलिखित अनुलग्नकों के अधीन अनुज्ञति प्रदान की जाती है।
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed thereunder and the conditions and the following annexures....
(क) उपर्युक्त क्रम संख्या 4 में यथाकथित सड़क वैन का आरेखण / (a) Drawings of the road van as stated in serial no.4 above.
(ख) अनुज्ञापन प्राधिकारी द्वारा हस्ताक्षरित शर्तें / (b) Conditions signed by the licensing authority.
- यह अनुज्ञति तारीख 31 मार्च 2020 तक विधिमान्य रहेगी / This licence shall remain valid till 31st day of March 2020

यह अनुज्ञति, अधिनियम या उसके अधीन विरचित नियमों या इस अनुज्ञति की शर्तों के उल्लंघन, अनुसूची 5 के भाग 4 में सन्दर्भित, जहाँ भी लागू हो, या यदि अनुज्ञत परिसर आरेखण या उससे संलग्न उपायों में दर्शाए गए विवरण के अनुरूप नहीं पाए जाने पर निलम्बित या प्रतिसंहत की जा सकती है।
This licence is liable to be suspended or revoked for any violation of the Act or rules framed there under or the conditions of this licence as set forth under, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and annexure attached hereto.

दिनांक / Date: 30/07/2015

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives
दक्षिणांचल, चेन्नई | South Circle, Chennai

अनुज्ञति के नवीनीकरण हेतु पृष्ठांकन / Endorsement for renewal of licence:

नवीनीकरण की तिथि Date of Renewal	वैधता समाप्ति की तिथि Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर Signature of licensing authority
10/02/2020	31/03/2025	Jt. Chief Controller of Explosives, South Circle, Chennai

वैधानिक चेतावनी : विस्फोटकों का लापरवाही से प्रयोग या दुरुपयोग, विधि के अधीन गम्भीर दण्डित अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

