

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

For

Rough Stone and Earth Quarry- 2.33.5 Ha

At

**S.F.Nos : 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13,
Thollamur Village,
Vanur Taluk,
Villupuram District, Tamilnadu**

**Project Proponent
Thiru.K.Gnanasekaran,
S/o. Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Villupuram District – 605 109**

**Project termed under schedule 1(a)
Category B₁ (Cluster Mining)
Baseline Period : June, July & August 2022**

***Environmental Consultant & Laboratory Details:*
Ecotech Labs Private Limited**



**No.48, 2nd Main road,
Ram Nagar South Extension,
Pallikaranai, Chennai-600100**

**May
2023**

Date:

From

Thiru.K.Gnanasekaran,
S/o. Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Villupuram District – 605 109

To

The District Environmental Engineer

Tamilnadu Pollution Control Board,
District Collectorate Master Plan Complex,
Backside of Taluk Office,
Villupuram – 605 602.

Sir,

Sub: Request to conduct Public Hearing – Environmental Clearance for Thiru.K.Gnanasekaran Rough Stone and Earth Quarry over a total extent of 2.33.5 Ha at S.F.No. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 of Thollamur Village, Vanur Taluk, Villupuram District, Tamilnadu State – Regarding.

Ref: Letter No. SEIAA-TN/F. No. 9208/SEAC/ToR-1250/2022 Dated: 07.09.2022

Please find enclosed herewith the application of Draft EIA Report along with necessary enclosures towards seeking environmental clearance for Thiru.K.Gnanasekaran Rough Stone and Earth Quarry over a total extent of 2.33.5 Ha at S.F.No. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 of Thollamur Village, Vanur Taluk, Villupuram District, Tamilnadu 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 Earth 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. K. Gnanasekaran,
S/o. Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Villupuram District – 605 109.

UNDERTAKING

I, Thiru. K. Gnanasekaran, undertaking that the Draft Environmental Impact Assessment (EIA) Report for Rough Stone and Earth Quarry over an extent of 2.33.5 Ha at S.F.No. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 of Thollamur Village, Vanur Taluk, Villupuram 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. 9208/SEAC/ToR-1250/2022 Dated: 07.09.2022.

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: Villupuram

Date:

Yours faithfully

Thiru. K. Gnanasekaran

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

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

UNDERTAKING

I, Dr. A. Dhamodharan, Managing Director confirms that this Draft EIA Report of Rough Stone and Earth Quarry over an extent of 2.33.5 Ha at S.F.No. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 of Thollamur Village, Vanur Taluk, Villupuram District, Tamilnadu State has been prepared at M/s. Ecotech Labs Pvt. Ltd., Chennai.

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

Signature:

Name: Dr. A. Dhamodharan

Designation: Managing Director

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

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


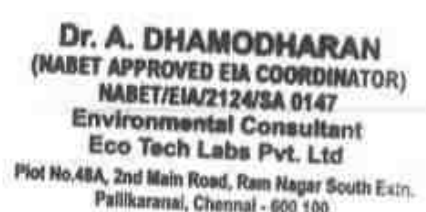
Date:

Place: Chennai

Declaration of Experts contributing to the EIA




Declaration by experts contributing to the EIA report for Rough Stone and Earth Quarry (minor mineral) mining project of Thiru. K. Gnanasekaran Rough Stone and Earth Quarry over a total extent of 2.33.5 Ha at S.F.No. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 of Thollamur Village, Vanur Taluk, Villupuram District, Tamilnadu State.


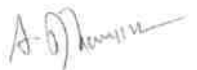


I, hereby certify that I was a part of the EIA team in the following capacity that developed the above EIA.



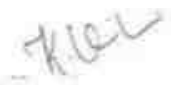

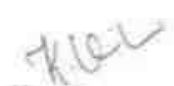
Project	Rough Stone and Earth Quarry-2.33.5 Ha
Type & Category	1 (a) Mining of Minerals
Project Proponent	Thiru K Gnanasekaran
Environment Consultant with their Accreditation Status	M/s. Eco Tech Labs Pvt. Ltd., QCI Accredited
NABET Certificate No.	NABET/ EIA/2124/ SA 0147
EIA Coordinator Name	Dr. A. Dhamodharan (Mining of Minerals)
Signature	 
Period of Involvement	June to August 2022
Contact Information	M/s. Eco Tech Labs Pvt. Ltd. No. 48, 2nd Main Road, Ram Nagar South Extension Pallikaranai, Chennai - 600 100 Mobile: +91 9789906200 E-mail: dhamo@ecotechlabs.in

Functional Area Experts

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

S. No.	Functional areas	Name of the experts	Involvement (period and task)	Signature and date
1	AP	Mrs. K. Vijayalakshmi	<ol style="list-style-type: none">1. Selection of Baseline Monitoring stations based on the wind direction2. Interpretation of Baseline data by comparing it with standards prescribed by CPCB against the type of area3. Identification of sources of air pollution and suggesting mitigation measures to minimize impact <p><i>Period: March 2022 – Till now</i></p>	
2	WP	Dr. A. Dhamodharan	<ol style="list-style-type: none">1. Selection of baseline Monitoring Locations for Ground water analysis and also identifying nearest surface water to be studied.2. Interpretation of baseline data collected3. Identification of impacts based on the baseline study conducted and also to the ground water and nearby surface water due to the proposed project4. Preparation of suitable and appropriate mitigation plan. <p><i>Period: March 2022 – Till now</i></p>	
3	SHW	Dr. A. Dhamodharan	<ol style="list-style-type: none">1. Identification of nature of solid waste generated2. 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 Environment3. Suggesting suitable mitigation measures by recommending appropriate disposal method for each category of waste generated4. Top soil and refuse management	

			<i>Period: March 2022 – Till now</i>	
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><i>Period: March 2022 – Till now</i></p> <p><i>*INVOLVES PUBLIC HEARING</i></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><i>Period: March 2022 – Till now</i></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><i>Period: March 2022 – Till now</i></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><i>Period: March 2022 – Till now</i></p>	

8	SC	Dr. A. Dhamodharan	<ol style="list-style-type: none"> 1. Interpretation of baseline report 2. Identification of possible impacts on soil, prediction of soil conservation and suggesting suitable mitigation measures. <p>Period: March 2022 – Till now</p>	
9	AQ	Mrs. K. Vijayalakshmi	<ol style="list-style-type: none"> 1. Collection of Meteorological data for the baseline study period 2. Plotting wind rose plot and thereby selecting the monitoring locations based on the wind pattern 3. Estimation of sources of air emissions and air quality modeling is done 4. Interpretation of the results obtained 5. Identification of the impacts and suggesting suitable mitigation measures. <p>Period: 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 S.F.No. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 of Thollamur Village, Vanur Taluk, Villupuram 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: NABET/ EIA/2124/ SA 0147

DRAFT EIA REPORT

Project	<i>Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran</i>	<i>Draft EIA Report</i>
Project Proponent	<i>Thiru K Gnanasekaran</i>	
Project Location	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

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ABBREVIATION

LU –Land use

AP – Air Pollution monitoring, prevention and control

AQ- Meteorology, Air quality modeling and prediction

WP – Water pollution monitoring, prevention and control

EB- Ecology and Biodiversity

NV- Noise & Vibration

SE- Socio-economics

HG- Hydrology, ground water and water conservation

GEO –Geology

RH – Risk assessment and hazards management

SHW –Solid and Hazardous waste management

SC- Soil conservation

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EXECUTIVE SUMMARY

1. Project Background:

The Proposed project total extent area is 2.33.5 Ha, Patta land in Thollamur Village of Vanur Taluk, Villupuram District. The category of project is B1, It is an Existing Rough stone and Earth quarry in Thollamur village. The area is situated on Plain topography gently sloping towards South Eastern side covered with Rough Stone which does not sustain any type of vegetation.

The quarry operation is proposed to carry out with open cast mechanized mining with 5.0 meter vertical bench with a bench width of 5.0 meter. The Quarry operation involves shallow hand jack hammer drilling, mild explosives in blasting, excavation, Loading and transportation of Rough Stone to the needy crushers.

The quarry operation is proposed up to depth for 22 m (2.0 m Earth + 20 m Rough Stone). The Total Geological reserve is about 8,17,250 m³ of Rough Stone and 46,700 m³ of Earth. The Mineable Reserves of Rough stone is 65,935 m³ and Earth is 18,652 m³. The yearwise production/recoverable resources of rough stone for 5 years are 65,935 m³ and Earth is 18,652 m³.

Mining Plan was approved by The Assistant Director, Dept. of Geology & Mining, Villupuram vide Rc No. B/G&M/277/2018 dated 26.12.2019. The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, Wildlife sanctuaries as per Wild life protection Act 1972, within the radius of 15 Km. Oussudu Lake Bird Sanctuary is located at a distance of 11.84 kms, SE from the project site and Kazhuveli Wetland Bird Sanctuary is located at a distance of 15.45 kms, NE from the project site. National Fossil/Petrified Wood Park is located at a distance of 4.46 kms, SW from the project site, which is a National Geo-heritage Monument maintained by Geological Survey of India.

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2. Nature & Size of the Project

The Existing Rough Stone and Earth Quarry over an extent of 2.33.5 Hectares land is located at Thollamur Village of Vanur Taluk, Villupuram District.

Mineral intends to quarry	: Rough stone and Earth
District	: Villupuram
Taluk	: Vanur
Village	: Thollamur
S. F. Nos.	: 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13
Extent	: 2.33.5 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	12° 03' 20.03" N to 12° 03' 27.36" N
2	Longitude	79° 40' 16.29" E to 79° 40' 23.75" E
3	Site Elevation above MSL	65 m from MSL
4	Topography	Plain
5	Land use of the site	Patta land
6	Extent of lease area	2.33.5 Ha
7	Nearest highway	<ul style="list-style-type: none"> ➤ NH-32 : Chennai to Nagapattinam Highway is about 13.37 Kms on E of the area ➤ SH-136 Mailam to Puducherry Road is about 0.94 Kms on N of the area
8	Nearest railway station	<ul style="list-style-type: none"> ➤ Vikravandi Railway Station – 14 km, W ➤ Villupuram Junction – 22.50 km, SW
9	Nearest airport	<ul style="list-style-type: none"> ➤ Puducherry Domestic Airport – 18.35 km – SE ➤ Chennai International Airport – 115.33 km - NE
10	Nearest town / city	<ul style="list-style-type: none"> ➤ Town - Vikravandi - 13.63 km - SW ➤ City - Villupuram - 22.62 km - SW ➤ District - Villupuram - 22.62 km – SW
11	Rivers / Canal	<ul style="list-style-type: none"> ➤ Sankarabarani River – 4.30 kms, S ➤ Veedur Dam – 9.41 kms, W
12	Lake	<ul style="list-style-type: none"> • Kunnam Lake – 2.80 kms, N

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		<ul style="list-style-type: none"> • Katrambakkam Lake – 8.53 kms, NE • Pulichapallam Lake – 9.55 kms, E • Purana Singa Palayam Lake – 11.17 kms, S • Oussudu Lake – 12.16 kms, SE • Avudayarpattu Lake – 11.75 kms, SW • Kodur Lake – 12.45 kms, NE • Omandur Lake – 12.25 kms, NW • Annamputhur Lake – 12.80 kms, NW • Nallavur Lake – 13 kms, NE • Kazhuveli Lake – 14.25 kms, NE
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places/Monuments	<ul style="list-style-type: none"> • National Petrified/Fossil Wood Park, Thiruvakkarai – 4.30 kms, SW
15	National parks / Wildlife Sanctuaries	<ul style="list-style-type: none"> • Oussudu Lake Bird Sanctuary – 11.84 kms, SE • Kazhuveli Wetland Bird Sanctuary – 15.45 kms, NE
16	Reserved / Protected Forests	<ul style="list-style-type: none"> • Kongarampoondi R.F – 13.95 Kms, SW • Melkondai R.F – 13.71 Kms, SW • Sadhana Forest – 14 Kms, SE • Nine Palms Forest – 14.45 Kms, E
17	Seismicity	Proposed Lease area come under Seismic zone-II (low risk area)
18	Defense Installations	Nil in 15 Km radius

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 and Earth extracted will be transported to be Stone crusher of Villupuram District.
- ❖ 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.

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❖ No damage to the land is caused, no reclamation or back filling is required.

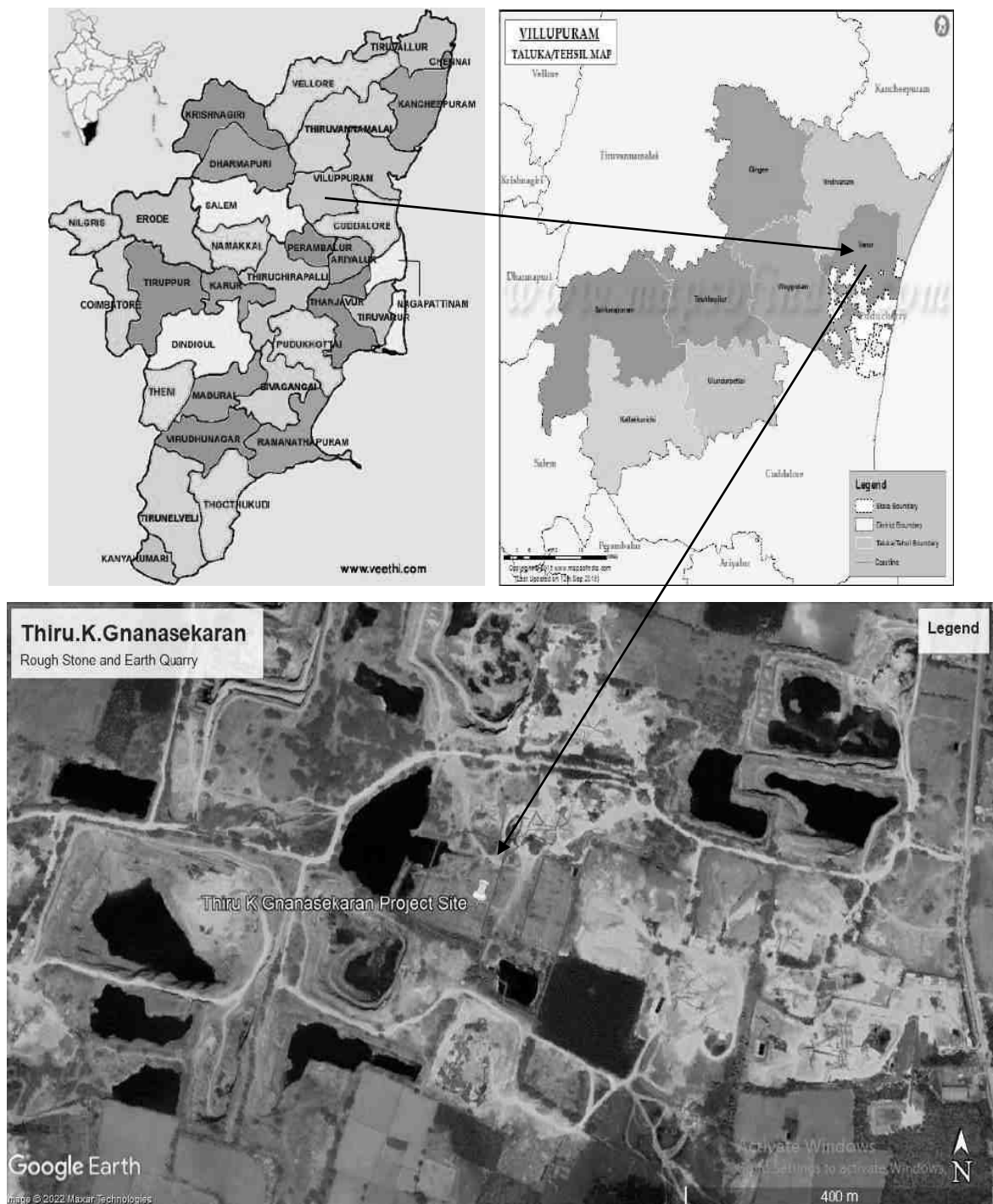


Figure 1: Location Map of the Project Site

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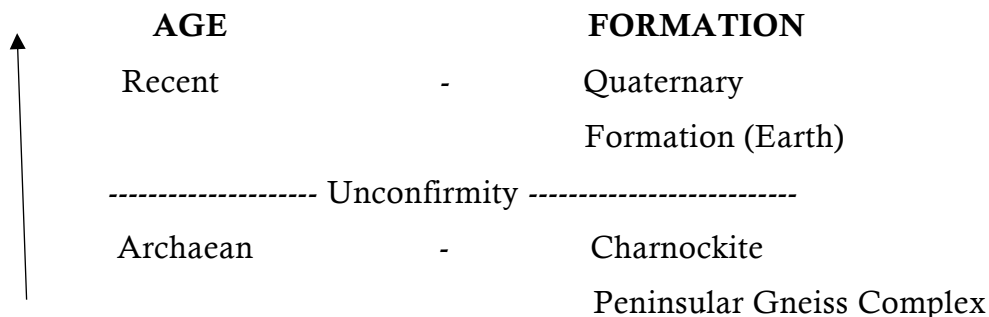


Figure 2: Google Image of the Project Site

4. Charnockite

The greater part of the district is covered by rocks belonging to Archaean age comprising the Charnockite group, the Migmatite complex, Sathyamangalam group and the Bhavani group and the alkali complex of Proterozoic age. West of Kallakurichi (Southwestern part of the district), the area comprises the Charnockite Group of rocks, viz., Charnockite, pyroxene-granulite and garnetiferous gabbro. West of Tirukoilur (Central part of the district) and east of the Charnockite terrain (i.e., Kallakurichi area) the Migmatite complex is made up of Hornblende-Biotite gneiss. Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite body N30°E – S30°W with dipping towards SE60°.

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



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5. Geological Resources

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

Table 2. Geological resources

The total Geological resources are calculated by area method. The calculation of the geological resources is given below.

Total Extent of the area = 2.33.5 Ha

$$= 2.33.5 \times 10,000 = 23350 \text{ sq.m}$$

Earth = 2 m below ground level

$$= 23350 \text{ sq.m} \times 2 \text{ m depth}$$

$$= 46,700 \text{ m}^3 \text{ of Earth formation}$$

Rough Stone formation = 35 m below ground level

$$= 23350 \text{ sq.m} \times 35 \text{ m depth}$$

$$= 8,17,250 \text{ m}^3 \text{ of Rough Stone}$$

Total Geological Resources of Earth formation = 46,700 m³

Total Geological Resources of Rough stone = 8,17,250 m³

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Table 3. Yearwise Production Plan

YEARWISE PRODUCTION RESERVES								
Year	section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Earth m ³	Mineable Reserves in m ³
1	XY-AB	I	45	73	2	6570	6570	
		II	41	65	5	13325		13325
	TOTAL							6570
2	XY-AB	I	29	73	2	4234	4234	
		II	25	65	5	8125		8125
	X1Y1-CD	I	40	36	2	2880	2880	
		II	36	28	5	5040		5040
	TOTAL							7114
3	X1Y1-CD	I	69	36	2	4968	4968	
		II	66	28	5	9240		9240
		III	56	14	5	3920		3920
	TOTAL							4968
4	X1Y1-CD	III	32	14	5	2240		2240
	XY-AB	III	43	51	5	10965		10965
	TOTAL							
5	XY-AB	III	10	51	5	2550		2550
		IV	39	38	5	7410		7410
		V	26	24	5	3120		3120
	TOTAL							
GRAND TOTAL							18652	65935

6. Mining

Opencast mining

The quarry operation is proposed to carry out with conventional open cast mechanized mining with 5.0 meter vertical bench with a bench width of 5.0 meter with slope of 80°. The Quarry operation involves shallow hand jack hammer drilling, mild explosives in blasting, excavation, loading and transportation of rough stone to the needy crusher.

Process Description

- The reserves and resource are arrived based upon the Geological investigation
- Removal of Earth by Excavators and directly Loaded into Tippers.

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- Removal of Rough Stone by Excavators by Drilling and Blasting.
- Shallow Drilling With Jackhammer of 30-35 mm Dia.
- Minimum Blasting With Class 3 Explosives.
- Loading of Rough Stone By Excavators Into Tippers.

7. Water Requirement

Total water requirement for the mining project is 2.0 KLD. Domestic water will be sourced from nearby Thollamur Village and other water will be source from nearby road tankers supply.

Table 4. Water Balance

Purpose	Quantity	Source
Domestic and Drinking Water	1.0 KLD	Packaged Drinking water vendors available in Thollamur which is about 0.76 Km South East of the area
Green belt	0.5 KLD	Other domestic activities through road tankers supply
Dust suppression	0.5 KLD	From road tankers supply
Total	2.0 KLD	

8. Manpower

Total manpower required for the project is approximately 18 persons. Workers will be from nearby villages.

Table 5. Man Power Requirement

1.	Skilled	Hand Jack Hammer Operator	8 No.
		Excavator Operator	1 No.
		Mate/Blaster	1 No.
2.	Semi – skilled	Tipper Driver	2 Nos
3.	Unskilled	Helper	2 Nos
		Cleaners & Co-operator	3 Nos

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	Security	1 No
4.	Mines Manager/Mines Foreman	1 No.
	Total	19 Nos.

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

9. Solid Waste Management

Table 6 Solid Waste Management

S. No	Type	Quantity	Disposal Method
1	Organic	3.42 kg/day	Municipal bin including food waste
2	Inorganic	5.13 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 other quarries:

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
1.	K.Gnanasekaran S/o. Kannadi Counder, Mettu Street, Karasanur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur & Thollamur	12/4 12/5A	0.59.5 0.65.0 Total 1.24.5	24.09.2017 to 23.09.2022
2	V. Sadayappan, No.18, Amal Nagar, West Tambaram, Chennai-600045	Rough Stone & Gravel	Vanur & Thollamur	1/3A 12/3 12/5B1	0.58.0 0.60.5 2.38.5 Total 3.57.0	16.08.2018 to 15.08.2023

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3	G. Raja, S/o. Gopal, Sivaraj Street, Thiruneermalai, Chennai	Rough Stone & Gravel	Vanur & Thollamur	26/1	2.42.5	16.08.2018 to 15.08.2023
4	R. Muralidharan, Manager, Om Sakthi Constructions, Thollamur Village, Vanur Taluk	Rough Stone & Gravel	Vanur & Thollamur	38/2A 35/1C 39/1B	0.96.0 0.10.0 1.00.0 Total 2.06.0	16.08.2018 to 15.08.2023
5	K. Balamurugan, S/o. Kuppusamy, Karasanur & Post, Vanur Taluk	Rough Stone & Gravel	Vanur & Thollamur	11/4A2 15/2 15/3A 15/3B 15/4	0.16.0 0.44.0 0.50.0 0.56.0 0.46.0 Total 2.12.0	27.08.2018 to 26.08.2023

2) Proposed Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.
1.	S.V.Venkatesh, Sri Santhosh Blue Metals, No.173, Sarkar Thopu, Tindivanam, Villupuram District	Rough Stone & Gravel	Vanur & Thollamur	8/1B 8/2	0.61.5 1.44.5 Total 2.06.0
2	K. Gnanasekaran S/o. Kannadi Counder, Mettu Street, Karasanur Village, Vanur Taluk, Villupuram District	Rough Stone & Gravel	Vanur & Thollamur	29/2 29/3 30/4 30/9 30/12 30/13	0.51.0 0.06.0 0.29.5 0.28.5 0.58.0 0.60.5

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					Total 2.33.5
3	V. Ramesh, S/o. J. Venkatapathy, No.5, Thangaraj Street, HLL Colony, Pammal, Chennai-75	Rough Stone & Gravel	Vanur & Thollamur	16/11	0.45.0
				16/12	0.74.5
				17/1	1.63.5
				18/3B	0.70.0
					Total 3.53.0
4	G. Arjunan S/o. Govindasamy, No.63, Throupathi Amman Koil Street, Thiruvakkarai Village, Vanur Taluk	Rough Stone & Gravel	Vanur & Thollamur	11/5A	0.14.0
				11/6	0.17.0
				11/7	0.19.0
				16/2	0.11.0
				16/4	0.15.0
				16/5	0.12.0
				16/6	0.16.0
				16/7	0.24.0
				16/8B	0.23.0
				16/9	0.08.5
16/10	1.62.0				
	Total 3.21.5				
5.	I. Justin Prabu, S/o. V. Iyyadurai, 1/56, D9, Church Street, Christopher Nagar, Peruvilai, Kanniyakumari District	Rough Stone & Gravel	Vanur & Karasanur	43/4A	0.35.5
				43/4B	0.35.5
				43/4C	0.35.0
				43/5	0.71.0
				43/6	1.27.0
				44/6	0.63.0
	Total 3.67.0				

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3) Abandoned Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
1.	R. Alagurajan, S/o. Ramaswamy, No.41, Erikaran Street, Nerkundram, Chennai-107	Rough Stone	Vanur & Thollamur	35/1B 35/2A2 (P) 35/2B (P)	1.04.0 0.19.5/0.48.0 0.23.0/0.48.0 Total 1.46.5	25.03.2015 to 24.03.2020
2	K. Dharmalingam, S/o. Kannaiyan, 2/6, Kalaigarnar Street, Erumaiyur, Chennai-44.	Rough Stone	Vanur & Thollamur	12/5B	2.52.0	20.04.2013 to 19.04.2018
3	S. Nanthini, W/o. Sankar, No.14, 3 rd Street, Jayapuram, Tindivanam Taluk	Rough Stone	Vanur & Thollamur	11/5A 11/6 11/7 16/2 16/3 16/4 16/5 16/6 16/7 16/8B 16/9 16/10	0.14.0 0.17.0 0.19.0 0.11.0 0.11.0 0.15.0 .0.12.0 0.16.0 0.24.0 0.23.0 0.08.5 1.62.0 Total 3.32.5	31.12.2015 to 30.12.2020
4	C. Ganesan, S/o. Chinnaiya Gounder, 168, Mettu Street,	Rough Stone	Vanur & Thollamur Nemili	13/3 14/7 15/1 118/1	1.50.0 0.39.5 0.48.5 0.56.0	22.08.2016 to 21.08.2021

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	Karasanur Village, V.Parangani Post, Vanur Taluk			118/2 118/3 118/4A	0.18.5 0.71.0 0.44.0 Total 4.27.5	
5	V. Sankar, S/o. Vivekanandan, 14, Jayapuram Colony, Tindivanam Town & Taluk, Villupuram District	Rough Stone	Vanur & Thollamur	2/1 2/2 2/3 2/4 2/5 3/1 3/2 3/3 3/4 3/5 3/6 3/7	0.45.5 0.22.0 0.22.0 0.23.5 0.25.0 0.32.5 0.33.5 0.81.0 0.20.0 0.22.5 0.21.0 0.18.0 Total 3.66.5	20.09.2016 to 19.09.2021
6	D. Sundaramurthy, Santhosh Blue Metals, Thollamur Village, Eraiur Post, Vanur Taluk	Rough Stone	Vanur, Thollamur	35/2A1 & 9/3	1.06.0 0.33.5 Total 1.39.5	26.04.2013 to 25.04.2018
7	V. Elumalai, S/o. N. Varadappa Chettiar, Old No. 132, New No. 477, Jawaharlal Nehruji Road, Viluppuram - 605602	Rough Stone	Vanur, Nemili	117/2 117/3 117/4 117/5	0.19.0 0.20.0 0.49.0 0.23.0 Total 1.11.0	18.06.2012 to 17.06.2017
8	S. Irusappa Gounder, S/o. Srinevasa Gounder, Karasanur Village, Vanur Taluk	Rough Stone	Vanur, Thollamur	4/1 4/2A 4/2B 4/2C	0.40.0 0.04.5 0.10.0 0.80.5	01.09.2008 to 31.08.2013

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				6/2B	0.61.0	
					Total 1.96.0	
9	R. Periyasamy, S/o. Rangasamy, Karasanur Village, V. Parangini Post, Vanur Taluk	Rough Stone	Vanur, Thollamur	1/3B	1.52.0	01.09.2008 to 31.08.2013
10	K. Gnanasekaran, S/o. Kannadi Gounder, Mettu Street, Karasanur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur, Thollamur	29/1 29/2 29/3 30/4 30/9 30/12 30/13	0.34.5 0.51.0 0.06.0 0.29.5 0.28.5 0.58.0 0.60.5 Total 2.68.0	28.02.2008 to 24.02.2013
11	V. Kannan, Thollamur Village, Vanur Taluk	Rough Stone	Vanur, Thollamur	5 11/3	1.42.5 3.13.0 Total 4.55.5	12.05.2003 to 11.05.2008

The Total extent of the Existing / Lease expired / Proposed quarries are 54.7.0 Ha

10. Land Requirement

The total extent area of the project is 2.33.5 Ha, Patta land in Thollamur Village of Vanur Taluk, Villupuram District.

Table 8 Land Use Breakup

Sl. No.	Description	Present Area (Ha.)	Area in use during the quarrying period (Ha.)
01.	Area under Quarrying	0.13.2	1.03.5
02.	Infrastructure	Nil	0.01.0

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03.	Roads	0.01.0	0.02.0
04.	Green Belt	Nil	0.25.5
05.	Unutilized Area	2.19.3	1.01.5
	TOTAL	2.33.5 Ha	2.33.5 Ha

11. Human Settlement

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

Table 9 Habitation

S.No	Direction	Village	Distance in kms	Population
1	North	Karasanur	1.40 Kms	2862
2	South East	Thollamur	0.76 Kms	1419
3	West	Eraiur	1.45 Kms	3257
4	North East	Parangani	2.10 Kms	3393

12. Power Requirement

The Rough Stone and Earth 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 and **10 Litre** diesel per hour for excavator for mining and loading for Earth.

13. Scope of the Baseline Study

This 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

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<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

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 : 18⁰ C to 26⁰ C
- ii) Average Maximum Temperature. : 30⁰ C to 40⁰ C
- iii) Average Annual Rainfall of the area : 985 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. 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 (56-45 µg/m³), PM_{2.5} (26-20 µg/m³), SO₂ (10-8 µg/m³), NO₂ (22-18 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from June to August 2022.

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 61 dB(A) and 48 dB(A) respectively in Government High School, Kunnam. The minimum Day Noise and Night noise were 42 dB(A) and 35 dB(A) respectively which was observed in Santa Clara Convent Girls Higher Secondary School, Muttarampattu. The observed values are all

well within the Standards prescribed by CPCB.

13.4 Water Environment

- The average pH ranges from 7.57 – 7.97.

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- TDS value varied from 118 mg/l to 1237 mg/l
- Hardness varied from 83.6 to 812 mg/l
- Chloride varied from 29.3 to 357 mg/l

13.5 Land Environment

The analysis results shows that the majority of soil in the project and surrounding area is slightly alkaline in nature and pH value ranges from 6.99 to 7.86 with organic matter 0.21 to 0.45 %. 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 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, Vilvam, Panai, etc will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 240 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

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Table.10 Plantation/ Afforestation Program

Name of species proposed	Survival	No of species
Neem, Vilvam, Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila Maram, Poo Marudhu, Panai, Marudha maram, Thandri, Sengondrai, Poovarasu, Pungam, Sandhana Vembu, Uva, Uzha, Illuppai, Sarakondrai, Puthranjivi, etc.,	80%	1200
Total		1200

16. Anticipated Environmental Impacts

16.1 Air Environment and Mitigation Measures

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

16.2 Noise Environment and Mitigation Measures

1. Periodical monitoring of ambient noise will be done as per CPCB guidelines.
2. No other equipment except the transportation vehicles 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

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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 1,27,88,227/-** for deployment of machinery and creation of infrastructural facilities like approach road, mine office / Workers Shed, First Aid Room etc., including electrifications and water supply

Table .11 Project Cost details

S. No.	Description	Cost (Rs.)
1	Fixed Asset Cost	15,82,800/-
2	Operational Cost	15,00,000 /-
3.	EMP Cost	97,05,427/-
	Total	1,27,88,227/-

20. Corporate Environmental Responsibility

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

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Table 12 CER Cost

S.No.	CER Activity	CER value (Rs)
1.	Government Higher Sec. School, Karasanur – 1.50 km, N ➤ Painting of Classroom, Compound Walls and Entire School Campus ➤ R.O.Water Purifier ➤ Smart Class facility (Projector Attached) ➤ Environmental books for library (in Tamil language), ➤ Greenbelt facilities in and around the campus ➤ Hygienic Toilet Facilities	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.

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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

The major portion of Villupuram district is covered by mineral deposits like silica sand, limestone, black granite and blue metal. Silica sand is found in Agaram Reserve Forest in Tindivanam Taluk. Fine Clay deposits are found in large numbers in Tindivanam Taluk. Inferior grade sedimentary limestone deposit is found in Vanur Taluk. Gingee, Kallakkurichi, Tindivanam, Tirukkivilur, Ulundurpettai, Vanur and Villupuram taluks has rich sources of export quantity of black granite. Multi coloured granites are found in Gingee, Kallakurichi and Villupuram Taluks.

Silica sand is quartz that over time, through the work of water and wind, has been broken down into tiny granules. Generally, it is an assemblage of Silica grains. Silica is the name given to a group of minerals composed solely of Silicon and Oxygen. It is formed by natural weathering of Sandstone and Quartzite or by process of floatation. It occurs in Villupuram, Nagapattinam, Kanchipuram and Cuddalore districts.

Black Granite is the commercial term of basic rock known geologically as Dolerite. It is used mainly as monuments, markers, slabs and tiles after cutting and polishing. Hence, unlike other major minerals where chemical composition plays an important role in the end use, Black Granite is concerned with the physical characteristics such as colour, grain size, texture, presence or absence of natural impurities, cracks play a vital role in the export market. If the material is more fine grained with uniform texture and colour background, the value increases. Black Granite deposits of export quality are located mainly in the districts of Dharmapuri,

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Villupuram, Salem, Erode, Vellore, Krishnagiri and Tiruvannamalai. The commercial varieties of Black Granite are Dharmapuri Black, Kunnam Black, Yellikaradu Black, Paithur Black.

The occurrences of limestone, limeshells, clay and reh salt are reported from the district. The polymetal sulphide deposit occurrence, eleven kilometers southwest of Mamandur, in the granulite terrain has been extensively studied by way of mapping, sampling, geophysical surveys and drilling by GSI, BGML and by Tamilnadu Government (UNDP Programme). The polymetal deposit includes area of copper, lead and silver. The district forms the hub for exploitation of dimensional stone viz., granite deposit in the country. The world famous black granite. Dykes of Kunnam area, Vanur taluk are rated at par with the Swedish “EBONY” black. WNW-ESE and NE-SW dykes swarm between Mailam- Perumbakkam – Kunnam – Thiruvakkarai – V.Parangini village is considered to be the potential zone for the exploitation of industrial granites. In addition, the district is also noted for multi-colored granite occurrences of Gingee area. Gypsum occurs in the eastern flank of Kaliveli tank near Marakkanam, Limeshells are locally recovered from the coastal lagoons of Marakkanam. Reh salt (sodium Sulphate and carbonate) occur near the eastern flanks of Kaliveli ner Marakkanam.

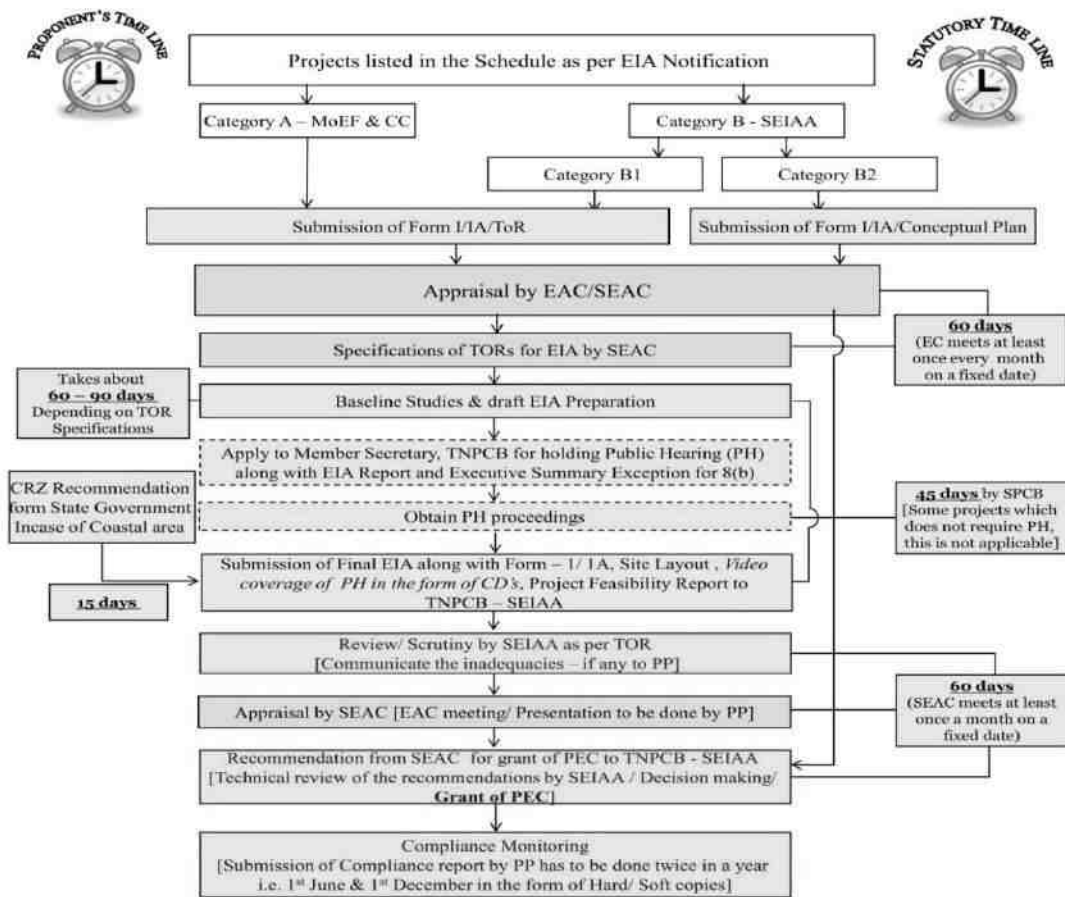
Hilly, undulated terrain like Kommedu, Mattaparai of Gingee Taluk, Mookkanur of Sankarapuram, Karadi of Tirukoilur, Ammanampakkam of Tindivanam are being mined for Multi-Colour Granite. The elevated hilly and undulating terrain around Thiruvakkarai, Kunnam, Semangalam, Siruvanoor, Karasanur, Perumbakkam and Eraiyur of Vanur Taluk, Udaiyanatham, Malligaipattu, Kangeyanur, Siruvalai, Muttathur, Vengamur, Hanumanthapuram, Kaanai and Kunnathur of Villupuram Taluk, Eraiyanur, Varagupattu, Adasal, Nagar and Sirvadi of Tindivanam Taluk, Pothuvai-Pazhavalam, Nagalampattu, Sathaputhur, Padipallam, Thatchampattu, Valathi, Irumpuli, Sathaputhur, Sorathuperiyan kuppam of Gingee Taluk. Blue metal is being mined from undulating, barren or agricultural field areas of Thiruvakkarai, Eraiyur, Thenkodipakkam, Nemili, Murukkam, Thollamur, Ulagapuram, Peravur of Vanur Taluk, Nalmukkal, Algaiyapakkam, T.Nallalam, Keelarungunam, Vilangampadi, Kunnapakkam, Yenthur, Chokkanthangal, Keelsiviri, Brammadesam, Keelsevur, Madavanthangal, Perumkkal of Marakkanam and Tindivanam Taluk, Gingeeputhur and Nangathur of Villupuram Taluk, Poondi and Ulagalampoondi of Vikkiravandi Taluk.

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1.3 ENVIRONMENTAL CLEARANCE

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

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



- SEIAA : State Level EIA Authority
- EIA : Environmental Impact Assessment
- TNPCB : Tamil Nadu Pollution Control Board
- SEAC : State Level Expert Appraisal Committee
- TOR : Terms of Reference
- PEC : Prior Environmental Clearance
- PP : Project Proponent
- [Light Grey Box] : TNPCB - SEIAA
- [Medium Grey Box] : SEAC
- [Dark Grey Box] : PP

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1.4 TERMS OF REFERENCE (TOR)

The Terms of Reference have been issued by SEAC TN vide Letter No. SEIAA-TN/F. No. 9208/SEAC/ToR-1250/2022 Dated: 07.09.2022. 39 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.

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

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alternative site could not be considered. The project implementation schedule, estimated cost of development as well as operation etc should be also included.

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

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

Chapter 5: Impact Analysis and mitigation measures. This chapter describes the anticipated impacts on the environment and mitigation measures. The method of assessment of impacts including studies carried out, modelling techniques adopted to assess the impacts where pertinent should be elaborated in this chapter. It should give the details of the impacts on the baseline parameters, both during the construction and operational phases and suggests the mitigation measures to be implemented by the proponent.

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

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

Chapter 8: Project Benefits. This chapter should cover the benefits accruing to the locality, 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.

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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. K. Gnanasekaran
Status of the Proponent : Private & Individual
Proponent's Name & Address : S/o. Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Villupuram District – 605 109

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) Government 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 and earth mining project by open cast mechanized method on allotted mine lease area at Thollamur Village, Vanur Taluk of Villupuram District, Tamil Nadu. It is a Plain terrain. The total allotted mine lease for the proposed project is 2.33.5 Ha with their maximum production capacity i.e. 65,935 m³ of Rough stone and 18,652 m³ of Earth for the period of Five years only.

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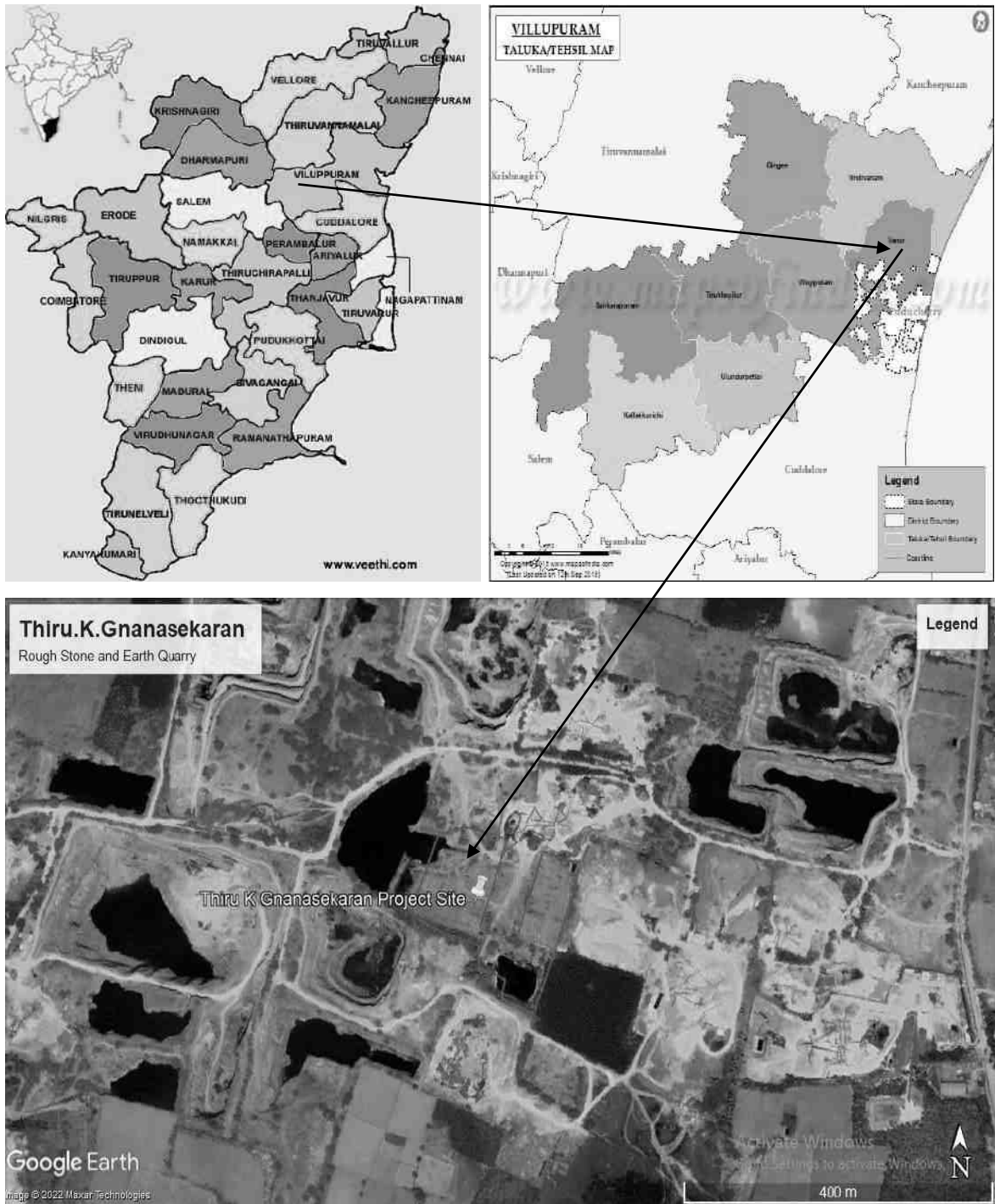


Figure 1.1: Location Map of the Project site

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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 earth mining project by open cast mechanized method on allotted mine lease area at Thollamur Village, Vanur Taluk of Villupuram District, Tamil Nadu. It is a Plain terrain. We had operated the quarry in the part of a land earlier from the period of 28.02.2008 to 24.02.2013 by obtaining the letter from District Collector, Villupuram vide Proceedings Rc. No. B/2657/2007 dated 07.02.2008 for a period of five years for the extent of 2.68.0 Ha Patta Land includes the Survey Numbers of 29/1, 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13. Now, we have obtained fresh mining plan from 2022 to 2027 from Department of Geology and Mining, Villupuram District for 2.33.5 Ha land area in the S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 for a proposed mining depth of 32 m below ground level and five years production of 1,30,290 m³ of Rough stone and 19,912 m³ of Earth.

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) Government 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 Villupuram 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.

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Table 2-1: Quarry within 500m Radius

1) Existing other quarries:

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
1.	K.Gnanasekaran S/o. Kannadi Counder, Mettu Street, Karasanur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur & Thollamur	12/4 12/5A	0.59.5 0.65.0 Total 1.24.5	24.09.2017 to 23.09.2022
2	V. Sadayappan, No.18, Amal Nagar, West Tambaram, Chennai-600045	Rough Stone & Gravel	Vanur & Thollamur	1/3A 12/3 12/5B1	0.58.0 0.60.5 2.38.5 Total 3.57.0	16.08.2018 to 15.08.2023
3	G. Raja, S/o. Gopal, Sivaraj Street, Thiruneermalai, Chennai	Rough Stone & Gravel	Vanur & Thollamur	26/1	2.42.5	16.08.2018 to 15.08.2023
4	R. Muralidharan, Manager, Om Sakthi Constructions, Thollamur Village, Vanur Taluk	Rough Stone & Gravel	Vanur & Thollamur	38/2A 35/1C 39/1B	0.96.0 0.10.0 1.00.0 Total 2.06.0	16.08.2018 to 15.08.2023
5	K. Balamurugan, S/o. Kuppusamy, Karasanur & Post, Vanur Taluk	Rough Stone & Gravel	Vanur & Thollamur	11/4A2 15/2 15/3A 15/3B 15/4	0.16.0 0.44.0 0.50.0 0.56.0 0.46.0 Total 2.12.0	27.08.2018 to 26.08.2023

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2) Proposed Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.
1.	S.V.Venkatesh, Sri Santhosh Blue Metals, No.173, Sarkar Thopu, Tindivanam, Villupuram District	Rough Stone & Gravel	Vanur & Thollamur	8/1B 8/2	0.61.5 1.44.5 Total 2.06.0
2	K. Gnanasekaran S/o. Kannadi Counder, Mettu Street, Karasanur Village, Vanur Taluk, Villupuram District	Rough Stone & Gravel	Vanur & Thollamur	29/2 29/3 30/4 30/9 30/12 30/13	0.51.0 0.06.0 0.29.5 0.28.5 0.58.0 0.60.5 Total 2.33.5
3	V. Ramesh, S/o. J. Venkatapathy, No.5, Thangaraj Street, HLL Colony, Pammal, Chennai-75	Rough Stone & Gravel	Vanur & Thollamur	16/11 16/12 17/1 18/3B	0.45.0 0.74.5 1.63.5 0.70.0 Total 3.53.0
4	G. Arjunan S/o. Govindasamy, No.63, Throupathi Amman Koil Street, Thiruvakkarai Village, Vanur Taluk	Rough Stone & Gravel	Vanur & Thollamur	11/5A 11/6 11/7 16/2 16/4 16/5 16/6 16/7 16/8B	0.14.0 0.17.0 0.19.0 0.11.0 0.15.0 0.12.0 0.16.0 0.24.0 0.23.0

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				16/9	0.08.5
				16/10	1.62.0
					Total 3.21.5
5.	I. Justin Prabu, S/o. V. Iyyadurai, 1/56, D9, Church Street, Christopher Nagar, Peruvilai, Kanniyakumari District	Rough Stone & Gravel	Vanur & Karasanur	43/4A 43/4B 43/4C 43/5 43/6 44/6	0.35.5 0.35.5 0.35.0 0.71.0 1.27.0 0.63.0 Total 3.67.0

3) Abandoned Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
1.	R. Alagurajan, S/o. Ramaswamy, No.41, Erikaran Street, Nerkundram, Chennai-107	Rough Stone	Vanur & Thollamur	35/1B 35/2A2 (P) 35/2B (P)	1.04.0 0.19.5/0.48.0 0.23.0/0.48.0 Total 1.46.5	25.03.2015 to 24.03.2020
2	K. Dharmalingam, S/o. Kannaiyan, 2/6, Kalaignar Street, Erumaiyur, Chennai-44.	Rough Stone	Vanur & Thollamur	12/5B	2.52.0	20.04.2013 to 19.04.2018
3	S. Nanthini, W/o. Sankar, No.14, 3 rd Street, Jayapuram, Tindivanam Taluk	Rough Stone	Vanur & Thollamur	11/5A 11/6 11/7 16/2 16/3	0.14.0 0.17.0 0.19.0 0.11.0 0.11.0	31.12.2015 to 30.12.2020

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				16/4	0.15.0	
				16/5	.0.12.0	
				16/6	0.16.0	
				16/7	0.24.0	
				16/8B	0.23.0	
				16/9	0.08.5	
				16/10	1.62.0	
					Total 3.32.5	
4	C. Ganesan, S/o. Chinnaiya Gounder, 168, Mettu Street, Karasanur Village, V.Parangani Post, Vanur Taluk	Rough Stone	Vanur & Thollamur Nemili	13/3 14/7 15/1 118/1 118/2 118/3 118/4A	1.50.0 0.39.5 0.48.5 0.56.0 0.18.5 0.71.0 0.44.0 Total 4.27.5	22.08.2016 to 21.08.2021
5	V. Sankar, S/o. Vivekanandan, 14, Jayapuram Colony, Tindivanam Town & Taluk, Villupuram District	Rough Stone	Vanur & Thollamur	2/1 2/2 2/3 2/4 2/5 3/1 3/2 3/3 3/4 3/5 3/6 3/7	0.45.5 0.22.0 0.22.0 0.23.5 0.25.0 0.32.5 0.33.5 0.81.0 0.20.0 0.22.5 0.21.0 0.18.0 Total 3.66.5	20.09.2016 to 19.09.2021

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<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

6	D. Sundaramurthy, Santhosh Blue Metals, Thollamur Village, Eraiyyur Post, Vanur Taluk	Rough Stone	Vanur, Thollamur	35/2A1 & 9/3	1.06.0 0.33.5 Total 1.39.5	26.04.2013 to 25.04.2018
7	V. Elumalai, S/o. N. Varadappa Chettiar, Old No. 132, New No. 477, Jawaharlal Nehruji Road, Viluppuram - 605602	Rough Stone	Vanur, Nemili	117/2 117/3 117/4 117/5	0.19.0 0.20.0 0.49.0 0.23.0 Total 1.11.0	18.06.2012 to 17.06.2017
8	S. Irusappa Gounder, S/o. Srinevasa Gounder, Karasanur Village, Vanur Taluk	Rough Stone	Vanur, Thollamur	4/1 4/2A 4/2B 4/2C 6/2B	0.40.0 0.04.5 0.10.0 0.80.5 0.61.0 Total 1.96.0	01.09.2008 to 31.08.2013
9	R. Periyasamy, S/o. Rangasamy, Karasanur Village, V. Parangini Post, Vanur Taluk	Rough Stone	Vanur, Thollamur	1/3B	1.52.0	01.09.2008 to 31.08.2013
10	K. Gnanasekaran, S/o. Kannadi Gounder, Mettu Street, Karasanur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur, Thollamur	29/1 29/2 29/3 30/4 30/9 30/12 30/13	0.34.5 0.51.0 0.06.0 0.29.5 0.28.5 0.58.0 0.60.5 Total 2.68.0	28.02.2008 to 24.02.2013

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran</i>	<i>Draft EIA Report</i>
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<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

11	V. Kannan, Thollamur Village, Vanur Taluk	Rough Stone	Vanur, Thollamur	5 11/3	1.42.5 3.13.0 Total 4.55.5	12.05.2003 to 11.05.2008
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The Total extent of the Existing / Abandoned / Proposed quarries are 54.7.0 Ha

2.1.1 *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 Villupuram, 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 Villupuram District are Black Granite, Rough Stone, Red soil, Gravel and Pebbles.

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.

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Gnanasekaran</i>	
<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

2.2 BRIEF DESCRIPTION OF THE PROJECT

Table 2-2 Salient Features of the Project

S. No.	Description	Details
1	Project Name	Rough Stone and Earth Quarry-2.33.5 ha
2	Proponent	Thiru K Gnanasekaran
3	Mining Lease Area Extent	2.33.5 Ha
4	Location	S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13, Thollamur Village, Vanur Taluk, Villupuram District.
5	Latitude	12° 03' 20.03" N to 12° 03' 27.36" N
6	Longitude	79° 40' 16.29" E to 79° 40' 23.75" E
7	Topography	Plain terrain
8	Site Elevation above MSL	65 m from MSL
9	Topo sheet No.	57-P/12
10	Minerals of Mine	Rough Stone and Earth Quarry
11	Proposed production of Mine	65,935 m ³ of Rough stone 18,652 m ³ of Earth
12	Ultimate depth of Mining	22 m below ground level
13	Method of Mining	Open cast mechanized mining
14	Water demand	2.00 KLD
15	Source of water	Water will be supplied through tankers supply
16	Man power	19 Nos.
17	Mining Lease	Precise area communication from The District Collector, Villupuram District vide Rc No: A/G&M/277/2018 dated 13.11.2019
18	Mining Plan Approval	Mining Plan was approved by The Assistant Director, Dept. of Geology & Mining, Villupuram vide Rc No: B/G&M/277/2018 dated 26.12.2019

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Gnanasekaran</i>	
<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

19	Production details	Geological reserves: 8,17,250 m ³ of Rough stone and 46,700 m ³ of Earth Proposed year wise recoverable reserves: 65,935 m ³ of Rough stone and 18,652 m ³ of Earth
20	Boundary Fencing	7.5 m barrier all along the boundary for adjacent patta lands and 10 m safety distance for Govt. Lands. Fencing will be provided.
21	Disposal of overburden	The overburden in the form of Earth formation, the Earth will be directly loaded into tippers for the filling and levelling of low lying areas. The excavated Rough stone (100%) will be directly loaded into tippers to the needy customers. There is no waste anticipated during this plan period hence, disposal of waste does not arise.
22	Ground water	The quarry operation is proposed up to a depth of 22 m below ground level. The water table is below 55 m from ground level which is observed from the nearby open wells and bore wells. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.
23	Habitations within 300m radius of the Project Site	There is no Habitation within 300m radius of the project site.
24	Drinking water	Water will be supplied through tankers from Thollamur village which is 0.76 Km South East of the area

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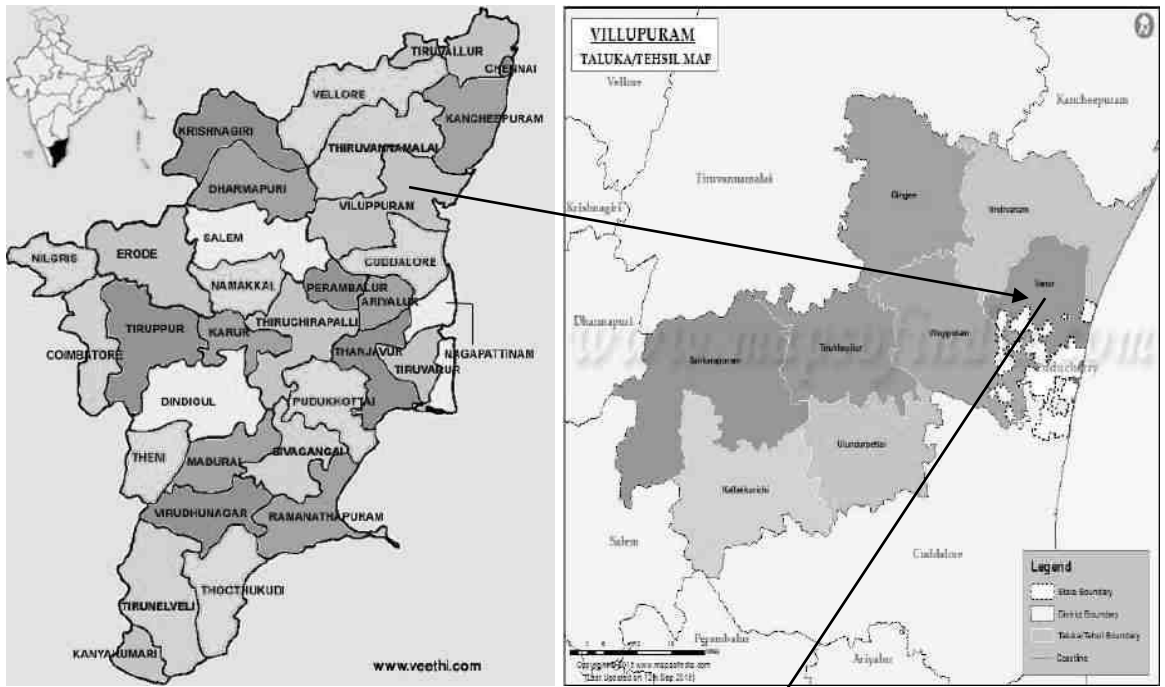


Figure 2.1: Location Map of the Project Site

Project	Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran	<i>Draft EIA Report</i>
Project Proponent	Thiru K Gnanasekaran	
Project Location	Thollamur Village, Vanur Taluk, Villupuram District	



Figure 2.2: Google Earth Image and Coordinates of the Project Site

2.2.1 Site Connectivity:

The site is connected to the roadways as follows.

NH 32 – Chennai to Nagapattinam Highway – 13.37 km, E

SH 136 – Mailam to Puducherry – 0.94 km, N

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Project Location	Thollamur Village, Vanur Taluk, Villupuram District	



Figure 2.3: Site Connectivity

2.3 LOCATION DETAILS:

Table 2-3: Location Details

S. No	Particulars	Details
1.	Latitude	12° 03' 20.03"N to 12° 03' 27.36"N
2.	Longitude	79° 40' 16.29" E to 79° 40' 23.75"E
3.	Site Elevation above MSL	65 m from MSL
4.	Topography	Plain
5.	Land use of the site	Patta land
6.	Extent of lease area	2.33.5 Ha

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Project Proponent	Thiru K Gnanasekaran	
Project Location	Thollamur Village, Vanur Taluk, Villupuram District	

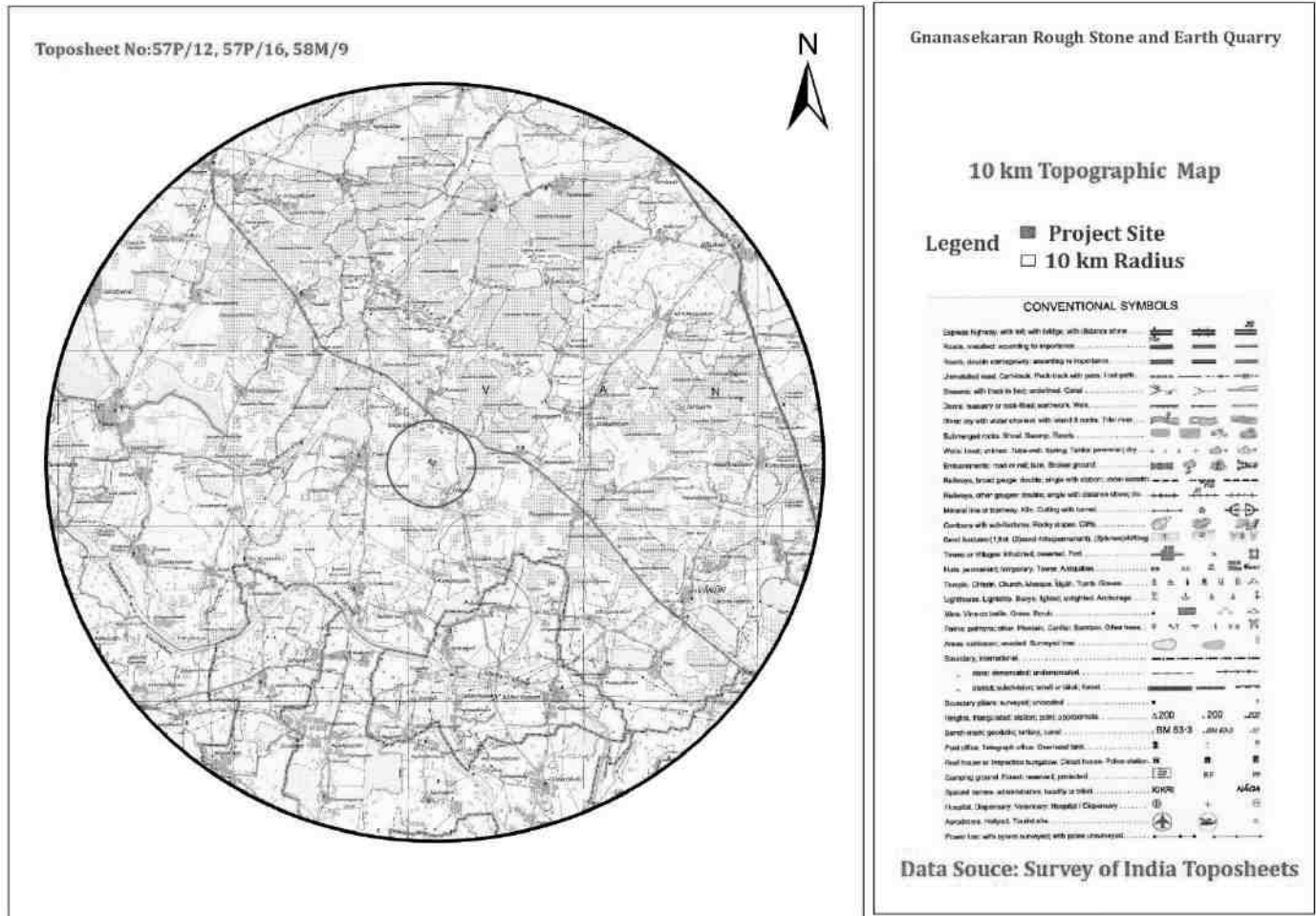


Figure 2.4: Topo Map of Project Site

Project	Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran	Draft EIA Report
Project Proponent	Thiru K Gnanasekaran	
Project Location	Thollamur Village, Vanur Taluk, Villupuram District	



Figure 2.5: Environmental Sensitivity within 15 km radius

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Gnanasekaran</i>	
<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

2.3.1 Site Photographs

The site photographs of the project site are as follows

East: 12°3'20.55"N, 79°40'20.26"E

Thollamur, Vanur, Villupuram



South: 12°3'20.02"N, 79°40'21.70"E

Thollamur, Vanur, Villupuram



West: 12°3'23.85"N, 79°40'16.27"E

Thollamur, Vanur, Villupuram



North: 12°3'26.87"N, 79°40'20.54"E

Thollamur, Vanur, Villupuram



Figure 2.6: Site Photographs

Project	Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran	<i>Draft EIA Report</i>
Project Proponent	Thiru K Gnanasekaran	
Project Location	Thollamur Village, Vanur Taluk, Villupuram District	

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	Area under Quarrying	0.13.2	1.03.5
2	Infrastructure	Nil	0.01.0
3	Roads	0.01.0	0.02.0
4	Green Belt	Nil	0.25.5
5	Unutilized area	2.19.3	1.01.5
	Total	2.33.5 Ha	2.33.5 Ha

2.3.3 Human Settlement

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

Table 2-5: Habitation

S.No	Direction	Village	Distance in kms	Population
1	Karasanur	1.40 Kms	North	2862
2	Thollamur	0.76 Kms	South East	1419
3	Eraiyrur	1.45 Kms	West	3257
4	Parangani	2.10 Kms	North East	3393

2.4 LEASEHOLD AREA

The Existing Rough Stone and Earth Quarry mine of 2.33.5 Ha is a Patta land. The lease area falls in S.F No: 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 of Thollamur Village, Vanur Taluk, Villupuram District. There is no reserve forest or protected forest land within the lease area. There is neither human settlement within 300m radius from the lease area.

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<i>Project Proponent</i>	<i>Thiru K Gnanasekaran</i>	
<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

2.5 GEOLOGY

The greater part of the district is covered by rocks belonging to Archaean age comprising the Charnockite group, the Migmatite complex, Sathyamangalam group and the Bhavani group and the alkali complex of Proterozoic age. West of Kallakurichi (Southwestern part of the district), the area comprises the Charnockite Group of rocks, viz., Charnockite, pyroxene-granulite and garnetiferous gabbro. West of Tirukoilur (Central part of the district) and east of the Charnockite terrain (i.e., Kallakurichi area) the Migmatite complex is made up of Hornblende-Biotite gneiss. Pink augen gneiss and pink migmatite with younger intrusions of Tindivanam and Gingee Granites (2250 Ma) and basic dykes (Proterozoic). The Migmatite Complex forms the major country rock of the area covering more than sixty percent and extending towards east upto Vikravandi, South of Gingee. Epidote-hornblende gneiss (Proterozoic age) occurs as small isolated outcrops. Dolerite dykes form the youngest basic intrusives traversing both Charnockites as well as the migmatite country equally. Overlying the Archaeans are the marine fossiliferous Upper, Cretaceous and Palaeogene Formations occurring in two separate sub basins separated by thick cover of alluvial sediments deposited by Gadilam and Pennaiyar Rivers. The two sub basins are recognized as Vridhachalam sub-basin and Pondicherry sub-basin. In Vridhachalam sub-basin, the marine Upper Cretaceous sediments are divisible into four formations viz., Parur formation, Patti formation, Mattur formation and Alladi formation. The Parur formation is not exposed in the district. The Patti formation comprises fossiliferous sandy limestone and Calcareous shale. Mattur formation and Alladi formation are chiefly composed of argillaceous sandstone and shales with pockets of fossiliferous limestone. The Pondicherry sub-basin is partly exposed in the eastern part of Villupuram district and the Upper Cretaceous sediments are divisible into Vanur Formation, comprising argillaceous sandstone with hard bands of calcareous sandstone and Nesal formation comprising fossiliferous shale, siltstone and bands of shell limestone. The Palaeocene rocks, overlying the Upper Cretaceous Formations, are divided into Karasur formation comprising fossiliferous limestone with calcareous shale and Manaveli Formation comprising siltstone and fine grained argillaceous sandstone and recognized as Putturai Group. The Tertiary rocks comprises the Cuddalore Formation, consisting of cobbly and pebbly sandstone, mottled sandstone, ferruginous sandstone with bands and lenses of clay besides lignite seams. This formation contains large quantities of fossil wood around Thiruvakkarai which have been declared and maintained as National Fossil wood Park by G.S.I. These are overlain by the Quaternary fluvial, marine and Aeolian formations along the coast as well as river courses.

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The terrain displays much structural complexity due to the multiple deformation it has suffered. A number of prominent shear zones have been recognized viz, N-S shear shone, east of Gingee town and NNE-SSW to ENE-WSW among which the one trending NNE-SSW near the eastern foot of the Kalrayan hills SW of Kallakurichi is the most striking.

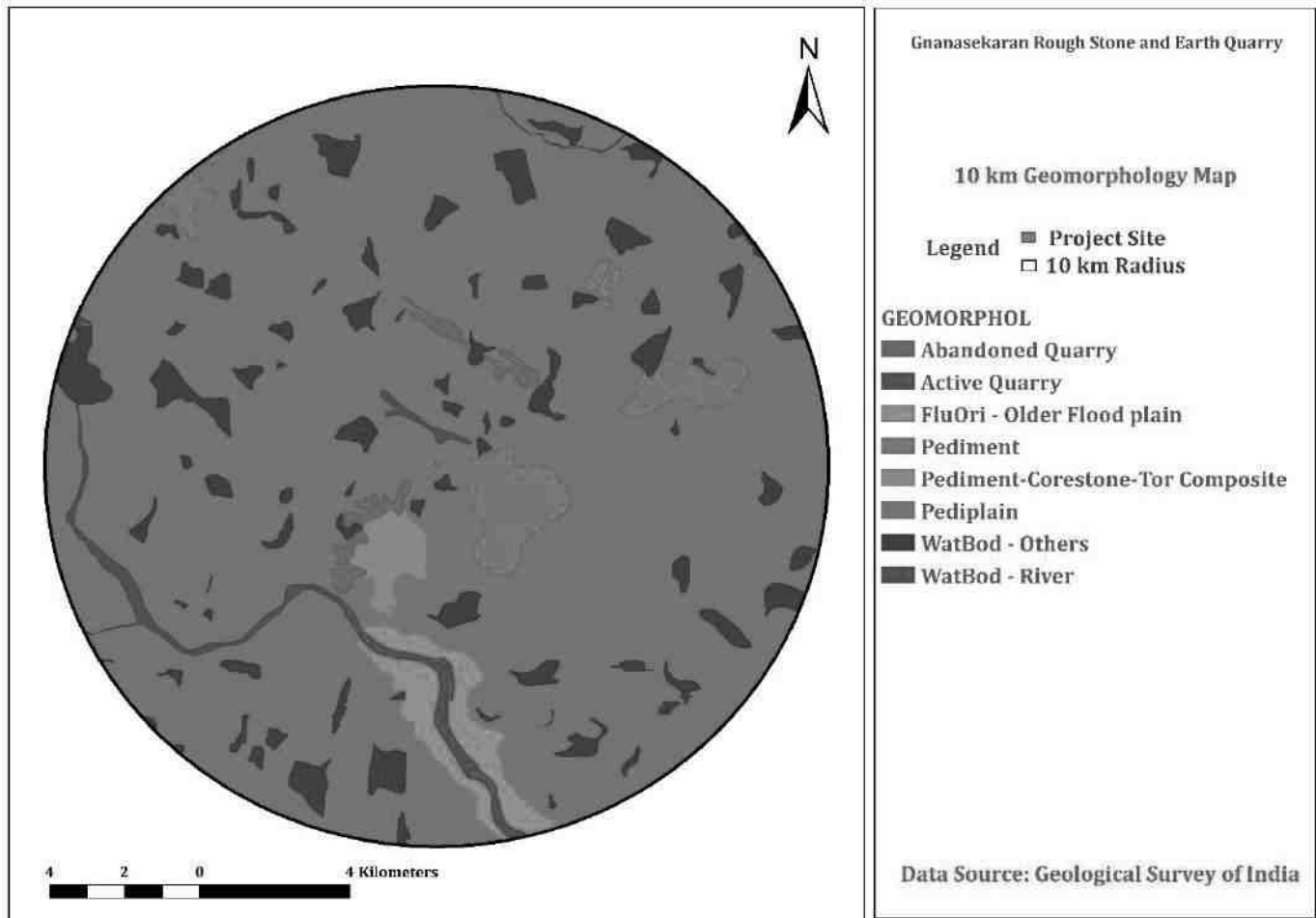


Figure 2.7: Geomorphology

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Project Location	Thollamur Village, Vanur Taluk, Villupuram District	

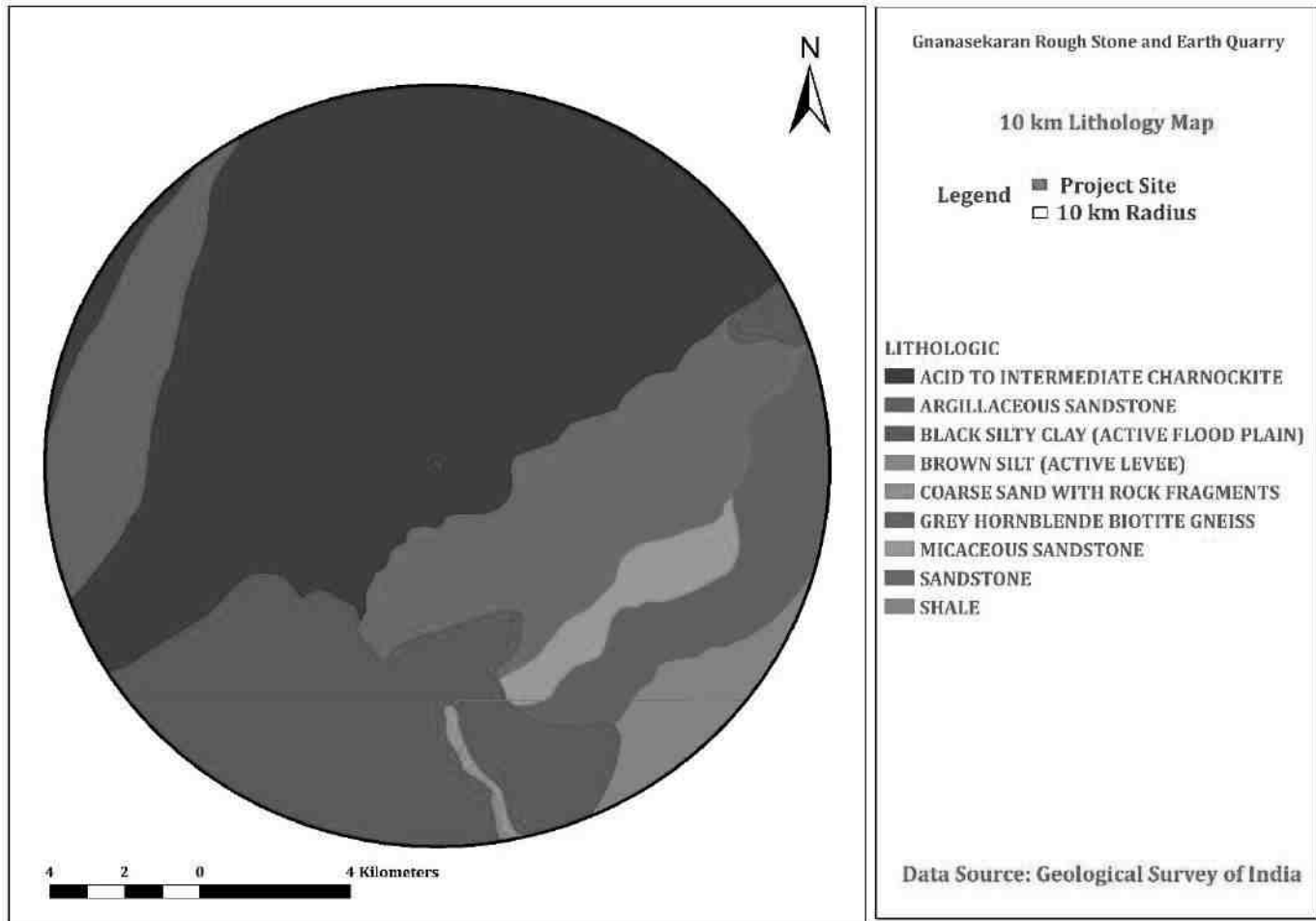


Figure 2.8 Lithology

2.6 QUALITY OF RESERVES:

The mining lease area is of 2.33.5 Ha, with production capacity of 65,935 m³ of Rough Stone and 18,652 m³ of Earth. Due to significant role in the domestic as well as infrastructural market, making the mining of Stone and earth along with associated minor minerals is economically viable.

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran</i>	<i>Draft EIA Report</i>
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<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

Table 2-6: Details of Mining

S. No	Particulars	Details
1	Method of Mining	Open Cast mechanized
2	Geological Reserves	8,17,250 m ³ of Rough stone, 46,700 m ³ of Earth
3	Recoverable Reserves	65,935 m ³ of Rough stone, 18,652 m ³ of Earth
4	Proposed Production	65,935 m ³ of Rough stone, 18,652 m ³ of Earth
5	Elevation Range of the Mine Site	65 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 8,17,250 m³ of Rough stone and 46,700 m³ of Earth.

2.6.2 Geological Reserves

Rough Stone and Gravel:

Geological Resources is estimated at 8,17,250 m³ of Rough stone and 46,700 m³ of Earth up to a depth of .0 m (Max) below ground level.

Table 2-7: Geological Reserves

The total Geological resources are calculated by area method. The calculation of the geological resources is given below.

Total Extent of the area = 2.33.5 Ha

Area in sq.m = 2.33.5 x 10,000 = 23350 sq.m

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Earth = 2 m below ground level
= 23350 sq.m x 2 m depth
= 46,700 m³ of Earth formation

Rough Stone formation = 35 m below ground level
= 23350 sq.m x 35 m depth
= 8,17,250 m³ of Rough Stone

Total Geological Resources of Earth formation = 46,700 m³

Total Geological Resources of Rough stone = 8,17,250 m³

2.6.3 Mineable Reserves

The mineable reserves and the Recoverable Reserves are 65,935 m³ of Rough stone and 18,652 m³ of Earth respectively, at the rate of 100% recovery upto the permissible depth. Total Depth – 22 m (2 m Earth + 20 m Rough Stone).

Table 2-8: Mineable Reserves

MINEABLE RESERVES								
Year	section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Earth m ³	Mineable Reserves in m ³
1	XY-AB	I	45	73	2	6570	6570	
		II	41	65	5	13325		13325
	TOTAL						6570	13325
2	XY-AB	I	29	73	2	4234	4234	
		II	25	65	5	8125		8125
	X1Y1-CD	I	40	36	2	2880	2880	
		II	36	28	5	5040		5040
	TOTAL						7114	13165
3		I	69	36	2	4968	4968	

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	X1Y1- CD	II	66	28	5	9240		9240
		III	56	14	5	3920		3920
TOTAL							4968	13160
4	X1Y1- CD	III	32	14	5	2240		2240
		XY-AB	43	51	5	10965		10965
TOTAL								13205
5	XY-AB	III	10	51	5	2550		2550
		IV	39	38	5	7410		7410
		V	26	24	5	3120		3120
TOTAL								13080
GRAND TOTAL							18652	65935

2.6.4 Year wise Production Plan

The proposed rate of production of Rough Stone is about 65,935 m³ and Earth is about 18,652 m³ for Five Years. Total Depth-22 m (2 m Earth + 20 m Rough Stone).

Table 2-9: Year wise Production Plan

YEARWISE PRODUCTION RESERVES								
Year	section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Earth m ³	Recoverable Reserves in m ³
1	XY-AB	I	45	73	2	6570	6570	
		II	41	65	5	13325		13325
TOTAL							6570	13325
2	XY-AB	I	29	73	2	4234	4234	
		II	25	65	5	8125		8125
	X1Y1- CD	I	40	36	2	2880	2880	
		II	36	28	5	5040		5040
TOTAL							7114	13165
3	X1Y1- CD	I	69	36	2	4968	4968	
		II	66	28	5	9240		9240
		III	56	14	5	3920		3920
TOTAL							4968	13160
4	X1Y1- CD	III	32	14	5	2240		2240
		XY-AB	43	51	5	10965		10965
TOTAL								13205

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran</i>	<i>Draft EIA Report</i>
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5	XY-AB	III	10	51	5	2550		2550
		IV	39	38	5	7410		7410
		V	26	24	5	3120		3120
	TOTAL							
GRAND TOTAL							18652	65935

Project	Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran	<i>Draft EIA Report</i>
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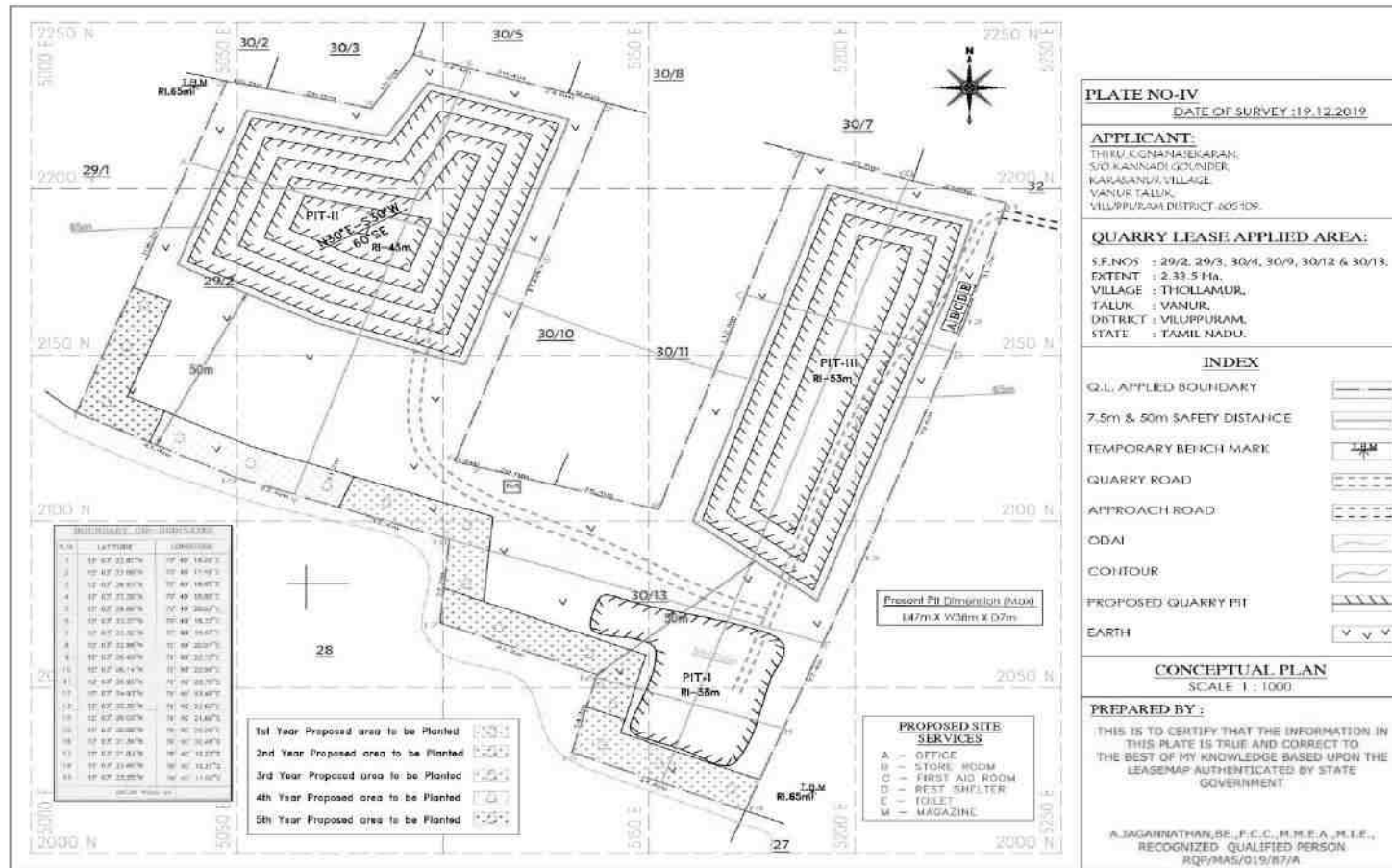


Figure 2.9 Year wise Production Plan

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Gnanasekaran</i>	
<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

2.7 TYPE OF MINING

The proposed project is an open cast mechanized mining with one 5.0 m bench for Rough Stone & Earth followed by 5.0m vertical bench with a bench width not less than the bench height with a slope of 80°. 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 and gravel is proposed to quarry at 5m bench height & width with conventional Open cast mechanized method with a slope of 80°. The quarry operation involves Shallow jack hammer drilling, blasting, Loading & transportation of Rough Stone to the nearby crusher units/road formation works and gravel to the nearby needy users. 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 in the form of Earth formation, Earth will be directly loaded into the tipper to needy buyers. This will be done only after obtaining permission and paying necessary seigniorage fees to the Government.

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 1.2 Cu.m bucket capacity Jack Hammer (30-35 mm dia) Tractor mounted compressor
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Loading Equipment	Excavator of 1.2 Cu.m bucket capacity
Transportation	Tipper 2 No. of 20 T capacity

2.7.4 *Blasting:*

2.7.4.1 **Blasting Pattern:**

The quarrying operation will be carried out by Open cast mechanized 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	1.5m
Diameter of hole	30-32 mm
Spacing between holes	1.2 m
Burden for hole	1.0 m
Pattern of hole	Zigzag Multi rows
Inclination of holes	80° from horizontal
Use of delay detonators	25 milli seconds relays
Detonating fuse	“Detonating” Cord

2.7.4.3 **Types of Explosives to be used:**

Slurry Class 3 explosives, type of nitro compound 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. Detonators of Class 3 and Safety fuse of Class 6 are used.

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2.7.4.4 Measures to minimize ground vibration due to blasting:

The quarry is situated more than 1 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.

Blasting program for the production per day:

No. of holes = 78 Holes

Yield = 232 Tonnes

Powder factor = 6 Tons/kg of explosives

Total explosives required = 39 Kg – Mild Explosives

Charge/hole = 0.5 Kg

Blasting at day time only = 12 – 12.30 p.m (whenever required)

Staggered “V” Pattern of Blasting Design:

Spacing = 1.2 m

Burden = 1.0 m

Depth of the hole = 1.5 m

No. of holes proposed per day = 78 Holes

Table 2-12: Blasting Details

Parameters	Details
Depth of each hole	1.5 m
Diameter of hole	30-32 mm
Spacing between holes	1.2 m
Burden for hole	1.0 m
Pattern of hole	Zig Zag – Multi rows
Inclination of Hole	25 milli second relays
Detonating fuse	“Detonating” Cord

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2.7.4.5 Storage & Safety measures taken during blasting:

The project proponent “Thiru.K.Gnanasekaran” 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

1.	Skilled	Operator	9 No.
		Blaster/Mat	1 No.
2.	Semi – skilled	Driver	2 Nos
3.	Unskilled	Cleaner & Co-operator	3 Nos
		Helper	2 No
		Security	1 No
4.	Management & Supervisory staff		1 No.
	Total =		19 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 2.0 KLD. Domestic water will be sourced from nearby Thollamur village and other water will be source from nearby road tankers supply.

Table 2-14: Water Requirement

Purpose	Quantity	Sources
Domestic & Drinking Water	1.0 KLD	Packaged Drinking water vendors available in Thollamur which is about 0.76 Km SE of the area

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Green belt	0.5 KLD	Other domestic activities through road tankers supply
Dust suppression	0.5 KLD	From road tankers supply
Total	2.0 KLD	

2.9 PROJECT IMPLEMENTATION SCHEDULE

The implementation schedule of the proposed Mine Lease of Thiru K Gnanasekaran (2.33.5 ha) is as follows.

Table 2-15: Mining Schedule

MINING SCHEDULE					
Activity	Dec-23	Dec-24	Dec-25	Dec-26	Dec-27
Site Clearance					
Excavation – Earth Removal/Overburden					
I Year Production – 13,325 Cum - Rough Stone, 6,570 Cbm -Earth					
II Year Production – 13,165 Cum - Rough Stone, 7,114 cu.m - Earth					
III Year Production – 13,160 Cum - Rough Stone, 4,968 cu.m - Earth					
IV Year Production – 13,205 Cum - Rough Stone					
V Year Production – 13,080 Cum - Rough Stone					

2.10 SOLID WASTE MANAGEMENT

Table 2-15: Solid Waste Management

S.No	Type	Quantity	Disposal Method
1	Organic	3.42 kg/day	Municipal bin including food waste
2	Inorganic	5.13 kg/day	TNPCB authorized recyclers

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

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2.11 MINE DRAINAGE

The quarry operation is proposed up to a depth of 22 m below ground level. The water table is below 55 m from the ground level which is observed from the nearby bore wells and bore wells of this area. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.

2.12 POWER REQUIREMENT

This 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 and **10 Litre** diesel per hour for excavator for loading of Gravel needed.

2.13 PROJECT COST

1	<u>A. Fixed Asset Cost:</u>	
	1. Land Cost	: Rs. 5,81,415/- (Amount for Patta Land)
	2. Labour Shed	: Rs. 1,00,000/-
	3. Sanitary Facility	: Rs. 50,000/-
	4. Refilling/Fencing cost	: Rs. 2,87,000/-
	5. Other Items	: Rs. 40,000/-
	6. Drinking Water facility	: Rs. 85,000/-
	7. Safety Kit	: Rs. 50,000/-
	8. Water Sprinkling	: Rs. 85,000/-
	9. Garland drains Construction	: Rs. 1,81,200/-
	10. Greenbelt	: Rs. 72,500/-
	Total	: Rs.15,82,800/-
2	<u>B. Operational Cost:</u>	
	<u>Machinery cost</u>	: Rs.15,00,000/-
3.	<u>EMP Cost</u>	Rs. 97,05,427/-
	Total Project Cost	: Rs. 1,27,88,227/-

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2.14 GREENBELT

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 components of Environmental Management plan, which will improve ecology, environment and quality of the surrounding area.
3. Local trees like, Neem, Vilvam Vaagai, Naval etc will be planted along the lease boundary and avenues as well as over non-active dumps at a rate of 240 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table. 2-17 Plantation/ Afforestation Program

Name of species proposed	Survival	No of species
Neem, Vilvam Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila maram, Poo Marudhu, Panai Maram, Marudha Maram, Thandri, Sengondrai, Poovarasu, Pungam, Puthranjivi, Sarakondrai, Sandhana Vembu, etc.,	80%	1200
Total		1200

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3 Description of the Environment

3.1 GENERAL:

The method of mining for extracting rough stone quarry and gravel is required to be selected in such a manner to ensure sustainable development. Mining activities invariably affect the existing environmental status of the site. It has both adverse and beneficial effects. In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans and sustainable resource extraction.

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

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

3.1.1 *Study Area:*

The study area for the mining projects is as follows:

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

We have obtained Terms of Reference from SEIAA vide Letter No. SEIAA-TN/ F. No. 9208/ ToR-1250/2022 Dated: 07.09.2022. The baseline monitoring is carried out in June to August 2022 and the

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analysis is briefed in the EIA report. The proponent has engaged M/s. Ecotech labs Pvt. Ltd for carrying out the existing baseline study.

3.1.2 *Instruments Used*

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

1. Respirable Dust Sampler with attachment for gaseous Pollutants, Envirotech APM 460, APM411.
2. Fine Particulate Matter (FPM) Sampler, APM 550
4. Sound Level Meter Model SL-4010
5. 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 June to August 2022.

3.1.4 *Frequency of Monitoring*

Table 3-1: Frequency of Sampling and Analysis

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

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pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Fluoride, Nitrate, Sodium, Potassium, Salinity, Total nitrogen, Total Coliforms, Fecal Coliforms		
Water (surface water) pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Fluoride, Nitrate, Sodium, Potassium, Salinity, Total nitrogen, Total Coliforms, Fecal Coliforms	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

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3.1.5 Secondary data Collection

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

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

3.1.6 Study area details

Table 3-2 Study area details

S. No	Description	Details	Source
1.	Project Location	S.F.No. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 – 2.33.5 Ha , Thollamur Village, Vanur Taluk, Villupuram District, Tamil Nadu State	Field Study
2.	Latitude & Longitude	Latitude: 12° 03' 20.03" N to 12° 03' 27.36" N Longitude: 79° 40' 16.29" E to 79° 40' 23.75" E	Topo Sheet
3.	Topo Sheet No.	57 P/12	Survey of India Toposheet
4.	Mine Lease Area	2.33.5 Ha	--
Demography in the study area (as per Census 2011)			
5.	Total Population	1419	Census Survey of India
6.	Total Number of Households	332	
7.	Maximum Temperature (°C)	40	IMD
8.	Minimum Temperature (°C)	18	

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9.	Ecological Sensitive Areas - Wetlands, watercourses or other waterbodies, coastal zone, biospheres, mountains, forests	<ul style="list-style-type: none"> ❖ Kunnam Lake – 2.80 kms, N ❖ Katrambakkam Lake – 8.53 kms, NE ❖ Pulichapallam Lake – 9.55 kms, E ❖ Purana Singa Palayam Lake – 11.17 kms, S ❖ Oussudu Lake – 12.16 kms, SE ❖ Avudayarpatu Lake – 11.75 kms, SW ❖ Kodur Lake – 12.45 kms, NE ❖ Omandur Lake – 12.25 kms, NW ❖ Annamputhur Lake – 12.80 kms, NW ❖ Nallavur Lake – 13 kms, NE ❖ Kazhuveli Lake – 14.25 kms, NE ❖ Sankarabarani River – 4.30 kms, S ❖ Veedur Dam – 9.41 kms, W ❖ Kongarampoondi R.F – 13.95 Kms, SW ❖ Melkondai R.F – 13.71 Kms, SW ❖ Sadhana Forest – 14 Kms, SE ❖ Nine Palms Forest – 14.45 Kms, E ❖ Kazhuveli Wetland Bird Sanctuary – 15.45 km, NE ❖ Oussudu Lake Bird Sanctuary – 11.84 kms, SE 	Google Earth/Field Study															
10.	Densely Populated area	Villupuram - 22.62 Km -SW																
11.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	<table border="1"> <thead> <tr> <th>S. No</th> <th>Places</th> <th>Dist. From Project Site</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;">Schools & Colleges</td> </tr> <tr> <td>1</td> <td>Nehru Matric.Hr.Sec.School, Mailam</td> <td>9.05 km, NW</td> </tr> <tr> <td>2</td> <td>Mass Polytechnic College, V.Parangani</td> <td>1.61 kms, NE</td> </tr> <tr> <td>3</td> <td>Govt. Primary School, Kunnam</td> <td>3.33 kms, N</td> </tr> </tbody> </table>	S. No	Places	Dist. From Project Site	Schools & Colleges			1	Nehru Matric.Hr.Sec.School, Mailam	9.05 km, NW	2	Mass Polytechnic College, V.Parangani	1.61 kms, NE	3	Govt. Primary School, Kunnam	3.33 kms, N	Google Earth/Field Study
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		4	Mailam Engg. College, Mailam	8.98 Kms, NW	
		Hospitals			
		1	Govt. Primary Health Centre, Kunnam	3.04 kms, N	
		2	Govt. Hospital, Vanur	7 Kms, SE	
		3	Govt. Primary Health Centre, Mailam	9.73 kms, NW	
		Worship Places			
		1.	Rahmath Masjid, Veedur	8.27 kms, W	
		2	Sri Pachavazhiyamma n Temple	1.72 kms, SW	
		3	CSI Christhu Nadar Church	4.63 kms, NE	

3.1.7 *Site Connectivity:*

The site is connected to the roadways as follows.

NH 32 – Chennai to Nagapattinam Highway – 13.37 km, E

SH 136 – Mailam to Puducherry – 0.94 km, N

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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

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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.

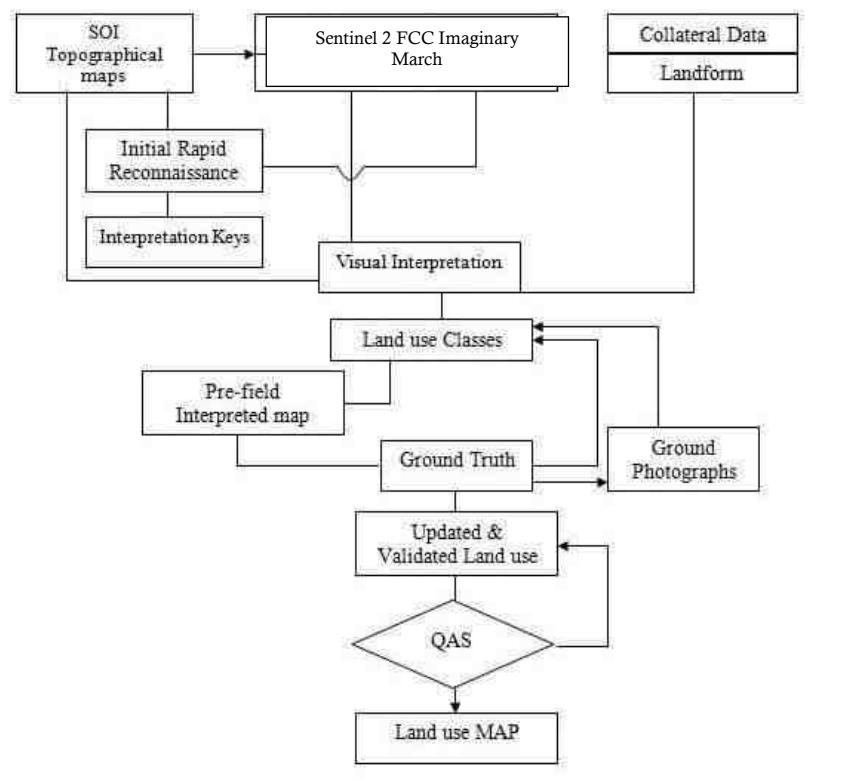


Figure 3.2 Flow Chart showing Methodology of Land use mapping

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3.2.3 *Satellite Data*

Sentinal 2 multispectral satellite data of 2020 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 Sentinal 2 data 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.

June 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 sentinal satellite image and SOI topo sheets of 58J/10, 58J/11, 58J/14, 58J/15 have been procured and interpreted using the ERDAS imaging and ARC-GIS software adopting the necessary interpretation techniques.
3. Satellite data interpretation and vectorization of the resulting units
4. Adopting the available guidelines from manual of LULC mapping using Satellite imagery (NRSA, 1989)
5. Field checking and ground truth validation
6. Composition of final LULC map

The LULC Classification has been done at three levels where level -1 being the broad classification about the land covers that is Built-up land, agriculture land, waste land, wet lands, and water bodies. These are followed by level –II where built-up land is divided into towns/cities as well villages. The

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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

3.2.6 Field Verification

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

3.2.7 Description of the Land Use / land cover classes

3.2.7.1 Water

Areas where water was predominantly present throughout the year; may not cover areas with sporadic or ephemeral water; contains little to no sparse vegetation, no rock outcrop nor built up features like docks; examples: rivers, ponds, lakes, oceans, flooded salt plains.

3.2.7.2 Trees

Any significant clustering of tall (~15-m or higher) dense vegetation, typically with a closed or dense canopy; examples: wooded vegetation, clusters of dense tall vegetation within savannas, plantations, swamp or mangroves (dense/tall vegetation with ephemeral water or canopy too thick to detect water

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underneath).

3.2.7.3 Grass

Open areas covered in homogenous grasses with little to no taller vegetation; wild cereals and grasses with no obvious human plotting (i.e., not a plotted field); examples: natural meadows and fields with sparse to no tree cover, open savanna with few to no trees, parks/golf courses/lawns, pastures.

3.2.7.4 Flooded vegetation

Mix of small clusters of plants or single plants dispersed on a landscape that shows exposed soil or rock; scrub-filled clearings within dense forests that are clearly not taller than trees; examples: moderate to sparse cover of bushes, shrubs and tufts of grass, savannas with very sparse grasses, trees or other plants

3.2.7.5 Crops

Human planted/plotted cereals, grasses, and crops not at tree height; examples: corn, wheat, soy, fallow plots of structured land.

3.2.7.6 Scrub/Shrub

Mix of small clusters of plants or single plants dispersed on a landscape that shows exposed soil or rock; scrub-filled clearings within dense forests that are clearly not taller than trees; examples: moderate to sparse cover of bushes, shrubs and tufts of grass, savannas with very sparse grasses, trees or other plants

3.2.7.7 Built Area

Human made structures; major road and rail networks; large homogenous impervious surfaces including parking structures, office buildings and residential housing; examples: houses, dense villages / towns / cities, paved roads, asphalt.