शर्त / Conditions

1. यह अनुमति किसी अन्य सड़क वैन को अंतरणीय नहीं है।
This licence is not transferable to any other explosives van.
2. यान, उसकी थोड़ी और अन्य फिटिंग्स में कोई भी परिवर्तन, अनुज्ञापन प्राधिकारी के अनुमोदन के बिना नहीं किया जाना चाहिए।
No alterations should be made to the vehicle, its body and other fittings without approval from the licensing authority.
3. यह अनुमति या उसकी अभिप्रमाणित प्रति सदैव वैन में रखी जाएगी एवं निरीक्षण अधिकारी के मांगे जाने पर उसे प्रस्तुत किया जाएगा।
This licence or its authenticated copy shall at all times be kept in the van and produced on demand by an inspecting officer.
4. सड़क यान का, विस्फोटकों के परिवहन के लिए तब तक प्रयोग नहीं किया जाएगा जब तक कि वह ठीक हालत में नहीं है और विस्फोटक नियम 2008 का अनुपालन नहीं करती है।
The road van shall not be used for transport of explosives unless it is in a fit condition and complies with the Explosives Rules, 2008.
5. सड़क यान का प्रयोग, इस अनुमति द्वारा प्राधिकृत सामग्री से भिन्न किसी सामग्री के लिए तब तक नहीं किया जाएगा जब तक कि अनुज्ञापन प्राधिकारी द्वारा इसकी लिखित अनुमति न दे दी हो।
The road van shall not be used for transport of any material other than that authorised by this licence, unless permitted by licensing authority in writing.
6. सड़क यान में धूम्रपान नहीं किया जाएगा न उसमें अग्नि या कुत्रिम प्रकाश या कोई ऐसे वस्तु जिससे आग लग सकती हो, की अनुमति दी जाएगी।
No smoking and no fire or artificial light or any article capable of causing fire shall be allowed on the explosives van.
7. यान का प्रयोग यात्रियों के वहन के लिए नहीं किया जाएगा।
The vehicle shall not be used for carrying passenger.
8. जिस समय सड़क यान पर विस्फोटकों की लदाई या उतराई या परिवहन किया जा रहा हो, उस समय सड़क यान ऐसे किसी सक्षम व्यक्ति के प्रभार में होगी जिसे विस्फोटकों की धरा-उठाई करने का अनुभव है और उनसे पूर्णतः परिचित है। जहाँ यान अनुज्ञापन प्राधिकारी द्वारा न चलाया जा रहा हो वहाँ एक ऐसा दस्तावेज, जिस पर अनुज्ञापन प्राधिकारी के हस्ताक्षर हों और उन व्यक्तियों का नाम दर्ज हो जिन्हें यान को चलाने के लिए प्राधिकृत किया गया हो, वैन के साथ ले जाया जाएगा और किसी निरीक्षण अधिकारी द्वारा मांगे जाने पर उसे पेश किया जाएगा।
Road van, while explosives are being loaded or unloaded or transported shall always be under the charge of competent person who shall be experienced in handling of explosives and fully conversant there under. Where the vehicle is not driven by the licensee holder, a document signed by the licensee naming persons authorised to drive and accompany the vehicle shall be carried in the van and produced on demand to an inspecting officer.
9. सड़क यान में किसी भी विस्फोटक का परिवहन तब तक नहीं किया जाएगा जब तक कि वे विस्फोटक नियमों के अनुसार या मुख्य विस्फोटक नियंत्रक द्वारा विनिर्दिष्ट रीति से पैक न कर दिए गए हों।
No explosives unless they are packed in accordance with the Explosives Rules or in a manner specified by the Chief Controller shall be transported in the explosives van.
10. किन्हीं अन्य विस्फोटकों के साथ डिटोनेटर्स का परिवहन नहीं किया जाएगा।
Detonators shall not be transported with any other explosives.
11. यदि सड़क यान में कोई दूट फूट हो जाती है या उसमें आग लग जाती है या विस्फोट हो जाता है अथवा सड़क यान इनमें किसी से अंतर्ग्रस्त हो जाती है तो ऐसी दूट फूट, दुर्घटना, अग्नि या विस्फोट की पूरी रिपोर्ट के साथ इस तथ्य की जानकारी अनुज्ञापन प्राधिकारी को तुरन्त दी जाएगी। यदि ऐसी दुर्घटना, अग्नि या विस्फोट में किसी व्यक्ति की मृत्यु हो जाती है या किसी व्यक्ति या सम्पत्ति को गम्भीर क्षति पहुँचती है तो उसकी रिपोर्ट निकटतम पुलिस स्टेशन को तुरन्त की जाएगी।
Any breakdown, accident, fire or explosion occurring in or involving the road van, shall be immediately reported to the licensing authority together with a full report of such breakdown, accident, fire or explosion. If such accident, fire or explosion is attended with loss of human life or serious injury to person or property, a report shall also be made immediately to the nearest Police Station.
12. विस्फोटकों को यान में परेषक के अनुज्ञापन परिसर में ही लदा जायेगा और परेषिता के अनुज्ञापन परिसर पर ही यान से उतरा जाएगा।
The explosives shall be loaded into the van only at the licensed premises of consignor and unloaded from the van at the licensed premises of the consignee.
13. अनुज्ञापन प्राधिकारी, परिवहन किए जाने वाले विस्फोटकों का लेखाजोखा प्रारूप आरई-6 में रखेगा और निरीक्षण अधिकारी द्वारा मांगे जाने पर प्रस्तुत करेगा।
The licensee shall maintain account of explosives transported in Form RE-6 and present the same on demand by an inspecting officer.
14. अनुज्ञापन प्राधिकारी और कर्मचारी परिसर के भीतर आपात के दौरान की जाने वाली प्रक्रिया से अद्यतन होंगे।
The licensee and the employee shall be conversant with procedure to be taken during the emergency within the premises.
15. किसी निरीक्षण करने या नमूना लेने वाले अधिकारी को सभी युक्तियुक्त संभव पर अनुज्ञापन परिसर में अबाध पहुँच प्रदान की जाएगी और यह अभिनिश्चित करने के लिए कि अधिनियम और इन नियमों के उपबन्धों तथा सुरक्षा सम्बन्धी शर्तों का सम्बन्ध रूप से पालन किया जाता है, उस अधिकारी को प्रत्येक सुविधा उपलब्ध कराई जाएगी।
Free access shall be given at all reasonable times to any inspecting or sampling officer and every facility shall be afforded to the officer for ascertaining that the provisions of the Act or these rules and these conditions are duly observed.
16. यदि अनुज्ञापन प्राधिकारी या विस्फोटक नियंत्रक, लिखित में अनुज्ञापन प्राधिकारक को ऐसी संस्तुतियों को क्रियान्वित करने के लिए, जो ऐसे प्राधिकारी की राय में अमान्य जोखिम उत्पन्न कर सकता है और स्थल पर या स्थल से बाहर व्यक्तियों की सुरक्षा के लिए आवश्यक है, सूचित करता है तो अनुज्ञापन प्राधिकारी उन संस्तुतियों को निष्पादित करेगा और ऐसे प्राधिकारी द्वारा विनिर्दिष्ट अवधि के भीतर अनुपालन की रिपोर्ट देगा।
If the licensing authority or a Controller of Explosives informs in writing, the holder of the licence to carry out recommendations, which are in the opinion of such authority may pose unacceptable risk and so necessary for the safety of either on-site or off-site persons, the holder of the licence shall execute the recommendations and report compliance within the period specified by such authority.
17. अग्नि या विस्फोटक के कारण होने वाली दुर्घटना और विस्फोटकों की हानि, कमी या चोरी के बारे में निकटतम पुलिस स्टेशन और अनुज्ञापन प्राधिकारी तथा अनुज्ञापन प्राधिकारी के स्थानीय कार्यालय को तुरन्त रिपोर्ट की जाएगी।
Accidents by fire or explosion and losses, shortage or theft of explosives shall be immediately reported to the nearest police station and the licensing authority and local office of the licensing authority