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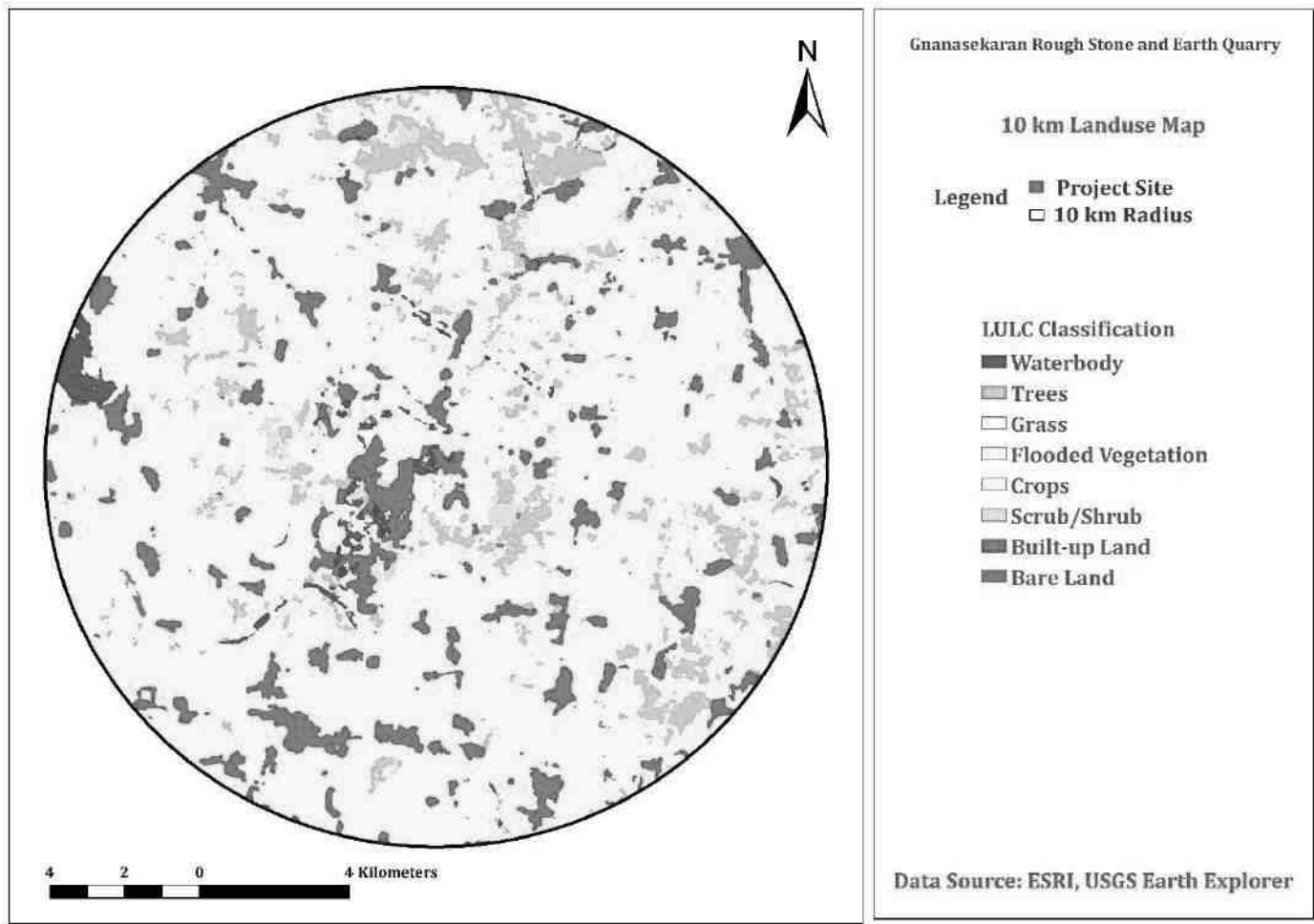


Figure 3.3 Land use classes around 10 km radius from the project site

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

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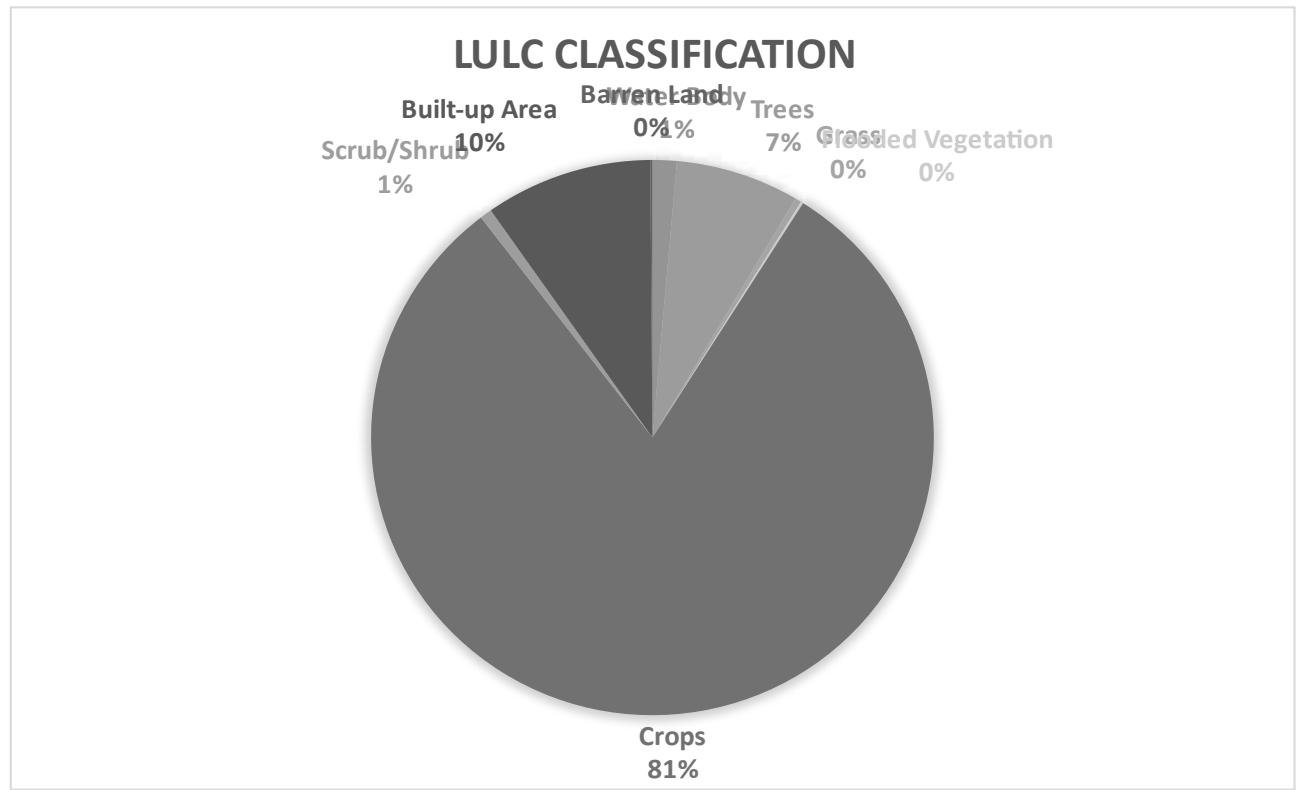


Table 3-3 Land use pattern

Sl.No	Categories	Area in Sq.m
1	Water Body	4.5
2	Trees	23.02
3	Grass	1.18
4	Flooded Vegetation	0.46
5	Crops	261.14
6	Scrub/Shrub	2.24
7	Built Area	31.18
8	Barren Land	0.4

3.3 WATER ENVIRONMENT

3.3.1 *Contour & Drainage*

The project site is 65 m AMSL. The drainage pattern within in the 10 km of the project site is dendritic.

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3.3.2 *Geomorphology*

The residual hills and denudational hills are common in Tirukoilur, Kallakurichi and Gingee Taluks. Structural hills are noticed in the western part of the district. The shallow pediments and buried pediments are common in the central part of the district. Coastal areas are having older and younger flood plains and also beach landforms at places. The ground slope is gentle towards coast. The valley fill near Villupuram is thick, which forms main ground water discharge zone. Lineaments are restricted to parts of Kallakurichi and Sankarapuram areas and productive fractures are noticed in select pockets. The crystalline sedimentary contact fault is having sympathetic fractures in hard rocks but mostly they are dry fractures.

Soils

The soil in the district are mostly forest soils and red soil. Alluvial soils are found in eastern side bordering coast. Black soils are confined to low ground in select pockets in Vanur Taluk.

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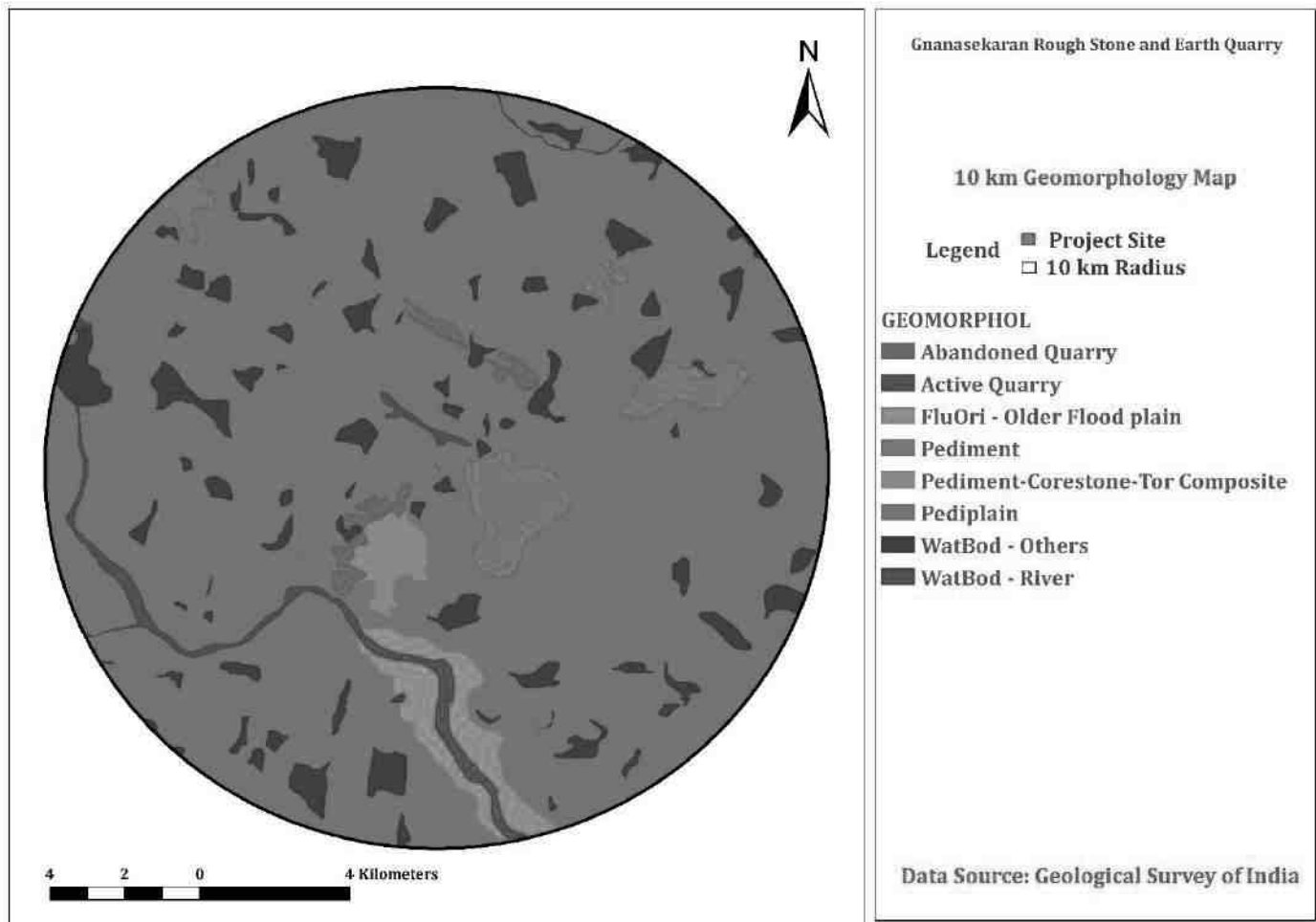


Figure 3.4 Geomorphology within 10km from the project site

3.3.3 *Geology:*

The greater part of the district is covered by rocks belonging to Archaean age comprising the Charnockite group, the Migmatite complex, Sathyamangalam group and the Bhavani group and the alkali complex of Proterozoic age. West of Kallakurichi (Southwestern part of the district), the area comprises the Charnockite Group of rocks, viz., Charnockite, pyroxene-granulite and garnetiferous gabbro. West of Tirukoilur (Central part of the district) and east of the Charnockite terrain (i.e., Kallakurichi area) the Migmatite complex is made up of Hornblende-Biotite gneiss. Pink augen gneiss and pink migmatite with younger intrusions of Tindivanam and Gingee Granites (2250 Ma) and basic dykes (Proterozoic). The Migmatite Complex forms the major country rock of the area covering more than sixty percent and extending towards east upto Vikravandi, South of Gingee.

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Epidote-hornblende gneiss (Proterozoic age) occurs as small isolated outcrops. Dolerite dykes form the youngest basic intrusives traversing both Charnockites as well as the migmatite country equally. Overlying the Archaeans are the marine fossiliferous Upper, Cretaceous and Palaeogene Formations occurring in two separate sub basins separated by thick cover of alluvial sediments deposited by Gadilam and Pennaiyar Rivers. The two sub basins are recognized as Vridhachalam sub-basin and Pondicherry sub-basin. In Vridhachalam sub-basin, the marine Upper Cretaceous sediments are divisible into four formations viz., Parur formation, Patti formation, Mattur formation and Alladi formation. The Parur formation is not exposed in the district. The Patti formation comprises fossiliferous sandy limestone and Calcareous shale. Mattur formation and Alladi formation are chiefly composed of argillaceous sandstone and shales with pockets of fossiliferous limestone. The Pondicherry sub-basin is partly exposed in the eastern part of Villupuram district and the Upper Cretaceous sediments are divisible into Vanur Formation, comprising argillaceous sandstone with hard bands of calcareous sandstone and Nesal formation comprising fossiliferous shale, siltstone and bands of shell limestone. The Palaeocene rocks, overlying the Upper Cretaceous Formations, are divided into Karasur formation comprising fossiliferous limestone with calcareous shale and Manaveli Formation comprising siltstone and fine grained argillaceous sandstone and recognized as Putturai Group. The Tertiary rocks comprises the Cuddalore Formation, consisting of cobbly and pebbly sandstone, mottled sandstone, ferruginous sandstone with bands and lenses of clay besides lignite seams. This formation contains large quantities of fossil wood around Thiruvakkarai which have been declared and maintained as National Fossil wood Park by G.S.I. These are overlain by the Quarternary fluvial, marine and Aeolian formations along the coast as well as river courses. The terrain displays much structural complexity due to the multiple deformation it has suffered. A number of prominent shear zones have been recognized viz, N-S shear zone, east of Gingee town and NNE-SSW to ENE-WSW among which the one trending NNE-SSW near the eastern foot of the Kalrayan hills SW of Kallakurichi is the most striking. (GSI – Villupuram District Resource Map).

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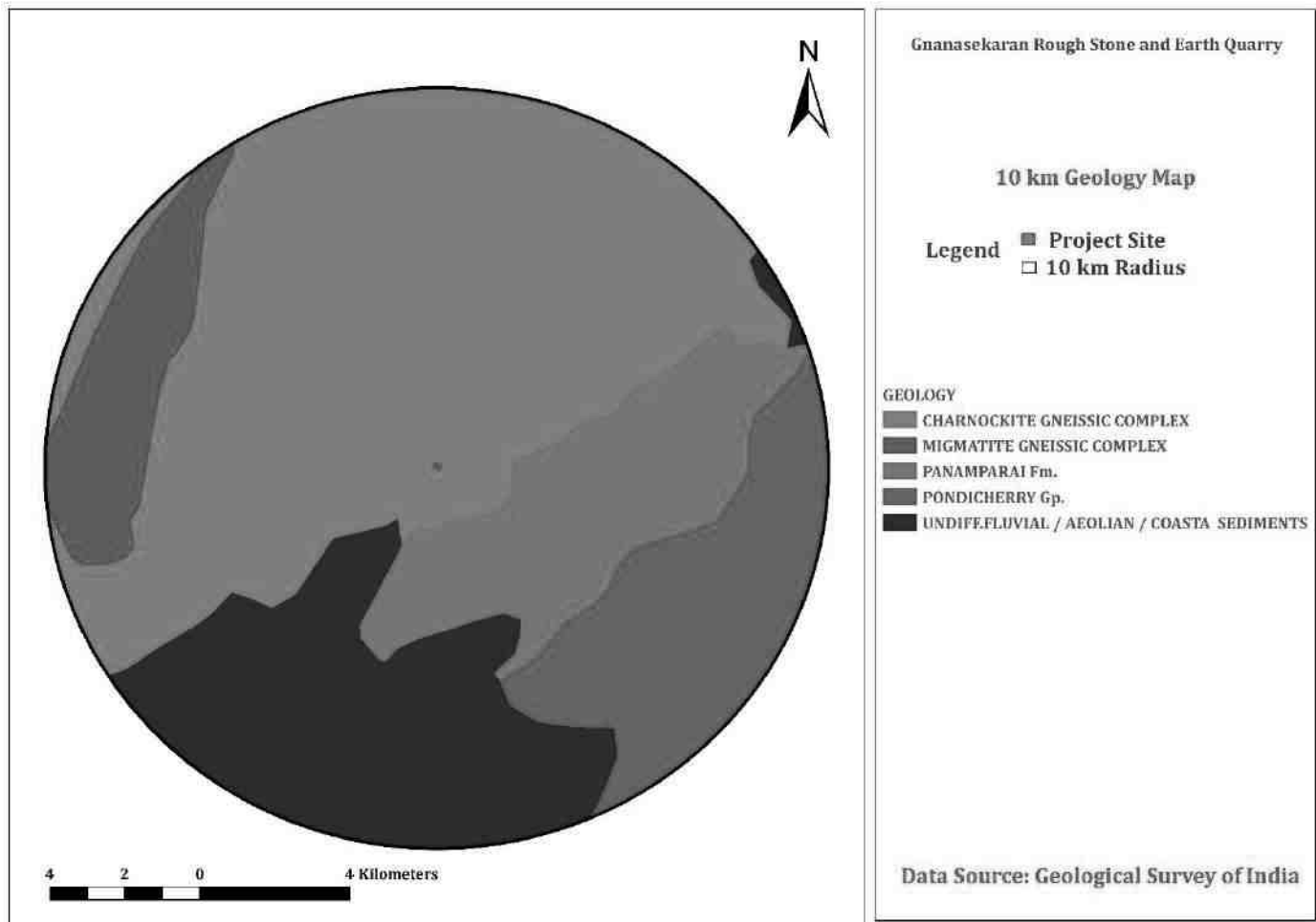


Figure 3.5 Geology within 10km from the project site

3.3.4 Hydrogeology

Villupuram district is underlain by crystalline metamorphic complex in the western part of the district and sedimentary tract in eastern side. The thickness of sediments exceeds 600m near southern part of the district. Groundwater occurs under phreatic and semi-confined conditions in consolidated formations, which comprises weathered and fractured granites, gneisses and chanoekites whereas in unconsolidated sedimentary rocks the groundwater occurs in phreatic, semi-confined conditions in Vanur sandstone, Kadapperi kuppam formation and Turuvai Limestone.

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The district is having rocky outcrops in major part of Kallakurichi, Sankarapuram and Tirukoilur taluks. The weathering is highly erratic and the depth of abstraction structures is controlled by the intensity of weathering and fracturing. The depth of wells varies from 6.64 to 17m BGL and water levels in observation wells tapping shallow aquifers varied from 0.74 to 9.7 m BGL during pre-monsoon (May 2006) and it varies from 0.7 to 4.45 m BGL during post monsoon (January 2007).

During pre-monsoon, the depth to water levels in the range of > 2 to 5 m BGL in major part of the district, in the range of > 5 – 10 m BGL in western and south eastern parts of the district and range of 0-2 m BGL were recorded in two isolated pockets. During post monsoon the depth to water levels range of > 2 to 5 m BGL exists in major part of the district, range of 0 – 2 m BGL prevails in central and north eastern parts of the district and range of > 5 – 10 m BGL were recorded in two isolated pockets in the southwestern and north western parts of the district.

The depth to piezometric surface ranged from 2.8 to 11.25 m BGL during pre-monsoon and 0.5 to 6.35 m BGL during post monsoon.

The groundwater is being developed by means of dug wells, bore wells and tube wells. The diameter of the well is in the range of 7 to 10 m and depth of dug wells range from 15 to 18 m BGL depending on the weathered thickness and joints. The dug wells yield up to 1 lps in summer months and few wells remains dry. The yield is adequate for irrigation for one or two more crops in monsoon period. The yield of bore wells in favorable locations vary from < 1 to 6 lps. The valley fills, intersection of lineaments, particularly, in the western parts along the foot hills of Kalrayan hills are reported to have potential pockets suitable for dug wells and bore wells. The area of contact between crystalline and sedimentary formations has variable yield prospects. The cretaceous formations are very compact and yield prospects are low. The dug wells of 6 m diameter and 10 m BGL depth in sandy tracts give about 3.5 lps. The yield of tube wells in the sedimentary formation ranges from 2.4 to 37 lps.

Long Term Fluctuations

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The long term water level fluctuation for the period of (1998-2007) indicates rise in water level in the range of 0.003 to 0.63 m/year whereas the fall in the water level ranges between 0.014 and 0.31 m/year.

Aquifer Parameters

The transmissivity values of fractured aquifers range from < 1 to 141 m²/day and storativity varies between 2.84 x 10⁻⁵ and 8.9 x 10⁻³. The transmissivity of sedimentary formation varies from 21 to 748 m²/day and storativity is in the order of 2.75 x 10⁻³.

Groundwater Quality

Ground water in phreatic aquifers in Villupuram district is, in general, colorless, odorless and slightly alkaline in nature. The specific electrical conductance of ground water in phreatic zone ($\mu\text{S}/\text{cm}$ at 25⁰ C) during May 2006 was in the range of 770 to 3650 in the district. Conductance below 750 has been observed only in select pockets of the district.

It is observed that the ground water is suitable for drinking and domestic uses in respect of all the constituents except total hardness and nitrate. In about 40% of samples, nitrates concentration is above permissible limits of 100 mg/l. The incidence of high total hardness is attributed to the composition of litho units constituting the aquifers in the district, whereas nitrate pollution is most likely due to the use of fertilizers and other improper waste disposal.

Sodium Adoption Ration values range from 1.7 to 4.4 with an average value of 3.25 in the district. This implies that no alkali hazard is anticipated to crops.

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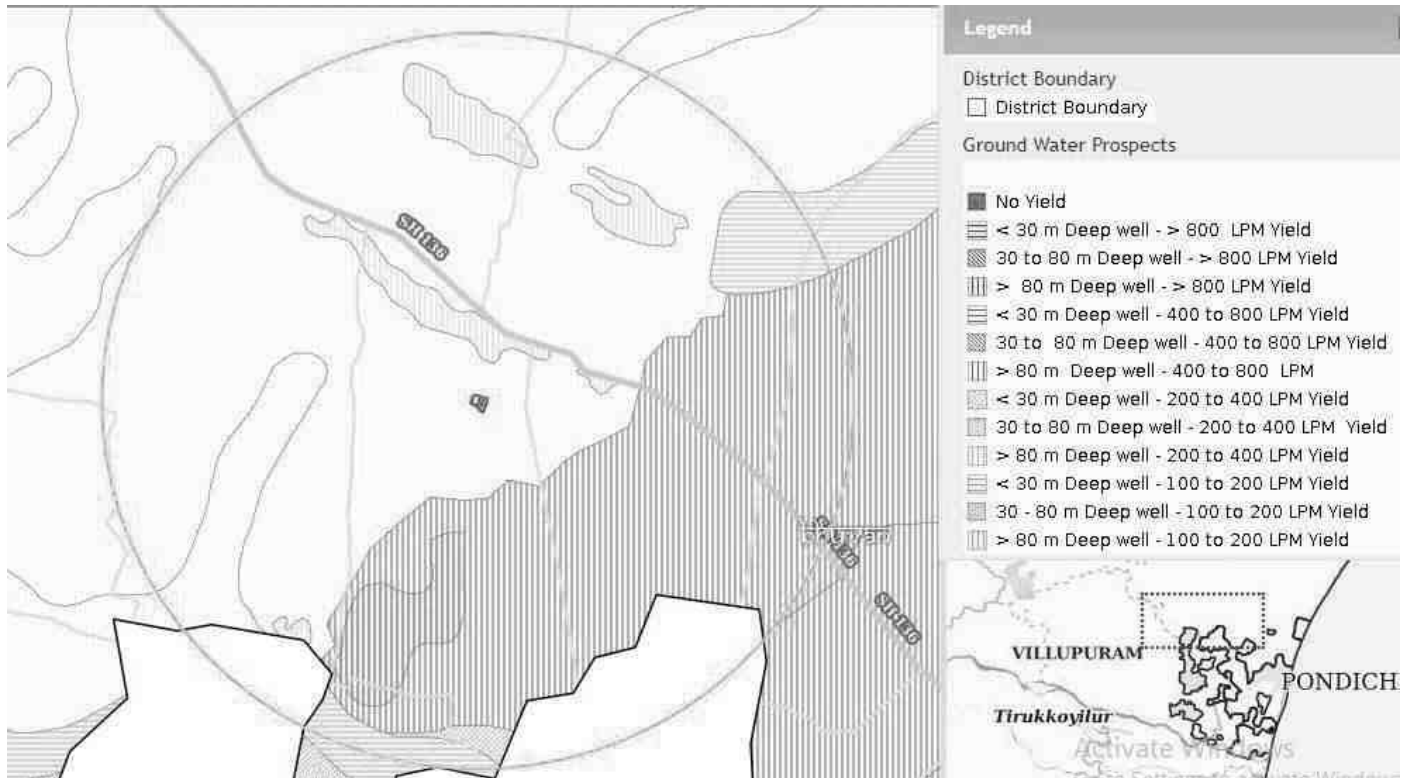


Figure 3.6 Ground water prospects within 5 km radius of the project site

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 3-4 Ground water Quality Analysis

Environmental Parameters: Ground water Quality Analysis	
Monitoring Period	June to August 2022
Design Criteria	Based on the Environmental settings in the study area
Monitoring Locations	Project Site - GW 1 Government High School, Katrambakkam - GW2 Government High School, Kunnam - GW 3 Santa Clara Convent Girls Hr. Sec. School, Muttarampattu - GW 4 Rahmath Masjid, Veedur - GW 5
Methodology	Water Samples were collected in 5 Litre fresh cans as per IS 3025 Part I and transported to the laboratory in Iceboxes
Frequency of Monitoring	Once in a season

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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 3-5: Standard Procedure

S. No	Parameters	Test Method
1	pH (at 25°C)	IS:3025(P -11)1983 RA: 2012
2	Electrical Conductivity	IS:3025(P -14) 2013
3	Colour	IS:3025 (P -4)1983 RA: 2012
4	Turbidity	IS:3025(P -10)1984 RA: 2012
5	Total Dissolved Solids	APHA 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

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Table 3-6 Ground water sampling results

S. No	Parameters	Units	Project Site - GW 1	GW 2	GW 3	GW 4	GW 5
1	pH (at 25°C)	-	7.97	7.57	7.82	7.77	7.82
2	Electrical Conductivity	µS/cm	2030	1282	1335	207	1688
3	Colour	Hazen Unit	2	3	2	1	3
4	Turbidity	NTU	BLQ(LOQ:1)	10	BLQ(LOQ:1)	BLQ(LOQ:1)	BLQ(LOQ:1)
5	Total Dissolved Solids	mg/L	1237	785	748	118	965
6	Total Suspended Solids	mg/L	BQL(LOQ:2)	13.2	BQL(LOQ:2)	BQL(LOQ:2)	BQL(LOQ:2)
7	Total Hardness as CaCO ₃	mg/L	812	481	518	83.6	763
8	Calcium as Ca	mg/L	239	103	103	20.4	106
9	Magnesium as Mg	mg/L	52.6	54.6	63.5	7.94	121
10	Chloride as Cl	mg/L	357	189	153	29.3	222
11	Sulphate as SO ₄	mg/L	115	108	40.9	1.28	84.2
12	Total Alkalinity as CaCO ₃	mg/L	260	196	358	355	306
13	Iron as Fe	mg/L	BQL(LOQ:0.1)	BQL(LOQ:0.1)	BQL(LOQ:0.1)	BQL(LOQ:0.1)	BQL(LOQ:0.1)
14	Silica as SiO ₂	mg/L	47.5	32.9	35.2	8.63	39.8
15	Potassium as K	mg/L	25.2	15.2	11.5	1.2	23.5
16	Sodium as Na	mg/L	255	165	126	28.5	185

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17	Nitrate as NO ₃	mg/L	5.56	4.52	5.56	3.21	15.3
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3.3.6 Interpretation of results:

3.3.6.1 Physical parameters of water:

The basic physical parameters of water include

Colour:

Value observed in Project Site (True/Apparent Color): 1 Hazen unit.

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

pH:

Value observed in the Project Site: 7.97

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

Turbidity:

Value observed in the Project Site: <1

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 slightly turbid.

Total Dissolved Solids:

Value observed in the Project Site: 1237 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. The value in the project site indicates the water is less turbid.

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3.3.6.2 Chemical parameters of water:

The chemical parameters of the drinking water include,

Calcium:

Value observed in the Project Site: 239 mg/L.

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

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

Magnesium:

Value observed in the Project Site: 52.6 mg/L.

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

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

Chloride

Value observed in the project site: 357 mg/L.

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

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

Total Alkalinity as CaCO₃:

Value observed in the project site: 260 mg/L.

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

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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 in the project site, which will impart soda taste to the water.

Hardness:

Value observed in the Project Site: 812 mg/L.

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

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

3.3.7 Surface Water Analysis

Surface water samples were taken from **Sankarabarani River**. The results are summarized below.

Table 3-7 Surface Water Sample Results

S. No	Parameters	Units	Sankarabarani River
1	pH (at 25°C)	-	8.96
2	Electrical Conductivity	µS/cm	415
3	Colour	Hazen Unit	15
4	Turbidity	NTU	5.1
5	Total Dissolved Solids	mg/L	235
6	Total Suspended Solids	mg/L	7.4
7	Total Hardness as CaCO ₃	mg/L	104
8	Calcium as Ca	mg/L	21.3
9	Magnesium as Mg	mg/L	12.4
10	Chloride as Cl	mg/L	47.5
11	Sulphate as SO ₄	mg/L	19.9
12	Total Alkalinity as CaCO ₃	mg/L	82.5
13	Iron as Fe	mg/L	0.33
14	Silica as SiO ₂	mg/L	12.6
15	Potassium as K	mg/L	8.3
16	Sodium as Na	mg/L	34.6
17	Nitrate as NO ₃	mg/L	25.3

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18	BOD	mg/L	6.18
19	COD	mg/L	32.5
20	DO	mg/L	5.92

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.

3.3.8 *Climatology & Meteorology:*

Climate and meteorology of a place can play an important role in the implementation of any developmental project. Meteorology is also the key to understand local air quality as there is an essential relationship between meteorology and atmospheric dispersion involving wind in the broadest sense of the term.

The year may broadly be divided into four seasons:

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

i) Climate

High temperature throughout the year. Generally a dry and hot climate prevails in the District. The district receives the rainfall under the influence of northeast monsoon and southwest monsoon. The heaviest rainfall in the district used to be received under northeast monsoon in the month of October to December as 341.39 mm (in 2018), 532.65 mm (in 2017) and 936.39 mm (in 2015).

ii) Temperature

The average daily temperature ranges from a maximum of 32.7°C to a minimum of 24 °C

iii) Rainfall

The rainfall data for the Villupuram district has been shown below from the year of 2014 to 2021. The highest annual rainfall was put at 1935.2 mm during 2021 and the normal rainfall of 985 mm for the district.

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VILLUPURAM DISTRICT -NORMAL AND ACTUAL RAINFALL

Unit in mm.

Year	Actual Rainfall
2014	980.42
2015	1390.25
2016	563.68
2017	1066.9
2018	727.5
2019	906.3
2020	1137.7
2021	1935.2
Normal Rainfall	985

Source: District survey report & TWAD Board, Villupuram

Meteorological 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 of time. Wind roses are also useful as they project a large quantity of data in a simple graphical plot.

The wind speed & wind direction data are taken and wind rose is plotted for July to September 2022.

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Project Location	Thollamur Village, Vanur Taluk, Villupuram District	

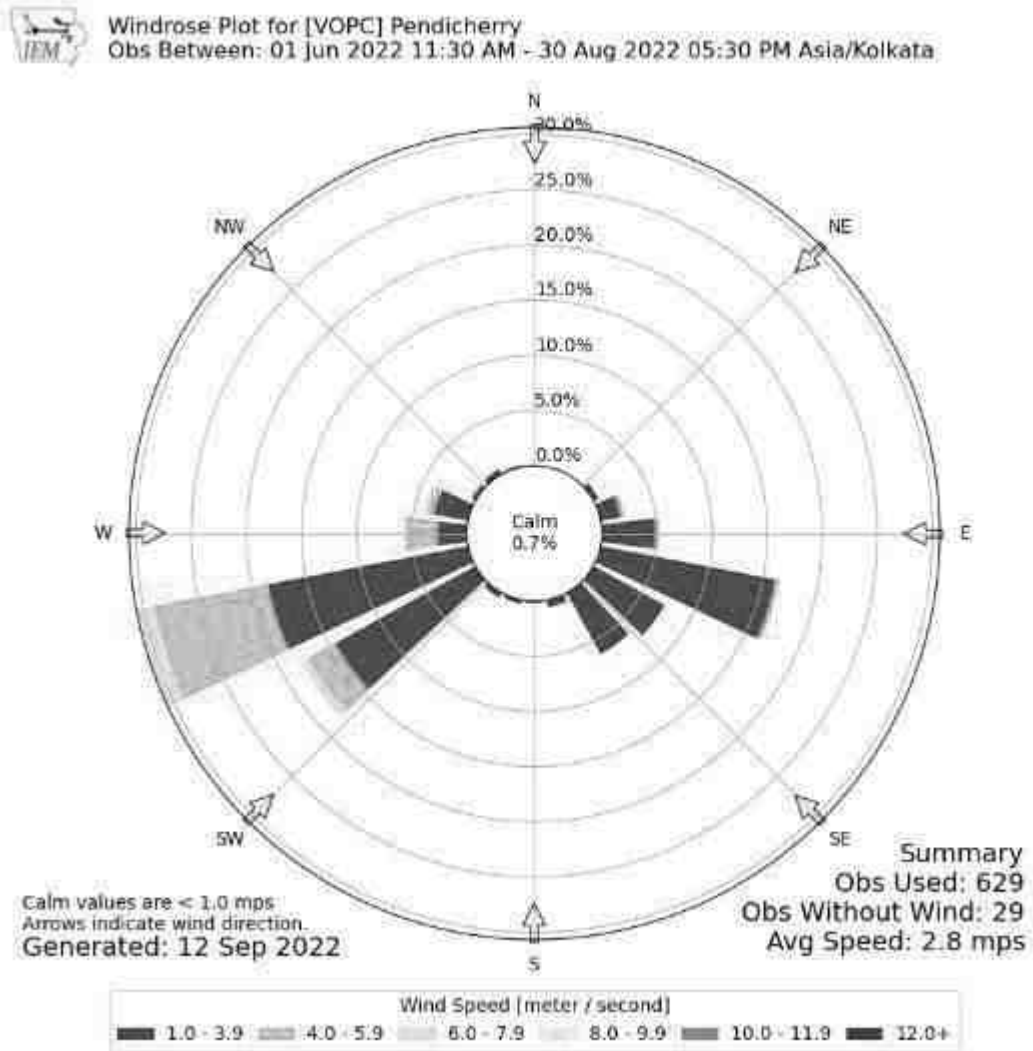


Figure 3.7 Wind rose

3.3.9 Selection of Sampling Locations:

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

3.4 AMBIENT AIR QUALITY

Table 3-8: Selection of Sampling Location

Environmental Parameters: <i>Ambient Air</i>	
Monitoring Period	June 2022 to August 2022

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Design Criteria	The monitoring stations are selected based on factors like topography/terrain, prevailing meteorological conditions like predominant wind direction (June to August 2022), etc, play a vital role in the selection of air sampling stations. Based on these criteria, 5 air sampling station were selected in the area as shown below.		
Monitoring Locations	Location & Code	Distance (km)	Direction
	Project Site	--	--
	Rahmath Masjid, Veedur	8.26	Upwind W
	Government High School, Kunnam	4.10	Crosswind N
	Santa Clara Convent Girls Higher Secondary School, Muttarampattu	6.98	Crosswind S
	Government High School, Katrambakkam	8.91	Downwind E
Methodology	Respirable Particulate Matter (PM10) - Gravimetric (IS 5182: Part 23:2006) Particulate Matter PM2.5 - Gravimetric (Fine particulate matter) Sulphur Dioxide - Calorimetric (West & Gaeke Method) (IS 5182: Part 02: 2001) Nitrogen Dioxide - Calorimetric (Modified Jacob & Hocheiser Method) (IS 5182: Part 06:2006)		
Frequency of Monitoring	2 days in a week, 4 weeks in a month for 3 months in a season.		

3.4.1 *Ambient Air Quality: Results & Discussion*

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

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Table 3-9 Ambient Air Quality

Code	Location	PM 10 ($\mu\text{g}/\text{m}^3$)				PM 2.5 ($\mu\text{g}/\text{m}^3$)				SO ₂ ($\mu\text{g}/\text{m}^3$)				NO _x ($\mu\text{g}/\text{m}^3$)			
		Min	Max	Avg	98 percentile	Min	Max	Avg	98 percentile	Min	Max	Avg	98 percentile	Min	Max	Avg	98 percentile
AAQ 1	Project Site	38	52	44.9	51.63	16	25	20.4	24.42	5	11	8.0	10.63	10	24	18.1	23.62
AAQ 2	Rahmath Masjid, Veedur	43	55	48.2	53.58	17	26	21.9	25.45	6	12	9.0	11.88	13	25	20.3	25.40
AAQ 3	Government High School, Kunnam	47	57	51.7	56.83	19	26	23.5	26.34	6	13	9.7	12.19	15	28	22.1	27.66
AAQ 4	Santa Clara Convent Girls Higher Secondary School, Muttarampattu	50	63	56.3	62.04	21	29	25.6	28.32	7	14	10.3	13.50	17	25	20.8	24.98
AAQ 5	Government High School, Katrambakkam	44	55	49.7	54.84	19	27	22.6	25.95	6	11	8.3	10.91	13	26	19.2	25.88
NAAQ Standards - Residential Area		100 ($\mu\text{g}/\text{m}^3$)				60($\mu\text{g}/\text{m}^3$)				80 ($\mu\text{g}/\text{m}^3$)				80 ($\mu\text{g}/\text{m}^3$)			

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3.4.2 Interpretation of ambient air quality:

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

Observation:

The Maximum value of PM10 (63 (µg/m³), PM 2.5 (29 (µg/m³), SOx (14 (µg/m³), NOx (28 (µg/m³) is observed in different places.

Inference:

The monitoring results for PM10, PM2.5, Sox, NOx was found to be high in Temple area which is due to existing mining activity.

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

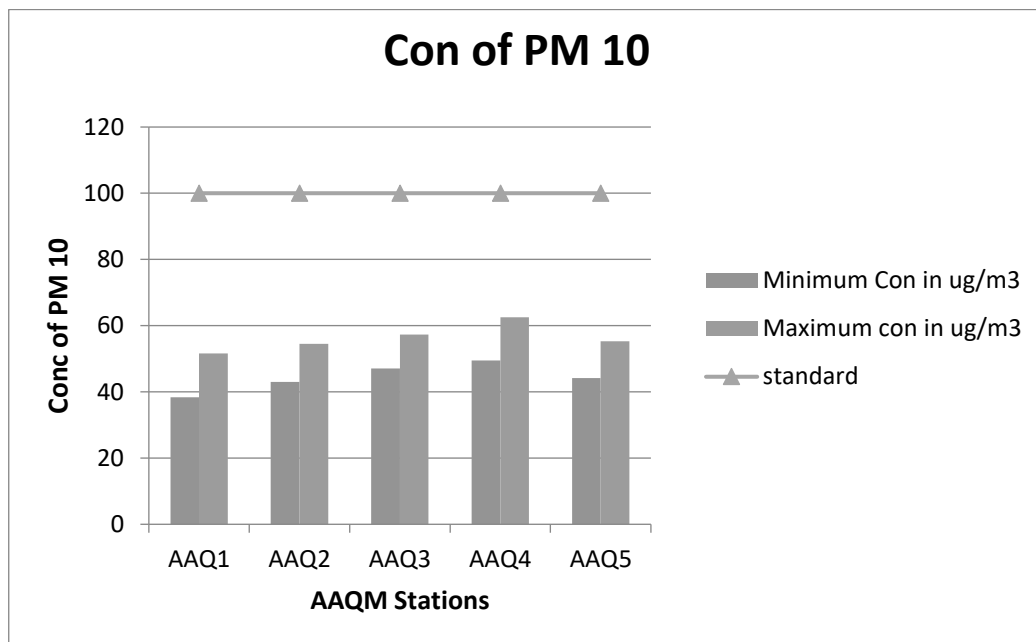


Figure 3.8 Concentration of PM10 (µg/m³) in Study Area

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Project Proponent	Thiru K Gnanasekaran	
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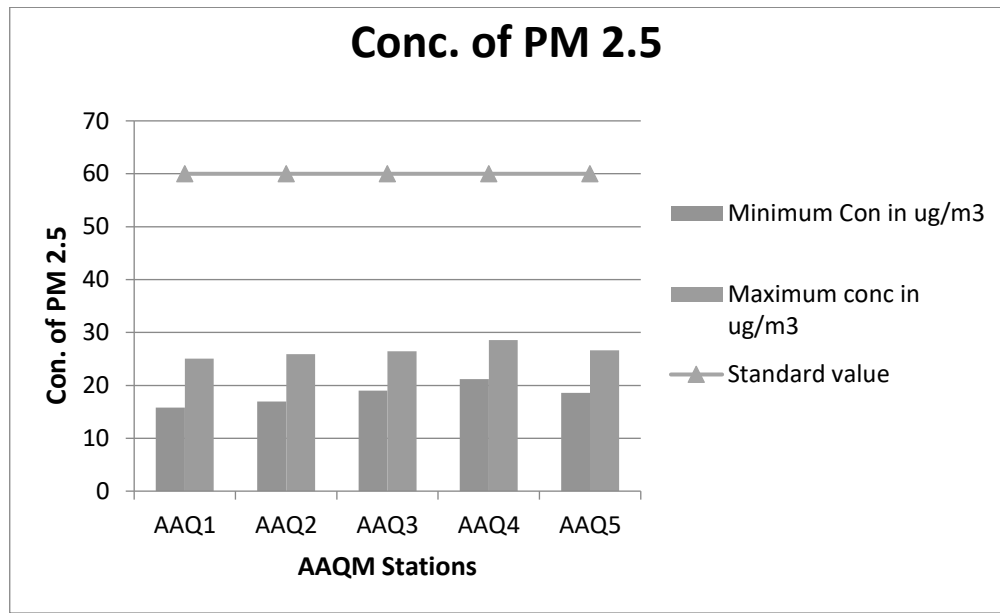


Figure 3.9 Concentration of PM_{2.5} (µg/m³) in Study Area

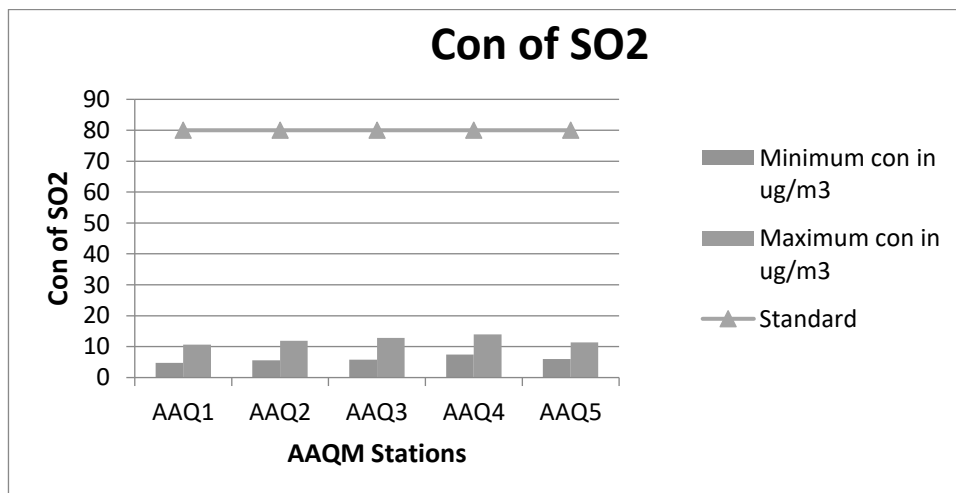


Figure 3.10 Concentration of SO_x (µg/m³) in Study Area

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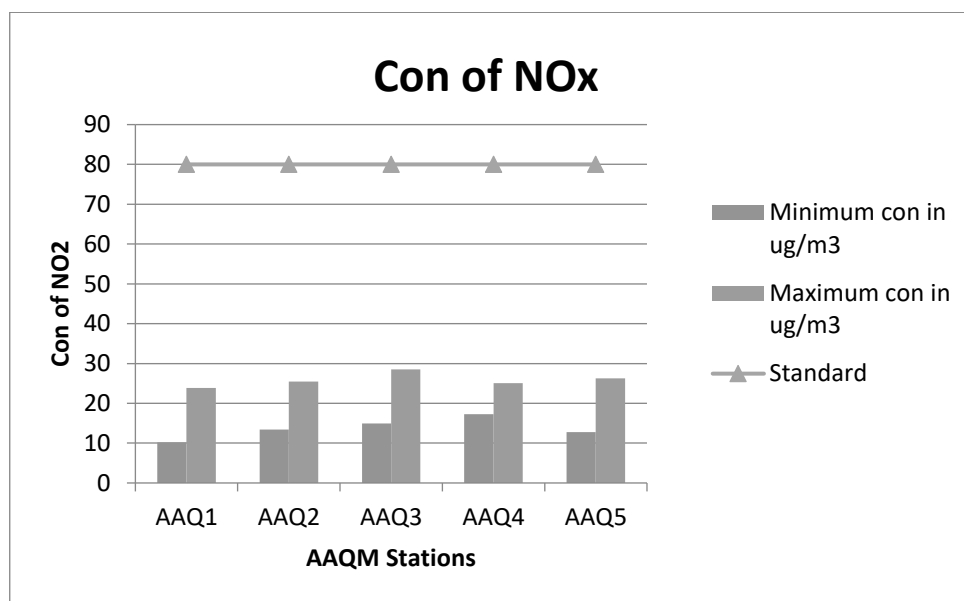


Figure 3.11 Concentration of NO_x (ug/m³) in Study Area

3.5 NOISE ENVIRONMENT:

Table 3-10 Noise Analysis

Environmental Parameters: <i>Noise Analysis</i>	
Monitoring Period	June to August 2022
Design Criteria	Based on the Sensitivity of the area
Monitoring Locations	Project Site - N 1 Rahmath Masjid, Veedur – N 2 Government High School, Kunnam - N 3 Santa Clara Convent Girls Hr. Sec. School, Muttarampattu - N 4 Government High School, Katrambakkam – N 5
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

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha by Thiru K Gnanasekaran</i>	<i>Draft EIA Report</i>
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3.5.1 Day Noise Level (Leq day)

Table 3-11 Day Noise Level (Leq day)

Location	Leq day in dB(A)		
	Max	Min	Average
Project Site	54	44	49
Rahmath Masjid, Veedur	57	46	51.5
Government High School, Kunnam	61	48	54.5
Santa Clara Convent Girls Hr. Sec. School, Muttarampattu	55	42	48.5
Government High School, Katrambakkam	58	45	51.5

3.5.2 Night Noise Level (Leq Night)

Table 3-12 Night Noise Level (Leq Night)

Location	Leq Night in dB(A)		
	Max	Min	Average
Project Site	44	35	39.5
Rahmath Masjid, Veedur	46	38	42
Government High School, Kunnam	48	39	43.5
Santa Clara Convent Girls Hr. Sec. School, Muttarampattu	42	35	38.5
Government High School, Katrambakkam	45	38	41.5

Observation:

The maximum Day noise and Night noise were found to be 61 dB(A) and 48 dB(A) respectively in Government High School, Kunnam. The minimum Day Noise and Night noise were 42 dB (A) and 35

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dB(A) respectively which was observed in Santa Clara Convent Girls Hr. Sec. School, Muttarampattu. The observed values are all well within the Standards prescribed by CPCB.

3.6 SOIL ENVIRONMENT

Soil environment is studied for 10 km radius from the project site. The 5 km radius image shows that the soil is not affected by any kind of erosion.