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives
दक्षिणार्ध, चन्ने | South Circle, Chennai

अनुज्ञापि प्ररूप एल. ई.-3 | LICENCE FORM LE-3

(विस्फोटक नियम, 2008 का अनुसूचा 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।)
(See article 3(a) to (d) of Part I of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1, 2, 3, 4, 5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने
Licence to possess (c) for use, explosives of class 1, 2, 3, 4, 5, 6 or 7 in a magazine

अनुज्ञापि सं. (Licence No.) : E/HQ/TN/22/430(E80761)

वार्षिक फीस रूपए (Annual Fee Rs): 11000/-



Licence is hereby granted to

M/s. N.T.C. Trading Company (अधिभोगी / Occupier : Shri S. Ramachandran), 14, Kovalan Street, Palayamkottai,
Distt- Tirunelveli-627002 (Tamil Nadu), Town/Village - Palayamkottai, District-TIRUNELVELI, State-Tamil Nadu,
Pincode - 627002

को अनुज्ञापि अनुदत्त की जाती है।

2. अनुज्ञापिधारी की प्रारिथिति / Status of licensee : Partnership Firm

3. अनुज्ञापि निम्नलिखित प्रयोजनों के लिए विधिमान्य है।

Licence is valid only for the following purpose.

possess for use of Nitrate Mixture, Safety Fuse, Detonating Fuse, Electric and/or Ordinary Detonators, - के उपयोग के लिए

4. अनुज्ञापि विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमान्य है।

Licence is valid for the following kinds and quantity of explosives -- (क) (a)

क्र Sr. No	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1	Nitrate Mixture	2, 0	0	5500 Kg.
2	Safety Fuse	6, 1	0	5000 Mtrs
3	Detonating Fuse	6, 2	0	20000 Mtrs
4	Electric and/or Ordinary Detonators	6, 3	0	44000 Nos.