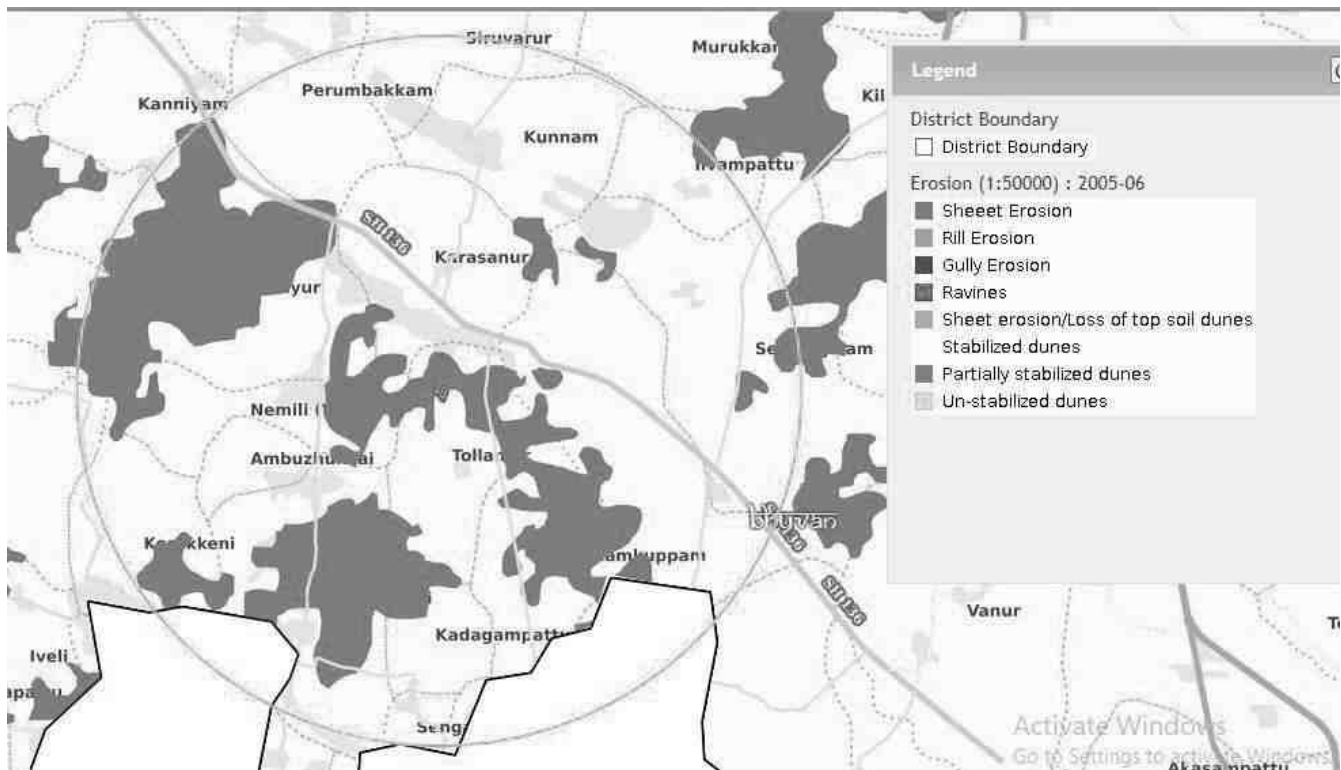


Figure 3.12 Soil Erosion pattern within 5 km radius of the project site

3.6.1 *Baseline Data:*

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

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

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Table 3-13 Soil Quality Analysis

Environmental Parameters: <i>Soil Quality Analysis</i>	
Monitoring Period	June to August 2022
Design Criteria	Based on the environmental settings of the study area
Monitoring Locations	Project Site - SQ 1 Government High School, Katrambakkam – SQ 2 Government High School, Kunnam - SQ 3 Santa Clara Convent Girls Hr. Sec. School, Muttarampattu - SQ 4 Rahmath Masjid, Veedur – SQ 5
Methodology	Composite soil samples using sampling augers and field capacity apparatus
Frequency of Monitoring	Soil samples were collected from 5 locations Once in a season

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

Table 3-14 Soil Quality Analysis

Parameters	Unit	Project Site SQ 1	SQ 2	SQ 3	SQ 4	SQ5
pH (at 25°C)	-	7.58	7.71	6.99	6.92	7.86
Specific Electrical Conductivity	mS/cm	0.09	0.14	0.08	0.28	0.14
Water Holding Capacity	ml/l	1.6	2.7	1.3	1.8	3.1
Chloride	g/cm ³	264	281	291	241	234
Soluble Calcium	mg/kg	164	165	174	151	86.6
Soluble Sodium	mg/kg	65.6	61.8	66.2	41.3	45.6
Soluble Potassium	mg/kg	16.4	27.5	31.1	18.2	32.3
Organic matter	%	0.25	0.26	0.30	0.21	0.45

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Soluble Magnesium	mg/kg	197	103	108	75.6	68.5
Total Soluble Sulphates	%	89.3	91.4	81.2	250	95.3
Cation Exchange Capacity	mg/kg	11.6	14.2	11.5	10.6	8.92
Total Nitrogen	%	0.21	0.32	0.20	0.31	0.45
Bulk Density	meq/100g	1.24	1.31	1.50	1.62	1.52
Phosphorous	meq/kg	134	154	126	143	162
Sand	%	48.8	49.7	53.4	49.0	49.3
Clay	mg/kg	4.9	5.0	20.0	4.9	4.6
Silt	mg/kg	46.4	45.3	26.6	46.1	46.1
SAR	mg/kg	9.8	10.7	3.1	4.1	10.4
Silicon	%	0.72	0.84	0.70	0.69	0.86

3.6.1.1 Physical Properties:

Regular cultivation practices increase the bulk density of soils thus inducing compaction. This results in reduction in water percolation rate and penetration of roots through soils. The soils with low bulk density have favorable physical conditions whereas those with high bulk density exhibit poor physical conditions for agriculture crops. The bulk density of the soil in the study area ranged between 1.24 to 1.62 meq/100g which indicates favorable physical condition for plant growth. The water holding capacity was found in the range of 1.3 ml/l to 3.1 ml/l.

3.6.1.2 Chemical Properties:

Chemical characteristics of soils include pH, exchangeable cations and fertility status in the form of NPK values and organic matter. The value of the pH ranges from 6.92 to 7.86, which it indicates majority of pH of the soil is slightly alkaline. The soil in the project site is sodic in nature, which challenges because

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they tend to have very poor structure which limits or prevents water infiltration and drainage. The organic matter varies from 0.21 to 0.45 %, which indicates the soil is slightly unfertile.

3.7 ECOLOGY AND BIODIVERSITY

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

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

3.7.1 Methods available for floral analysis:

3.7.1.1 Plot Sampling Methods

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

3.7.1.2 Plot less Sampling Methods

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

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3.7.2 *Field study & Methodology adopted:*

To assess the suitability of the methodology, random field survey was done. Field survey was conducted around 2 km radius from the project site and five locations were chosen based on the species density. Quadrat method is chosen for the proposed study as compared to other sampling methods, because they are relatively simple to use. Quadrat plots are uniform in size and shape and distributed randomly throughout the sample area, which makes the study design straightforward. They are also one of the most affordable techniques because they require very few materials.

3.7.3 *Study outcome:*

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

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

Table 3-15 Calculation of Density, Frequency (%), Dominance, Relative Density, Relative Frequency, Relative Dominance & Important Value Index

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

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Table 3-16 Tree Species in the core Zone

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Dominance	Relative Density	Relative Frequency	Relative Dominance	IVI	IUCN Conservation Status
1	Ficus Carica	Athi Maram	2	2	6	0.33	33.33	1	0.28	1.68	2.17	4.45	8.31	Least Concern
2	Cocos nucifera	Thennai	10	6	6	1.67	100.0	1.67	0.15	8.40	6.52	2.39	17.32	Not assessed
3	Azadirachta indica	Veppam	17	6	6	2.83	100.0	2.83	0.13	14.29	6.52	1.98	22.79	Not assessed
4	Tamarindus indica	Puli	10	6	6	1.67	100.0	1.66	0.20	8.40	6.52	3.09	18.02	Not assessed
5	Mangifera indica	Mamaram	7	6	6	1.17	100.0	1.16	0.07	5.88	6.52	1.11	13.52	Data insufficient
6	Morinda pubescens	Nuna	6	6	6	1.00	100.0	1	0.24	5.04	6.52	3.74	15.31	Not assessed
7	Couroupita guianensis	Nagalingam	5	3	6	0.83	50.00	1.67	0.14	4.20	3.26	2.18	9.64	Not assessed
8	Bombax ceiba	Sittan	4	4	6	0.67	66.67	1	0.08	3.36	4.35	1.27	8.98	Not assessed
9	Acacia nilotica	Karuvelai	4	4	6	0.67	66.67	1	0.28	3.36	4.35	4.45	12.16	Least Concern
10	Bambusa vulgaris	Moongil	4	4	6	0.67	66.67	1	0.50	3.36	4.35	7.92	15.63	Not assessed
11	Syzygium cumini	naval	5	1	6	0.83	16.67	5	0.11	4.20	1.09	1.79	7.07	Not assessed
12	Carica papaya	Papaya	3	3	6	0.50	50.00	1	0.09	2.52	3.26	1.43	7.21	Not assessed
13	Psidium guajava	Guava	3	3	6	0.50	50.00	1	0.23	2.52	3.26	3.61	9.39	Not assessed
14	Cassia siamea	ManjalKonrai	3	2	6	0.50	33.33	1.5	0.07	2.52	2.17	1.11	5.81	Least Concern
15	Ficus religiosa	Arasa maram	3	3	6	0.50	50.00	1	0.09	2.52	3.26	1.35	7.13	Not assessed

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16	Musa paradise	Vaazhai	3	3	6	0.50	50.00	1	0.08	2.52	3.26	1.19	6.97	Not assessed
17	Prosopis juliflora	Vaelikaruvai	3	3	6	0.50	50.00	1	0.21	2.52	3.26	3.34	9.13	Not assessed
18	Tectona grandis	Thekku	3	3	6	0.50	50.00	1	0.12	2.52	3.26	1.88	7.66	Not assessed
19	Thespesia populnea	Poovarasam	3	3	6	0.50	50.00	1	0.15	2.52	3.26	2.39	8.18	Not assessed
20	Causuarina equisetifolia	Savukku	2	2	6	0.33	33.33	1	0.21	1.68	2.17	3.34	7.20	Not assessed
21	Alstonia scholaris	Elilaipalai	2	2	6	0.33	33.33	1	0.27	1.68	2.17	4.31	8.16	Least Concern
22	Anacardium occidentale	Cashew	1	1	6	0.17	16.67	1	0.44	0.84	1.09	6.96	8.88	Not assessed
23	Artocarpus heterophyllus	Palaa	2	2	6	0.33	33.33	1	0.18	1.68	2.17	2.85	6.70	Not assessed
24	Aegle marmelos	Vilvam	1	1	6	0.17	16.67	1	0.16	0.84	1.09	2.50	4.43	Not assessed
25	Delonix elata	Perungondrai	1	1	6	0.17	16.67	1	0.17	0.84	1.09	2.62	4.54	Least Concern
26	Pithecellobium dulce	Kodukapuli	1	1	6	0.17	16.67	1	0.14	0.84	1.09	2.18	4.11	Not assessed
27	Citrus medica	Elumichai	2	2	6	0.33	33.33	1	0.23	1.68	2.17	3.61	7.46	Not assessed
Total			110	83					5.02					

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Table 3-17 Shrubs in the Core Zone

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IUCN Conservation Status
1	Jatropagossypifolia	Kaatamanaku	32	17	24	1.17	0.71	1.65	14.43	17.17	Not Assessed
2	Calotropis gigantea	Erukam	16	12	24	0.58	0.50	1.17	7.22	12.12	Not Assessed
3	Tabernaemontanadivaricata	Crepe Jasmine	4	3	24	0.13	0.13	1	1.55	3.03	Not Assessed
4	Catharanthus roseus	Nithyakalyani	4	3	24	0.13	0.13	1	1.55	3.03	Not Assessed
5	Datura metal	Ummattangani	7	4	24	0.21	0.17	1.25	2.58	4.04	Not Assessed
6	Robiniapseudoacacia	Black locust	15	5	24	0.71	0.21	3.4	8.76	5.05	Least Concern
7	Acalypha indica	Kuppaimeni	18	8	24	0.83	0.33	2.5	10.31	8.08	Not Assessed
8	Stachytarpeaurticifolia	Rat tail	13	9	24	0.63	0.38	1.67	7.73	9.09	Not Assessed
9	Woodfordiafruiticosa	Velakkai	4	3	24	0.13	0.13	1	1.55	3.03	Least Concern
10	Hibiscus rosa sinensis	Sembaruthi	3	2	24	0.13	0.08	1.5	1.55	2.02	Not Assessed
11	Lantana camara	Unnichedi	8	6	24	0.38	0.25	1.5	4.64	6.06	Not Assessed
12	Parthenium hysterophorous	Vishapoondur	45	13	24	2.08	0.54	3.85	25.77	13.13	Not Assessed
13	Euphorbia geniculata	Amman Pacharisi	5	3	24	0.13	0.13	1	1.55	3.03	Not Assessed

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Table 3-18 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	Helicteresisora	Valampuri	4	2	30	0.07	0.07	1	0.79	2.15	Not assessed
2	Tridax procumbens	Vettukaayathalai	7	4	30	0.17	0.13	1.25	1.98	4.30	Not assessed
3	Heraculem spondylium	Hog Weed	19	10	30	0.67	0.33	2	7.94	10.75	Not assessed
4	Tridax procumbens	Cuminipachai	18	4	30	0.50	0.13	3.75	5.95	4.30	Not assessed
5	Senna occidentalis	Nattamsakarai	30	4	30	0.83	0.13	6.25	9.92	4.30	Not assessed
6	Plumbago zeylanica	Chittiramoolam	12	3	30	0.10	0.10	1	1.19	3.23	Not assessed
7	Scrophularia nodosa	Sarakkothini	18	7	30	0.50	0.23	2.14	5.95	7.53	Not assessed
8	Viburnum dentatum	Viburnum	7	5	30	0.17	0.17	1	1.98	5.38	Least concern
9	Cynodondactylon	Arugu	15	6	30	0.40	0.20	2	4.76	6.45	Not assessed
10	Euphorbia hirta	Amman Pacharisi	7	4	30	0.17	0.13	1.25	1.98	4.30	Not assessed
11	Sida cordifolia	Maanikham	50	4	30	1.50	0.13	11.25	17.86	4.30	Not assessed
12	Sida acuta	Malaidangi	12	3	30	0.33	0.10	3.33	3.97	3.23	Not assessed
13	Laportea canadensis	Peruganchori	28	20	30	1.00	0.67	1.5	11.90	21.51	Not assessed
14	Sporobolus fertilis	Giant Parramatta Grass	10	4	30	0.30	0.13	2.25	3.57	4.30	Not assessed
15	Tephrosia purpurea	Kavali	23	4	30	0.67	0.13	5	7.94	4.30	Not assessed

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

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

Table 3-19 Calculation of species diversity

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

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

i. Species Diversity

Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
Ficus Carica	Athi Maram	2	0.018182	-4.00733	-0.07286
Cocos nucifera	Thennai	10	0.090909	-2.3979	-0.21799
Azadirachta indica	Veppam	17	0.154545	-1.86727	-0.28858
Tamarindus indica	Puli	10	0.090909	-2.3979	-0.21799
Mangifera indica	Mamaram	7	0.063636	-2.75457	-0.17529
Morinda pubescens	Nuna	6	0.054545	-2.90872	-0.15866
Couroupita guianensis	Nagalingam	5	0.045455	-3.09104	-0.1405

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Bombax ceiba	Sittan	4	0.036364	-3.31419	-0.12052
Acacia nilotica	Karuvelai	4	0.036364	-3.31419	-0.12052
Bambusa vulgaris	Moongil	4	0.036364	-3.31419	-0.12052
Syzygium cumini	naval	5	0.045455	-3.09104	-0.1405
Carica papaya	Papaya	3	0.027273	-3.60187	-0.09823
Psidium guajava	Guava	3	0.027273	-3.60187	-0.09823
Cassia siamea	ManjalKonrai	3	0.027273	-3.60187	-0.09823
Ficus religiosa	Arasa maram	3	0.027273	-3.60187	-0.09823
Musa paradise	Vaazhai	3	0.027273	-3.60187	-0.09823
Prosopis juliflora	Vaelikaruvai	3	0.027273	-3.60187	-0.09823
Tectona grandis	Thekku	3	0.027273	-3.60187	-0.09823
Thespesia populnea	Poovarasam	3	0.027273	-3.60187	-0.09823
Causuarina equisetifolia	Savukku	2	0.018182	-4.00733	-0.07286
Alstonia scholaris	Elilaipalai	2	0.018182	-4.00733	-0.07286
Anacardium occidentale	Cashew	1	0.009091	-4.70048	-0.04273
Artocarpus heterophyllus	Palaa	2	0.018182	-4.00733	-0.07286
Aegle marmelos	Vilvam	1	0.009091	-4.70048	-0.04273
Delonix elata	Perungondrai	1	0.009091	-4.70048	-0.04273
Pithecellobium dulce	Kodukapuli	1	0.009091	-4.70048	-0.04273
Citrus medica	Elumichai	2	0.018182	-4.00733	-0.07286
Total		110			-3.02215005

H (Shannon Diversity Index) =3.02

Shrubs

Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
Jatropagossypifolia	Kaatamanaku	32	0.183908	-1.69332	-0.31142
Calotropis gigantea	Erukam	16	0.091954	-2.38647	-0.21945
Tabernaemontanadivaricata	Crepe Jasmine	4	0.022989	-3.77276	-0.08673
Catharanthus roseus	Nithyakalyani	4	0.022989	-3.77276	-0.08673
Datura metal	Ummattangani	7	0.04023	-3.21315	-0.12926
Robiniapseudoacacia	Black locust	15	0.086207	-2.45101	-0.21129
Acalypha indica	Kuppaimeni	18	0.103448	-2.26868	-0.23469
Stachytarphaurticifolia	Rat tail	13	0.074713	-2.59411	-0.19381
Woodfordiafruiticosa	Velakkai	4	0.022989	-3.77276	-0.08673
Hibiscus rosa sinensis	Sembaruthi	3	0.017241	-4.06044	-0.07001
Lantana camara	Unnichi	8	0.045977	-3.07961	-0.14159
Parthenium hysterophorous	Vishapoond	45	0.258621	-1.35239	-0.34976
Euphorbia geniculata	Amman Pacharisi	5	0.028736	-3.54962	-0.102
Total		174			-2.2234

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H (Shannon Diversity Index) =2.22

Herbs

Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
Helicteresisora	Valampuri	4	0.015385	-4.17439	-0.06422
Tridax procumbens	Vettukaayathalai	7	0.026923	-3.61477	-0.09732
Heraculem spondylium	Hog Weed	19	0.073077	-2.61624	-0.19119
Tridax procumbens	Cuminipachai	18	0.069231	-2.67031	-0.18487
Senna occidentalis	Nattamsakarai	30	0.115385	-2.15948	-0.24917
Plumbago zeylanica	Chittiramoolam	12	0.046154	-3.07577	-0.14196
Scrophularia nodosa	Sarakkothini	18	0.069231	-2.67031	-0.18487
Viburnum dentatum	Viburnum	7	0.026923	-3.61477	-0.09732
Cynodondactylon	Arugu	15	0.057692	-2.85263	-0.16457
Euphorbia hirta	Amman Pacharisi	7	0.026923	-3.61477	-0.09732
Sida cordifolia	Maanikham	50	0.192308	-1.64866	-0.31705
Sida acuta	Malaidangi	12	0.046154	-3.07577	-0.14196
Laportea canadensis	Peruganchori	28	0.107692	-2.22848	-0.23999
Sporobolus fertilis	Giant Parramatta Grass	10	0.038462	-3.2581	-0.12531
Tephrosia purpurea	Kavali	23	0.088462	-2.42519	-0.21454
Total		260			-2.51

H (Shannon Diversity Index) =2.51

i. Species diversity calculation

Details	H	Hmax	Evenness	Species Richness (Margalef)
Trees	3.02	3.36	0.89	5.95
Shrubs	2.22	2.56	0.86	2.32
Herbs	2.51	2.70	0.92	2.51

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

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ecological niches are available, environmental change is less likely to be damaging to the ecosystem. Species richness is high for herb community when compared with tree and shrubs.

3.7.6 *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.

3.7.7 *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.

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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 considered to be the indicators for monitoring and understanding human impacts on ecological systems (Lawton, 1996) attempt was made to gather quantitative data on the avifauna by walk through survey within the entire study area and surrounding areas. From the 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 3-20 List of fauna species

Scientific Name	Common Name	Schedule of wild life protection act	IUCN conservation status
Mammals			
Funambulus pennanti	Palm Squirrel	IV	Least Concern
Mus rattus	Indian rat	IV	Not listed
Bandicota bengalensis	Indian mole rat	IV	Least Concern
Funambulus palmarum	Three stripped palm squirrel	IV	Least Concern
Herestes edwardsii	Common Mongoose	IV	Not listed
Mus musculus	Common Mouse	IV	Least Concern
Bandicota indica	Rat	IV	Least Concern
Lepus nigricollis	Indian Hare	IV	Least Concern

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Felis catus	Cat	Not listed	Not listed
Canis lupus familiaris	Indian dog	Not listed	Not listed
Bos Indicus	Indian Cow	Not listed	Not listed
Bubalus bubalis	Buffalo	I	Not listed
Sus scrofa domesticus	Domestic pig	Not listed	Not listed
Birds			
Milvus migrans	Black kite	IV	Least concern
Saxicoloides fulicatus	Indian Robin	IV	Least concern
Pycnonotus cafer	Red vented Bulbul	IV	Least concern
Phragamaticola aedon	Thick billed warbler	IV	Least concern
Pericrocotus cinnamomeus	Small Minivet	IV	Least concern
Eudynamys scolopaceus	Koel	IV	Least concern
Psittacula krameni	Rose ringed parakeet	IV	Least concern
Dicrurus marcocercus	Black drongo	IV	Least concern
Columba livia	Rock pigeon	IV	Least concern
Corvus splendens	House crow	IV	Least concern
Alcedo atthis	Small blue kingfisher	IV	Least concern
Cuculus canorus	Common Cukoo	IV	Least concern
Reptiles & Amphibians			
Chameleon zeylanicum	Chameleon	IV	Not listed
Calotes versicolor	Common garden lizard	II	Not listed
Bungarus caeruleus	Common krait	IV	Not listed
Ophisops leschenaultia	Snake eyed lizard	--	Not listed
Bufo melanostictus	Toad	IV	Least concern
Ptyas mucosa	Rat snakes	IV	Least concern
Hemidactylus sp.	House lizard	--	Not listed
Butterflies			
Danaus chrysippus	Plain Tiger	--	Not listed

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

3.8 DEMOGRAPHY AND SOCIO ECONOMICS

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

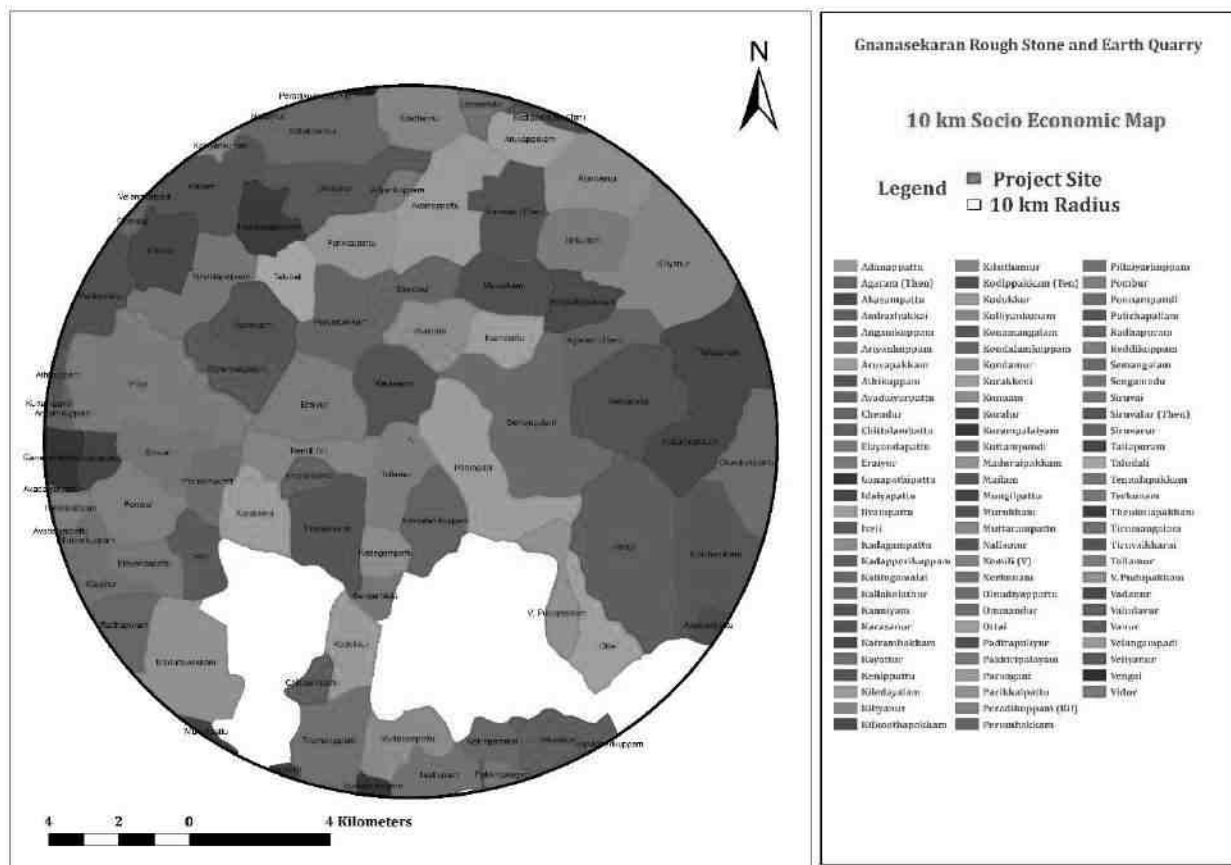


Figure 3.13 Socio Economic map surrounding the project site.

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

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Table 3-21: Demography Survey Study

Source: Census of India, 2011

Villages	Household	Population	Sex Ratio		Literacy Rate		SC	ST
			Male	Female	Male	Female		
Tollamur	332	1419	731	688	496	330	916	31
Semangalam	863	3635	1859	1776	1348	983	1361	0
Ilvampattu	179	743	384	359	281	195	522	1
Kunnam	401	1742	873	869	630	492	414	9
Murukkam	173	787	395	392	266	213	422	24
Sirunarur	59	290	152	138	89	58	186	0
Perumbakkam	501	2357	1199	1158	878	662	1708	0
Karasanur	683	2862	1458	1404	1084	744	539	32
Eraiyrur	740	3257	1656	1601	1085	779	950	0
Nemili (V)	266	1238	627	611	471	364	544	0
Korakkeni	218	906	489	417	362	232	361	0
Ambuzhukkai	134	558	294	264	224	153	124	22
Vidur	1405	5748	2861	2887	1883	1405	3122	8
Ponnampundi	132	565	289	276	214	161	154	0
Tiruvakkarai	738	3220	1627	1593	1052	852	911	90
Sengamedu	234	1063	521	542	391	328	745	35
Kadagampattu	144	601	315	286	269	193	0	0
Kondalamkuppam	96	353	175	178	144	126	97	0

3.9 TRAFFIC IMPACT ASSESSMENT

Traffic data collected continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each

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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 3.14: Site Connectivity

Table 3-22: No. of Vehicles per Day

S. No	Vehicles Distribution	Number of Vehicles Distribution/Day	Passenger Car Unit (PCU)	Total Number of Vehicle in PCU
		SH-136	-	SH-136
1	Cars	1035	1	1035
2	Buses	458	3	1374
3	Trucks	376	3	1128
4	Two wheelers	1330	0.5	665
5	Three wheelers	623	1.5	935
	Total	3822	-	5137

Table 3-23: Existing Traffic Scenario and LOS

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Road	V (Volume in PCU/hr)	C (Capacity in PCU/hr)	Existing V/C Ratio	LOS
NH45	5137/24=214	563	0.38	B

Note: The existing level may be "Very Good" for SH-136.

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

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4 Anticipated Environmental Impacts & Mitigation Measures

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

4.1 INTRODUCTION

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

Environmental Impacts can be group into Primary impacts & Secondary Impacts

Primary Impacts: These impacts are directly attributed by the project

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

Assessment of impacts is done for the following Environmental Parameters:

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

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4.2 LAND ENVIRONMENT:

Aspect	Impact	Mitigation Measures					
<p><i>Mining of rough stone and Gravel</i></p>	<p>The proposed 2.33.5 Ha mine located in Thollamur Village having 65,935 m³ of Rough stone and 18,652 m³ of Earth respectively. The quarry operation is proposed to carry out with conventional open cast mechanized mining with 5.0 meter vertical bench and bench width of 5.0 meter. At the end of 5 years, mining lease area will be converted into ultimate pit.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">ULTIMATE PIT DIMENSION</td> </tr> <tr> <td>Pit 1: 112.0 m (L) x 38.0 m (W) Avg x 22.0 m (D)</td> </tr> <tr> <td>Pit 2: 76.0 m (L) x 75.0 m (W) Avg x 12.0 m (D)</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">EXISTING PIT DIMENSION</td> </tr> <tr> <td>Pit – 1 : 47 m (L) x 38 m (W) x 7 m (D)</td> </tr> </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 and Earth 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>	ULTIMATE PIT DIMENSION	Pit 1: 112.0 m (L) x 38.0 m (W) Avg x 22.0 m (D)	Pit 2: 76.0 m (L) x 75.0 m (W) Avg x 12.0 m (D)	EXISTING PIT DIMENSION	Pit – 1 : 47 m (L) x 38 m (W) x 7 m (D)	<p>The proposed project site is not prone to any kind of soil erosion (Source: Bhuvan).</p> <p>In addition, garland drainage of 1m x 1m will be provided to avoid storm water run-off.</p> <p>It is proposed to plant 1200 No's of local tree species (Neem, Vilvam Vaagai, Pungam, Magizha maram, Eachai, etc.,) along the roads, outer periphery of the mining area which enhances the binding property of the soil.</p> <p>It is proposed to improve the affected land wherever possible for better land use, so as to support vegetation and creation of water reservoir in the ultimate pit after quarrying.</p> <p>The over burden in the form of 2.0 m Earth in this mine area.</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 in 3 hours.</p>
ULTIMATE PIT DIMENSION							
Pit 1: 112.0 m (L) x 38.0 m (W) Avg x 22.0 m (D)							
Pit 2: 76.0 m (L) x 75.0 m (W) Avg x 12.0 m (D)							
EXISTING PIT DIMENSION							
Pit – 1 : 47 m (L) x 38 m (W) x 7 m (D)							

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	<p>Impact due to transformation of terrain characteristics over the large area results in soil degradation.</p> <p>Solid waste will be generated from the mining activity as there will be refuse also generation of domestic waste. If it is not properly managed, may cause odor and health problem to the workers.</p>	<p>The proposed mining activity is carried out in almost Plain terrain where the contour level difference is above 65 m.</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 no refuse generation due to the mining activity. Apart from that, a very meagre quantity of domestic waste will be generated in the project, which will be handed over to the local body on daily basis.</p>
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4.3 WATER ENVIRONMENT:

Aspect	Impact	Mitigation Measures
<i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i>	The mining in the area may cause ground water contamination due to intersection of the water table and mine runoff.	The water table will not be intersected during mining, as the ultimate depth is limited upto 32 m below ground level, whereas the ground water table is at 55 m below ground level during summer and 50 m below ground level during

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	<p>The ground water depletion may occur due to mining activity</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>rainy seasons. The municipal wastewater will be disposed into septic tanks of 5 cum and soak pit. No chemicals consisting of toxic elements will be used for carrying out mining activity.</p> <p>The ground water table is at a depth of 50 to 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. 2 No. of Tippers will be used for loading and unloading, 1 No of Excavator (1.2 m³ bucket capacity (with rock breaker attachment), 1 No. Compressor and 4 No. Jack Hammer will be used for excavation of the mineral which contributes to the generation of fugitive dust. In addition, blasting will be done using explosives leading to the generation of dust.</p>	<p><i>Mitigation Measures during Operation Phase</i></p> <p>It is proposed to plant 1200 Nos of local species (with 240 No's each year) along the haul roads, outer periphery within the lease area to prevent the impact of dust in consultation with Forest department for the plantation of trees (Neem, Magizham, Tamarind, Elandhai, Mantharai, Vilvam, etc..) in two tier to combat air pollution and with herbs (Nerium) in between the tree species.</p> <p>Planning transportation routes of the mined out mineral, so as to reach the nearest paved roads (an approach road) by shortest route connecting to SH 136.</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</p>

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	<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 on leaf. 	<p>20km/hr to avoid generation of dust.</p> <p>The trucks will be covered by tarpaulin.</p> <p>Overloading will be avoided.</p> <p>Personal Protective Equipments (PPEs) like eye goggles, dust mask, leather gloves, safety shoes & boots will be provided to the workers engaged at dust generation points like excavation and loading points.</p> <p>0.5 KLD of water will be proposed for sprinkling on unpaved roads to avoid dust generation during transportation.</p>
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Air Quality Modeling:

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

- AERMOD (AERMIC Dispersion Model),

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- AERMAP (AERMOD Terrain Preprocessor)
- AERMET (AERMOD Meteorological Preprocessor)

4.4.1 *Source Characterization*

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

The emission Sources from the proposed operation are

Point Sources:

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

1. Hydraulic excavator – 1.2 Cum Bucket Capacity (with Rock Breaker Attachment)
2. Jack Hammer 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 March to May 2022 emissions were estimated. Emissions due to haul road and general plant traffic on the unpaved road network were modelled as volume sources. The model volume source parameter for the haul roads initially utilized USEPA developed emission factors for hauling trucking. The haul road sources utilized source to source spacing of 6 meters along the simulated haul roads. The initial lateral dimension of the sources were set to 3 m were used as an input to replicated a 2 truck travel adjacent for a typical mining scenario.

The parameters considered for the hauling operation include the following,

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

Other fugitive particulate emission sources:

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

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

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 June to August 2022 are superimposed on the maximum baseline concentrations obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase. The overall scenario with predicted concentrations over the maximum baseline concentrations is shown in the following table along with isopleths.

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Table 4-1 Emission Factors for uncontrolled mining

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

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4.5 NOISE ENVIRONMENT:

Aspect	Impact	Mitigation Measures
<i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i>	<p>Usage of Equipments (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 collate which may result in unwanted sound and can also cause impact on human health like breathing and respiratory system, damage to lung tissue, influenza or asthma.</p>	<ul style="list-style-type: none"> • The machinery will be maintained in good running condition so that noise will be reduced to minimum possible level. • Awareness will be imparted to the workers once in six months about the permissible noise level and effect of maximum exposure to those levels. Adequate silencers will be provided in all the diesel engines of vehicles. • It will be ensured that all transportation vehicles carry a valid PUC Certificates. • 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 1200 Nos. of local species (Neem, Mandharai, Athi, Tamarind, Panai, Vilvam,etc...) to reduce the impact of

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		<p>noise in the study area. The development of green belts around the periphery of the mine will be implemented to attenuate noise.</p> <ul style="list-style-type: none"> • The trucks will be diverted on two roads viz. SH 136 and a District Road to avoid traffic congestion. • Health check-up camps will be organized once in six month. • Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas. • 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.

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Planting of trees	Development of afforestation in the mine lease area will have a positive impact as the land was initially a barren.	10 m safety distance will be provided all along the boundary of the mine lease area and safety. Around 0.25.5 Ha of land is utilized for greenbelt development (1200 Nos – 5 years). This will attract avifauna thus enhancing the existing ecological environment.
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4.7 SOCIO ECONOMIC ENVIRONMENT:

Aspect	Impact	Mitigation Measures
Proposed implementation of Mining activity	Land acquisition for the implementation of the project may result in loss of assets, which in return will make the PAP to shift, losing their normal routine and livelihood	The proposed project is a Patta land of <i>Thiru. K. Gnanasekaran</i> and the land is vacant where there are no human settlement within 300m 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. The nearest human settlement is observed in Thollamur village which is 0.76 km, SE from 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	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.

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	movement of the vehicles may affect/injure the animals	
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 i.e, 5 Lakhs will be allocated. Developing sports facilities, providing hygienic toilet, R.O Water facilities to Government Higher Secondary School, Karasanur.

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4.8 OTHER IMPACTS:

S. No	Aspect	Impact	Mitigation measure
1.	Risk due to the proposed mining	Accidents may occur in the mine area	Proper PPE kit (Safety jacket, Helmet, Safety Shoes, Gloves) etc will be provided to each and every employee in the mine lease concerning the safety of each labour
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 – 5 P.M to 6 P.M (or whenever required) so that the employees will be aware of the activity. Smoking will be banned in the site and sign boards will be displayed in various places at site.
3.	Screening of Labors	Labors will be checked for health condition before employing them in mining activity	All the labors will be checked and screened for health before employing them. After employing them, periodical medical checkups will be held once in every six months.

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5 Analysis Of Alternatives

5.1 GENERAL

Analysis of 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 Assistant Director, Department of Mining and Geology, Villupuram District prior to submission of the Form-1 and PFR.

ToR issued by the SEIAA-TN vide Letter No. SEIAA-TN/ F. No. 9208/SEAC/ ToR-1250/2022 Dated: 07.09.2022. The study for alternative analysis involves in-depth examination of site and technology.

5.1.1 *Analysis for Alternative Sites and Mining Technology*

5.1.1.1 Alternative Site

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

5.1.1.2 Alternative Technology

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

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Table 5-1: Alternative for Technology and other Parameters

S. No.	Particular	Alternative Option 1	Alternative Option 2	Remarks
1.	Technology	Opencast semi mechanized mining	Opencast mechanized mining	Opencast semi mechanized Involving drilling and blasting are preferred. Benefits: Material is hard so to make it loose and to bring it to appropriate size.
2.	Employment	Local employment.	Outsource employment	Local employment is preferred Benefits: Provides employment to local people along with financial benefits No residential building/ housing is required.
3.	Labour transportation	Public transport	Private transport	Local labours will be deployed from Thollamur 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.

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5.	Water	Tanker supplier	Ground water/	Tanker supply will be preferred. Water will be sourced from Thollamur village which is 0.76 km, SE from site
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6 Environmental Monitoring Program

6.1 GENERAL:

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

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

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

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

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

Table 6-1: Environmental Monitoring Programme

Parameters	Sampling	Frequency	Location
Air environment – Pollutants PM 10 PM 2.5 SO ₂	5 locations	24 hourly twice a week 4 hourly. Twice a week, One non monsoon season	Project Site, Government High School, Katrambakkam, Government High School, Kunnam, Santa Clara Convent Girls Hr. Sec. School,

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NO _x		8 hourly, twice a week 24 hourly, twice a week	Muttarampattu, Rahmath Masjid, Veedur
Noise	5 locations	24 hourly Once in 5 locations	Project Site, Government High School, Katrambakkam, Government High School, Kunnam, Santa Clara Convent Girls Hr. Sec. School, Muttarampattu, Rahmath Masjid, Veedur
Water (Ground water) <ul style="list-style-type: none"> • pH • Temperature • Turbidity • Magnesium Hardness • Total Alkalinity • Chloride • Sulphate • Fluoride • Nitrate • Sodium • Potassium • Salinity • Total nitrogen • Total Coliforms • Fecal Coliforms 	5 locations	Once in 5 locations	Project Site, Government High School, Katrambakkam, Government High School, Kunnam, Santa Clara Convent Girls Hr. Sec. School, Muttarampattu, Rahmath Masjid, Veedur

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Water (surface water) <ul style="list-style-type: none"> • pH • Temperature • Turbidity • Magnesium Hardness • Total Alkalinity • Chloride • Sulphate • Fluoride • Nitrate • Sodium • Potassium • Salinity • Total nitrogen • Total Coliforms • Fecal Coliforms 	Sample from nearby lakes/river	One time Sampling	Sankarabarani River
Soil (Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	5 locations	Once in 5 locations	Project Site, Government High School, Katrambakkam, Government High School, Kunnam, Santa Clara Convent Girls Hr. Sec. School, Muttarampattu, Rahmath Masjid, Veedur
Ecology and biodiversity Study	Study area covering 5 km radius	One time Sampling	

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Socio- Economic study (Population, Literacy Level, employment, Infrastructure like school, hospitals & commercial establishments)	Villages around 5 km radius	One time Sampling	
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Table 6-2: Monitoring Schedule during Mining

S. No.	Attributes	Parameters	Frequency	Location
1.	Ambient Air Quality at Mine Site & Fugitive Dust Sampling	PM 10 PM 2.5 SO ₂ NO _x	Once in a Month	Project Site
2.	Ground water Quality	Drinking Water Parameters, As per IS - 10500: 2012	Half yearly	Project Site
3.	Surface Water Quality	Class will be assessed as per the CPCB Guidelines	Half yearly	Project Site
4.	Soil Quality	(Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	Half yearly	Project Site
5.	Noise Level Monitoring	Noise level in dB(A) Quarterly/half yearly	Half yearly	Project Site

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7 Additional Studies

7.1 GENERAL

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

7.1.1 *Public Hearing:*

As the proposed mining project falls under 1(a), Category B1 – Cluster Mining (includes **Existing Quarries**- K. Gnanasekaran – 1.24.5 Ha, V. Sadaiyappan – 3.57.0 Ha, G. Raja – 2.42.5 Ha, R. Muralidaran – 2.06.0 Ha, K. Balamurugan – 2.12.0 Ha

Proposed Quarries – S.V.Venkatesh – 2.06.0 Ha, K. Gnanasekaran – 2.33.5 Ha, V. Ramesh – 3.53.0 Ha, G. Arjunan – 3.21.5 Ha, I. Justin Prabu – 3.67.0 Ha

Abandoned Quarries – R. Alagurajan – 1.46.5 Ha, K. Dharmalingam – 2.52.0 Ha, S. Nanthini – 3.32.5 Ha, C. Ganesan – 4.27.5 Ha, V. Sankar – 3.66.5 Ha, D. Sundaramurthy – 1.39.5 Ha, V. Elumalai – 1.11.0 Ha, S. Irusappa – 1.96.0 Ha, R. Periyasamy – 1.52.0 Ha, K. Gnanasekaran – 2.68.0 Ha, V. Kannan – 4.55.5 Ha

The Total extent of the Existing / Proposed quarries are 54.7.0 Ha

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

7.1.2 *Risk assessment:*

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

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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:

Depth of Each Hole	1.5 m
Diameter of Hole	30-32 mm
Spacing between Holes	1.2 m
Burden of hole	1.0 m
Pattern of Hole	Zigzag Multi rows
Inclination of Hole	80° from horizontal
Use of delay detonators	25 milli-second relays
Detonating fuse	“Detonating” Cord

a. Types of explosives to be used:

Slurry Class 3 explosives, type of nitro compound 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. Detonators of Class 3 and Safety fuse of Class 6 are used.

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

The quarry is situated more than 0.70 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

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mainly to give the shattering effect in rough stone for easy excavation and to control fly of rocks.

No. of Holes	=	78 Holes
Yield	=	232 Tons
Powder factor	=	6 Tons/Kg of explosives
Total Explosive Required	=	39 Kg Mild Explosives
Charge/Hole	=	0.5 kg
Blasted at day time	=	12 to 12.30 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 1.2 Cum Bucket capacity (with Rock Breaker attachment), Jack Hammers (30-35 mm Dia) of 4 Nos.
- Loading Equipment – Excavator of 1.2 Cum Bucket Capacity (with Bucket attachment)
- Transportation (includes within the mine and mine to destination) – Tipper 2 No of 20 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.

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- 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 (18 Nos.) and regular inspection for their use;
- In case of eventuality, first aid will be given by the senior safety officer 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 foot wear and safety helmets;
- Cleaning of mine faces will be regularly done;
- Handling of explosives, charging and blasting will be carried out by highly skilled labors 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

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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

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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)

7.2.1 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

7.2.2 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.

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- 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

7.2.3 *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 Patta land. There is no displacement of the population within the project area and adjacent nearby area and hence Rehabilitation & Resettlement is not applicable.

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8 Project Benefits

8.1 GENERAL

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

8.1.1 *Physical Benefits*

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

Market: Generating useful economical resource for construction. Due to demand supply chain, excavated mineral (Rough stone) will sold in the market in the affordable price.

Infrastructure: The excavated rough stone and gravel will be used for *Laying Roads, Building & Construction Projects, Bridges.*

Enhancement of Green Cover & Green Belt Development: As a part of reclamation plan, native tree species will be planted along the safety boundary of the mine lease area. A suitable combination of trees that can grow fast and also have good leaf cover will be adopted to develop the green belt. It is proposed to plant 1200 numbers of native species along with some fruit bearing and medicinal trees during the mining plan period.

8.2 SOCIAL BENEFITS

The mining in the area will create rural employment. During site visit, it has been observed that the economic conditions of the villages in the study area is quite normal. After the development of the proposed mine, it will improve the livelihood of local people and also provide the indirect employment opportunities. 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, i.e., 5 Lakhs will be allocated. The detailed agenda, which is to be executed has been framed. The salient features of the programmes are as follows:

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R.O. Water Purifier for Drinking Purpose, Painting the compound walls, Classrooms and School, Environmental Science based books for Library in Tamil Language, Smart Classroom Facility, Greenbelt in and around the periphery of the school campus and Hygienic Toilet facilities to Government Higher Secondary School, Karasanur which is located at 1.50 km, N from the project site.

8.3 PROJECT COST / INVESTMENT DETAILS

1	<u>A. Fixed Asset Cost:</u>	
	1. Land Cost	: Rs. 5,81,415/- (Amount for Patta Land)
	2. Labour Shed	: Rs. 1,00,000/-
	3. Sanitary Facility	: Rs. 50,000/-
	4. Refilling/Fencing cost	: Rs. 2,87,000/-
	5. Other Items	: Rs. 40,000/-
	6. Drinking water facility	: Rs. 85,000/-
	7. Safety Kit	: Rs. 50,000/-
	8. Water Sprinkling	: Rs. 85,000/-
	9. Garland drains construction	: Rs. 1,81,200/-
	10. Greenbelt, etc.,	: Rs. 72,500/-
	Total	Rs. 15,82,800/-
2	<u>B. Operational Cost:</u>	
	<u>Machinery cost</u>	: Rs. 15,00,000/-
3.	<u>EMP Cost</u>	: Rs. 97,05,427/-
	Total Project Cost	: Rs. 1,27,88,227/-

Total Project Cost: Rs. 1,27,88,227/- (One Crore Twenty Seven Lakhs Eighty Eight Thousand Two Hundred and Twenty Seven Rupees Only)

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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 mechanized mining method with drilling & blasting as per mining plan approved by Department of Mining and Geology, Villupuram. 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

9.3.1 *Storm water Management*

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

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

9.3.2 *Drainage*

Local workers will be deployed for the project. But, urinals and Latrines will be provided and the same will be connected to septic tank followed by soak pit arrangement. No domestic

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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.

9.3.3 *Administrative and Technical Setup*

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

To carry out the above activities, Thiru. K. Gnanasekaran will work in association with M/s. Ecotech Labs Pvt Ltd.

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Table 9-1: Impacts and mitigation measures

S. No	Impacts on Environment	Activity / Aspect	Anticipated impacts	Mitigation measures
1.	Air	Fugitive Emission	During mining operation, fugitive dust and other air pollutants like particulate matter (PM10 & PM 2.5) will be generated.	Planting of trees along the safety distance of the Mine Lease Area Water will be sprinkled in the site as dust suppression measure.
2.	Water	Wastewater Generation	Improper management of Domestic wastewater in the Mine lease may create unhygienic conditions in the site thereby causing health impacts to the labors	Provision of urinals/Latrines along with septic tank followed by soak pit arrangement will be provided in the Mine Lease area for the proper management of wastewater.
3.	Noise	Mining activities like drilling, blasting, loading and transportation	Noise from the machinery can cause hypertension, high stress level, hearing loss, sleep disturbance etc due to prolonged exposure. Apart from Mining activities like drilling, blasting may generate noise	Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.
4.	Land	Improper management of Storm water Runoff	Storm water Runoff may result in Soil Erosion	Garland drainage of 1m x 1m will be provided to avoid storm water runoff.
5.	Social Responsibility	Mining workers	Unhygienic site sanitation facilities may cause health damage to workers.	The objective is to ensure health and safety of the workers with effective provisions for the basic facilities of sanitation, drinking water, safety of equipments or machinery etc. The following will be done in the site

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

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			resources & increase in carbon footprint.	
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Table 9-2: Budgetary Allocation for EMP during Mining

	Mitigation Measures	Provision for Implementation	Capital	Recurring
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	23350	23350
	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	40000 0	50000
	Air Quality will be regularly monitored as per norms within ML area & Ambient Area	Yearly Compliance as per CPCB norms	0	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance	50000	5000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed	20000	0

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	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	20000
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
Noise Environment	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	329675
Water Environment	Water management	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	23350	5000
	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and	20000	10000

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Waste Management		disposal through authorized agency		
		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	10000	1000
	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee)	76000	19000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	19000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	4670
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	46700 0	23350
	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	11675 0	23350
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of	0	780000

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		MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate		
Green Belt Development	Green belt development - 500 trees per one hectare (200 Inside Lease Area & 300 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)	96000	14400
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	216000	21600
			1663450	1455395

Year 1	Year 2	Year 3	Year 4	Year 5
3118845	1528165	1604573	1684802	1769042

Total EMP Cost: 97,05,427/- for 5 years (Rs. 97 Lakhs)

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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 K Gnanasekaran site is a cluster of three mining project. The individual mine lease area is 2.33.5 Ha of Rough Stone and Earth Quarry located at S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 of Thollamur Village, Vanur Taluk, Villupuram District.

10.2 PROJECT OVERVIEW

Table 10-1: Project Overview

S. No.	Description	Details
1	Project Name	Existing Rough Stone and Earth Quarry-2.33.5 ha
2	Proponent	Thiru K Gnanasekaran
3	Mining Lease Area Extent	2.33.5 Ha
4	Location	S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 of Thollamur Village, Vanur Taluk, Villupuram District.
5	Latitude	12° 03' 20.03" N to 12° 03' 27.36" N
6	Longitude	79° 40' 16.29" E to 79° 40' 23.75" E
7	Topography	Plain topography
8	Site Elevation above MSL	65 m from MSL
9	Topo Sheet No.	57 P/12
10	Minerals of Mine	Rough Stone and Earth Quarry
11	Proposed production of Mine	65,935 m ³ of Rough stone and 18,652 m ³ of Earth

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12	Ultimate depth of Mining	22 m below ground level
13	Method of Mining	Open cast mechanized mining
14	Water demand	2.0 KLD
15	Source of water	Water will be supplied through tankers supply
16	Man power	19 Nos.
17	Mining Lease	Precise area communication from The District Collector, Villupuram District vide Rc No: A/G&M/277/2018 dated 13.11.2019
18	Mining Plan Approval	Mining Plan was approved by The Assistant Director, Dept. of Geology & Mining, Villupuram vide Rc No: B/G&M/277/2018 dated 26.12.2019
19	Production details	Geological reserves: 8,17,250 m ³ of Rough stone and 46,700 m ³ of Earth Proposed year wise recoverable reserves: 65,935 m ³ of Rough stone and 18,652 m ³ of Earth
20	Boundary Fencing	7.5 m barrier all along the boundary Fencing will be provided.
21	Disposal of overburden	This area is covered by 2 m Earth. Earth formation will be removed and hydraulic excavators are used for loading gravel into tipper from pit head to needy buyers. This will be done only after obtaining and paying necessary seigniorage fee to Government.
22	Ground water	The quarry operation is proposed up to a depth of 22 m below ground level. The water table is below 50 m to 55 m from ground level which is observed from the nearby open wells and bore wells. Hence the ground water will not be affected in any manner due to the

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Gnanasekaran</i>	
<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

		quarrying operation during the entire lease period.
23	Habitations within 500m radius of the Project Site	There is no Habitation within 300m radius of the project site.
24	Drinking water	Water will be supplied through tankers from Thollamur village which is 0.76 km, South East 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 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 Villupuram, a city known for its small-scale industries and also the soil in the area near project site is not very fertile making it unsuitable for carrying out agricultural activities. The topography near the lease area is barren dry lands showing only less chance for crop growth and development of vegetation. In addition to that, geological reserves of rough stone is abundant in the lease area which is evident from the mine activities carried out in the nearby sites.

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Gnanasekaran</i>	
<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

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 equipments will be carried out on contractual basis. Plantation will be carried out along approach roads & mine premises.
2	Waste water will be generated due to mining activity and from other domestic activities. These may contaminate the ground water leading to ground water. The mining activity may affect the ground water table	No waste water will be generated from the mining activity of minor minerals as the project only involves lifting of over burden from mine site. The wastewater generated from the domestic activity will be disposed off safely through the proposed septic tank. Mining will not intersect ground water table. Hence the water table will not be impacted due to the proposed project
3	Noise will be generated in the mine area during various mining activities such as blasting, drilling, excavation. During transportation of the mined out mineral, there may be noise generation due to the movement of vehicles. This may impact the	Periodical monitoring of noise will be done. No other equipments except the transportation vehicles and Excavator (as & when required) for loading will be allowed at site.

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha</i>	<i>Draft EIA Report</i>
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<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

	health condition of the workers by creating headache	Noise generated by these equipments shall be intermittent and does not cause much adverse impact. Plantation will be carried out along approach roads. The plantation minimizes propagation of noise and also arrest dust.
4	Solid waste will be generated from the mining activity as there will be refuse after 95% recovery and also generation of domestic waste	The 100% recovery is achieved by extracting the entire mineable reserve. Hence there will be no refuse generation due to the mining activity. Apart from that, a very meagre quantity of domestic waste will be generated in the project, which will be handed over to the local body on daily basis.
5	During mining activities, there are chances of workers getting health issues or may be prone to accidents	Dust masks will be provided as additional personal protection equipment to the workers working in the dust prone area. Periodical trainings will be conducted to create awareness about the occupational health hazards due to activities like blasting, drilling, excavation Workers health related problem if any, will be properly addressed.

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Gnanasekaran</i>	
<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

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.

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.

<i>Project</i>	<i>Rough stone and Earth Quarry- 2.33.5 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Gnanasekaran</i>	
<i>Project Location</i>	<i>Thollamur Village, Vanur Taluk, Villupuram District</i>	

- 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**



**THIRU.DEEPAK S.BILGI, I.F.S.
MEMBER SECRETARY**

**STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU**
3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/E.No.9208/SEAC/ToR-1250/2022 Dated :07.09.2022

To

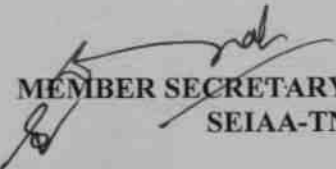
Thiru. K. Gnanasekaran,
S/O. Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Villupuram District – 605 109

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough Stone & Earth quarry lease over an extent of 2.33.5 Ha at S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12, 30/13, Thollamur Village, Vanur Taluk, Villupuram District, Tamil Nadu by Thiru. K. Gnanasekaran - 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/ 76147/2022, dated: 26.04.2022
2. Your application seeking Terms of Reference submitted on: 29.04.2022
3. Minutes of the 287th meeting of SEAC held on 22.06.2022
4. Minutes of the 532nd meeting of Authority held on 14.07.2022
5. Minutes of the 305th meeting of SEAC held on 23.08.2022
6. Minutes of the 550th meeting of Authority held on 07.09.2022.

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


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SEIAA-TN**

The project proponent, Thiru. K. Gnanasekaran has submitted application seeking ToR for B1 category project in Form-I, for the Proposed Rough Stone & Earth quarry lease over an extent of 2.33.5 Ha at S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12, 30/13, Thollamur Village, Vanur Taluk, Villupuram District, Tamil Nadu and has furnished Pre-feasibility report.

Discussion by SEAC and the Remarks:-

Proposed Rough Stone & Earth quarry lease over an extent of 2.33.5 Ha at S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12, 30/13, Thollamur Village, Vanur Taluk, Villupuram District, Tamil Nadu by Thiru. K. Gnanasekaran for Terms of Reference (SIA/TN/MIN/76147/2022 Dt.26.04.2022)

The proposal was placed in this 287th Meeting of SEAC held on 22.06.2022. The details of the project furnished by the proponent are available in the website (parivesh.nic.in).

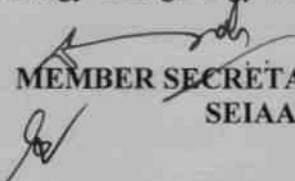
The SEAC noted the following

1. The Project Proponent, Thiru. K. Gnanasekaran has applied for Terms of Reference for the proposed Rough Stone & Earth quarry lease over an extent of 2.33.5 Ha at S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12, 30/13, Thollamur Village, Vanur Taluk, Villupuram District, Tamil Nadu.
2. The proposed quarry/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. As per the mining plan the lease period is 5 years. The mining plan is for the period of five years & production should not exceed 133570 cu.m of rough stone & 19912 cu.m of Earth. The annual peak production is 36850 cu.m. of Rough Stone (3rd year) and 11400 cu.m. of Earth (2nd year). The ultimate depth is 37 m BGL.

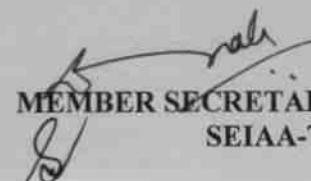
Based on the presentation made by the proponent and considering safety point of view, SEAC recommended to remove the last bench in XIY1-CD. Accordingly grant of Terms of Reference (TOR) with Public Hearing is issued for the production of 130290m³ of rough stone and 19912m³ of Earth in 5 years with ultimate depth 37m, 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:


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1. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.
2. The Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
4. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.
5. **The Proponent shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.**
6. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.
7. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b) Quantity of minerals mined out.
 - c) Highest production achieved in any one year
 - d) Detail of approved depth of mining.
 - e) Actual depth of the mining achieved earlier.
 - f) Name of the person already mined in that leases area.
 - g) If EC and CTO already obtained, the copy of the same shall be submitted.
 - h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
8. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the


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- 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).
9. The Proponent shall carry out Drone video survey covering the cluster, Green belt , fencing etc.,
 10. 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.
 11. 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.
 12. 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.
 13. 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.
 14. 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.
 15. 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.
 16. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.


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17. 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.
18. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
19. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
20. 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.
21. Impact on local transport infrastructure due to the Project should be indicated.
22. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
23. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
24. Public Hearing points raised and commitments 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 and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
25. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
26. The Proponent shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
27. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.


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28. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-I** in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
29. 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 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
30. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
31. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
32. 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.
33. 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.
34. 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.
35. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
36. 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.
37. If any quarrying operations were carried out in the proposed quarrying site for which now the


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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.

38. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
39. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Appendix -I

List of Native Trees Suggested for Planting


1. *Aeglemarmelos*-Vilvam
2. *Adenaantherapavonina*-Manjadi
3. *Albizialebeck*-Vaagai
4. *Albiziaamara*-Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa*-Iruvathi
8. *Buchananiaaillaris*-Kattuma
9. *Borassusflabellifer*- Panai
10. *Buteamonosperma* - Murukkamaram
11. *Bobaxceiba*- Ilavu, Sevvilavu
12. *Calophylluminophyllum* - Punnai
13. *Cassia fistula*- Sarakondrai
14. *Cassia roxburghii*- Sengondrai
15. *Chloroxylonsweitenia* - Purasamaram
16. *Cochlospermumreligiosum*- Kongu, Manjallavu
17. *Cordiadichotoma*- Mookuchalimaram
18. *Cretevaadansonii*-Mavalingum
19. *Dilleniaindica*- Uva, Uzha
20. *Dilleniapentagyna*- SiruUva, Sitruzha
21. *Diospyrosebenum*- Karungali
22. *Diospyroschloroxylon*- Vaganai
23. *Ficusamplissima*- KallItchi
24. *Hibiscus tiliaceous*-Aatrupoovarasu
25. *Hardwickiabinata*- Aacha
26. *Holopteliaintegrifolia*-Aayili
27. *Lanneacoromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu

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29. *Lepisanthustetraphylla*- Neikottaimaram
30. *Limoniaacidissima* - Vila maram
31. *Litseaglutinosa*-Pisinpattai
32. *Madhucalongifolia* - Illuppai
33. *Manilkarahexandra*-UlakkaiPaalai
34. *Mimusopselengi* - Magizhamaram
35. *Mitragynaparvifolia* - Kadambu
36. *Morindapubescens*-Nuna
37. *Morindacitriifolia*- VellaiNuna
38. *Phoenix sylvestre*-Eachai
39. *Pongamiapinnata*-Pungam
40. *Premnamollissima*- Munnai
41. *Premnaserratifolia*- Narumunnai
42. *Premnatomentosa*-PurangaiNaari, PudangaNaari
43. *Prosopiscinerea* - Vannimaram
44. *Pterocarpusmarsupium* - Vengai
45. *Pterospermumcanescens*-Vennangu, Tada
46. *Pterospermumxylocarpum* - Polavu
47. *Puthranjivaroxburghii*-Puthranjivi
48. *Salvadorapersica*- Ugaamaram
49. *Sapindusemarginatus*- Manipungan, Soapukai
50. *Saracaasoca* - Asoca
51. *Streblusasper*- Pirayamaram
52. *Strychnosnuxvomica*-Yetti
53. *Strychnopotatorum* - TherthangKottai
54. *Syzygiumcumini* - Naval
55. *Terminaliabellerica*- Thandri
56. *Terminalia arjuna*- Venmarudhu
57. *Toona ciliate* - Sandhanavembu
58. *Thespesiapopulnea*- Puvarasu
59. *Walsuratrifoliata*-valsura
60. *Wrightiatinctoria*- Vep

Subsequently, it was placed in 532nd SEIAA meeting held on 14.07.2022 and the Authority decided to refer back the proposal to SEAC for the following reasons.

1. *“Based on the presentation made by the proponent and considering safety point of view, SEAC recommended to remove the last bench in XIYI-CD. Accordingly grant of Terms of Reference (TOR) with Public Hearing is issued for the production of 130290m³ of Rough stone and 19912m³ of Earth in 5 years with ultimate depth 37m”*


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2. Subsequently, in the mining plan, as per the "TOPOGRAPHY, GEOLOGICAL PLAN YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS, it was ascertained the topography plan consists of two sections namely AB and CD. AB section represents the S.F.No. 29/2, 30/4 & 30/9 and CD represents the S.F.No. 30/12. Hence there are two distinct sites demarcated for excavation covering S.F.No. 29/2, 30/4 & 30/9 for one site and 30/12 for the second site within the Lease applied Area.
3. The Cross Sections along A-B and C-D as provided in the mining plan, it was ascertained that only in the section AB the proponent has proposed to quarry upto a depth of 37m but in the section CD the depth proposed is only 22m.
4. As per the minutes of SEAC, if the last bench of X1Y1 – CD is removed then the depth in section X1Y1 – CD will be further reduced to 17m. Since there is an ambiguity in considering the depth for two proposed sections in the lease applied area for grant of Terms of Reference, the recommended depth and quantity pertaining to the individual sections namely AB & CD may be mentioned specific to the sections.
5. Further, the name of the owner of the land S.F.No. 30/10 & 30/11 shall be furnished and a No Objection Certificate may be obtained from the owner since the particular area is landlocked in quarry area.
6. There seems to be a water body in the South East side of the proposed area. The name of the drain area must be furnished and the details of capacity of the water body and water utilisation by the nearby habitants, if any. Hence, a detailed study shall be carried out in regard to assess the impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, Agricultural lands & any ecological fragile areas.

Now the proposal was placed for reappraisal in this 305th meeting of SEAC held on 23.08.2022. The Project Proponent furnished reply covering the points raised by SEIAA. The Committee carefully examined the points raised by SEIAA and the replies given by the PP and decided to reiterate its recommendation already made in the 287th Meeting of SEAC held on 22.06.2022. All other conditions stipulated in the earlier minutes will remain unaltered.

Discussion by SEIAA and the Remarks:-

The proposal was placed before the 550th Authority meeting held on 07.09.2022. The Authority noted that the subject was placed in the 305th meeting of SEAC held on 23.08.2022. SEAC has furnished


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its recommendations to the Authority for granting Terms of Reference (ToR) along with Public Hearing for the project.

After detailed discussions, the Authority accepted 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 ToR as recommended by SEAC & subject specific standard ToR stipulated by MoEF& CC in addition to the following ToR:

1. Considering the environmental impacts due to mining, safety of the working personnel and following the principle of sustainable mining, the ultimate depth of mining is restricted to **32m (last bench in X₁Y₁-CD) ^{removed} below ground level and 130290 cu.m of Rough Stone and 19912 cu.m of Earth are permitted for mining over a period of five years** as per the approved mining plan.
2. The scientific studies shall be carried out for any proposed quarry over the existing pit/quarry by the reputed Government Scientific Research / Academic Institutions such as Anna University, NITs, IITs, NIRM, CISR laboratories where the depth of the proposed working (or) ultimate depth of working is extended beyond 40 m below ground level (BGL) in case of flat terrain and the excavation extends beyond 30 m above ground level (AGL) in case of outcrops/hilly terrains for evaluating the stability of slopes. A copy of the report shall be submitted to the SEIAA, the concerned AD/DGM, the concerned DEE/TNPCB and the Director of Mines Safety, Chennai.
3. Detailed study shall be carried out regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
4. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological structures etc.
5. 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.
6. The Environmental Impact Assessment shall study in detail on 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.
7. 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.
8. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.


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9. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the nearby water body and Reservoir.
10. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
11. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
12. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
13. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
14. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
15. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
16. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
17. The project proponent shall study and furnish the impact of project on plantations in adjoin patta lands, Horticulture, Agriculture and livestock.
18. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
19. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.
20. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
21. The project proponent shall study and furnish the possible pollution due to plastic and micro plastic on the environment. The ecological risks and impacts of plastic & micro plastic on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
22. The project proponent shall study on impact of mining on Reserve forests free ranging wildlife.


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23. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
- Soil health & bio-diversity.
 - Climate change leading to Droughts, Floods etc.
 - Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - Possibilities of water contamination and impact on aquatic ecosystem health.
 - Agriculture, Forestry & Traditional practices.
 - Hydrothermal/Geothermal effect due to destruction in the Environment.
 - Bio-geochemical processes and its foot prints including environmental stress.
 - Sediment geochemistry in the surface streams.
24. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby water bodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.
25. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.
26. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.
27. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.

A. STANDARD TERMS OF REFERENCE

- 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.
- A copy of the document in support of the fact that the Proponent is the rightful lessee of the


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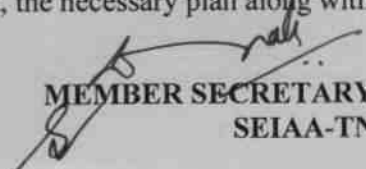
mine should be given.

- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors 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

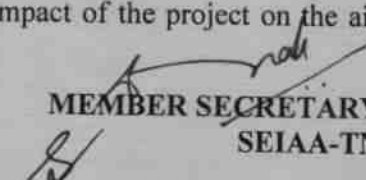

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to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

- 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 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


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- 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, 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


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quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.

- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis


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- on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
 - 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
 - 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
 - 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.


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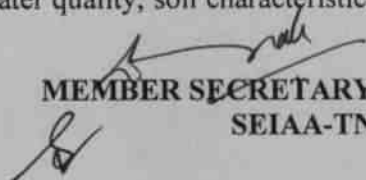
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, 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.
 - 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.


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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.
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 acquisition, nearby (in 2-3 km.) water body, population, within 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,


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- 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
 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.

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- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs 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, Villuppuram District.
7. Copy to Regional office, MOEF&CC Chennai
8. Stock File.



TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

COMPLIANCE OF TOR CONDITIONS

Point wise compliance of ToR points issued by SEIAA, TN vide letter No. SEIAA-TN/F. No. 9208/SEAC/ToR-1250/2022 Dated: 07.09.2022 for Mining of Minor Minerals in the Mine of “Rough stone & Earth Quarry Lease Over an Extent of 2.33.5 Ha at S.F.No. 29/2, 29/3, 30/4, 30/9, 30/12, 30/13 of Thollamur Village, Vanur Taluk, Villupuram District, Tamilnadu State.

STANDARD TERMS OF REFERENCE

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>This is a existing mining project of Proposed Rough stone and Earth quarry</p> <p>Precise Area Communication Letter received from The District Collector, Villupuram District vide letter Rc.No.A/G&M/277/2018 dated 13.11.2019</p> <p>Mining Plan was approved by the Assistant Director, Dept. of Geology & Mining, Villupuram vide letter Rc.No.B/G&M/277/2018 dated 26.12.2019</p> <p>Earlier operated at the year of 2008 – 2013 and As the remaining area is being exploited for the first time hence Year-wise production details since 1994 and before 1994 are not</p>	<p>Chapter-2</p> <p>Table No.2.2</p> <p>Page No.44</p>

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

		<table border="1"> <thead> <tr> <th>Year</th> <th>Rough stone (m³)</th> <th>Earth (m³)</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>13325</td> <td>6570</td> </tr> <tr> <td>II</td> <td>13165</td> <td>7114</td> </tr> <tr> <td>III</td> <td>13160</td> <td>4968</td> </tr> <tr> <td>IV</td> <td>13205</td> <td>-</td> </tr> <tr> <td>V</td> <td>13080</td> <td></td> </tr> <tr> <td>Total</td> <td>65935</td> <td>18652</td> </tr> </tbody> </table> <p>relevant or applicable.</p> <p>Proposed Production of Rough Stone & Earth for five years is proposed in the EIA/EMP in chapter no-2.</p>	Year	Rough stone (m ³)	Earth (m ³)	I	13325	6570	II	13165	7114	III	13160	4968	IV	13205	-	V	13080		Total	65935	18652	
Year	Rough stone (m ³)	Earth (m ³)																						
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III	13160	4968																						
IV	13205	-																						
V	13080																							
Total	65935	18652																						
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 2.33.5 hectare in Thollamur Village for Rough stone and Earth quarry approved by The District Collector, Villupuram District vide letter Rc.No.A/G&M/277/2018 dated 13.11.2019	Annexure 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 Assistant Director, Dept. of Geology &	Annexure-VI Chapter- II																					

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

		Mining, Villupuram District	
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. 47
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. 49
6.	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	Details about the land proposed for mining activities should be given Chapter 2.	Chapter-2 Page 52
7	It should be clearly stated whether the proponent company has a well	Noted.	

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

	<p>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 / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large may also be detailed in the EIA report.</p>		
8	<p>Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.</p>	<p>It is an open cast mining project. Blasting details are incorporated in chapter 2</p>	<p>Chapter-2, Page no.62</p>

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9	<p>The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc should be for the life of the mine / lease period.</p>	<p>Study area comprises of 10 km radius from the mine lease boundary. Key Plan showing core zone (ML area).</p>	<p>Chapter-2 Fig no. 2.5 Page no.50</p>
10	<p>Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p>	<p>Land Use 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-2 of EIA/EMP Report. There is no wildlife sanctuary and national park, migratory routes of fauna in the study area.</p>	<p>Chapter-2, Table no. 2.4 Page no.52</p>

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<p>11</p>	<p>Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.</p>	<p>Earth formation will be removed and transported to the needy end user, only after obtaining permission and paying necessary seigniorage fees to the Government.</p>	<p>Chapter-2, Page no.61</p>
<p>12</p>	<p>A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area.</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 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</p>	<p>Complied.</p> <p>The proposed mining lease area is not falling under forest land.</p>	

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	Committees.		
13	Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	The proposed mining lease area is not falling under forest land.	
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable. There is no involvement of forest land in the project area.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	Details of flora have been discussed in Chapter-3 of the EIA/EMP Report.	Chapter-3 Pg No. 104

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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 Wildlife Warden under the Wildlife (Protection) Act, 1972 and copy furnished.	There is two bird sanctuaries named Oussudu Lake Bird Sanctuary and Kazhuvveli Wetland Bird Sanctuary located at a distance of 11.84 kms, SE and 15.45 kms, NE from the project site. National Petrified/Fossil Wood Park, Thiruvakkarai is located at a distance of 4.30 kms, SW from the project site, which is a National Geo-Heritage site which is maintained by Geological Survey of India.	Executive Summary Page No: 12
18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the	Details biological study (flora & fauna) within 10 km radius of the project site have been incorporated	

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	<p>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>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. 104</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 required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.</p>	<p>The proposed mining lease area is not falling under critically polluted area.</p>	
<p>20</p>	<p>Similarly, for coastal projects, A</p>	<p>There is no Coastal Zone within 15km</p>	

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	<p>CRZ map duly authenticated by one of the authorized agencies Similarly, for coastal projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)</p>	<p>radius of the project site. Bay of Bengal – 22.50 kms, E</p>	
<p>21</p>	<p>R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should 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</p>	<p>There is no Rehabilitation and resettlement is involved. Land classified as Patta land</p>	

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	<p>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 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.</p>	<p>Baseline data collected during Monsoon Season (June to August 2022) has been incorporated in EIA/EMP report.</p> <p>The key plan of monitoring station has been discussed in Chapter-3 Locations of the monitoring stations have been selected keeping in view the pre- dominant downwind direction and location of the sensitive receptors and also that they represent whole of the study area.</p>	Chapter 3

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	<p>The mineralogical composition of PM10, particularly for free silica, should be given.</p>		
23	<p>Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided.</p> <p>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>	<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-136 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.124</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: 2.0 KLD</p> <p>Dust Suppression: 0.5 KLD</p> <p>Domestic Purpose: 1 KLD</p> <p>Plantation :0.5 KLD</p> <p>Domestic Water will be sourced from nearby village Thollamur which is about 0.76 Km-SE of the</p>	<p>Chapter-2</p> <p>Page no.64</p>

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		area.	
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable Water will be taken from nearby villages	
26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	At the last stage of mining operation, almost complete area will be worked to restore the land to its optimum reclamation for future use as water reservoir.	
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.120
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	Maximum working depth: 22 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,	Chapter-2 Page no. 44 Table No. 2.2

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	<p>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.</p>	<p>quarrying may not affect the ground water So mine working will not be intersecting the ground water table.</p>	
29	<p>Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.</p>	<p>There is no any stream crossing in the proposed quarry</p>	<p>Executive Summary</p>
30	<p>Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.</p>	<p>Highest elevation: 65 m from MSL Depth: 22 m Below Ground Level</p>	<p>Chapter-2 Table no. 2.2 Page no. 44</p>
31	<p>A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and 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</p>	<p>Green Belt Development plan is proved given in Chapter 2.</p>	<p>Chapter-2</p>

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	<p>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 the species which are tolerant pollution</p>		
<p>32</p>	<p>Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project proponent shall conduct impact of Transportation study as per Indian Road Congress Guidelines</p>	<p>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.</p>	<p>Chapter-3 Page No.117</p>

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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.	Adequate infrastructure & other facilities shall be provided to the mine workers. Details are given in chapter-2 of EIA/EMP	Chapter-2
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-10 of EIA/EMP.	Chapter-10 Pg No. 161
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-10 Pg No. 161
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	Suitable measures has been discussed in Chapter 4	Chapter-4 Pg No. 131

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	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. 154
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.	<table border="1"> <thead> <tr> <th>S. No</th> <th>Description</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Fixed Asset Cost</td> <td>15,82,800/-</td> </tr> <tr> <td>2</td> <td>Operational Cost</td> <td>15,00,000 /-</td> </tr> <tr> <td>3</td> <td>EMP Cost</td> <td>97,05,427/-</td> </tr> <tr> <td></td> <td>Total</td> <td>1,27,88,227 /-</td> </tr> </tbody> </table>	S. No	Description	Cost	1	Fixed Asset Cost	15,82,800/-	2	Operational Cost	15,00,000 /-	3	EMP Cost	97,05,427/-		Total	1,27,88,227 /-	Chapter-8 Pg No. 149
S. No	Description	Cost																
1	Fixed Asset Cost	15,82,800/-																
2	Operational Cost	15,00,000 /-																
3	EMP Cost	97,05,427/-																
	Total	1,27,88,227 /-																
42	A 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. 145															
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. 148															
44	Besides the above, the below mentioned general points are also to be followed:																	
(a)	Executive Summary of the EIA/EMP report	Complied	Executive Summary of EIA Report is given from page No.10-25															
(b)	All documents to be properly referenced with index and continuous page numbering.	Complied																

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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.	Complied	
(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.	

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(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 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	There are no changes in prepared EIA as per submitted Form-1 & PFR	
(i)	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.	Will be complied after grant environment clearance from SEIAA, Tamilnadu	
(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 (iii) sections of mine pit	All Sectional Plates of Quarry is enclosed in Mining Plan.	

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	and external dumps, if any clearly showing the features of the adjoining area.		
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Additional ToR Compliance - SEAC

S.No.	Condition	Compliance
1.	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.	Agree to comply.
2.	The Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30m below ground level.	Slope stability report will be submitted with final EIA.
3.	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	The PP will furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent
4.	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30m from the blast site.	Noted. Agree to comply.

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5.	<p>The EIA Coordinator shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and Photographic evidence.</p>	<p>Complied.</p> <p>The photographs are attached in EIA report.</p>
6.	<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> <ol 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. h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. 	<p>Earlier operated period from 2008 to 2013 on the Survey Number 30/13</p> <p>22 m</p> <p>Thiru. K. Gnanasekaran</p> <p>Agreed to comply</p>
7.	<p>All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological feature of the study area (core and buffer</p>	<p>Complied.</p> <p>All corners with coordinates of the mine lease area has attached with EIA report in chapter 2</p>

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	zone)	
8.	The Project Proponent shall carry out Drone video survey covering survey covering the cluster, green belt, fencing etc.,	Drone video survey will be submitted in final EIA report.
9.	The Project Proponent shall furnish photographs of adequate fencing, green belt along periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Complied. The photographs of fencing and green belt attached as per SEAC recommendation.
10.	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.
11.	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 environment.	Complied. Manpower requirements table attached in EIA report chapter 2
12.	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	Hydro geological study report will be submitted along final EIA report.

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	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.	
13.	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
14.	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.	Noted. Agree to comply.
15.	Rainwater harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Noted. Agree to comply.
16.	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	Current land use of the study area has attached in EIA report chapter 3. Operational and post operational land use will be submitted.

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	preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given	
17.	Details of the land for storage of Overburden/Waste dump (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	The over burden in the form of Earth formation will be removed and transported to the needy end user, only after obtaining permission and paying necessary seigniorage fees to the Government.
18.	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered	Noted
19.	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.	The ultimate pit at the end of the mining operation will be used for rainwater storage, the stored water will be used for green belt development and further the stored water will be used for domestic purposes (other than drinking) after proper treatment.
20.	Impact on local transport infrastructure due to the Project should be indicated.	Traffic impact assessment has given in EIA report chapter 3.
21.	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	No tree species were found inside the project site. only few shrubs and thorny bushes were present. Tree

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	its management during mining activity.	survey study details given in EIA report chapter 3.
22.	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Noted. The mine plan and mine closure plan has been approved by the Assistant Director, Department of Mining and Geology, Villupuram District
23.	Public hearing points raised and commitments of the PP 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 and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF & CC accordingly.	Noted and will be complied in Final EIA report.
24.	The Public hearing advertisement shall be published in on major National daily and one most circulated vernacular daily	Noted. Agree to comply.
25.	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing Tamil Language also.	Noted
26.	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	Noted. Agree to comply
27.	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	Noted. Agree to comply

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

	<p>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.</p>	
28.	<p>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 area 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.</p>	<p>The green belt plan enclosed with mining plates in Annexure VI</p>
29.	<p>A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p>	<p>Disaster management plan has prepared and enclosed in Chapter 7.</p>
30.	<p>A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p>	<p>Risk assessment and management plan has prepared and enclosed in chapter 7.</p>
31.	<p>Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with</p>	<p>Occupational Health impacts of the project has prepared and incorporated in Environmental management plan.</p>

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

	required facilities proposed in the mining area may be detailed.	
32.	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.
33.	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.
34.	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given	No. litigation is pending against the project in any court.
35.	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 in EIA report chapter 8
36.	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB	Agree to comply. The certified compliance report will be submitted in Final EIA report.
37.	The PP shall prepare the EMP for the entire life of	Noted.

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

	mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	Agree to comply.
38.	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.

Additional ToR Compliance – SEIAA

S.No.	Condition	Compliance
1.	Considering the environmental impacts due to mining, safety of the working personnel and following the principle of sustainable mining, the ultimate depth of mining is restricted to 32m (last bench in X ₁ Y ₁ -CD) removed below ground level and 130290 cu.m of Rough Stone and 19912 cu.m of Earth are permitted for mining over a period of five years as per the approved mining plan.	As per SEAC Recommendations of safety aspects, the ultimate depth of mining is restricted to 22 m below ground level and 65,935 m ³ of Rough stone and 18,652 m ³ of Earth are permitted for mining over a period of five years as per the approved mining plan.
2.	The scientific studies shall be carried out for any proposed quarry over the existing pit/quarry by the reputed Government Scientific Research / Academic Institutions such as Anna University, NITs, IITs, NIRM, CSIR Laboratories where the depth of the proposed working (or) ultimate depth of working is extended beyond 40 m below ground level (BGL) in case of flat terrain and the excavation extends beyond 30 m above ground level (AGL) in case of outcrops/hilly terrains for	The project site is a plain terrain and the depth of mining is restricted to 22 m below ground level. The Existing pit is just 7 m which is operated at 2008-2013. The Existing Pit letter has been approved by Deputy Director, Department of geology and Mining, Villupuram is attached as Annexure X.

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

	evaluating the stability of slopes. A copy of the report shall be submitted to the SEIAA, the concerned AD/DGM, the concerned DEE/TNPCB and the Director of Mines Safety, Chennai	
3	Detailed study shall be carried out regard to impact of mining around the proposed mine lease area on the nearby Villages, Water bodies/rivers & any ecological fragile areas.	Noted. Agree to Comply.
4.	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools Archaeological Structures, etc.,	Complied. VAO Certificate has attached as Annexure VII.
5.	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.
6.	The Environmental Impact Assessment shall study in detail on the carbon emissions and also suggest the measures to mitigate the 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.
7.	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

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

8.	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	
9.	The project proponent shall study impact on fish habitats and the food WEB/food chain in the nearby water body and Reservoir.	There is no water bodies within 500 m radius. Kunnam Lake is located at a distance of 2.80 kms, N from the project site. Hence there won't be much impact on fish habitats and the food WEB/food chain in the water body and Reservoir.
10.	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.
11.	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The Environmental Impact Assessment on forest, vegetation, endemic and endangered indigeneous flora and fauna has been given in Chapter 3 and 4.
12.	The Environmental Impact Assessment should study on standing trees and the existing trees should be numbered and action suggested for protection.	There is no existing trees in the project site and surrounding the project site.

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

13.	The Environmental Impact Assessment should study in wetlands, water bodies, rivers, streams, lakes and farmer sites.	The water environment impacts and its mitigation measures has been given in Chapter 4.
14	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	The EMP details has been given in Chapter 8 & 9.
15	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil and below soil carbon stock.	Noted and will be complied in Final EIA Report.
16.	The Environmental Impact Assessment should study impact on protected areas, Reserved Forests, National Parks, Corridors and Wildlife pathways, near project site.	<p>There is No Reserve Forests within 1 km radius of the project site. Hence our project will not cause any damage to reserve forest. Also, we have received letter from DFO indicating the nearest Reserve Forest and Attached with Annexures.</p> <p>There is two bird sanctuaries located above the distance of 10 km radius from the project site named Oussudu Lake Bird Sanctuary and Kazhuveli Wetland Bird Sanctuary.</p> <p>There is a national geo-heritage site located at a distance of 4.30 kms, SW named National Fossil</p>

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

		Wood Park, Thiruvakkarai.
17.	The project proponent shall study and furnish the impact of project on plantations in adjoin patta lands, Horticulture, Agriculture and livestock.	There is no plantation surrounding 500m from project site. Hence there won't be any impact in adjoining patta lands, Horticulture, Agriculture and Livestock.
18.	Th project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.	Noted and will be complied in Final EIA Report.
19.	Detailed Environment Management Plan along with adaptation, mitigation and remedial strategies covering the entire mine lease period as per precise area communication order issued.	Environment Management Plan has been described in detail in Chapter – 10 of the Draft EIA/EMP Report.
20.	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	Noted. Agree to comply.
21.	The project proponent shall study and furnish the possible pollution due to plastic and micro plastic on the environment. The ecological risks and impacts of plastic and micro plastic on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	There will not be any plastic and microplastic pollution due to mining activity. Also, we ensure that we won't use any single use plastics in the project site.
22.	The project proponent shall study on impact of mining on Reserve forests free ranging wildlife.	There is No Reserve Forest within 1 km radius of the Project Site. Hence our project will not

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

		cause any damage to reserve forest.
23.	<p>Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following.</p> <ul style="list-style-type: none"> A) Soil Health and Biodiversity B) Climate Change leading to Droughts, Floods, etc., C) Pollution leading to Release of Greenhouse Gases (GHG), Rise in Temperature and Livelihood of the local people. D) Possibilities of water contamination and impact on aquatic ecosystem health. E) Agriculture, Forestry & Traditional practices F) Hydrothermal/Geothermal effect due to destruction in the Environment G) Bio-geochemical processes and its foot prints including environmental stress H) Sediment geochemistry in the surface streams 	<p>The biodiversity has been studied and discussed in Chapter 3.</p> <p>The soil erosion map of 5 km radius surrounding the project site has been given in Chapter 3.</p> <p>The detailed study will be carried out and will be enclosed in the Draft EIA Report.</p>
24.	<p>Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc., within 1 km (radius) so as to assess the impacts on the nearby water bodies due to mining activity. Based on actual monitored data, it may</p>	<p>The hydro-geological study will be conducted and submitted in final EIA Report.</p>

TOR Reply of Proposed Rough stone & Earth Quarry Over an Extent of 2.33.5 Ha

	clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	
25.	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	Disaster Management and Risk Assessment has be incorporated in Chapter 7
26.	To furnish the risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	A Risk Assessment and Management Plan will be prepared and included in the final EIA/EMP Report.
27.	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Mine closure plan has been attached along with mining plates as Annexure VI.

ANNEXURE-II
PRECISE AREA COMMUNICATION LETTER

From

Dr. L. Subramanian, I.A.S.,
District Collector,
Viluppuram District,
Viluppuram.

To

Thiru.K.Gnanasekaran,
S/o.Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Viluppuram District.



Rc.No.A/G&M/277/2018 Dated 13.11.2019

Sub Mines & Minerals - Minor Mineral - Rough stone and Earth - Viluppuram District - Vanur Taluk - Thollamur Village - over an extent of **2.68.0 hectares** of patta lands - **Survey Nos. 29/1, 29/2, 29/3, 30/4, 30/9, 30/12 and 30/13** - Quarry lease application preferred by **Thiru.K.Gnanasekaran** - Precise area communicated - Mining Plan called for - Reg.

- Ref
- 1) Quarry lease application dated 02.07.2018 preferred by Thiru.K.Gnanasekaran, S/o.Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District.
 - 2) This office letter even number Rc.No A/G&M/277/2018 dated 05.07.2018 addressed to the Revenue Divisional Officer, Viluppuram.
 - 3) Revenue Divisional Officer, Viluppuram Letter Rc.No.A4/3151/2018 dated 29.10.2018.
 - 4) Inspection report of the Assistant Director, Geology and Mining, Viluppuram dated 05.12.2018.
 - 5) G.O.Ms.No.79, Industries (MMC-1) Department dated 06.04.2015.

The quarry lease application preferred by Thiru.K.Gnanasekaran, S/o. Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District for the grant of quarry lease for quarrying Rough stone and Earth over an extent of 2.33.5 hectares of patta lands in SF.Nos.29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 in Thollamur Village, Vanur Taluk, Viluppuram District has been taken up for consideration under rule 19 of Tamilnadu Minor Mineral Concession Rules, 1959 and the following precise area is considered for the grant of quarry lease for Rough stone and Earth for a period of 5 years with the conditions stipulated below.

le. S. Srinivasan

Taluk	Village	SF.Nos.	Total Extent (in hect.)	Extent applied for (in Hect.)
Vanur	Thollamur	29/2	0.51.0	0.51.0
		29/3	0.06.0	0.06.0
		30/4	0.29.5	0.29.5
		30/9	0.28.5	0.28.5
		30/12	0.58.0	0.58.0
		30/13	0.60.5	0.60.5
		Total		2.33.5

1. A safety distance of 7.5 meters should be provided all along the boundary of the area applied for lease and a safety distance of 50 meter should be provided for the Oodai Poramboke situated in the southern side of the applied area.
2. While carry out quarry operation, No hindrance shall be caused to the adjoining Patta lands and Oodai.
3. Necessary Environmental clearance should be obtained from the Competent Authority as required under rule 42 of TNMMCR 1959.

In this regard, you are directed to prepare a mining plan for the above mentioned area through the help of Recognized Qualified Person (RQP) and to submit the same before the Assistant Director for getting approval within in a period of 90 days from the date of receipt of this letter as required under rule 41 of Tamilnadu Minor Mineral Concession Rules, 1959.

Sd/- (L.Subramanian)
District Collector,
Viluppuram.

/t.c.b.o/

L. Subramanian
13/11/2019
For Collector,
Viluppuram.

8
13/11/2019

L. Subramanian

ANNEXURE-III
MINING PLAN APPROVED LETTER

From
Dr.S.Lakshmi Priya., M.Sc., Ph.D.,
Assistant Director,
Dept. of Geology and Mining,
Viluppuram.

To
Thiru.K.Gnanasekaran,
S/o. Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Viluppuram District.

Re.No.B/G&M/277/2018 Dated 26.12.2019

Sub: Mines & Minerals - Minor Mineral - Rough stone and Earth - Viluppuram District - Vanur Taluk - Thollamur Village - over an extent of 2.33.5 hectares of patta lands - S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 - Quarry lease application preferred by Thiru.K.Gnanasekaran - Precise area communicated - Submission of mining plan for approval - Approved - Regarding.

- Ref:**
1. Quarry lease application dated 02.07.2018 preferred by Thiru.K.Gnanasekaran, S/o.Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District.
 2. District Collector, Viluppuram Letter Rc.No.A/G&M/277/2018 Dated 13.11.2019.
 3. Mining Plan submitted by Thiru.K.Gnanasekaran, S/o.Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District Dated 23.12.2019.
 4. G.O.Ms.No.79, Industries (MMC-1) Department dated 06.04.2015.

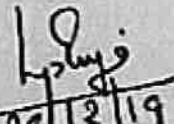
In response to the precise area communicated by the District Collector, Viluppuram, the applicant viz., Thiru.K.Gnanasekaran, vide reference 3rd cited has submitted three copies of mining plan for the area applied for the grant of quarry lease for Rough stone and Earth over an extent of 2.33.5 hectares of patta lands in S.F.Nos. 29/2 (0.51.0 hecets.), 29/3 (0.06.0 hecets.), 30/4 (0.29.5 hecets.), 30/9 (0.28.5 hecets.), 30/12 (0.58.0 hecets.) and 30/13 (0.60.5 hecets.) of Thollamur Village, Vanur Taluk, Viluppuram District.

2. The mining plan submitted for the grant of quarry lease for Rough stone and Earth over an extent of 2.33.5 hectares of patta lands in S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 of Thollamur Village, Vanur Taluk, Viluppuram District has been verified in detail.


3. As per the guidelines / instructions issued by the Commissioner of Geology and Mining, Chennai vide letter Rc.No.3868/LC/2012, dated 19.11.2012, the mining plan is hereby approved subject to the following conditions:

- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (ii) This approval of the mining plan does not in any way imply the approval of the Government in terms or any other provisions of the Mines and Minerals (Development and Regulation) Amended Act, 2015, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Explosives Act, 1884 (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv) As per the District Collector, Viluppuram letter Rc.No.A/G&M/277/2018 Dated 13.11.2019, the following conditions have been incorporated in the Mining Plan.
- (a) A safety distance of 7.5 meters should be provided all along the boundary of the area applied for lease and a safety distance of 50 meter should be provided for the Oodai Poramboke situated in the southern side of the applied area.
- (v) Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

Encl: Two copy of Approved Mining Plan.


26/12/19
Assistant Director,
Dept. of Geology and Mining,
Viluppuram.

Copy to:


26/12/19
The Director of Geology and Mining, Chennai-32.

ANNEXURE-IV
500M Radius letter

From
Thiru.D.Sundararaman, M.Sc., D.E.C.E.,
Assistant Director (i/c),
Department of Geology & Mining,
Viluppuram.

To
Thiru.K.Gnanasekaran,
S/o.Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Viluppuram District.

Rc.No.B/G&M/277/2018 Dated .03.2022

Sir,

Sub: Mines & Minerals - Minor Mineral - Rough stone and Gravel - Viluppuram District - Vanur Taluk - Thollamur Village - over an extent of 2.33.5 hectares of Patta lands - S.F.Nos.29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 - Quarry lease application preferred by Thiru.K.Gnanasekaran - Details of quarries situated within 500 meter radial distance- reg.

- Ref: 1. District Collector, Viluppuram Letter Rc.No.A/G&M/277/2018 Dated 13.11.2019.
2. Representation dated 18.02.2022 received from Thiru.K.Gnanasekaran, S/o.Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District.

With reference to your letter in the reference 2nd cited, the details of existing and abandoned quarries located within 500 meter radial distance from the proposed Rough Stone and Gravel quarry lease over an extent of 2.33.5 hectares of patta lands in S.F.Nos. 29/2 (0.51.0 hecets.), 29/3 (0.06.0 hecets.), 30/4 (0.29.5 hecets.), 30/9 (0.28.5 hecets.), 30/12 (0.58.0 hecets.) and 30/13 (0.60.5 hecets.) of Thollamur Village, Vanur Taluk, Viluppuram District are as follows.

i. **Existing quarries:**

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period	Remarks
1.	K. Gnanasekaran S/o.Kannadi counder, Mettu Street, Karasanur Village, Vanur Taluk, Viluppuram District.	Rough stone	Vanur & Thollamur	12/4 12/5A	0.59.5 <u>0.65.0</u> <u>1.24.5</u>	24.09.2017 to 23.09.2022	

K. Gnanasekaran

2.	V.Sadaiyappan, No.18, Amal Nagar, West Tambaram, Chennai-600 045.	Rough stone & Gravel	Vanur & Thollamur	1/3A 12/3 12/5B1	0.58.0 0.60.5 <u>2.38.5</u> 3.57.0	16.08.2018 to 15.08.2023	
3.	G.Raja, S/o. Gopal, Sivaraj Street, Thiruneermalai, Chennai.	Rough stone & Gravel	Vanur & Thollamur	26/1	2.42.5	16.08.2018 to 15.08.2023	-
4.	R.Muralidaran, Mamager, OM sakthi Constructions, Thollamur Village, Vanur Taluk.	Rough stone & Gravel	Vanur & Thollamur	38/2A 35/1C 39/1B	0.96.0 0.10.0 <u>1.00.0</u> 2.06.0	16.08.2018 to 15.08.2023	-
5.	K.Balamurugan, S/o.Kuppusamy, Karasanur & Post, Vanur Taluk.	Rough stone & Gravel	Vanur & Thollamur	11/4A2 15/2 15/3A 15/3B 15/4	0.16.0 0.44.0 0.50.0 0.56.0 <u>0.46.0</u> 2.12.0	27.08.2018 to 26.08.2023	-

ii. Proposed Area :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Remarks
1.	S.V. Venkatesh, Sri Santhosh Blue Metals, No.173, Sarkar Thopu, Tindivanam, Viluppuram District.	Rough stone & Gravel	Vanur & Thollamur	8/1B 8/2	0.61.5 <u>1.44.5</u> 2.06.0	-
2.	K. Gnanasekaran S/o.Kannadi counder, Mettu Street, Karasanur Village, Vanur Taluk, Villupuram District.	Rough stone & Gravel	Vanur & Thollamur	29/2 29/3 30/4 30/9 30/12 30/13	0.51.0 0.06.0 0.29.5 0.28.5 0.58.0 <u>0.60.5</u> 2.33.5	-
3.	V.Ramesh, S/o.J.Venkatapathy, No.5, Thangaraj Street, HLL Colony, Pammal, Chennai-75.	Rough stone & Gravel	Vanur & Thollamur	16/11, 16/12, 17/1 & 18/3B	0.45.0 0.74.5 1.63.5 <u>0.70.0</u> 3.53.0	-
4.	G.Arjunan, S/o.Govindasamy, No.63, Throupathi Amman Koil Street, Thiruvakkarai Village, Vanur Taluk	Rough Stone & Gravel	Vanur, Thollamur	11/5A 11/6 11/7 16/2 16/4 16/5 16/6 16/7 16/8B 16/9 16/10	0.14.0 0.17.0 0.19.0 0.11.0 0.15.0 0.12.0 0.16.0 0.24.0 0.23.0 0.08.5 <u>1.62.0</u> 3.21.5	-

12. 6/10/2023

5.	I.Justin Prabu, S/o.V.Iyyadurai, 1/56,D9, Church Street, Christopher Nagar, Peruvilai, Kanniyakumari District.	Rough stone & Gravel	Vanur & Karasanur	43/4A	0.35.5	
				43/4B	0.35.5	
				43/4C,	0.35.0	
				43/5	0.71.0	
				43/6	1.27.0	
				44/6	<u>0.63.0</u>	
					<u>3.67.0</u>	

iii. Abandoned Quarries :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period	Remarks
1.	R.Alagurajan, S/o.Ramaswamy, No.41, Erikaran Street, Nerkundram, Chennai-107.	Rough stone	Vanur & Thollamur	35/1B 35/2A2 (P) 35/2B (P)	1.04.0 0.19.5 / 0.48.0 0.23.0 / <u>0.48.0</u> 1.46.5	25.03.2015 to 24.03.2020	-
2.	K.Dharmalingam, S/o.Kannaiyan, 2/6, Kalaingar Street, Erumaiyur, Chennai-44.	Rough stone	Vanur & Thollamur	12/5B	2.52.0	20.04.2013 to 19.04.2018	-
3.	S.Nanthini, W/o.Sankar, No.14, 3 rd Street, Jayapuram, Tindivanam Taluk.	Rough stone	Vanur & Thollamur	11/5A 11/6 11/7 16/2 16/3 16/4 16/5 16/6 16/7 16/8B 16/9 16/10	0.14.0 0.17.0 0.19.0 0.11.0 0.11.0 0.15.0 0.12.0 0.16.0 0.24.0 0.23.0 0.08.5 <u>1.62.0</u> 3.32.5	31.12.2015 to 30.12.2020	-
4.	C.Ganesan, S/o.Chinnaiya Gounder, 168, Mettu Street, Karasanur Village, V.Parangani Post, Vanur Taluk.	Rough stone	Vanur & Thollamur Nemili	13/3 14/7 15/1 118/1 118/2 118/3 118/4A	1.50.0 0.39.5 0.48.5 0.56.0 0.18.5 0.71.0 <u>0.44.0</u> 4.27.5	22.08.2016 to 21.08.2021	-

b. S. Srinivasan

5.	V.Sankar, S/o.Vivekanandan, 14, Jayapuram Colony, Tindivanam Town & Taluk, Viluppuram District	Rough stone	Vanur & Thollamur	2/1 2/2 2/3 2/4 2/5 3/1 3/2 3/3 3/4 3/5 3/6 3/7	0.45.5 0.22.0 0.22.0 0.23.5 0.25.0 0.32.5 0.33.5 0.81.0 0.20.0 0.22.5 0.21.0 0.18.0 3.66.5	20.09.2016 to 19.09.2021	-
6.	D.Sundaramurthy, Santhosh Blue Metals, Thollamur Village, Eraiur Post, Vanur Taluk.	Rough Stone	Vanur, Thollamur	35/2A1 & 9/3	1.06.0 <u>0.33.5</u> 1.39.5	26.04.2013 to 25.04.2018	-
7.	V.Elumalai, S/o. N.Varadappa Chettiar, Old No.132, New No.477, Jawaharlal Nehruji Road, Viluppuram - 605 602	Rough Stone	Vanur, Nemili	117/2 117/3 117/4 117/5	0.19.0 0.20.0 0.49.0 <u>0.23.0</u> 1.11.0	18.06.2012 to 17.06.2017	-
8.	S. Irusappa Gounder, S/o. Srinevasa gounder, Karasanur Village, Vanur Taluk.	Rough Stone	Vanur, Thollamur	4/1 4/2A 4/2B 4/2C 6/2B	0.40.0 0.04.5 0.10.0 0.80.5 <u>0.61.0</u> 1.96.0	01.09.2008 to 31.08.2013	-
9.	R. Periyasamy, S/o. Rangasamy, Karasanur Village, V. Parangini post, Vanur Taluk.	Rough Stone	Vanur, Thollamur	1/3B	1.52.0	01.09.2008 to 31.08.2013	-
10.	K.Gnanasekaran, S/o.Kannadi Gounder, Mettu Street Karasanur village Vanur taluk Viluppuram District	Rough Stone	Vanur, Thollamur	29/1 29/2 29/3 30/4 30/9 30/12 30/13	0.34.5 0.51.0 0.06.0 0.29.5 0.28.5 0.58.0 <u>0.60.5</u> 2.68.0	28.02.2008 to 24.02.2013	-
11.	V.Kannan, Thollamur Village, Vanur Taluk	Rough Stone	Vanur, Thollamur	5 11/3	1.42.5 <u>3.13.0</u> 4.55.5	12.05.2003 to 11.05.2008	-