(ख) किसी एक कलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा (अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञापि के लिए)

(b) Quantity of explosives to be purchased in a calendar month (applicable for licence under article 3(b) and (c))

(7 times
as above.

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञापि परिसर की पुष्टि होती है।

The licensed premises shall conform to the following drawing(s):

रेखाचित्र क्र. (Drawing No.) E/HQ/TN/22/430(E80761)

दिनांक (Dated) 05/11/2014

6. अनुज्ञापि परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address:

Survey No. 707/2, 707/3A, 707/3B, 714/2B, ग्राम (Town/Village): Melaseval Village, Aabhasamudram Taluk पुलिस थाना (Police Station) : Tirunelveli

जिला (District)

TIRUNELVELI

राज्य (State)

Tamil Nadu

पिनकोड (Pincode)

627002

दूरभाष (Phone)

ई.मेल (E-Mail)

फैक्स (Fax)

7. अनुज्ञापि परिसर में निम्नलिखित सुविधाएँ अंतर्विष्ट हैं।

The licensed premises consist of following facilities.

a main magazine room, a lobby and a detonator storage room.

8. अनुज्ञापि समय-समय पर पृथक्शोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबंधों के अधीन रहते हुए अनुदत्त की जाती है।

The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed there under and the conditions, additional conditions and the following Annexures.

- उपर्युक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, सन्निर्माण संबंधी और अन्य विवरण दर्शाते हुए)।
Drawings (showing site, constructional and other details) as stated in serial No. 5 above
- अनुज्ञापि प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञापि की शर्तों और अतिरिक्त शर्तों।
Conditions and Additional Conditions of this licence signed by the licensing authority.
- दूरी प्ररूप DE-2 | Distance Form DE-2

9. यह अनुज्ञापि तारीख 31 मार्च 2019 तक विधिमान्य रहेगी। This licence shall remain valid till 31st day of March 2019.

यह अनुज्ञापि, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति विधिभंग सेट-प1 के अधीन तथा उपबंधित इस अनुज्ञापि की शर्तों का अधिकतम कठन या यदि अनुज्ञापि परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिबंधित की जा सकती है जहां यह लागू हो।

This licensee is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख : The Date - 05/11/2014

मुख्य विस्फोटक नियंत्रक | Chief Controller of Explosives

Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 14/08/2015
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 26/10/2015
- Change in Postal Address dated : 24/04/2017
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 11/12/2018
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 09/01/2019

नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

नवीकरण की तारीख
Date of Renewal

29/07/2019

समाप्ति की तारीख
Date of Expiry

31/03/2024

अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प
Signature of licensing authority and stamp

Jt. Chief Controller of Explosives, South Circle, Chennai

कानूनी चेतावनी : विस्फोटकों को गलत ढंग से चलाने या उनका दुरुपयोग विधि के अधीन गंभीर दंडित अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

ANNEXURE-IX NABET CERTIFICATE



National Accreditation Board for Education and Training



Certificate of Accreditation

Eco Tech Labs Pvt Ltd.,

48, 2nd Main Road, Ram Nagar South Extension, Pallikaranai, Chennai- 600100, T.N.

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals - including Open cast only	1	1 (a) (i)	B
2	Thermal power plants	4	1(d)	A
3	Coal washeries	6	2 (a)	B
4	Metallurgical industries - Ferrous only	8	3 (a)	B
5	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	21	5 (f)	A
6	Airports	29	7 (a)	A
7	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	A
8	Building and construction projects	38	8 (a)	B
9	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated Apr. 20, 2021 and supplementary minutes dated Oct.19, 2021 posted on QCI-NABET website

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/22/2217 dated Jan. 19, 2022. The accreditation needs to be renewed before the expiry date by Eco Tech Labs Pvt. Ltd., Chennai following due process of assessment.

NABET

Sr. Director, NABET
Dated: Jan. 19, 2022

Certificate No.
NABET/EIA/2124/SA 0147

Valid up to
Sep. 15, 2023

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