D. Subbayya
Assistant Director (i/c),
Geology and Mining,
Viluppuram.

04/03/2014

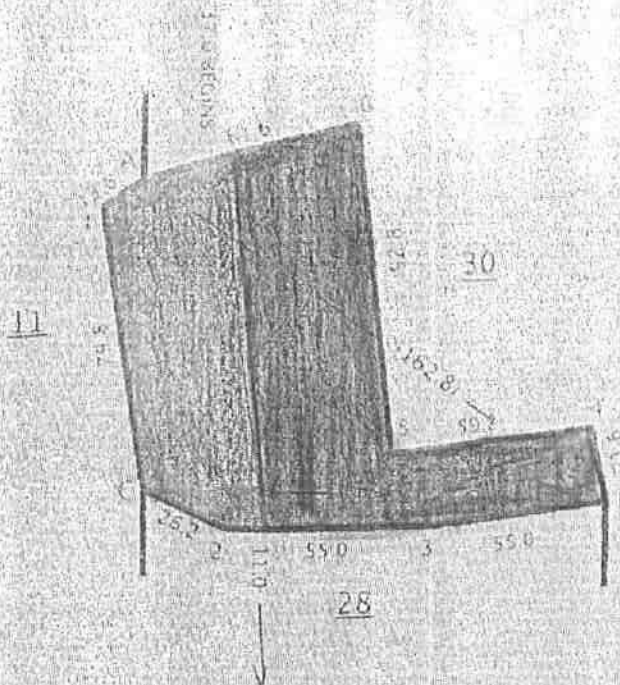
V. Srinivasan

ANNEXURE – V
FMB, A REGISTER, VILLAGE MAP &
PATTA/DEED OF AGREEMENT



விடுபட்ட
 பக்கம் 12
 சென்னை 12661

460-616001-29
 மலையாள : 2019-11-01
 திகதி : 1-2000



LEASE APPLIED AREA: [REDACTED]

[Signature]
 வ. ச. சுவாமிநாதன்
 ஊராட்சி

பி. சி. சுவாமிநாதன் 29/11/1998
 1 - 0.51.0
 3 - 0.06.0
 0.91.5

[Signature]
 1998

சென்னை ஊராட்சி ஒன்றியம்

Taller	
A	12.8
B	121.8
C	60.8
D	15.6
E	14.6
F	137.2
G	78.4
H	9.0
I	25.6
J	11.2
K	88.2
L	1

(சென்னை ஊராட்சி ஒன்றியம் அலுவலகம்)

[Signature]



நிழல்புரம்

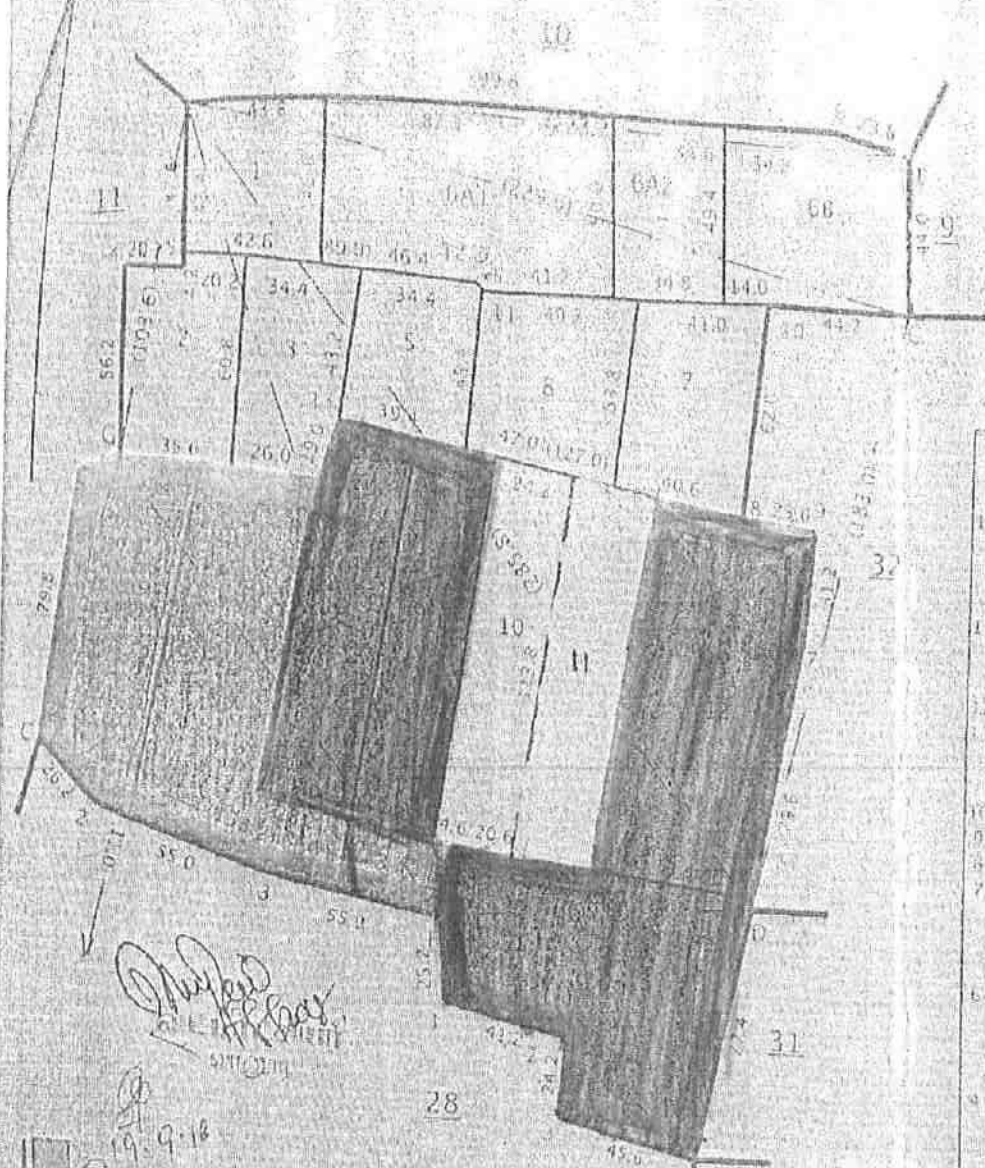
பகுதி 121

கலாச்சாரம் (256)

புல எண் 30

புறப்பகுதி எண் 04 ஜி 4

அளவு 7000



Leader	
0	162.8
1	121.8
2	60.8
3	15.6
4	14.6
5	243.2
6	98.7
7	A
8	229.0
9	28.2
10	132.0
11	30.0
12	111.0
13	E
14	183.0
15	43.0
16	172.0
17	10.8
18	113.8
19	32.4
20	110.6
21	7.5
22	87.4
23	D
24	F
25	223.2
26	5.4
27	199.8
28	A
29	103.6
30	57.6
31	9.2
32	54.8
33	10.6
34	C
35	E
36	107.8
37	67.0
38	20.4
39	53.8
40	0.4
41	17.2
42	18.6
43	F
44	B
45	44.0
46	C
47	D
48	77.4
49	E
50	A
51	285.8
52	D
53	99.8

[Handwritten signature]
புறப்பகுதி

9.9.18
 I hereby certify that the above is a true and correct copy of the original map as submitted to me by the applicant.
 (Signature) *[Handwritten signature]*
 I hereby certify that the above is a true and correct copy of the original map as submitted to me by the applicant.
 (Signature) *[Handwritten signature]*

LEASE APPLIED AREA



AMUR
TALUK

No. 269
KAPASAMUR

11 Hectares 21.2 Acres
100 Hectares 24.5 Acres

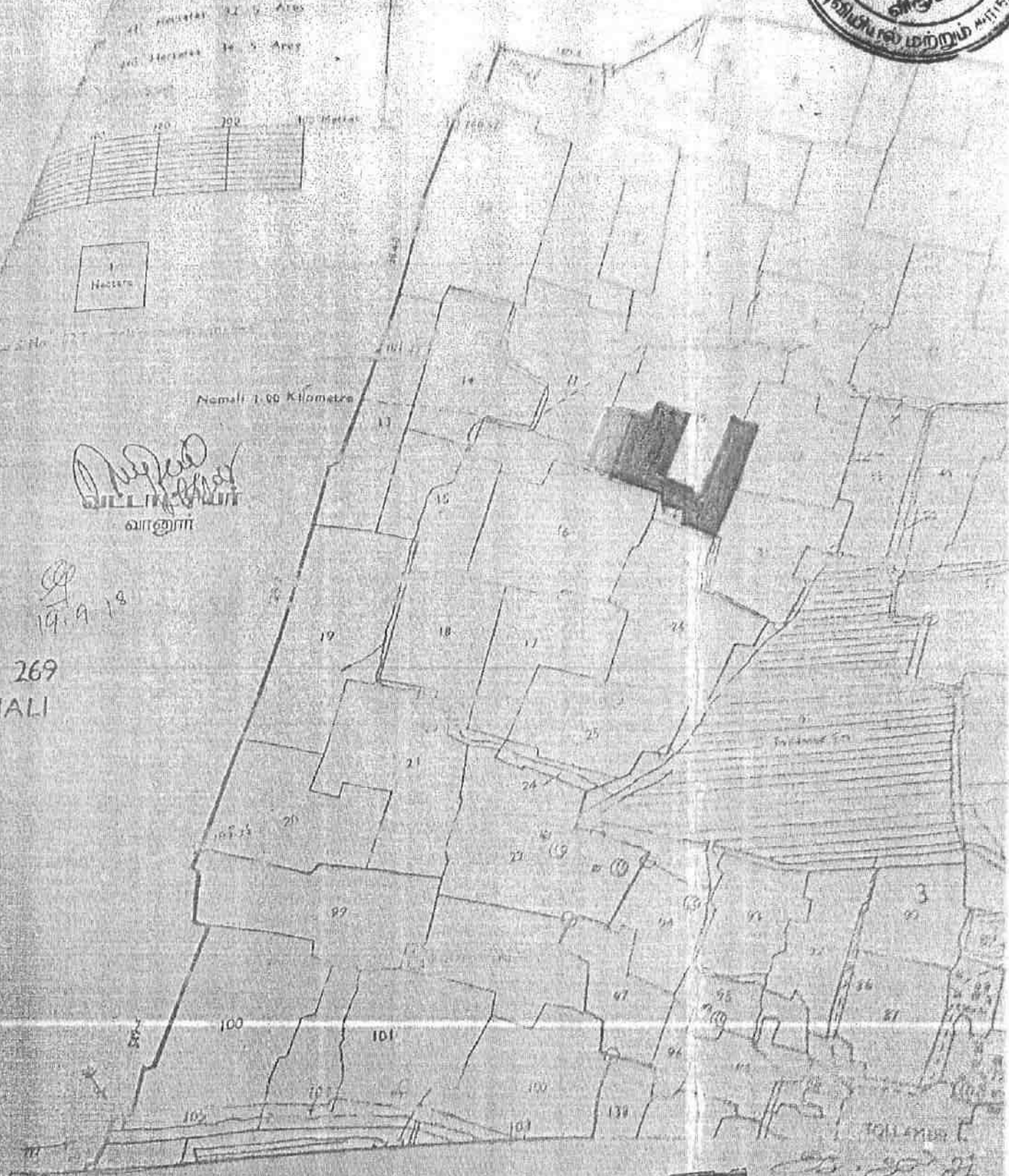
1 Hectares

Nemali 1.00 Kilometre

[Signature]
வாணாளர்

14.9.18

No. 269
NEMALI



LEASE APPLIED AREA

[Handwritten signature]



தமிழக அரசு

வருவாய்த் துறை

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

ANNEXURE IV



மாவட்டம் : விழுப்புரம்

வட்டம் : வானூர்

வருவாய் கிராமம் : தொள்ளாமூர்

பட்டா எண் : 408

உரிமையாளர்கள் பெயர்

1. கண்ணாடிக்கவுண்டர்

தந்தை

சூனசேகரன்

புல எண்	உட்பிரிவு	நன்செய்		புன்செய்		மற்றவை	
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை
12	4	--	--	0 - 59.50	2.50	--	--
12	5A	--	--	0 - 65.00	2.75	--	--
13	1B	--	--	0 - 5.00	0.20	--	--
29	1	--	--	0 - 34.50	1.92	--	--
29	2	--	--	0 - 51.00	2.83	--	--
29	3	--	--	0 - 6.00	0.33	--	--
30	10	--	--	0 - 28.50	1.58	--	--
30	11	--	--	0 - 28.50	1.58	--	--
30	12	--	--	0 - 58.00	3.22	--	--
30	13	--	--	0 - 60.50	3.36	--	--
30	4	--	--	0 - 29.50	1.64	--	--
30	6A2	--	--	0 - 17.07	0.95	--	--
30	6B	--	--	0 - 28.00	1.55	--	--
30	7	--	--	0 - 25.50	1.42	--	--
30	8	--	--	0 - 22.00	1.22	--	--
30	9	--	--	0 - 28.50	1.58	--	--
32	1A	--	--	0 - 40.50	2.25	--	--
				5 - 87.57	30.88		

குறிப்பு 2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் மூலம் தீர்வுபெற்று பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 07/02/266/00408/50602 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.

(Handwritten signature)



2. இத் தகவல்கள் 25-02-2019 அன்று 12:30:32 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



le சாண்டி



Sl. No.	Particulars	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
1	...	400	31						
2	...	400	36						
3	...	400	36						
4	...	400	36						
5	...	400	36						
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95	...	400	36						
96	...	400	36						
97	...	400	36						
98	...	400	36						
99	...	400	36						
100	...	400	36						

ಶಿವಮೊಗ್ಗ ಜಿಲ್ಲಾ ಪಂಚಾಯತ್
64

ಶಿವಮೊಗ್ಗ ಜಿಲ್ಲಾ ಪಂಚಾಯತ್
64

ಶಿವಮೊಗ್ಗ ಜಿಲ್ಲಾ ಪಂಚಾಯತ್
64

2018

ಶಿವಮೊಗ್ಗ ಜಿಲ್ಲಾ ಪಂಚಾಯತ್

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்

வட்டம் : வானூர்

கிராமம் : தொள்ளாமூர்

1. புல எண்	29	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	1	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	30-1	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 34.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.92
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	408
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானசேகரன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 30602 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்
வட்டம் : வானூர்
கிராமம் : தொள்ளாமூர்

1. புல எண்	29	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	2	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	-2	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	3 - 51.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	2.83
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	408
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானசேகரன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 30602 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

க. சண்முகம்

அ-பதிவேடு விவரங்கள்

மாவட்டம் : விழுப்புரம்
வட்டம் : வானூர்
கிராமம் : தொள்ளாமூர்



1. புல எண்	29	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	3	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	-3	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 6.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.33
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	408
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானசேகரன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 30602 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

1. ஜெ. சிவசுப்பிரமணியன்

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்
வட்டம் : வானூர்
கிராமம் : தொள்ளாமூர்

1. புல எண்	30	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	4	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	-6	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	3 - 29.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.64
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	408
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானசேகரன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40602 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

16 சிவசுப்பிரமணியன்

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்
வட்டம் : வானூர்
கிராமம் : தொள்ளாமூர்

1. புல எண்	30	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	9	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	-5	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 28.50
5. அரக / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.58
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	408
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானசேகரன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40602 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

2. சான்றிதழ்

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்
வட்டம் : வானூர்
கிராமம் : தொள்ளாமூர்

1. புல எண்	30	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	12	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	-6	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 58.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	3.22
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	408
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானசேகரன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40602 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

க. சீனிவாசன்

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்
வட்டம் : வானூர்
கிராமம் : தொள்ளாமூர்

1. புல எண்	30	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	13	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	29-4	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 60.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	3.36
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	408
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானசேகரன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை.
இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40602 என்ற
குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

6 சுவாமிநாதன்

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

26/12/2019

**MINING PLAN AND PROGRESSIVE QUARRY
CLOSURE PLAN FOR THOLLAMUR
ROUGHSTONE AND EARTH QUARRY**



(PREPARED UNDER RULES 41 & 42 AS AMENDED IN TAMIL NADU MINOR MINERAL CONCESSION REGULATION)

Patta Lands / Lease Period = Five Years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 2.33.5ha
S.F.NO's : 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13
VILLAGE : THOLLAMUR
TALUK : VANUR
DISTRICT: VILUPPURAM
STATE : TAMIL NADU

FOR

APPLICANT

Thiru.K.Gnanasekaran,

S/o. Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Viluppuram District – 605 109.

PREPARED BY

A.Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,

RQP/MAS/019/87/A

Recognized Qualified Person

Regd.off.No.17, Advaita Ashram Road,

Alagapuram, Salem – 636 004.

Cell: 94433 56539.

E-mail: infogeoexploration@gmail.com

A. Jagannathan

K.Gnanasekaran,

S/o. Kannadi Gounder,

Karasanur Village,

Vanur Taluk,

Viluppuram District – 605 109.



CONSENT LETTER FROM APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Thollamur Roughstone and Earth Quarry in S.F.No's.29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 over an extent of 2.33.5ha of Patta Lands in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State has been prepared by

A.Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,

RQP/MAS/019/87/A

Recognized Qualified Person

I request to the District Collector, Viluppuram to make further correspondence regarding the modification of the Mining Plan with the said Recognized Qualified Person at his following address.

A.Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,

Regd. Off. No. 17,

Advaita Ashram Road,

Alagapuram, Salem – 636 004.

Cell: 94433 56539.

I hereby undertake that all the modifications, if any made in the Mining Plan by the 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 in all respects.

Signature of the Applicant

K.Gnanasekaran

Place: Viluppuram

Date: 23.12.2019

K.Gnanasekaran,
S/o. Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Viluppuram District – 605 109.



DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Thollamur Roughstone and Earth Quarry in S.F.No's.29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 over an extent of 2.33.5ha of Patta Lands in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State has been prepared in full consultation with me.

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

Signature of the Applicant


K.Gnanasekaran

Place: Viluppuram

Date: 23.12.2019



A.Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,

Regd. Off. No. 17,

Advaitha Ashram Road,

Alagapuram, Salem – 636 004.

Cell: 94433 56539.



CERTIFICATE FROM THE RECOGNIZED QUALIFIED PERSON

This is to certify that the Provisions under Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959. I have been observed while the preparation of Mining Plan and Progressive Quarry Closure Plan for Thollamur Roughstone and Earth Quarry in S.F.No's.29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 over an extent of 2.33.5ha of Patta Lands in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State has been prepared for

Thiru.K.Gnanasekaran,

S/o. Kannadi Gounder,

Karasanur Village,

Vanur Taluk,

Viluppuram District – 605 109.

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

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

Signature of the Recognized Qualified Person

A.Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,
RQP/MAS/019/87/A

Place: Salem

Date: 23.12.2019

Handwritten signature/initials at the bottom right of the page.

A.Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,

Regd. Off. No. 17,

Advaitha Ashram Road,

Alagapuram, Salem – 636 004.

Cell: 94433 56539.



CERTIFICATE FROM THE RECOGNIZED QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations or Orders made there have been observed while the preparation of Mining Plan and Progressive Quarry Closure Plan for Thollamur Roughstone and Earth Quarry in S.F.No's.29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 over an extent of 2.33.5ha of Patta Lands in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State has been prepared for

Thiru.K.Gnanasekaran,

S/o. Kannadi Gounder,

Karasanur Village,

Vanur Taluk,

Viluppuram District – 605 109.

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

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

Signature of the Recognized Qualified Person


A.Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,
RQP/MAS/019/87/A

Place: Salem

Date: 23.12.2019





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S. No.	Description	Page No.
1.0	Introduction and Executive Summary	1
2.0	General Information	5
3.0	Location	6
	<u>PART-A</u>	
4.0	Geology and Mineral Reserves	8
5.0	Mining	11
6.0	Blasting	15
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	<u>PART-B</u>	
10.0	Environment Management Plan	22
11.0	Progressive Quarry Closure Plan	30
12.0	Any Other Details Intend to Furnish by the Applicant	36

6-5/2019/2019



LIST OF ANNEXURES

S. No.	Description	Annex. No.
1.	Copy of Precise Area Communication	I
2.	Copy of FMB	II
3.	Copy of Village Map	III
4.	Copy of Patta	IV
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6.	Copy of A-Register	VI
7.	Copy of ID Proof	VII
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LIST OF PLATES

S. No.	Description	Plate No.
1.	Location Plan	I
2.	Toposketch of Quarry Lease Applied Area for 10km Radius	IA
3.	Environmental Plan & Landuse Plan for 1km Radius	IB
4.	Route Map	IC
5.	Quarry Lease Plan & Surface Plan	II
6.	Topography, Geological, Yearwise Development & Production Plan & Sections	III
7.	Progressive Quarry Closure Plan & Sections	IV
8.	Conceptual Plan & Sections	V

6-6-2019



**MINING PLAN AND PROGRESSIVE QUARRY CLOSURE PLAN FOR
THOLLAMUR ROUGHSTONE AND EARTH QUARRY OVER AN EXTENT OF
2.33.5ha IN THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT,
TAMIL NADU STATE**

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

1.0 INTRODUCTION AND EXECUTIVE SUMMARY

This Mining Plan and Environment Management Plan is prepared for **Thiru.K.Gnanasekaran**, S/o. Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State – 605 109.

The applicant applied for Roughstone and Earth quarry over an extent of 2.33.5ha of Patta Lands in S.F.No's.29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 of Thollamur Village, Vanur Taluk, Viluppuram District.

The application was processed by the District Collector, Viluppuram and passed a Precise Area Communication letter vide **Rc.No.A/G&M/277/2018, Dated: 13.11.2019** to submit Mining Plan for the approval in Department of Geology and Mining, Viluppuram and obtain Environmental Clearance from the Competent Authority, Tamil Nadu.

In order to ensure compliance of the order of the Honourable Supreme Court Dated: 27.02.2012 in I.A.No.12.13.2011 in Special Leave Petition SLP (C) No 19628-19629/2009, it has been now decided that all mining projects of minor minerals including their renewal irrespective of sizes of the lease would hence forth require prior environmental clearance mining project within the lease applied area up to less than 100ha including projects or minor mineral with lease applied area less then 5ha would be treated as category B as defined in the EIA notification 2006 and will be considered by the state Competent Authority notified by MoEF as prescribed procedure prescribed under EIA notification 2006.

In the above circumstances the applicant through his consultant is hereby preparing the Mining Plan, Environmental Management Plan and Progressive Quarry Closure Plan for approval and subsequent submission of Form-I, Form-IM and Pre feasibility report to obtain environmental clearance from the Competent Authority, Tamil Nadu, Roughstone and Earth quarry. This mining plan is prepared by considering the Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the EIA Notification 2006 and its subsequent Amendment and judgments till 24.01.2019.

6- 6/10/2019

**Short Notes of Mining plan:**

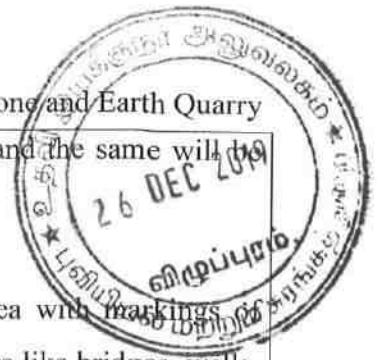
- a. Village Panchayat - Thollamur
- b. Panchayat Union - Vanur
- c. The Geological Resources are **8,17,250m³** of Roughstone and **46,700m³** of Earth formation in the entire area.
- d. The Total Mineable Reserves are **1,33,570m³** of Roughstone and **19,912m³** of Earth formation in the entire area.
- e. The proposed quantity of reserves/ (level of production) to be mined are **1,33,570m³** of Roughstone and **19,912m³** of Earth formation for five years in the entire area.
- f. Total extent of the lease applied area = 2.33.5ha
- g. Topography of the area = The area exhibits plain topography
- h. Proposed Depth of mining = 37m (2m Earth + 35m Roughstone) below ground level
- i. This Mining Plan period = Five years
- j. It is a fresh lease application but, the applied area has been considered quarrying operation earlier. The quarry lease was first granted in over an extent of 2.33.5 hectares of Patta land in S.F.No's.29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 of Thollamur Village, Vanur Taluk, Viluppuram District for quarrying of Roughstone and Earth. In this situation the applicant has applied a quarry lease on 02.07.2018 with S.F.No's.29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 over an extent of 2.33.5ha for the period of five years. The application was meritoriously processed by the District Collector, Viluppuram and recommended the quarry lease for the period of five years. The maximum dimensions of the **existing quarry pits** are given table below (Refer Plate No. III).

Length (m)	Width (m)	Depth (m)
47	38	7m below ground level

- k. Method of mining / level of mechanization.
Opencast mechanized method, the quarry operation involves shallow hand jack hammer drilling, mild blasting.
- l. Type of machineries proposed in the quarrying operation is given below.
Excavators attached with rock breaker (Rental Basis).
Hand Jack Hammer, Compressor (Diesel drive) (4 Hand jack hammer capacity) (Rental Basis).
- m. No trees will be uprooted due to this quarrying operation.

Handwritten signature

- n. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Roughstone and Earth.
- o. There is No Export of this Roughstone and Earth.
- p. Topo sketch covering 10km and 1km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archaeological importance, places of worships is marked and enclosed as Plate Nos. IA and IB.
- q. The lease applied area is about 2.33.5ha bounded by nineteen corners; the corners are designated as 1-19 Clockwise from the Western corner the Co – ordinates for the all the corners are clearly marked in the Quarry Lease and Surface Plan enclosed as (Plate No-II).
- r. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depth and maximum area of proposed quarrying are enclosed as Plate Nos. III and IV.
- s. The Interstate Boundary is situated in 3km from Southeastern side of the lease applied area. The based on MoEF Notification S.O.141 (E) 15th January 2016 the general condition shall apply expect mining the of minor minerals category B2 (up to 25ha of mining lease applied area).
- t. General conditions will not be applicable for the proposed area. The area applied for lease is 10Km away from the,
- i) *Protected area under wild life protection ACT 1972,*
 - ii) *Critically polluted areas as identified by CPCB,*
 - iii) *Notified Eco sensitive areas.*
- u. There is no waste anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- v. Around 19 employees are deploying in the quarrying operation.
- w. Total Cost of the project is about **Rs.35,32,000/-**



x. Infrastructure:

TABLE-1

S. No	Particulars	Location	Direction	Approximate Distance
1	Nearest Post Office	Parangani	E	2.5km
2	Nearest School	Valudavur	NE	1km
3	Nearest Dispensary	Vanur	SE	7.5km
4	Nearest Town	Vanur	SE	7.5km
5	Nearest Police Station	Vanur	SE	7.5km
6	Nearest Hospital	Vanur	SE	7.5km
7	Nearest D.S.P. Office	Vanur	SE	7.5km
8	Nearest Railway Station	Mailam	NW	13.5km
9	Nearest International Airport	Chennai	NE	133km
10	Nearest Harbour	Chennai	NE	133km
11	District Head Quarters	Viluppuram	SW	23km



6. சிவசுப்பிரமணியன்

**2.0 GENERAL INFORMATION**

2.1 a) Name of the Applicant : Thiru.K.Gnanasekaran,
S/o. Kannadi Gounder,

b) Address of the Applicant (With Phone No and Aadhaar No)

Address : Karasanur Village,
Vanur Taluk, Viluppuram District.

Pin Code : 605 109

Mobile No : 73396 98938 & 93606 32022

Aadhaar No : 4268 4681 9836

Email ID : uniqueinfrastructureneyveli@gmail.com

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

The applicant is an Individual.

2.2 a) Mineral which the Applicant intends to mine:

The Applicant intends to quarry Roughstone and Earth only.

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

The precise area communication letter was received from the District Collector, Viluppuram vide **Rc.No.A/G&M/277/2018, Dated: 13.11.2019** to submit approved mining plan and to obtain Environmental Clearance from the Competent Authority, Tamil Nadu.

c) Period of permission / lease to be granted:

The applicant has applied for five years, the District Collector has recommended for Five years for Roughstone and Earth.

d) Name, address and registration of the Recognized Qualified Person preparing the Mining Plan:

Name : **A.Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,**
Recognized Qualified Person

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

Tele Fax : 0427- 2431989 (Office)

Cell No : 94433 56539

Registration No : RQP/MAS/019/87/A

Valid up to : 17.11.2021

Email : infogeoexploration@gmail.com

(Refer Annexure No. VIII).

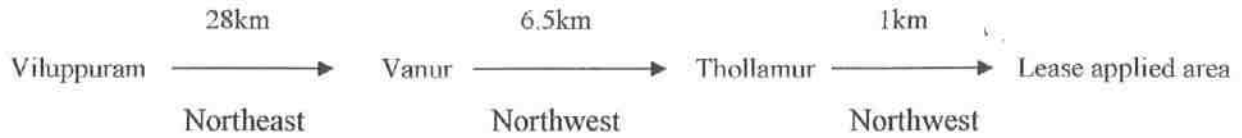
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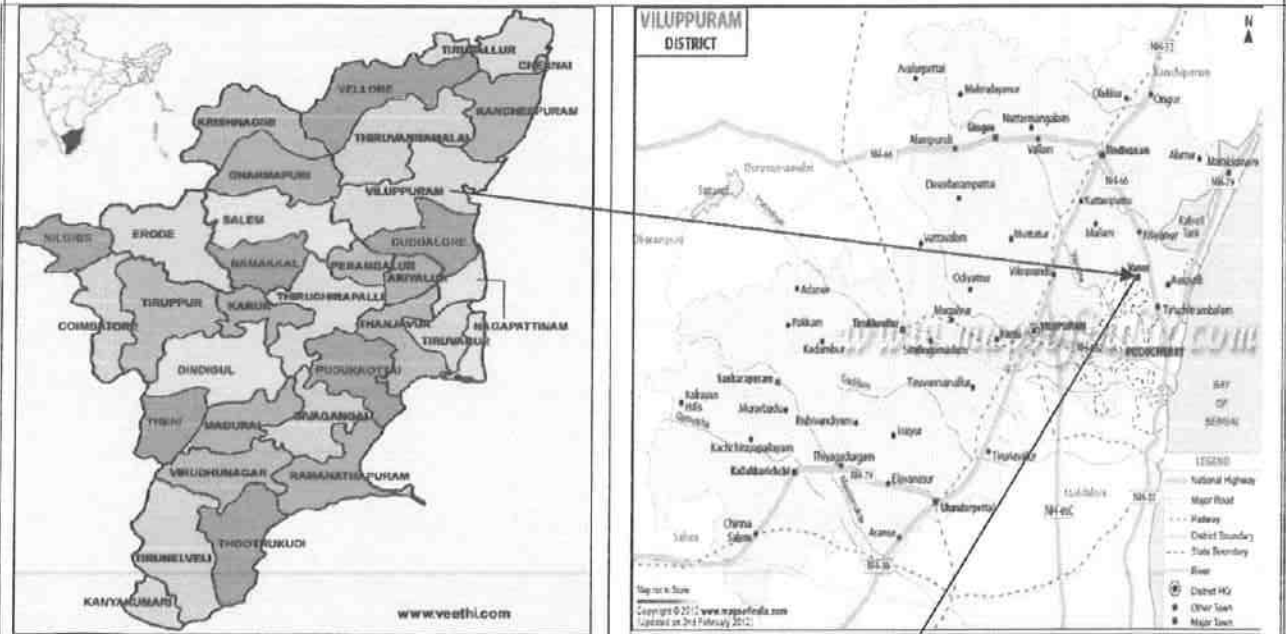
3.0 LOCATION

a) Details of the area with location map:

The lease applied area is about 23km Northeastern side of Viluppuram, 7.5km Northwest side of Vanur and 1km Northwest side of Thollamur Village.



Location Map of the Lease Applied Area



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TABLE-2

District	Taluk	Village	S.F. No's.	Lease Applied Area in ha.
Viluppuram	Vanur	Thollamur	29/2	0.51.0
			29/3	0.06.0
			30/4	0.29.5
			30/9	0.28.5
			30/12	0.58.0
			30/13	0.60.5
Total Extent				2.33.5ha

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

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

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

It is a Patta land, Registered in the name of the applicant (Thiru.K.Gnanasekaran), vide Patta No.408. Refer Annexure Nos. IV to VI.

d) Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No: 57 - P/12 Latitude between: 12°03'20.03"N to 12°03'27.36"N and Longitude between: 79°40'16.29"E to 79°40'23.75"E on WGS datum-1984. Please refer the Plate Nos. I to II.

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

The approach (metal) road is situated on the Northeastern side of the applied area which connects the Panchyat Road at a distance 540m.

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

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

The Nearest Railway line is Chengalpattu – Viluppuram which is about 13km on the Northwestern side of the lease applied area.



PART - A

4.0 GEOLOGY AND MINERAL RESERVES

4.1 Brief description of the Topography and general Geology of the area (with plans)

The lease applied area exhibits plain topography. The area has gentle sloping towards Southeastern side. The altitude of the area is 65m (max) above Mean Sea level. The area is covered by 2m thickness of Earth formation. Massive Charnockite is found after 2m (Earth formation) which is clearly inferred from the existing quarrying pits.

The Water table is found at a depth of 55m in summer and at 50m in rainy seasons. Average annual rainfall is about 1012mm.



Topographical View of lease applied area

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body N30°E – S30°W with dipping towards SE60°.

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

AGE	FORMATION
Recent	- Quaternary Formation (Earth)
-----Unconformity-----	
Archaean	- Charnockite Peninsular Gneiss complex

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4.2 Details of exploration already carried out if any:

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

Geological Survey of India has carried out detailed mapping in Viluppuram District. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Roughstone formation is clearly inferred from the existing quarrying pits.

4.3 Estimation of Reserves:

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

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

Totally six sections have been drawn, two sections are drawn Length wise as (X-Y) & (X1-Y1) and other four cross sections are drawn Width wise as (A-B), (C-D), (E-F) & (G-H) to cover the maximum area considered for lease.

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

Geological Resources (Plate No. III):

The Geological Resources of Roughstone and Earth are calculated up to a maximum depth of 37m (2m Earth + 35m Roughstone) below ground level.

The total Geological resources are calculated by area method. The calculation of the geological resources is given below:

Total Extent of the area	=	2.33.5ha	
Area in square meter	=	2.33.5 X 10,000 = 23350sq.m	
Earth	=	2m below ground level	
	=	23350sq.m X 2m Depth	
	=	46,700m³ of Earth formation	
Rough Stone formation	=	35m below ground level.	
	=	23350sq.m X 35m Depth	
	=	8,17,250m³ of Rough stone	
Total Geological Resources of Earth formation	:	46,700m³	
Total Geological Resources of Roughstone	:	8,17,250m³	

b. Sangeetha

**Existing Pit Dimension:**

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

TABLE-3

Length (m)	Width (m)	Depth (m)
47	38	7m below ground level

Available Mineable Reserves:

The available mineable reserves are calculated after leaving the safety distance and Bench loss.

TABLE-4

MINEABLE RESERVES						
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Mineable Reserves in Rough stone (m ³)	Earth Formation (m ³)
XY-AB	I	76	75	2	-	11400
	II	76	75	5	28500	-
	III	66	65	5	21450	-
	IV	56	55	5	15400	-
	V	46	45	5	10350	-
	VI	36	35	5	6300	-
	VII	26	25	5	3250	-
	VIII	16	15	5	1200	-
	Total					86450
XIY1-CD	I	112	38	2	-	8512
	II	112	38	5	21280	-
	III	102	28	5	14280	-
	IV	92	18	5	8280	-
	V	82	8	5	3280	-
	Total					47120
Grand Total					133570	19912

The mineable reserves have been computed as 1,33,570m³ of Roughstone and 19,912m³ of Earth formation at the rate of 100% recovery upto a maximum depth of 37m below ground level for a period of five years.



5.0 MINING

5.1 Method of mining (opencast / underground):

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

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

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

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

The quarry operation involves shallow hand jack hammer drilling, mild explosives in blasting, excavation, Loading and transportation of Roughstone to the needy crusher.

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

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

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

5.3 Proposed Bench Height and Width:

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

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

The overburden in the form of Earth formation, the Earth will be directly loaded into tippers for the filling and levelling of low lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government. The excavated Roughstone will be directly loaded into tippers to the needy customers. The Composite year wise Development and production plan and sections indicating the Pit lay out, Green belt development are shown in Plate No-III.



Year wise development and Production

TABLE-5

YEARWISE PRODUCTION DETAILS

Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserves in Rough stone (m ³)	Earth Formation (m ³)
I Year	X1Y1-CD	I	112	38	2	-	8512
		II	112	38	5	21280	-
		Total					21280
II Year	XY-AB	I	76	75	2	-	11400
		II	76	75	5	28500	-
		Total					28500
III Year	XY-AB	III	66	65	5	21450	-
		IV	56	55	5	15400	-
		Total					36850
IV Year	XY-AB	V	46	45	5	10350	-
		VI	36	35	5	6300	-
		VII	26	25	5	3250	-
		VIII	16	15	5	1200	-
		Total					21100
V Year	X1Y1-CD	III	102	28	5	14280	-
		IV	92	18	5	8280	-
		V	82	8	5	3280	-
		Total					25840
Grand Total						133570	19912

The Recoverable reserves have been computed as **1,33,570m³** of Roughstone and **19,912m³** of Earth formation for five years of 100% recovery upto depth of 37m below ground level for a mining period.

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

Mining Plan and PQCP

Thollamur Roughstone and Earth Quarry



One lorry load	=	6m ³ (approx)
Total No of Working days	=	300 Days per year
Total quantity to be removed in this five years plan period	=	1,33,570m ³
Hence total lorry loads per day	=	1,33,570m ³ /6m ³
	=	22262 lorry loads
	=	22262/5 years
	=	4452/300 Days
Roughstone	=	14-15 lorry loads per day
Total quantity to be removed in this two years plan period	=	19,912m ³
Hence total Tippers loads per day	=	19,912m ³ /6m ³
	=	3319 lorry loads
	=	3319/2 years
	=	1660/300 Days
Earth	=	5-6 lorry loads per day
Working hours = 8.30 am to 5.30 pm (with 12.30-1.30 pm lunch break)		

5.5 Machineries to be used:

For Mining:

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

TABLE-6

I. DRILLING MACHINE

S.No.	Type	Nos	Dia Hole mm	Size Capacity	Motive power
1	Hand jack hammer	4	30-35	1.2m to 2.0m	Compressed air
2	Compressor	1	-	400 psi	Diesel Drive

II. EXCAVATION & LOADING EQUIPMENT:

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

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

S.No.	Type	Nos	Capacity	Motive Power
1	Tippers	2	20 tonnes	Diesel Drive

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5.6 Disposal of Overburden/Waste:

The overburden in the form of Earth formation, the Earth will be directly loaded into tippers for the filling and levelling of low lying areas. The excavated Roughstone (100%) will be directly loaded into tippers to the needy customers. There is no Waste anticipated during this plan period hence, disposal of waste does not arise.

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

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

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

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

TABLE-7

Pits	Length in m (Max)	Width in m (Max)	Depth in m (Max)
I	47	38	7m below ground level
II	112	38	22m below ground level
III	76	75	37m below ground level

Greenbelt has proposed on the safety zone by planting Neem, Pongamia Pinnata, Casuarina, etc., trees of native species. All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF&CC Norms. Please refer Plate Nos. III & IV.

It is propose to engage any local institution to monitor the EIA and EMP during the course of quarrying operation after the grant of quarry lease.

There is no waste anticipated during the entire life of quarry. Hence, backfilling is not possible in this quarry. After completion of quarry operation, the quarry pit will be allowed to collect the seepage and rainwater, the water storage will be kept as temporary reservoir for charging the nearby wells and the storage water will be used for afforestation purpose. The quarry pit will be fenced with barbed wire fencing to prevent inadvertent entry of public and cattle (Refer Plate No. IV).

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6.0 BLASTING

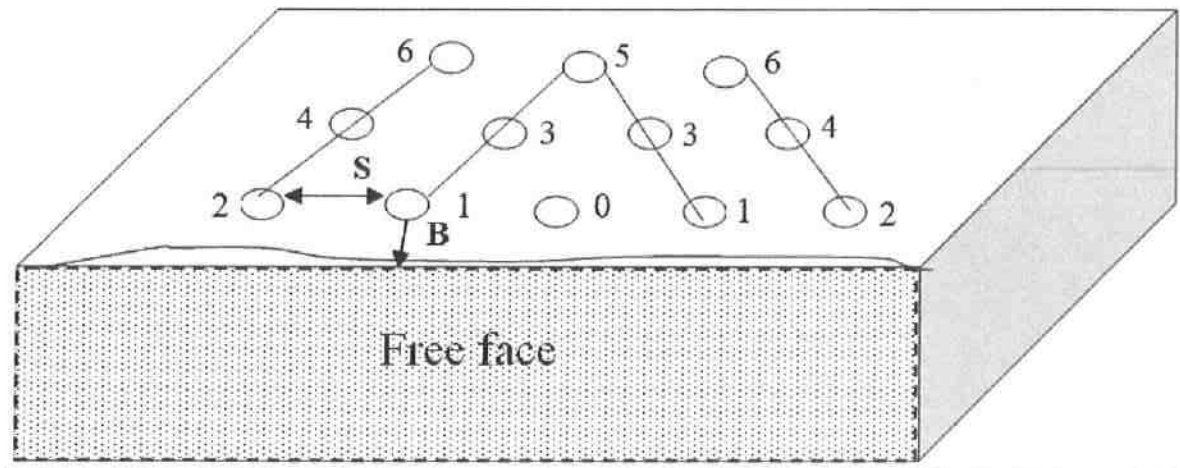
6.1 Blasting pattern:

The quarrying operation is proposed to be carried out by Mechanized Opencast Method in conjunction with conventional method of mining using Hand jack hammer drilling and blasting of shattering effect for loosening the Roughstone.

Drilling and blasting parameters are as follows:

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

BLASTING PATTERN DRAWING



Staggered “V” Pattern of Blasting Design

Spacing	=	1.2m
Burden	=	1.0m
Depth of the hole	=	1.5m
No of holes proposed per day	=	78 Holes

6.2 Type of explosives to be used:

Small Dia. 25mm Mild explosives 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:

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

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

Delay detonators:

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

The major advantages of delay blasting are:

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

Blasting program for the production per day:

No of Holes	= 78 Holes
Yield	= 232 Tons
Powder factor	= 6 Tons/Kg of explosives
Total explosive required	= 39 Kg-Mild explosives
Charge/ hole	= 0.5 Kg
Blasting at day time only	= 12.00 – 12.30p.m (whenever required)

6.4 Storage and safety measures to be taken while blasting:

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



7.0 MINE DRAINAGE

7.1 Depth of water table (based on nearby wells and water bodies):

The Water Table in the area is 55m in summer season and 50m in Rainy season which is observed from the nearby wells and the data obtained from existing private boreholes. The lease area is fully covered by Massive Charnockite formation. Hence the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt.

TABLE-8

Type	Distance & Direction	Location
Bore Well	750m Southeastern side	12°02'58.02"N 79°40'30.63"E

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

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



8.0 OTHER PERMANENT STRUCTURES (also shown in the map)

8.1 Habitations/ Villages natham:

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

8.2 Power Lines (HT/LT):

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

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

Odai is passing on the Southern side of the lease applied area hence 50m safety distance has been maintained.

8.4 Archaeological / historical monuments:

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

8.5 Road (NH, SH others):

The Nearest National Highway (NH-66) Puducherry – Thiruvannamalai is situated about 8km on the Northeastern side of the lease applied area.

The State Highway (SH-136) Puducherry – Mailam is situated about 1km on the Northeastern side of the lease applied area.

8.6 Places of worships:

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

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

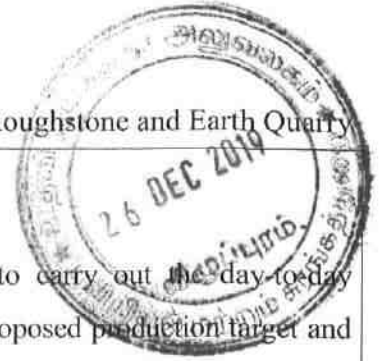
There is no reserved forest / forest / social forest / wild life sanctuary etc., within radius of 500m of the lease applied area.



SALIENT FEATURES

S. No.	Salient Features Present around site	Prescribed safety distance	If any present within Prescribed distance if actual distance and direction from the area.																
1.	Railways, Highways, Reservoirs or Canal	50m	None of the above situated within 50m radius.																
2.	Village Road	10m	No Village Road is located within 10m radius of the lease applied area.																
3.	Habitation / Village	300m	There is no approved habitation within 300m radius from the lease applied area.																
4.	Adjacent Patta Land / Govt. Land	7.5m/10m	<table border="1"> <thead> <tr> <th>Direction</th> <th>Classification</th> <th>Safety Distance</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>East</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td rowspan="2">South</td> <td>Patta land</td> <td rowspan="2">50m</td> </tr> <tr> <td>Odai</td> </tr> <tr> <td>West</td> <td>Patta land</td> <td>7.5m</td> </tr> </tbody> </table> <p>(Refer Plate No. II).</p>	Direction	Classification	Safety Distance	North	Patta land	7.5m	East	Patta land	7.5m	South	Patta land	50m	Odai	West	Patta land	7.5m
Direction	Classification	Safety Distance																	
North	Patta land	7.5m																	
East	Patta land	7.5m																	
South	Patta land	50m																	
	Odai																		
West	Patta land	7.5m																	
5.	Housing area, EB line (HT & LT Line)	50m	There is no EB (LT/HT) line or Housing area situated within 50m radius of the lease applied area.																
6.	Boundaries of the permitted area	7.5m/10m	<p>The boundaries of the permitted areas is as follows:</p> <p>North – S.F.No's.30/2, 30/3, 30/5, 30/8, 30/10, 30/11, 30/7 & 32</p> <p>East – S.F.No's.32 & 31</p> <p>South – S.F.No.28</p> <p>West – S.F.No.29/1</p> <p>(Refer Plate No. II).</p>																
7.	Reserve forest	50m	There is no reserved forest within the radius of 50m.																
8.	Protected area / ECO sensitive area/Wild Life Sanctuary	10Km	There is no ECO sensitive Zone/ Wild Life Sanctuary/ Critically Polluted Area/ HACA/ CRZ located within 10km radius of the area.																

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9.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES

9.1 Employment potential (skilled, semi skilled, un skilled):

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

a. Mine official & Competent Persons

Mines Manager/Mines Foreman	:	1
Mate/Blaster	:	1

b. Machinery Operators

Hand jack hammer operator	:	8
Excavator Operator	:	1
Tippers Driver	:	2

c. Ordinary Employee

Helper	:	2
Cleaner & Co-Operator	:	3
Security	:	1
Total	:	19

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

9.2 Welfare Measures:

a. **Drinking Water:**

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

b. **Sanitary Facilities:**

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



c. First aid facility:

First aid kits are kept in Mines office room, in case of such eventuality the victim will be given first aid immediately at the site by the competent and statutory foreman/permit holder. The foreman will be in charge of first aid and injured person will be taken to the hospital by the applicant vehicle. Hospital is available in Vanur located at a distance of 7.5km on the Southeast side.

d. Labour Health:

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

e. Precautionary safety measures to the labourers:



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

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

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

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

LAND USE TABLE-9

Description	Present area in (ha)	Area at the end of this quarrying period (ha)
Area under Quarrying	0.13.2	1.03.5
Infrastructure	Nil	0.01.0
Roads	0.01.0	0.02.0
Green Belt	Nil	0.25.5
Unutilized Area	2.19.3	1.01.5
Grand Total	2.33.5	2.33.5

10.2 Water Regime:






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

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









10.3 Flora and Fauna:

TABLE-10

S.No.	Name of the plant (Scientific)	Family Name	Common Name	Habit	Picture
1.	<i>Tamarindus indica</i>	<i>Caesalpiniaceae</i>	Tamarind	Tree	
2.	<i>Tectona grandis</i>	<i>Lamiaceae</i>	Teak, Tekku	Tree	
3.	<i>Prosopis juliflora</i>	<i>Fabaceae</i>	Seemai Karuvelam	Tree	
4.	<i>Calotropis gigantea</i>	<i>Asclepiadaceae</i>	Crown Flower, Erukku	Shrub	
5.	<i>Syzygium cumini</i>	<i>Myrtaceae</i>	Naval	Tree	

List of Fauna

S.No.	Scientific Name	Common Name	Picture
1.	<i>Calotes versicolor</i>	Lizard	
2.	<i>Naja naja</i>	Indian Cobra	
3.	<i>Funambulus spp</i>	Squirrel	
4.	<i>Bubalus bubalis</i>	Buffalo	
5.	<i>Ardeolagravii</i>	Pond heron	
6.	<i>Junonia atlites</i>	Grey pansy	

**10.4 Climatic Conditions:**

The area receives rainfall of about 1012mm/annum and the rainy season is mainly from Oct to Dec during monsoon. The summer is hot with maximum temperature of 32°C and winter encounters a minimum temperature of 25°C.

10.5 Human settlement:

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

TABLE-11

S. No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population
1.	Parangani	2.5km – Northeast	3420
2.	Thollamur	1km – Southeast	1440
3.	Eraiyr	2km – West	3280
4.	Karasanur	2km – Northwest	2880

Basic human welfare Amenities such as Health Centre, Schools, Communication Facilities, and Commercial Centres etc., are available at Vanur located at a distance of 7.5km on the Southeast side of the area.

10.6 Plan for air, dust suppression:

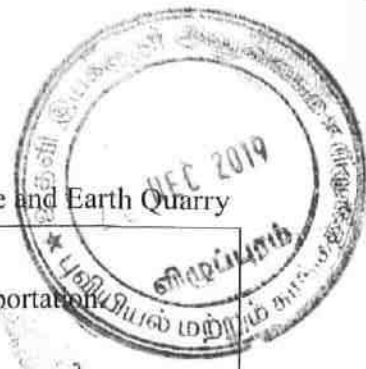
The air quality will be affected by the Suspended Particulate Matter (SPM) generated by the mild blasting, hand jack hammer drilling, Loading and unloading during the Roughstone quarry operation.

The following Mitigations measures will be carried out:

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

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

S. S. Srinivasan

**10.7 Plan for Noise level control:**

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

Engineering Noise control:

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

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

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

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

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

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

10.9 Proposal for waste management:

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

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

In the mining plan proposed only to a maximum depth of 37m below ground level has been envisaged as workable depth for safe & economic mining during entire lease applied area. There is no waste generated hence, backfilling is not possible. Hence, the quarry area will be fenced with Barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle. The barbed wire fencing cost would be around **Rs.2,87,700/-**

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

The safety zone all along the boundary barrier has been identified to be utilized for Greenbelt development. Appropriate native species of Neem, Pongamia Pinnata, Casuarina, etc., trees will be planted in a phased manner as described below.

TABLE-12

Year	No. of trees proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
I	55	80%	510	Neem, Pongamia Pinnata, Casuarina, etc.,	44
II	55	80%	510		44
III	55	80%	510		44
IV	55	80%	510		44
V	55	80%	510		44

Nearly 2,550sq.m area is proposed to use under Greenbelt by planting 55 Number of tree saplings during every year with an anticipated survival rate of 80% (Please refer Plate No. III). The estimated budget for plantation and maintenance of Greenbelt development would be around **Rs.27,500/-** for the period of five years.

The Greenbelt Development will be formed in around the quarried out top benches and panchayat road of the lease applied area. The cost would be around **Rs.45,000/-**.

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

Budget Provision for the entire quarrying period:

TABLE-13

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

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

i)	Land cost	The Land value as per the Government Guideline land cost is about, Rs.2,49,000/ha, hence the total land cost is calculated about 2.33.5ha X Rs.2,49,000/- = Rs.5,81,415/- (source : https://tnreginet.gov.in/portal/)	= Rs.5,81,400/-
ii)	Machinery to be used	The following machineries are proposed to meet out the productions. Excavator attached with rock breaker Tippers, Tractor mounted compressor with Hand jack hammer and loose tools (Rental Basis)	= Rs.15,00,000/-
iii)	Refilling/ Fencing	Fencing will be constructed around the quarry pit to prevent the inadvertent entry of public and cattles cost would be around	= Rs.2,87,700/-
iv)	Labourers shed	Labour sheds will be constructed as semi permanent structure. The cost would be around	= Rs.1,00,000/-
v)	Sanitary facility	Adequate latrine and urinal accommodation shall be provided at conveniently accessible places the cost would be around	= Rs.50,000/-
vi)	Others items	First aid room & accessories	= Rs.40,000/-



vii) Drinking water facility for the labourers	Packaged drinking water will be provided for all the Labours. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around	= Rs.85,000/-
viii) Sanitary arrangement	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around	= Rs.50,000/-
ix) Safety kit	All the Safety kit such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided to the workers by the applicant own cost which would be around	= Rs.50,000/-
x) Water sprinkling	Water will be sprinkled in the haul roads by water sprinklers the cost would be around	= Rs.85,000/-
xi) Garland drains Construction	Construction of garland drains to divert surface runoff from virgin area away from mining area	= Rs.1,81,200/-
xii) Greenbelt etc.	Greenbelt program will be carried out in the boundary barriers the cost would be around	= Rs.27,500/-
	Greenbelt program will be carried out in the quarried out benches and Panchayat roads	= Rs.45,000/-
	Total Project Cost	= Rs.30,82,800/-
<p>B. EMP Cost :- (Per year)</p> <p>Air Quality monitoring = Rs. 52,000/-</p> <p>Water Quality Sampling = Rs. 18,000/-</p> <p>Noise Monitoring = Rs. 2,000/-</p> <p>Ground vibration test = Rs. 4,000/-</p> <p>Total Cost = Rs. 76,000/-</p> <p>Total EMP Cost for the five years period is Rs. 3,80,000/-</p> <p>A+B =</p> <p>A. Project cost = Rs.30,82,800/-</p> <p>B. EMP Cost = Rs. 3,80,000/-</p> <p>Total Project Cost (A+B) = Rs.34,62,800/-</p>		

le. S. S. S. S. S.



The applicant Indents to involve corporate environment responsibilities (CER) activity like

1. Developing the Garden Maintenance in Valudavur Govt. School.
2. If we are instructed by PWD/ Competent bodies to desilt the water bodies nearby. I assure to spend out CER Cost for desilting/ strengthening the bunds of the nearby water bodies at 2.0% from the total project cost the cost would be around **Rs.69,200/-**

Total Project cost = Rs.34,62,800/-

CER Cost (2.0%) = Rs. 69,200/-

Total cost = Rs.35,32,000/-

(The Total cost of the project including EMP Cost is Rupees thirty five lakhs and thirty two thousand only).



11.0 PROGRESSIVE QUARRY CLOSURE PLAN

11.1 Introduction:

The Progressive Quarry Closure Plan for Roughstone and Earth quarry over an extent of 2.33.5ha of Patta Lands in S.F.No's.29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State has been prepared for **Thiru.K.Gnanasekaran**, S/o. Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State – 605 109.

11.2 Present Land use pattern:

LAND USE TABLE-14

Description	Present area in (ha)
Area under Quarrying	0.13.2
Infrastructure	Nil
Roads	0.01.0
Green Belt	Nil
Unutilized Area	2.19.3
Grand Total	2.33.5

11.3 Method of Mining:

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

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

11.4 Mineral Processing Operations:

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

11.5 Reasons for closure:

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

**11.6 Statutory obligations:**

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

11.7 Progressive quarry closure plan preparation:

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

Name : **A.Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,**
Recognized Qualified Person

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

Tele Fax : 0427- 2431989 (Office)

Cell No : 94433 56539

Registration No : RQP/MAS/019/87/A

Valid up to : 17.11.2021

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

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

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

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

At the end of mining plan period, about 1.03.5ha of area will be mined out. Land use at various stages is given in the table below.

LAND USE TABLE-15

Description	Present area in (ha)	Area at the end of this quarrying period (ha)
Area under Quarrying	0.13.2	1.03.5
Infrastructure	Nil	0.01.0
Roads	0.01.0	0.02.0
Green Belt	Nil	0.25.5
Unutilized Area	2.19.3	1.01.5
Grand Total	2.33.5	2.33.5



The Greenbelt Development will be formed in around the quarried out top benches and panchayat road of the lease applied area.

(ii) Water quality management:

Following control measures will be adopted for controlling water pollution:

- Construction of garland drains to divert surface run-off from virgin area away from mining area.
- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Collection of surface run-off from broken up area in mine pits for settling and only properly settled excess water from mine pit will be discharged to nearby users. The storm water/ mine water will be used for dust suppression, greenbelt development, etc.
- Periodic analysis of mine pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in QL is discharged in septic tank followed by soak pits.

(iii) Air Quality Management:

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

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

(iv) Top Soil and Waste Management:

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

(v) Disposal of mining machinery:

Part of the Machineries will be purchased by fresh condition also part of machineries has been utilized on rental basis. After completion of quarry operation all purchased machineries will be utilized another quarry area or sold out to the second hand. Hence, disposal or decommissioning of mining machinery does not arise.

**(vi) Safety & Security:**

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

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

(vii) Disaster Management and Risk Assessment:

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

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

V. Srinivasan



- Competent persons will be provided FIRST AID kits which they will always carry.
- The Greenbelt Development will be formed in around the quarried out top benches and panchayat road of the lease applied area.

(viii) Care and Maintenance during Temporary Discontinuance:

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

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

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

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

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

(x) Time Scheduling For Abandonment:

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

(xi) Abandonment Cost:

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

LAND USE TABLE-16

ACTIVITY	YEAR					RATE	AMOUNT (INR)
	I	II	III	IV	V		
Plantation (In Nos.)	55	55	55	55	55	@100 Rs	Rs.27,500/-
Plantation & Maintenance Cost	5500	5500	5500	5500	5500	Per sapling Including Maintenance	
Wire Fencing (In Mtrs) 959 Mtrs	287700					@300 Rs Per Meter	Rs.2,87,700/-
Garland Drain with check (In Mtrs) 604 Mtrs	181200					@300 Rs Per Meter	Rs.1,81,200/-
Cost for Plantation in worked out benches & Panchayat Roads	-	-	-	-	45000	@100 Rs Per sapling Including Maintenance	Rs.45,000/-
TOTAL							Rs.5,41,400/-



12.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

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

Prepared by

A. Jagannathan, B.E., F.C.C., M.M.E.A., M.I.E.,

RQP/MAS/019/87/A

Recognized Qualified Person

Place: Salem

Date: .

This mining plan is approved based on the instructions & guidelines issued by the Commissioner of Geology and Mines Chennai vide letter Rc. No:3868/LC/2012 Dated: 19.11.12 and based on Incorporation of the conditions laid by the District Collector, Villupuram in Precise area communication letter. Rc.No: A/G & M/277/2018 Dated 13.11.2019
Dated: 26.12.19
Assistant Director Geology
Villupuram

26/12/2019

26/12/19

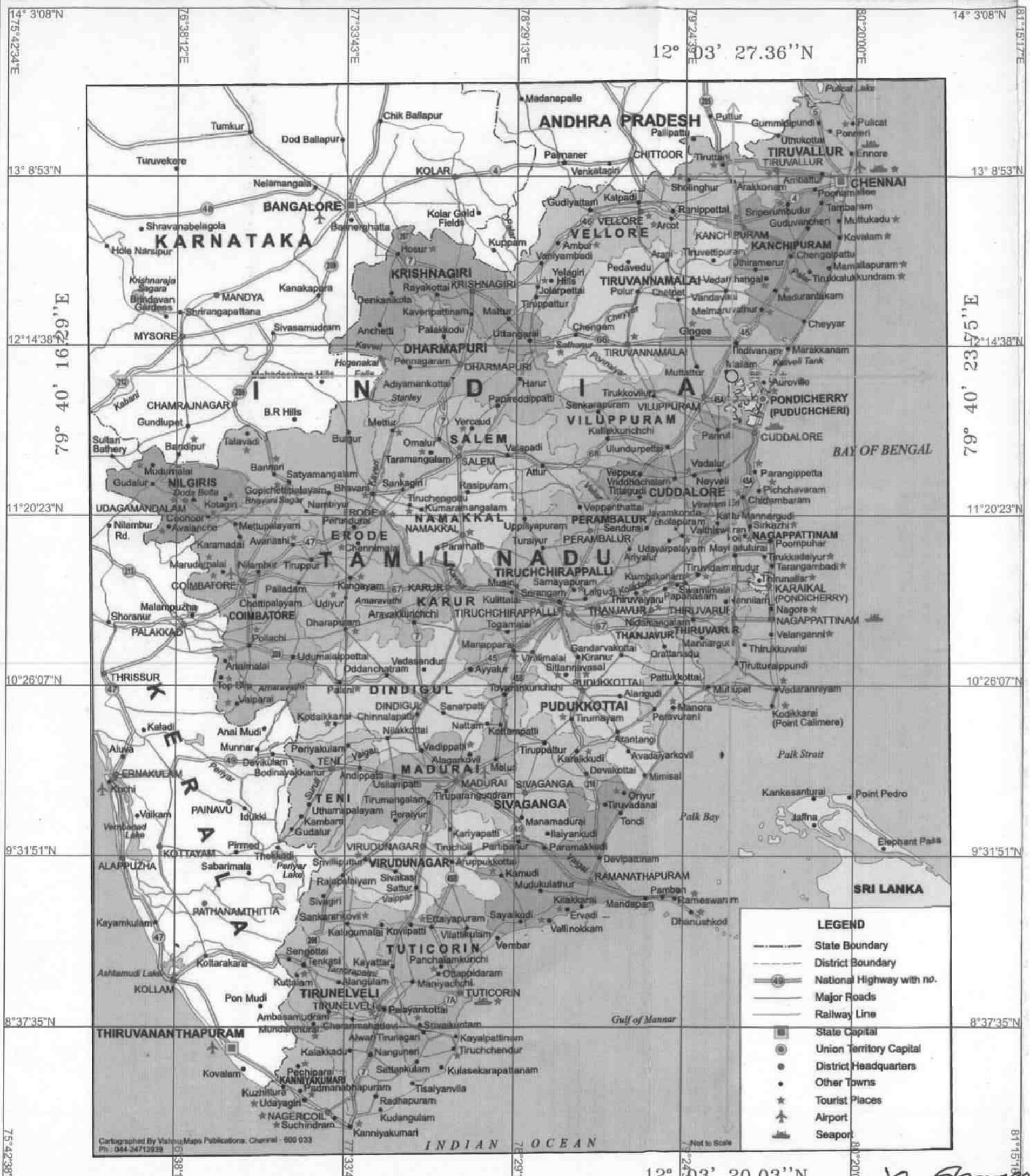


PLATE NO: I

DATE OF SURVEY : 19.12.2019

APPLICANT:

THIRU.K.GNANASEKARAN,
S/O.KANNADI GOUNDER,
KARASANUR VILLAGE,
VANUR TALUK,
VILUPPURAM DISTRICT-605 109.

**LOCATION OF QUARRY
LEASE APPLIED AREA:**

S.F.NO.S : 29/2,3,30/4,9,12 & 13,
EXTENT : 2.33.5 Ha.
VILLAGE : THOLLAMUR,
TALUK : VANUR,
DISTRICT : VILUPPURAM,
STATE : TAMIL NADU.

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Q. L. A. AREA :

TOPO SHEET NO. : 57 P/12

LATITUDE : 12° 03' 20.03"N to 12° 03' 27.36"N

LONGITUDE : 79° 40' 16.29"E to 79° 40' 23.75"E

LOCATION PLAN

SCALE 1 : 24,00,000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP
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BY STATE GOVERNMENT

A. JAGANNATHAN, BE., F.C.C., M.M.E.A., M.I.E.,
RECOGNIZED QUALIFIED PERSON
RQP/MAS/019/87/A

12° 03' 20.03"N

PLATE NO:I-A

DATE OF SURVEY : 19.12.2019

APPLICANT:

THIRU.K.GNANASEKARAN,
S/O.KANNADI GOUNDER,
KARASANUR VILLAGE,
VANUR TALUK,
VILUPPURAM DISTRICT-605 108



LOCATION OF QUARRY

LEASE APPLIED AREA:

S.F.NO.S : 29/2,3,30/4,9,12 & 13,
EXTENT : 2.33.5 Ha.
VILLAGE : HOLLAMUR,
TALUK : VANUR,
DISTRICT : VILUPPURAM,
STATE : TAMIL NADU.

INDEX

ROADS

- Hard surface,all weather more than two lanes wide..... 3 LANES/4 LANES
- Two lanes wide.....
- Less than two lanes wide.....
- Loose surface
- Graded,all weather.....
- Dry weather,or dirt.....
- Track;Trail.....

RAILROADS

- Normal gauge(5'.6").....
- Narrow gauge.....

BOUNDARIES

- International.....
- State.....
- Landplane airport.....
- Landing area.....
- Seaplane airport.....
- Seaplane anchorage.....
- Unclassified stream.....
- Buildings or landmark feature.....
- Mine.....
- Horizontal control point.....
- spot elevation in feet..... 792
- swamp;Orchard,vineyard.....
- Woods-brushwood.....

**TOPO SKETCH OF QUARRY
LEASE APPLIED AREA FOR
10Km RADIUS**

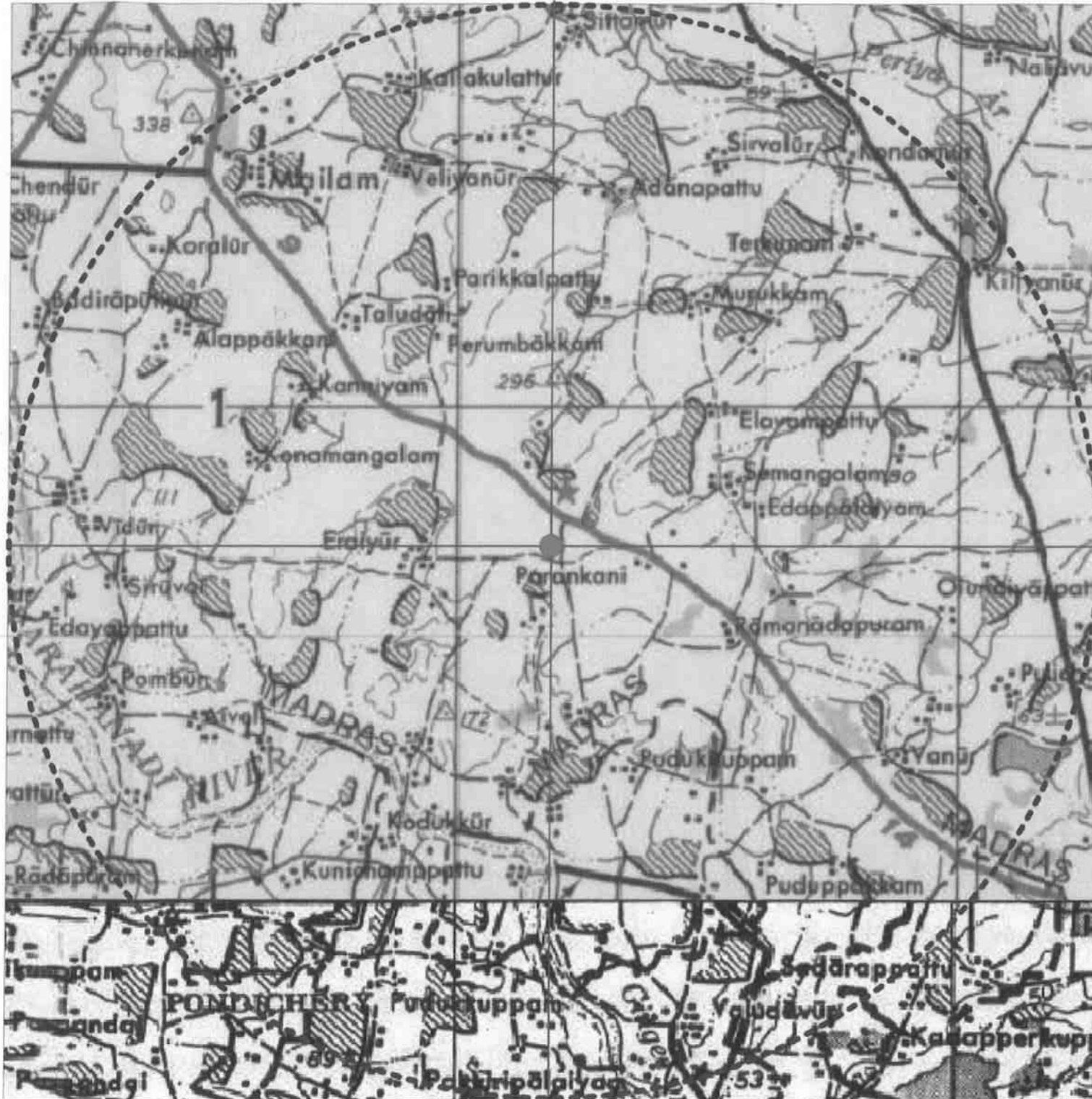
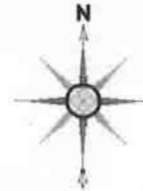
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A.JAGANNATHAN,BE.,F.C.C.,M.M.E.A.,M.I.E.,
RECOGNIZED QUALIFIED PERSON
RQP/NAS/019/87/A

12° 08' 52.83"N



79° 34' 45.61"E

79° 45' 54.44"E

11° 57' 54.56"N

TOPO SHEET NO. : 57 P/12

LATITUDE : 12° 03' 20.03"N to 12° 03' 27.36"N

LONGITUDE : 79° 40' 16.29"E to 79° 40' 23.75"E

10KM RADIUS :

Q.L.APPLIED AREA :

V. Jagannathan

OCTOBER TO DECEMBER



PLATE NO: I-B

DATE OF SURVEY : 19.12.2019

1Km Radius

500m Radius

Q.L. Applied Area

TOPO SHEET NO.: 57 P

LATITUDE : 12° 03' 20.03" N to 12° 03' 27.36" N

LONGITUDE : 79° 40' 16.29" E to 79° 40' 23.75" E



APPLICANT:

THIRU.K.GNANASEKARAN,
S/O.KANNADI GOUNDER,
KARASANUR VILLAGE,
VANUR TALUK,
VILUPPURAM DISTRICT-605 109.

LOCATION OF QUARRY

LEASE APPLIED AREA:
S.F.NO.S : 29/2,3,30/4,9,12 & 13,
EXTENT : 2.33.5 Ha.
VILLAGE : THOLLAMUR,
TALUK : VANUR,
DISTRICT : VILUPPURAM,
STATE : TAMIL NADU.

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QUARRY PIT	
BARREN LAND	
WIND DIRECTION	
LAKE	
CRUSHER PLANT	
ODAI	

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 1Km RADIUS

SCALE- 1:10,000

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(Signature)
A.JAGANNATHAN, BE., F.C.C., M.M.E.A., M.I.E.,
RECOGNIZED QUALIFIED PERSON

Towards Eraiyyur

JULY TO SEPTEMBER

Towards Eraiyyur

Towards Maillam

Towards Koot Road

Towards Koppalan Kupparam

12° 03' 59.91" N

12° 03' 43.63" N

12° 03' 03.76" N

12° 02' 47.49" N

79° 39' 43.23" E

79° 38' 59.76" E

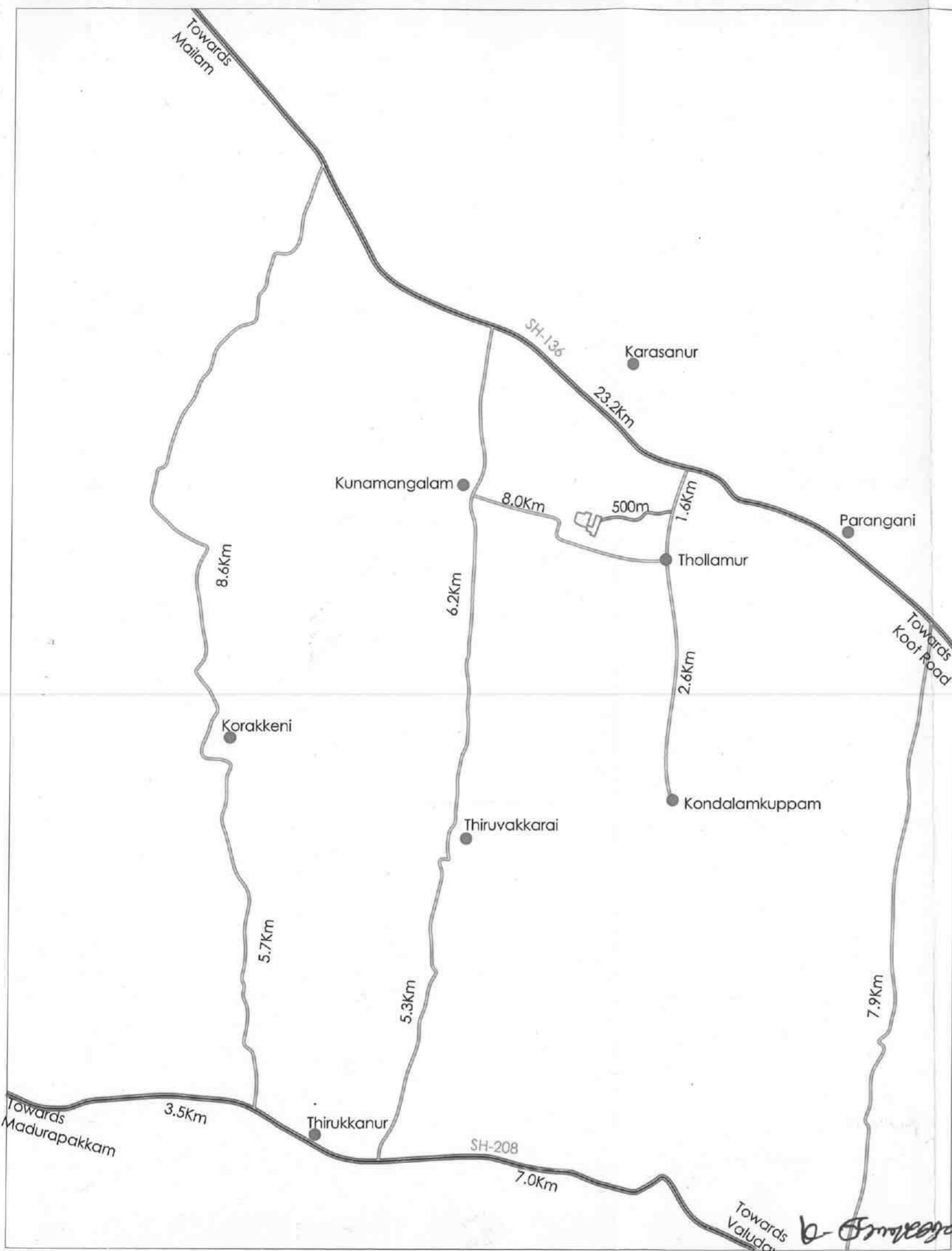
79° 40' 40.28" E

79° 40' 56.82" E

LANDUSE PATTERN

DESCRIPTION	PERCENTAGE	INDEX
ROADS	(5%)	
HABITATIONS	(3%)	
TREES /CRUSHER PLANT	(20%)	
AGRICULTURAL LAND	(40%)	
BARREN LAND	(22%)	
OLD PIT	(8%)	
LAKE	(2%)	

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DATE OF SURVEY : 19.12.2019

APPLICANT:
 THIRU.K.GNANASEKARAN,
 S/O.KANNADI GOUNDER,
 KARASANUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT-605 109.

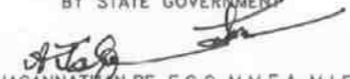
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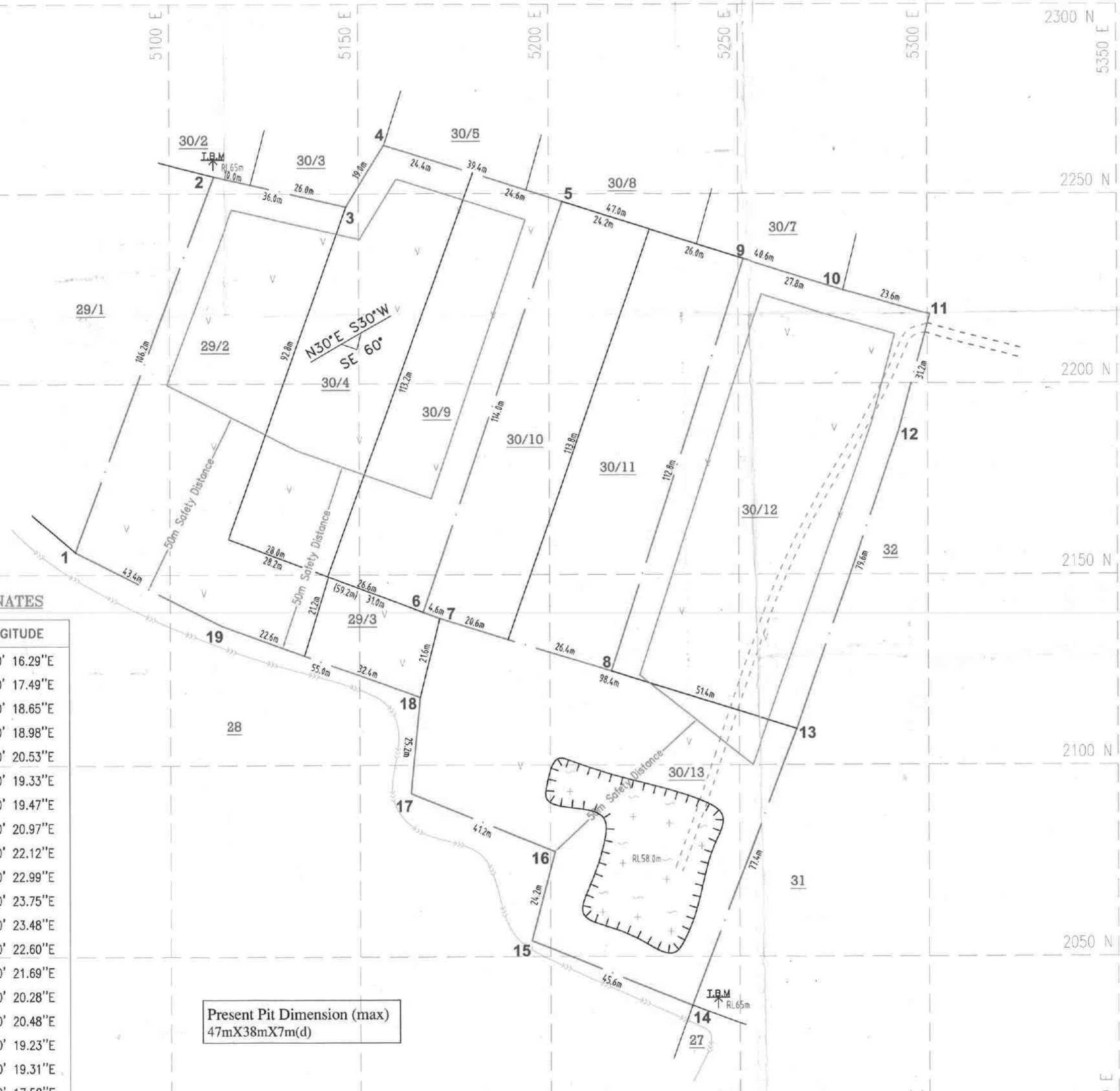
INDEX

- Q.L.APPLIED AREA 
- STATE HIGHWAY 
- PANCHAYAT ROAD 
- APPROACH ROAD 
- HABITATIONS 

ROUTE MAP

Not To Scale

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 BY STATE GOVERNMENT

 A. JAGANNATHAN, BE., F.C.C., M.M.E.A., M.I.E.,
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/019/87/A



BOUNDARY CO-ORDINATES

LATITUDE	LONGITUDE
12° 03' 23.87"N	79° 40' 16.29"E
12° 03' 27.08"N	79° 40' 17.49"E
12° 03' 26.83"N	79° 40' 18.65"E
12° 03' 27.36"N	79° 40' 18.98"E
12° 03' 26.89"N	79° 40' 20.53"E
12° 03' 23.37"N	79° 40' 19.33"E
12° 03' 23.32"N	79° 40' 19.47"E
12° 03' 22.88"N	79° 40' 20.97"E
12° 03' 26.40"N	79° 40' 22.12"E
12° 03' 26.14"N	79° 40' 22.99"E
12° 03' 25.93"N	79° 40' 23.75"E
12° 03' 24.93"N	79° 40' 23.48"E
12° 03' 22.39"N	79° 40' 22.60"E
12° 03' 20.03"N	79° 40' 21.69"E
12° 03' 20.58"N	79° 40' 20.28"E
12° 03' 21.34"N	79° 40' 20.48"E
12° 03' 21.83"N	79° 40' 19.23"E
12° 03' 22.65"N	79° 40' 19.31"E
12° 03' 23.25"N	79° 40' 17.58"E

Present Pit Dimension (max)
47mX38mX7m(d)

PLATE NO-II

DATE OF SURVEY : 19.12.2019

APPLICANT:
THIRU.K.GNANASEKARAN,
S/O.KANNADI GOUNDER,
KARASANUR VILLAGE,
VANUR TALUK,
VILUPPURAM DISTRICT-605 109.

LOCATION OF QUARRY
LEASE APPLIED AREA:
S.F.NO.S : 29/2,3,30/4,9,12 & 13.
EXTENT : 2.33.5 Ha.
VILLAGE : THOLLAMUR,
TALUK : VANUR,
DISTRICT : VILUPPURAM,
STATE : TAMIL NADU.

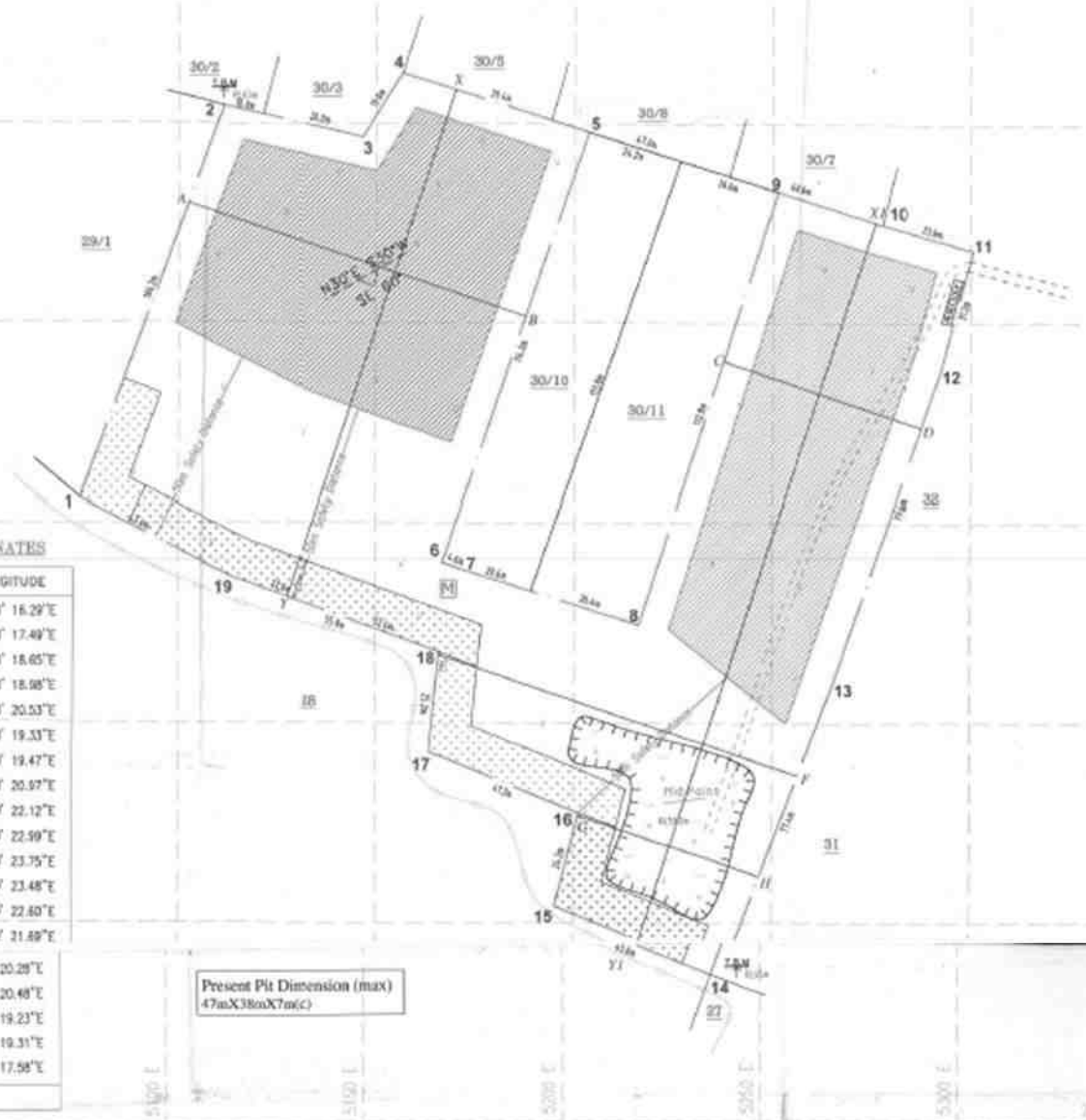
INDEX

- Q.L. APPLIED AREA BOUNDARY
- 7.5m,10m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- ODAI
- EARTH
- STRIKE AND DIP
- QUARRY PIT
- QUARRY ROAD
- ROUGH STONE

QUARRY LEASE & SURFACE PLAN

SCALE 1 : 1000

PREPARED BY :
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP
AUTHENTICATED
BY STATE GOVERNMENT



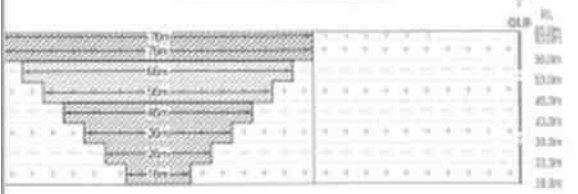
BOUNDARY CO-ORDINATES

LATITUDE	LONGITUDE
12° 03' 23.87"N	79° 40' 18.29"E
12° 03' 27.08"N	79° 40' 17.49"E
12° 03' 26.83"N	79° 40' 18.65"E
12° 03' 27.36"N	79° 40' 18.98"E
12° 03' 26.89"N	79° 40' 20.53"E
12° 03' 23.37"N	79° 40' 19.33"E
12° 03' 23.32"N	79° 40' 19.47"E
12° 03' 22.88"N	79° 40' 20.97"E
12° 03' 26.40"N	79° 40' 22.12"E
12° 03' 26.14"N	79° 40' 22.99"E
12° 03' 25.63"N	79° 40' 23.75"E
12° 03' 24.93"N	79° 40' 23.48"E
12° 03' 23.59"N	79° 40' 22.80"E
12° 03' 20.03"N	79° 40' 21.69"E
03° 20.58"N	79° 40' 20.28"E
03° 21.34"N	79° 40' 20.48"E
03° 21.83"N	79° 40' 19.23"E
03° 22.65"N	79° 40' 19.31"E
03° 23.25"N	79° 40' 17.58"E

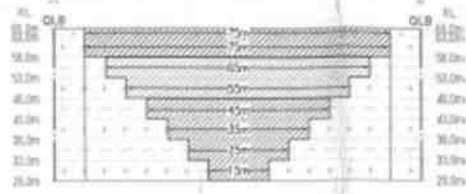
DATUM WGS-84

Present Pit Dimension (max)
47mX38mX7m(c)

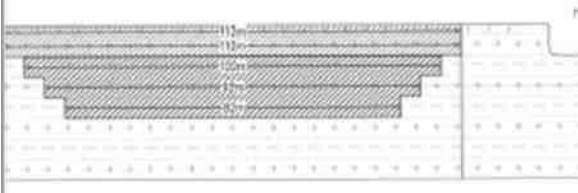
SECTION ALONG X-Y



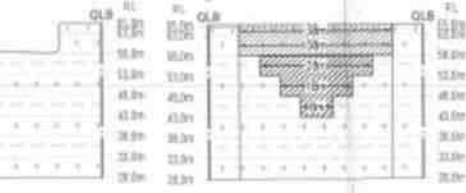
SECTION ALONG A-B



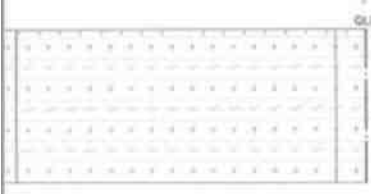
SECTION ALONG X1-Y1



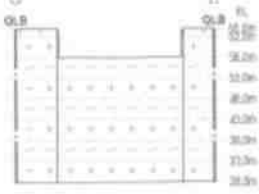
SECTION ALONG C-D



SECTION ALONG E-F



SECTION ALONG G-H



PRESENT & POST LAND USE PATTERN		
DESCRIPTION	PRESENT AREA (Ha)	AREA AT THE END OF THIS QUARRYING PERIOD (Ha)
AREA UNDER COVERING	0.13.2	1.03.5
INFRASTRUCTURE	Nil	0.01.8
ROADS	0.01.0	0.02.0
GREEN BELT	Nil	0.25.5
UN-UTILIZED AREA	2.19.3	1.01.5
GRAND TOTAL	2.33.5	2.33.5

SITE SERVICES

- A-OFFICE
- B-FIRST AID ROOM
- C-STORE
- D-REST SHED
- E-TOILET
- M-MAGAZINE(Proposed)

EXCAVATION

- I Yr EXCAVATION
- II Yr EXCAVATION
- III Yr EXCAVATION
- IV Yr EXCAVATION
- V Yr EXCAVATION

PLANTATION

- I Yr PLANTATION
- II Yr PLANTATION
- III Yr PLANTATION
- IV Yr PLANTATION
- V Yr PLANTATION

PLATE NO-III
DATE OF SURVEY : 19.12.2019

APPLICANT:
THIRU.K.GNANASEKARAN,
S/O.KANNADI GOUNDER,
KARANUR VILLAGE,
VANUR TALUK,
VELUPURAM DISTRICT-605 109.

LOCATION OF QUARRY LEASE APPLIED AREA:
S.F.NO.S : 29/2,3,30/4,9,12 & 13.
EXTENT : 2.33.5 Ha.
VILLAGE : THOLLAMUR,
TALUK : VANUR,
DISTRICT : VELUPURAM,
STATE : TAMIL NADU.

INDEX

- Q.L. APPLIED AREA BOUNDARY
- 7.5m,50m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- ODAI
- EARTH
- STRIKE AND DIP
- ROUGH STONE
- QUARRY ROAD
- QUARRY PIT

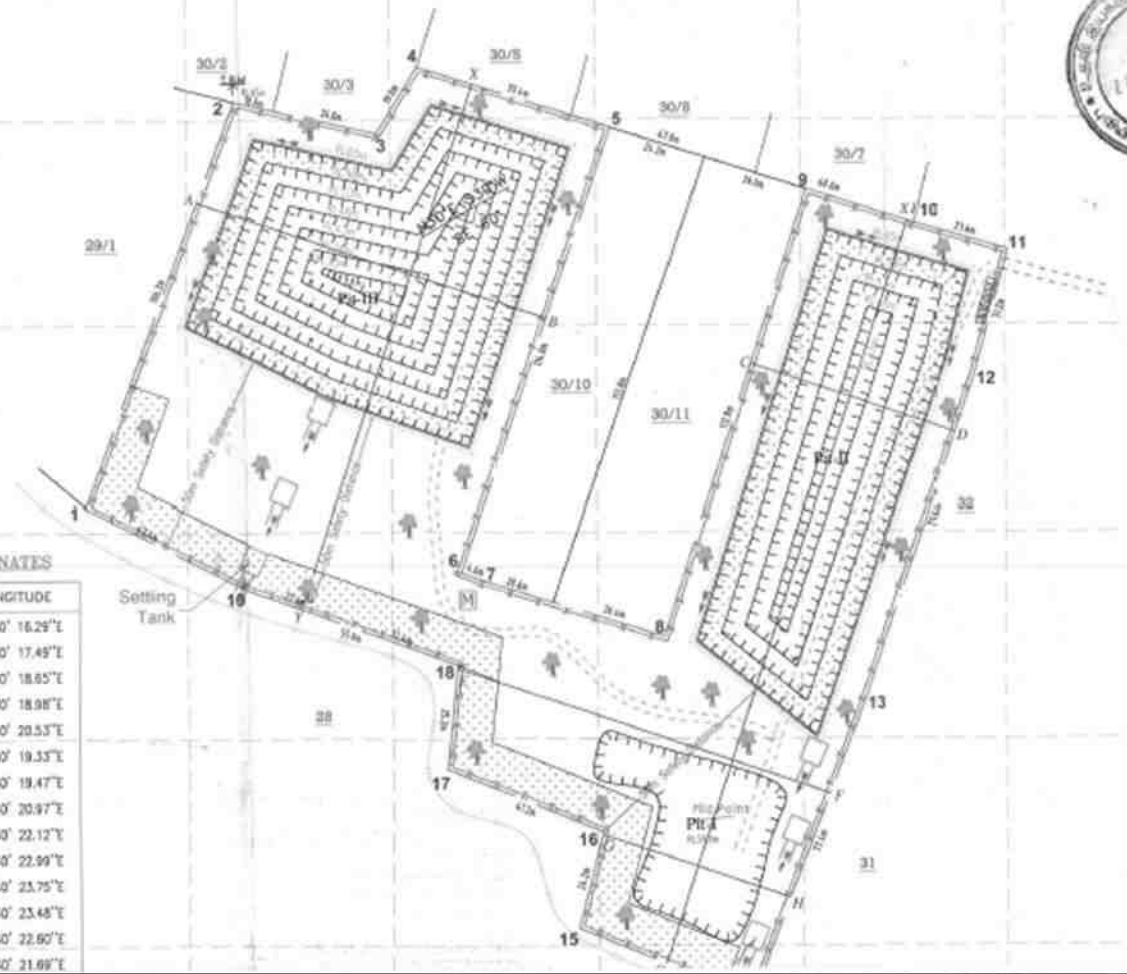
TOPOGRAPHY, GEOLOGICAL & YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS
SCALE 1 : 1000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLAN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASER'S AUTHENTICATES BY STATE GOVERNMENT

B. Chinnappa

B. CHINNAPPA, F.C.C., M.W.E.A., M.E.,
REGONIZED SURVEYOR
607/MAS/19/87/A



BOUNDARY CO-ORDINATES

LATITUDE	LONGITUDE
12° 03' 23.87"N	79° 40' 16.29"E
12° 03' 27.08"N	79° 40' 17.49"E
12° 03' 28.83"N	79° 40' 18.85"E
12° 03' 27.36"N	79° 40' 18.98"E
12° 03' 26.89"N	79° 40' 20.53"E
12° 03' 23.37"N	79° 40' 19.33"E
12° 03' 23.32"N	79° 40' 19.47"E
12° 03' 22.85"N	79° 40' 20.97"E
12° 03' 26.40"N	79° 40' 22.12"E
12° 03' 26.14"N	79° 40' 22.99"E
12° 03' 25.93"N	79° 40' 23.75"E
12° 03' 24.93"N	79° 40' 23.48"E
12° 03' 22.39"N	79° 40' 22.60"E
12° 03' 20.03"N	79° 40' 21.69"E

12° 03' 20.56"N	79° 40' 20.28"E
12° 03' 21.34"N	79° 40' 20.48"E
12° 03' 21.83"N	79° 40' 19.23"E
12° 03' 22.65"N	79° 40' 19.31"E
12° 03' 23.25"N	79° 40' 17.58"E

DATUM WGS-84

Proposed Pit Dimension (m)(max)
 PIT-4 47mX33mX7m(d)
 PIT-8 112mX38mX2.2m(d)
 PIT-10 76mX35mX3.7m(d)

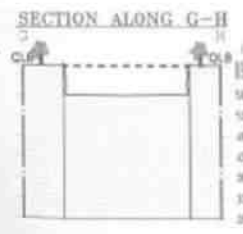
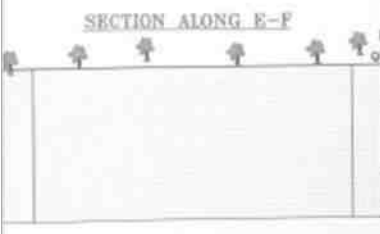
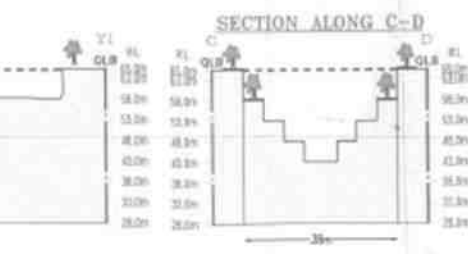
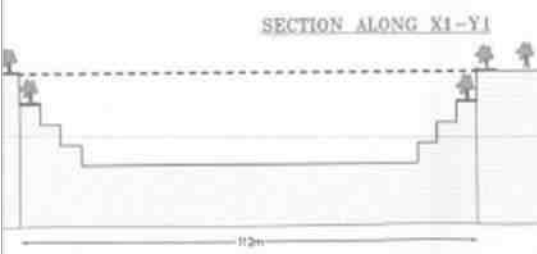
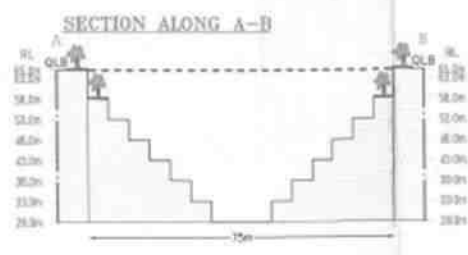
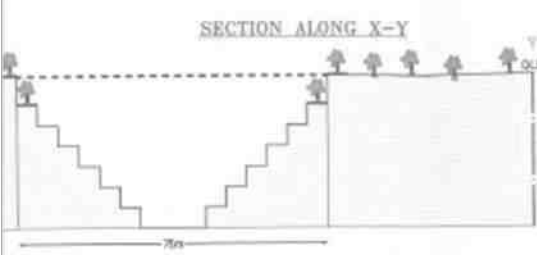
PLATE NO-IV
 DATE OF SURVEY : 19.12.2019
APPLICANT:
 THIRU.K.GNANASEKARAN,
 S/O.KANNADI GOUNDER,
 KARASANUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT-605 109.

LOCATION OF QUARRY
LEASE APPLIED AREA:
 S.F.NO.S : 29/2,3,30/4,9,12 & 13.
 EXTENT : 2.33.5 Ha.
 VILLAGE : THOLLAMUR,
 TALUK : VANUR,
 DISTRICT : VILUPPURAM,
 STATE : TAMIL NADU.

INDEX

- Q.L. APPLIED AREA BOUNDARY
- 7.5m.50m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- ODAI
- EARTH
- STRIKE AND DIP
- ROUGH STONE
- EXISTING LANDFORM
- OLD SURFACE LEVEL
- FINISHED SURFACE LEVEL
- TREES
- SOIL LAYER
- REHABILITATED LANDFORM
- FENCING
- PROPOSED GARLAND DRAIN

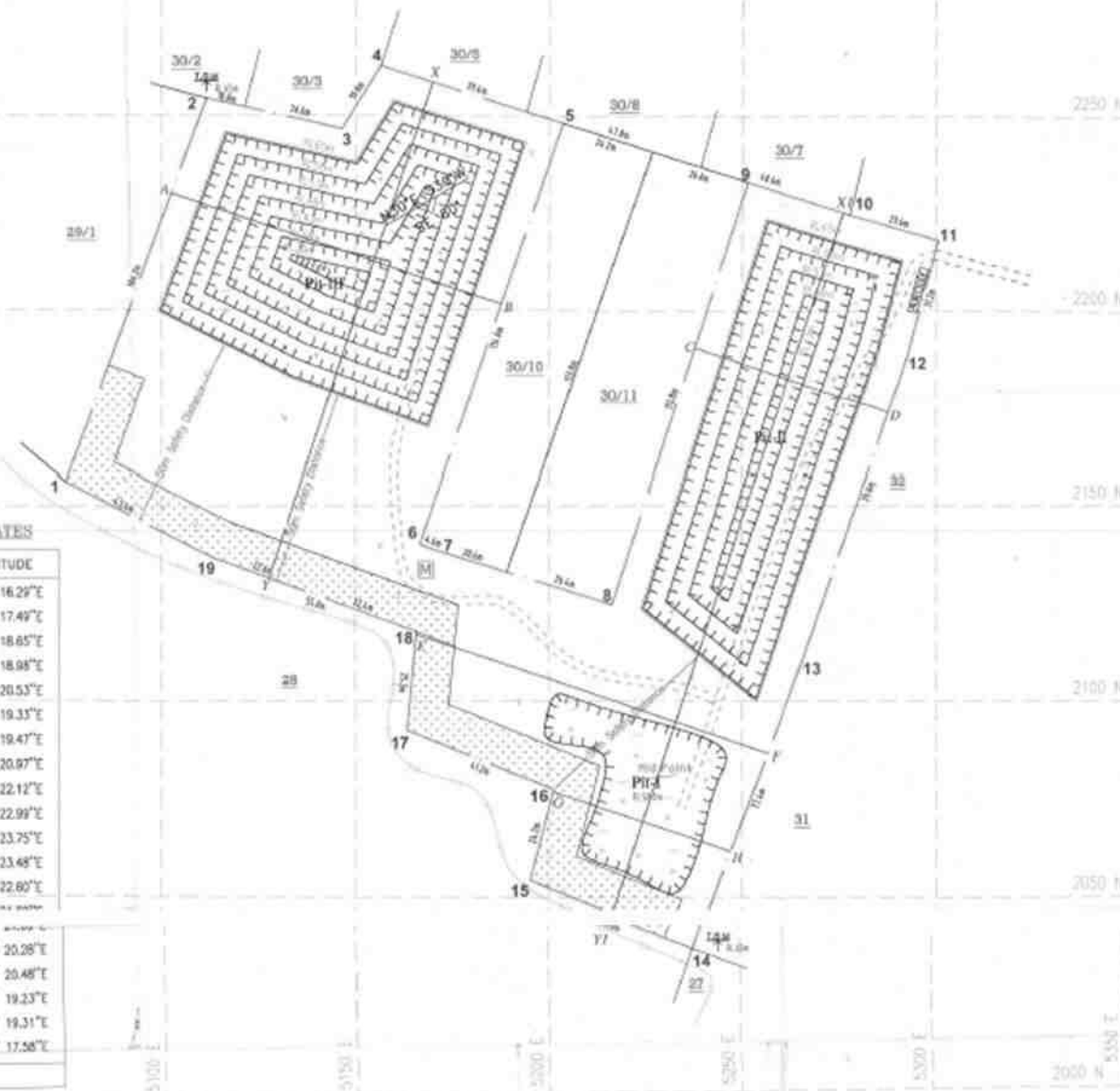
SITE SERVICES
 A-OFFICE
 B-FIRST AID ROOM
 C-STORE
 D-REST SHED
 E-TOLLEY
 M-MAGAZINE



I-Y WY PLANTATION

B. Srinivasan

PROGRESSIVE QUARRY CLOSURE PLAN & SECTIONS
 SCALE 1 : 1000
PREPARED BY:
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEADMAP AUTHENTICATED BY STATE GOVERNMENT
 A. JAYANARAYAN, I.C.E., M.B.C.E., M.I.C.E., RECORDING SUPERVISOR
 082/2018/019/07/X

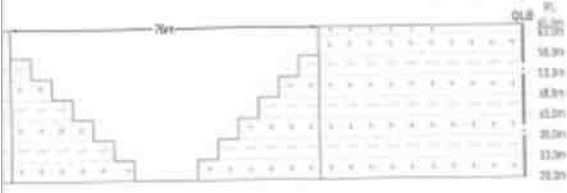


BOUNDARY CO-ORDINATES

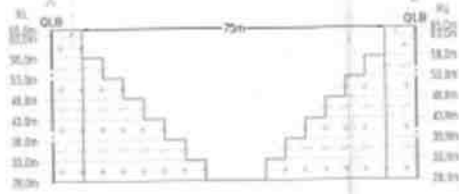
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2° 03' 27.08"N	79° 40' 17.49"E
2° 03' 26.83"N	79° 40' 18.65"E
2° 03' 27.36"N	79° 40' 18.98"E
2° 03' 26.89"N	79° 40' 20.53"E
2° 03' 23.37"N	79° 40' 19.33"E
2° 03' 23.32"N	79° 40' 19.47"E
2° 03' 22.88"N	79° 40' 20.07"E
2° 03' 26.40"N	79° 40' 22.12"E
2° 03' 26.14"N	79° 40' 22.99"E
2° 03' 25.93"N	79° 40' 23.75"E
2° 03' 24.93"N	79° 40' 23.48"E
2° 03' 22.39"N	79° 40' 22.60"E
2° 05' 20.56"N	79° 40' 20.28"E
2° 05' 21.34"N	79° 40' 20.48"E
2° 05' 21.83"N	79° 40' 19.23"E
2° 03' 22.65"N	79° 40' 19.31"E
2° 03' 23.25"N	79° 40' 17.58"E

DATUM WGS-84

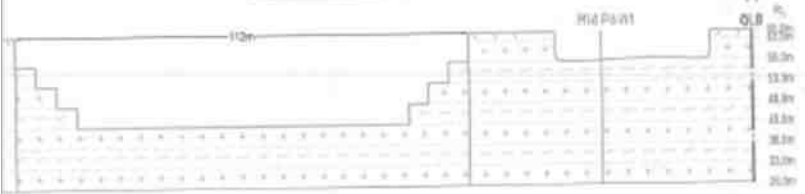
SECTION ALONG X-Y



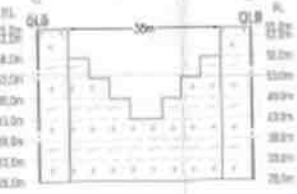
SECTION ALONG A-B



SECTION ALONG X1-Y1

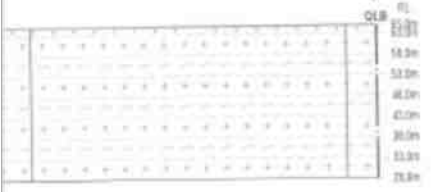


SECTION ALONG C-D

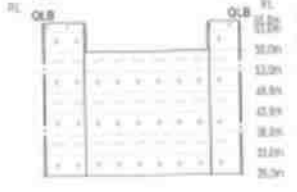


- SITE SERVICES**
- A-OFFICE
 - B-FIRST AID ROOM
 - C-STORE
 - D-REST SHED
 - E-TOILET
 - M-MAGAZINE

SECTION ALONG E-F



SECTION ALONG G-H



1-V Y PLANTATION

Ultimate Pit Dimension (max)
 PIT-I 47mX38mX7m(d)
 PIT-II 112mX38mX22m(d)
 PIT-III 76mX75mX37m(d)

PLATE NO-V
 DATE OF SURVEY : 19/12/2019

APPLICANT:
 THIRU.K.GNANASEKARAN,
 S/O.KANNADI GOUNDER,
 KARASANUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT-605 109.

LOCATION OF QUARRY
LEASE APPLIED AREA:
 S.F.NO.5 : 29/2,3,30/4,9,12 & 13.
 EXTENT : 2.33.5 Ha.
 VILLAGE : THOLLAMUR,
 TALUK : VANUR,
 DISTRICT : VILUPPURAM,
 STATE : TAMIL NADU.

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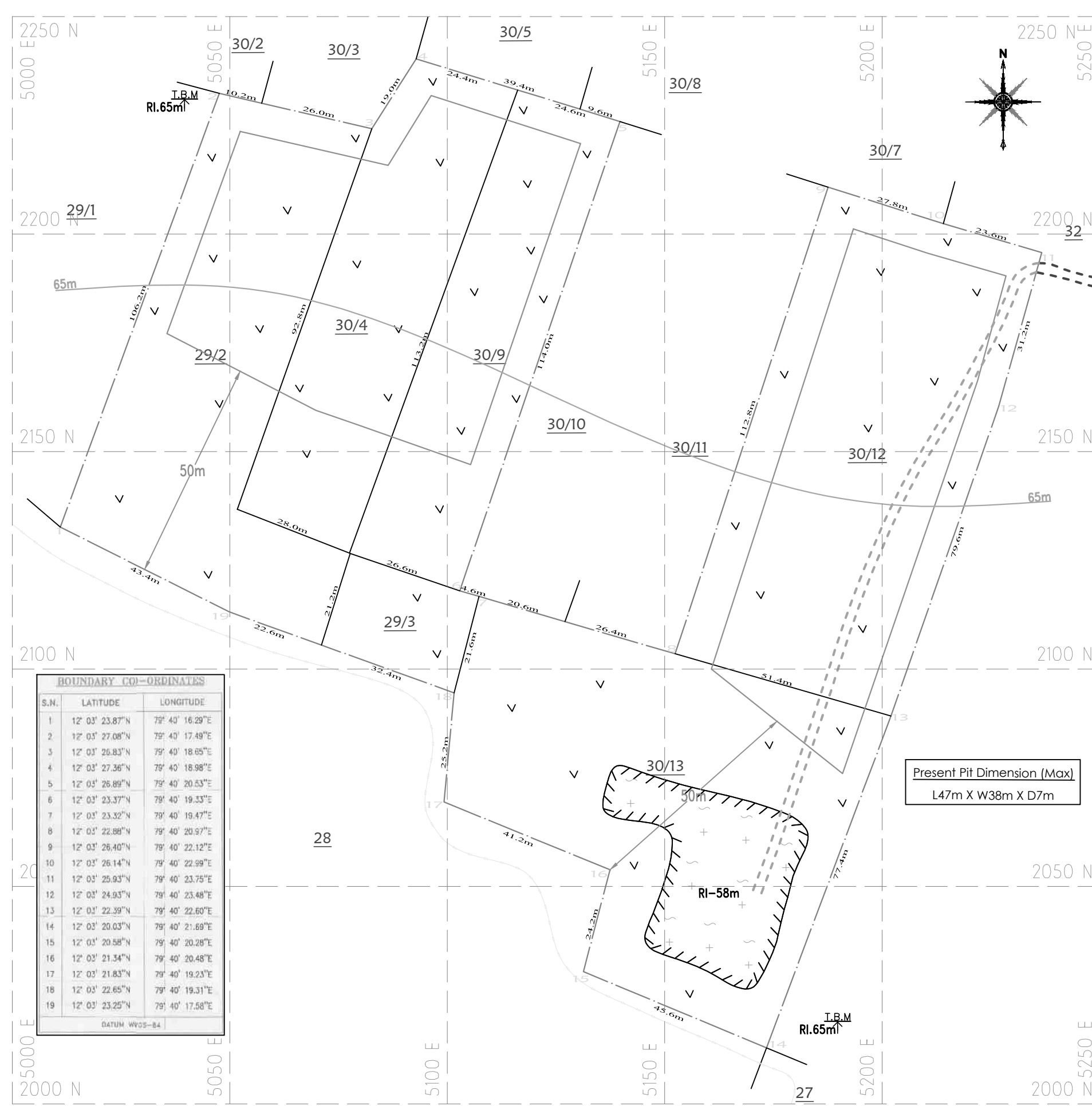
Q.L. APPLIED AREA BOUNDARY	=====
7.5m/50m SAFETY DISTANCE	=====
TEMPORARY BENCH MARK	TM
APPROACH ROAD	-----
ODA	~~~~~
EARTH	
STRIKE AND DIP	↘
ROUGH STONE	-----
QUARRY PIT	
QUARRY ROAD	-----

CONCEPTUAL PLAN & SECTIONS
 SCALE 1 : 1000

PREPARED BY:
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
 PLAN IS TRUE AND CORRECT TO THE
 BEST OF MY KNOWLEDGE BASED UPON THE LEASER'S
 AUTHENTICATION
 BY STATE GOVERNMENT
 S. JAYARAJAN, P.C.C. M.A.E.A. M.S.E.
 REGISTERED QUALIFIED PERSON
 NO. 146/2018/2019

B. Srinivasan

REVISED PLATES



BOUNDARY CO-ORDINATES		
S.N.	LATITUDE	LONGITUDE
1	12° 03' 23.87"N	79° 40' 16.29"E
2	12° 03' 27.08"N	79° 40' 17.49"E
3	12° 03' 26.83"N	79° 40' 18.65"E
4	12° 03' 27.36"N	79° 40' 18.96"E
5	12° 03' 26.89"N	79° 40' 20.53"E
6	12° 03' 23.37"N	79° 40' 19.33"E
7	12° 03' 23.32"N	79° 40' 19.47"E
8	12° 03' 22.88"N	79° 40' 20.97"E
9	12° 03' 26.40"N	79° 40' 22.12"E
10	12° 03' 26.14"N	79° 40' 22.99"E
11	12° 03' 25.93"N	79° 40' 23.75"E
12	12° 03' 24.93"N	79° 40' 23.48"E
13	12° 03' 22.39"N	79° 40' 22.60"E
14	12° 03' 20.03"N	79° 40' 21.68"E
15	12° 03' 20.58"N	79° 40' 20.28"E
16	12° 03' 21.34"N	79° 40' 20.48"E
17	12° 03' 21.83"N	79° 40' 19.23"E
18	12° 03' 22.65"N	79° 40' 19.31"E
19	12° 03' 23.25"N	79° 40' 17.58"E

DATUM: WGS-84

PLATE NO-II

DATE OF SURVEY : 19.12.2019

APPLICANT:

THIRU.K.GNANASEKARAN,
S/O.KANNADI GOUNDER,
KARASANUR VILLAGE,
VANUR TALUK,
VILUPPURAM DISTRICT-605 109.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13,
EXTENT : 2.33.5 Ha,
VILLAGE : THOLLAMUR,
TALUK : VANUR,
DISTRICT : VILUPPURAM,
STATE : TAMIL NADU.

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- Q.L. APPLIED BOUNDARY
- 7.5m & 50m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- QUARRY ROAD
- APPROACH ROAD
- ODAI
- CONTOUR
- QUARRY PIT
- EARTH
- ROUGH STONE

QUARRY LEASE & SURFACE PLAN

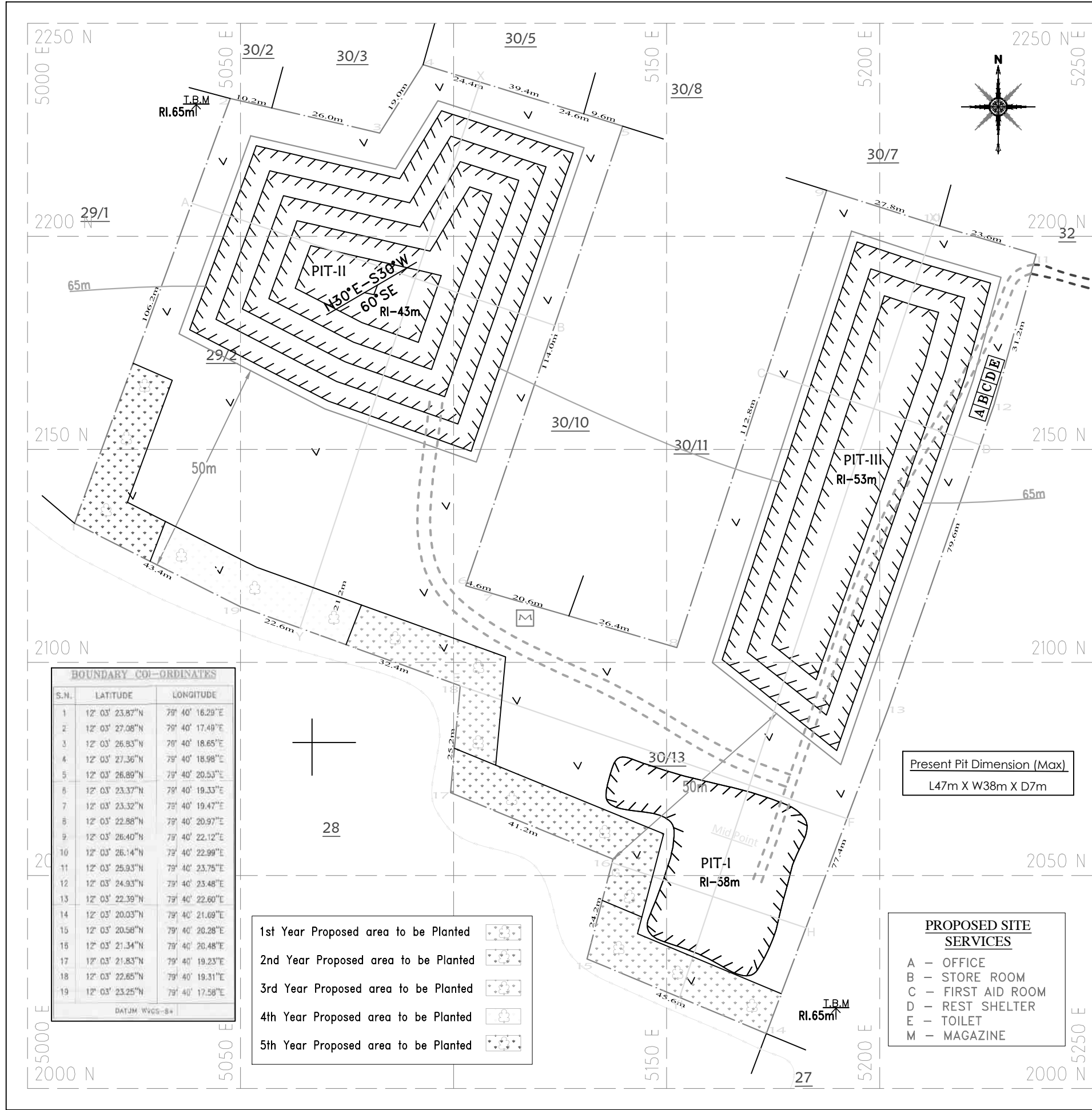
SCALE 1 : 1000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP AUTHENTICATED BY STATE GOVERNMENT

A.JAGANNATHAN, BE., F.C.C., M.M.E.A., M.I.E.,
RECOGNIZED QUALIFIED PERSON
RQP/MAS/019/87/A

Present Pit Dimension (Max)
L47m X W38m X D7m



BOUNDARY CO-ORDINATES

S.N.	LATITUDE	LONGITUDE
1	12° 03' 23.87"N	79° 40' 16.29"E
2	12° 03' 27.06"N	79° 40' 17.48"E
3	12° 03' 26.93"N	79° 40' 18.65"E
4	12° 03' 27.36"N	79° 40' 18.98"E
5	12° 03' 26.89"N	79° 40' 20.53"E
6	12° 03' 23.37"N	79° 40' 19.33"E
7	12° 03' 23.32"N	79° 40' 19.47"E
8	12° 03' 22.88"N	79° 40' 20.97"E
9	12° 03' 26.40"N	79° 40' 22.12"E
10	12° 03' 26.14"N	79° 40' 22.99"E
11	12° 03' 25.93"N	79° 40' 23.75"E
12	12° 03' 24.93"N	79° 40' 23.48"E
13	12° 03' 22.39"N	79° 40' 22.60"E
14	12° 03' 20.03"N	79° 40' 21.69"E
15	12° 03' 20.58"N	79° 40' 20.28"E
16	12° 03' 21.34"N	79° 40' 20.48"E
17	12° 03' 21.83"N	79° 40' 19.23"E
18	12° 03' 22.85"N	79° 40' 19.31"E
19	12° 03' 23.25"N	79° 40' 17.58"E

DATUM WGS-84

- 1st Year Proposed area to be Planted
- 2nd Year Proposed area to be Planted
- 3rd Year Proposed area to be Planted
- 4th Year Proposed area to be Planted
- 5th Year Proposed area to be Planted

Present Pit Dimension (Max)
L47m X W38m X D7m

- PROPOSED SITE SERVICES**
- A - OFFICE
 - B - STORE ROOM
 - C - FIRST AID ROOM
 - D - REST SHELTER
 - E - TOILET
 - M - MAGAZINE

PLATE NO-IV
DATE OF SURVEY :19.12.2019

APPLICANT:
THIRU.K.GNANASEKARAN,
S/O.KANNADI GOUNDER,
KARASANUR VILLAGE,
VANUR TALUK,
VILUPPURAM DISTRICT-605 109.

QUARRY LEASE APPLIED AREA:
S.F.NOS : 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13,
EXTENT : 2.33.5 Ha,
VILLAGE : THOLLAMUR,
TALUK : VANUR,
DISTRICT : VILUPPURAM,
STATE : TAMIL NADU.

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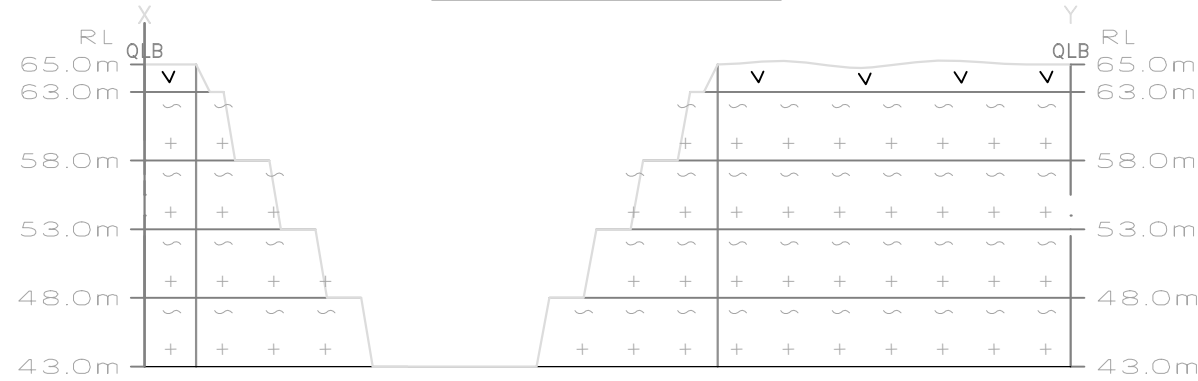
Q.L. APPLIED BOUNDARY	
7.5m & 50m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
QUARRY ROAD	
APPROACH ROAD	
ODAI	
CONTOUR	
PROPOSED QUARRY PIT	
EARTH	

CONCEPTUAL PLAN
SCALE 1 : 1000

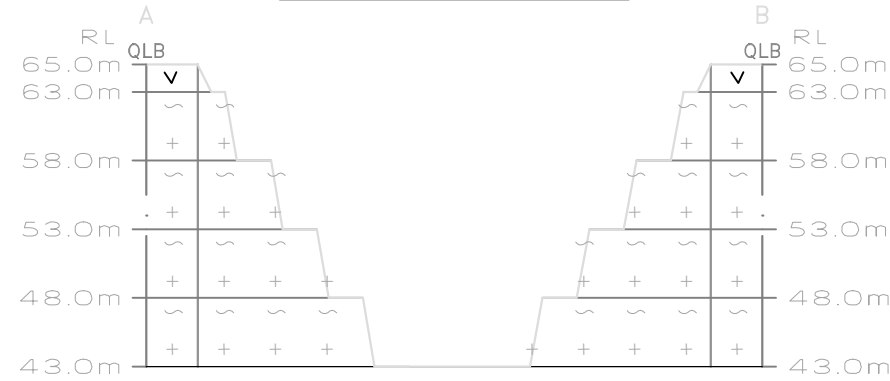
PREPARED BY :
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP AUTHENTICATED BY STATE GOVERNMENT

A.JAGANNATHAN,BE.,F.C.C.,M.M.E.A.,M.I.E.,
RECOGNIZED QUALIFIED PERSON
RQP/MAS/019/87/A

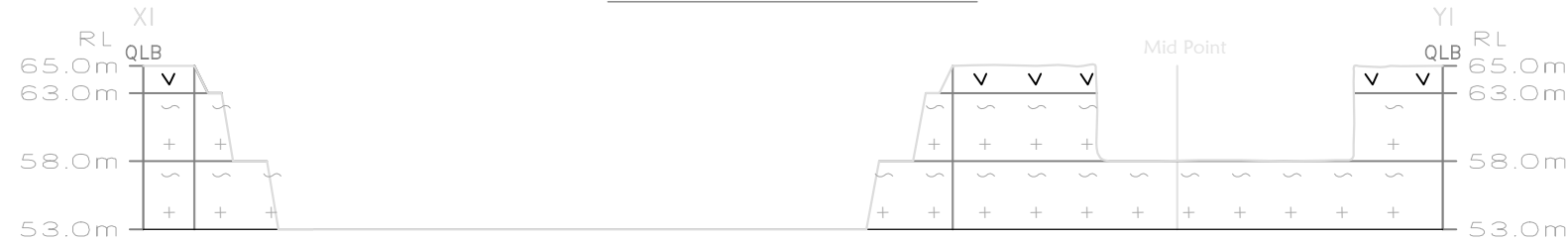
SECTION ALONG X-Y



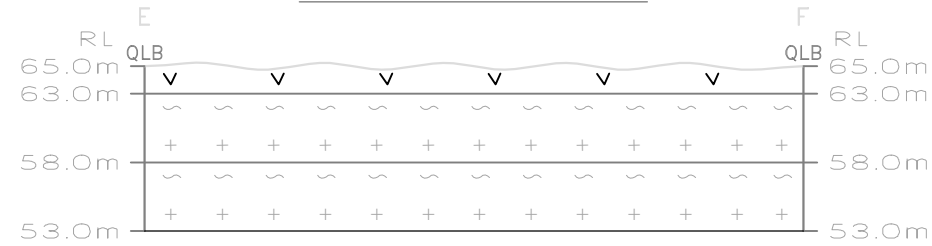
SECTION ALONG A-B



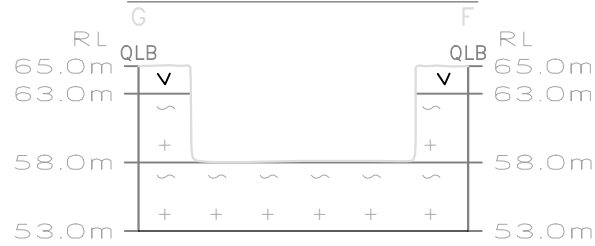
SECTION ALONG XI-YI



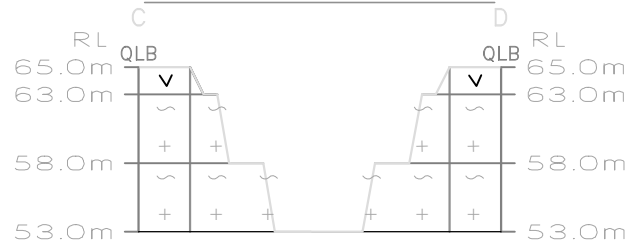
SECTION ALONG E-F



SECTION ALONG G-F



SECTION ALONG C-D



Ultimate Pit Dimension
 PIT-I L47m(Max) X W38m(Avg) X D7m
 PIT-II L112m(Max) X W38m(Avg) X D22m
 PIT-III L76m(Max) X W75m(Avg) X D12m

PLATE NO-IV-A

DATE OF SURVEY : 19.12.2019

APPLICANT:

THIRU.K.GNANASEKARAN,
 S/O.KANNADI GOUNDER,
 KARASANUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT-605 109.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13.
 EXTENT : 2.33.5 Ha,
 VILLAGE : THOLLAMUR,
 TALUK : VANUR,
 DISTRICT : VILUPPURAM,
 STATE : TAMIL NADU.

INDEX

Q.L. APPLIED BOUNDARY	
7.5m & 50m SAFETY DISTANCE	
EARTH	
ROUGH STONE	

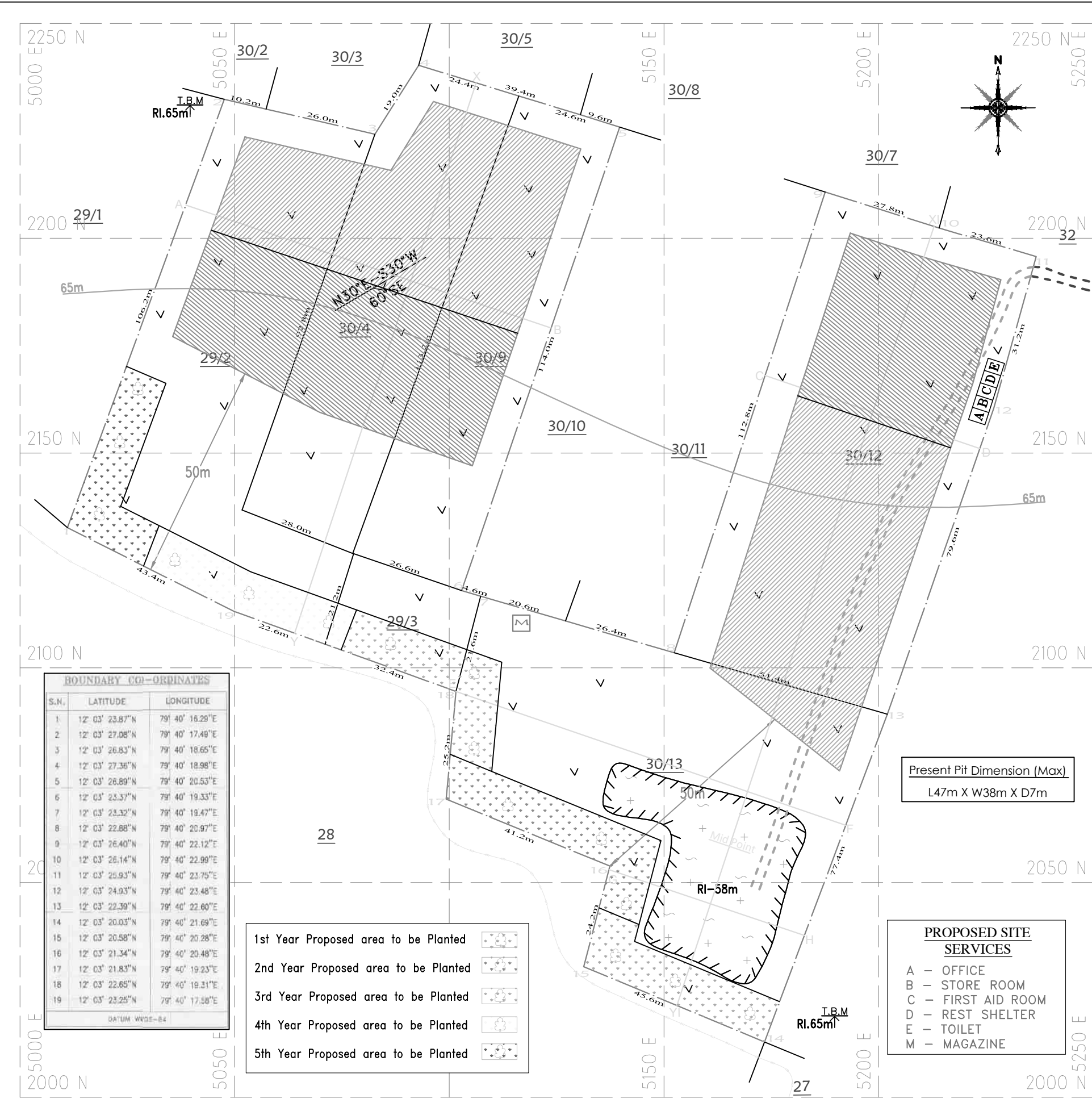
CONCEPTUAL SECTION

SECTION HOR 1 : 1000, VER 1 : 500

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP AUTHENTICATED BY STATE GOVERNMENT

A.JAGANNATHAN, BE., F.C.C., M.M.E.A., M.I.E.,
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/019/87/A



BOUNDARY CO-ORDINATES

S.N.	LATITUDE	LONGITUDE
1	12° 03' 23.87"N	79° 40' 16.29"E
2	12° 03' 27.08"N	79° 40' 17.49"E
3	12° 03' 26.83"N	79° 40' 18.65"E
4	12° 03' 27.36"N	79° 40' 18.98"E
5	12° 03' 28.89"N	79° 40' 20.53"E
6	12° 03' 23.37"N	79° 40' 19.33"E
7	12° 03' 23.32"N	79° 40' 19.47"E
8	12° 03' 22.88"N	79° 40' 20.97"E
9	12° 03' 26.40"N	79° 40' 22.12"E
10	12° 03' 26.14"N	79° 40' 22.99"E
11	12° 03' 25.93"N	79° 40' 23.75"E
12	12° 03' 24.03"N	79° 40' 23.48"E
13	12° 03' 22.39"N	79° 40' 22.60"E
14	12° 03' 20.03"N	79° 40' 21.69"E
15	12° 03' 20.58"N	79° 40' 20.28"E
16	12° 03' 21.34"N	79° 40' 20.48"E
17	12° 03' 21.83"N	79° 40' 19.23"E
18	12° 03' 22.65"N	79° 40' 19.31"E
19	12° 03' 23.25"N	79° 40' 17.58"E

DATUM: WGS-84

- 1st Year Proposed area to be Planted
- 2nd Year Proposed area to be Planted
- 3rd Year Proposed area to be Planted
- 4th Year Proposed area to be Planted
- 5th Year Proposed area to be Planted

Present Pit Dimension (Max)
L47m X W38m X D7m

- PROPOSED SITE SERVICES**
- A - OFFICE
 - B - STORE ROOM
 - C - FIRST AID ROOM
 - D - REST SHELTER
 - E - TOILET
 - M - MAGAZINE

PLATE NO-III
DATE OF SURVEY :19.12.2019

APPLICANT:
THIRU.K.GNANASEKARAN,
S/O.KANNADI GOUNDER,
KARASANUR VILLAGE,
VANUR TALUK,
VILUPPURAM DISTRICT-605 109.

QUARRY LEASE APPLIED AREA:
S.F.NOS : 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13,
EXTENT : 2.33.5 Ha,
VILLAGE : THOLLAMUR,
TALUK : VANUR,
DISTRICT : VILUPPURAM,
STATE : TAMIL NADU.

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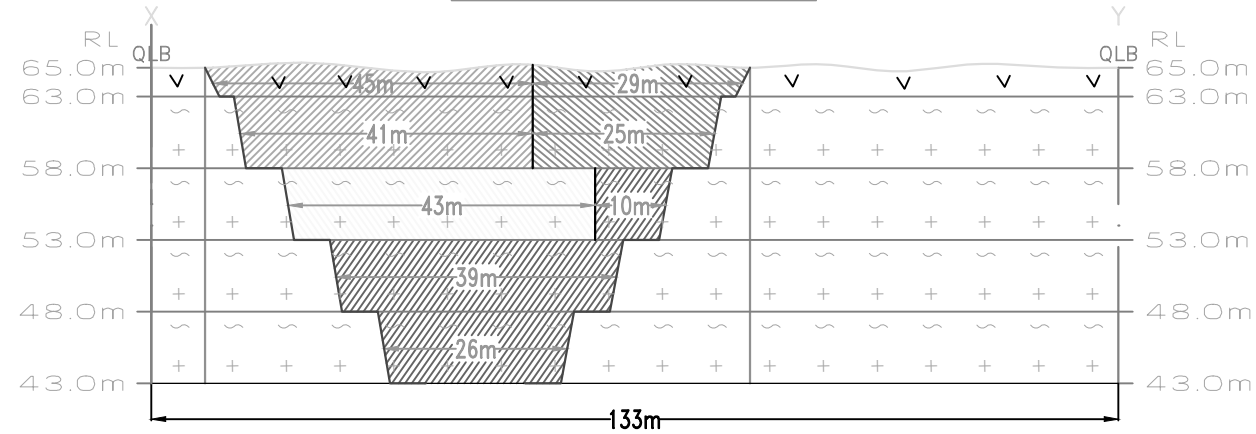
Q.L. APPLIED BOUNDARY	
7.5m & 50m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
QUARRY ROAD	
APPROACH ROAD	
ODAI	
CONTOUR	
QUARRY PIT	
EARTH	
ROUGH STONE	
STRIKE & DIP	

TOPOGRAPHY, GEOLOGICAL, YEARWISE DEVELOPMENT & PRODUCTION PLAN
SCALE 1 : 1000

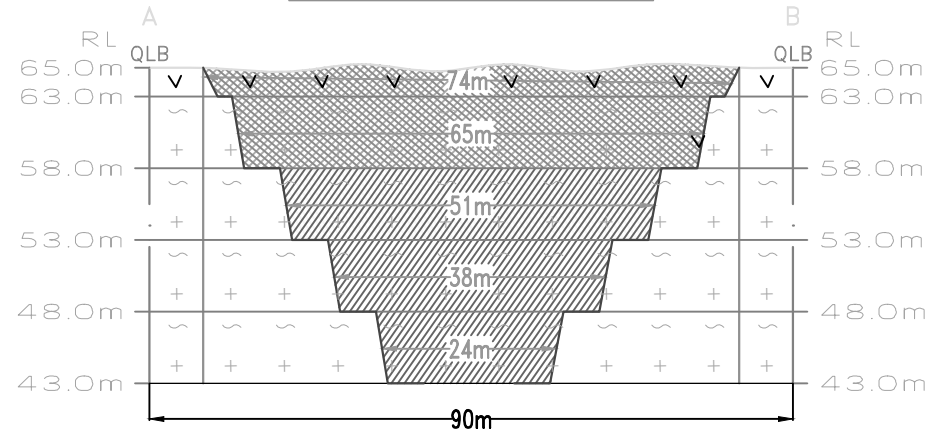
PREPARED BY :
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RECOGNIZED QUALIFIED PERSON
RQP/MAS/019/87/A

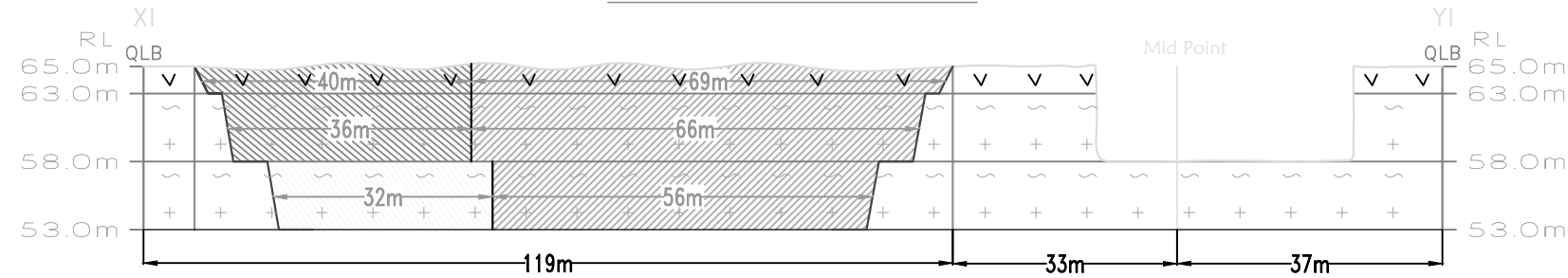
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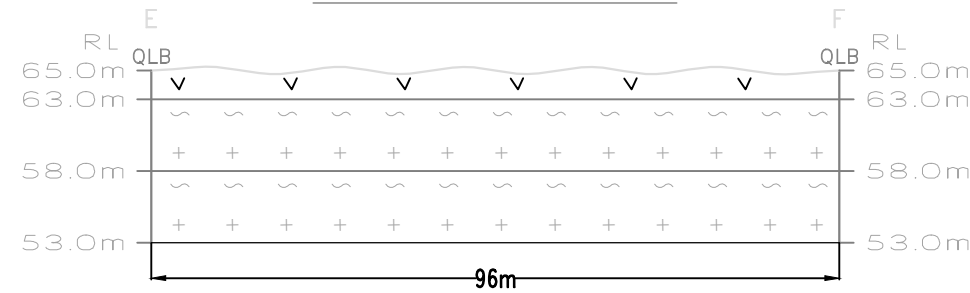
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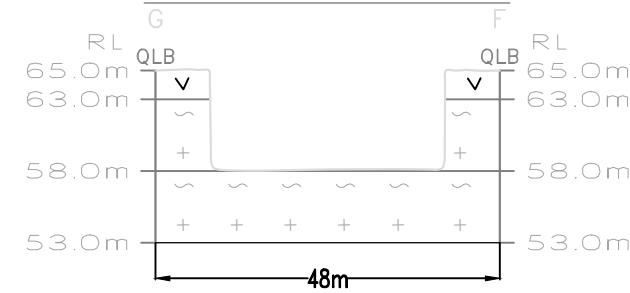
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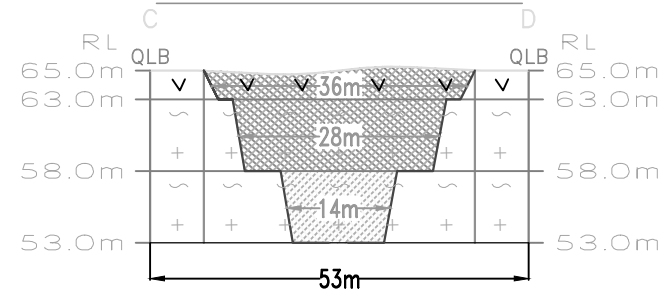
SECTION ALONG E-F



SECTION ALONG G-F



SECTION ALONG C-D



PRESENT & POST LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Ha)	AREA AT THE END OF THIS QUARRYING PERIOD (Ha)
AREA UNDER QUARRYING	0.13.2	1.03.5
INFRASTRUCTURE	Nil	0.01.0
ROADS	0.01.0	0.02.0
GREEN BELT	Nil	0.25.5
UN-UTILIZED AREA	2.19.3	0.01.5
GRAND TOTAL	2.33.5	2.33.5

1st Year Proposed area to be Quarried	
2nd Year Proposed area to be Quarried	
3rd Year Proposed area to be Quarried	
4th Year Proposed area to be Quarried	
5th Year Proposed area to be Quarried	

PLATE NO-III-A

DATE OF SURVEY : 19.12.2019

APPLICANT:

THIRU.K.GNANASEKARAN,
S/O.KANNADI GOUNDER,
KARASANUR VILLAGE,
VANUR TALUK,
VILUPPURAM DISTRICT-605 109.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13,
EXTENT : 2.33.5 Ha,
VILLAGE : THOLLAMUR,
TALUK : VANUR,
DISTRICT : VILUPPURAM,
STATE : TAMIL NADU.

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7.5m & 50m SAFETY DISTANCE	
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ROUGH STONE	

TOPOGRAPHY, GEOLOGICAL, YEARWISE DEVELOPMENT & PRODUCTION SECTION

SECTION HOR 1 : 1000, VER 1 : 500

PREPARED BY :

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A.JAGANNATHAN, BE., F.C.C., M.M.E.A., M.I.E.,
RECOGNIZED QUALIFIED PERSON
RQP/MAS/019/87/A

ANNEXURE-VII
VAO CERTIFICATE

சீரணி

64. தொழில்நுட்ப

23/12/2021

விழுப்புலம் மாவட்டம் வானூர்தி

வட்டம் கருவாங்கு கிராமத்தின் வசதிக்கு

தே. தொண்டிச்சேரி 5/ஸ. கண்ணாடி கண்ணாடி

பாண்டிவாங்கு வானூர்திவட்டம் 64. தொழில்நுட்ப

கிராமத்தின் ⁴⁰⁰⁰ 4000. 29/2 - 051.0 - 29/3 - 006.0

30/4. 0.29.5 - 30/9. 028.5 - 30/12 - 0.58.0

30/13 - 0.60.5. மொத்தம் 2 மீட்டர் 58 மீட்டர்

நிலம் 2 மீட்டர் வட்டம். 408. பாண்டிவாங்கு

கிராமத்தின் நிலத்தை சீரணி 300 மீட்டர் சீரணி

- ல் சீரணிப்பதில். கிராமத்தின். பரிசீலனை

மேற்கு, பரிசீலனைப்பதில் மீட்டர் கிடை

பாண்டிவாங்கு சீரணிப்பதில்.

கிடை: 64. தொழில்நுட்ப

நாள்: 23/12/2021

S. Ravi V.A.O
கிராம நிர்வாக அலுவலர்
தொள்ளை கிராமம்
வானூர். 23/12/21

S. Ravi

**TOPOGRAPHICAL VIEW OF THOLLAMUR ROUGHSTONE
AND EARTH QUARRY LEASE APPLIED AREA**



Name of the Applicant : **K.Gnanasekaran,**
S/o. Kannadi Gounder,
Address : Karasanur Village,
Vanur Taluk,
Viluppuram District – 605 109.

LOCATION DETAILS

Extent : 2.33.5ha
S.F.No's. : 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13
Village : Thollamur
Taluk : Vanur
District : Viluppuram

Signature of the applicant

K.Gnanasekaran

S. Ravi V.A.O
(Village Administrative Officer)
Attestation

கிராம நிர்வாக அலுவலர்
தொள்ளமுர் கிராமம்
வானூர்.

23/12/20

K. Gnanasekaran

ANNEXURE-VIII BLASTING AGREEMENT

भारतीय गैर न्यायिक

बीस रुपये

रु.20



Rs.20

TWENTY
RUPEES

INDIA NON JUDICIAL

தமிழ்நாடு தமில்நாடு TAMIL NADU

01AC 518574

22/01/2022 ல் உடனடி செயலாக்கம்
செய்ய

M. SENTHIL
Stamp Vendor Lic.No.15/2000
Mettur Dam - 636 401.

DEED OF AGREEMENT FOR BLASTING OPERATION

This Deed Of Agreement Entered And Executed On **22/01/2022** By And Between M/S. SRI VELAVA MININGS Having Its Registered Office At No. 5/77 F2, Rajaji Nagar, Mathaiyankuttai {Po}, Mettur Dam, Salem, Tamil Nadu, (Mobile No. 9715432999) Having LE-3 (Form 22) Explosives Magazine At Sf.No 1109/2, Village Batharahalli Taluk, Pennagaram, District Dharmapuri, Tamilnadu State Hereinafter Referred To As Party Of The **First Part** And

Signature Of The Second Part

Signature Of The First Part

SRI VELAVA MINING'S

[Handwritten Signature]
MANAGING PARTNER

[Handwritten Signature]

Thiru.K.GNANASEKARAN, S/oKannadi Gounder

Residing At Karasanur village, Vanur Taluk, Viluppuram District. For The Leased Quarry Situated At Survey No. 29/2,29/3,30/4,30/9,30/12,30/13 Of Thollamur Village, Vanur Taluk, Viluppuram District Under Quarry Lease Granted By The District Collector Viluppuram District Referred To As Party Of The **Second Part**.

Whereas the Party of the Second Part has decided to entrust the work of conducting blasting operation in his quarry 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 their own arrangements for the explosives and exploding machineries/equipments required for the work. The entire blasting in the above quarry and the Possesment of blasting equipments will be handled by the Party of the first Part having valid Explosives Licence in Form 22 (LE-3) Licence Number **E/SC/TN/22/750(E124272)** licenced Shot Firers or Blasters or Mine Mates holding permit granted under DGMS or by the Department Petroleum and Explosives Safety Organization, under Explosives Rules, 2008 hereby undertake the responsibility for the work entrusted.

This Agreement is valid from **22nd day of January 2022** of to the date of Quarry lease period or Date of withdrawal from two parts. The payments will be made Weekly (Monday – Monday) periodically by the Party of the Second Part to the First part for the quantity of explosives used and hours and time of the exploding equipments put into use. Calculations will be made and settlement will be arrived at on the completion of blasting operation.

Whereas the agreement is valid from the date of execution till validity of the quarrying lease granted by the State Govt. to the Party of the Second Part or terminable earlier by mutual consent.

This lease deed is executed in original with two copies and kept each one with First and Second part.

Signature of the Party of

Second Part

Witnesses:

1.

Signature of the Party of

First Part

SRI VELAVA MINING'S

MANAGING PARTNER





தமிழ்நாடு தமில்நாடு TAMIL NADU

01AC 518573

22/01/2022

ஸ்ரீ வெலவா மைனிங்ஸ்
மெட்டூர்



M. SENTHIL
Stamp Vendor Lic.No.15/2000
Mettur Dam - 636 401.

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Signature Of The Second Part

Signature Of The First Part

SRI VELAVA MINING'S
[Signature]
MANAGING PARTNER

[Signature]

Thiru.K.GNANASEKARAN, S/oKannadi Gounder

Residing At Karasanur village, Vanur Taluk, Viluppuram District. For The Leased Quarry Situated At Survey No. 29/2,29/3,30/4,30/9,30/12,30/13 Of Thollamur Village, Vanur Taluk, Viluppuram District Under Quarry Lease Granted By The District Collector Viluppuram District Referred To As Party Of The **Second Part**.

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This lease deed is executed in original with two copies and kept each one with First and Second part.

Signature of the Party of

Second Part

Signature of the Party of

First Part

Witnesses:

1.

SRI VELAVA MINING'S

[Handwritten Signature]
MANAGING PARTNER

[Handwritten Signature]

Cert No. MR /SZ/1183



भारत सरकार/Government of India
खान अधिनियम, 1952/Mines Act, 1952
खनन परीक्षा बोर्ड/Board of Mining Examinations
खनन मेट सक्षमता प्रमाण-पत्र
MINING MATE'S CERTIFICATE OF COMPETENCY
(केवल ओपेनकास्ट खानों तक सीमित)
(Restricted to mines having opencast workings only)
(धात्विकीय खान विनियम, 1961 के अन्तर्गत)
(Under the Metalliferous Mines Regulations, 1961)

श्री अरिदोस एस

सुपुत्र अर. सक्तिवेल

जिनकी जन्म तिथि 14.05.1990

है, को अपनी

आयु, स्वस्थता, सदाचार, साबरता और धात्विकीय खानों में काम करने के विहित अनुभव का सन्तोषजनक प्रमाण प्रस्तुत करने एवं दिनांक 23.01.2021 को जीतीटीसी, त्रिची

केन्द्र पर आयोजित

विहित परीक्षा में उत्तीर्ण होने पर एतद्वारा केवल ओपेनकास्ट खानों तक सीमित मेट सक्षमता प्रमाण-पत्र प्रदान किया जाता है।

Shri ARIDOSS S

R. SAKTHIVEL

born on 14.05.1990

Son of

having given satisfactory evidence of his age,

medical fitness, good character, literacy and prescribed experience of working in metalliferous mines and having passed the prescribed examination held at

centre on 23.01.2021

is hereby granted MINING MATE'S CERTIFICATE OF

COMPETENCY restricted to mines having opencast workings only.

का निशान

Left hand thumb impression

K. J. J. J.

अंचल सचिव
खनन परीक्षा बोर्ड
Zonal Secretary
Board of Mining
Examinations

अंचल सचिव
खनन परीक्षा बोर्ड
दक्षिणी अंचल, बेंगलूर
Zonal Secretary
Board of Mining Examination
Southern Zone, Bengaluru.

अध्यक्ष
खनन परीक्षा बोर्ड
Chairman
Board of Mining
Examinations

Signed and Sealed
Date 23.07.2021

K. S. S. S.

KUBERAN EXPLOSIVES & CO

Explosives Blasting Contractors & Dealers

Plot No. 1, Meenakshi Avenue, 3rd Cross Street, Old Perungalathur, Chennai – 600063

TeleFax No : 2276 1987, Cell No: 9444814614, 9941181779.

E.mail ID: dhanamexplo1@yahoo.com

Date- 21.03.2022

Mr. K. Gnanasekaran

S/o. Kannadi Gounder

Karasanur Village,

Vanur Taluk, Villupuram District,

Tamilnadu – 605 109

Dear Sir,

Sub : Regarding Blasting work using Explosive in your proposed Quarry.

With reference to the subject and we refer to the discussions we had with your representative regarding the subject, we would like to introduce ourselves that, we are having Explosive License in Form 22 Holding No. E/HQ/TN/22/298(E56920) situate in Survey No. 592/2B 1A , 164 Arungunam Village, Madhurandagam Taluk, Kancheepuram Dist and our office functioning at Address No. 1 Meenakshi Avenue, 3rd Cross Street, Old Perungalathur, Chennai – 600063.

We are enacting Explosive Vans separately for Transporting Class 2 Explosives and Class 6 Detonators from my Magazine to your work site. We engaged well experienced Licensed Blasters and Shot Firer for safe Blasting work for the past 6 Years. We are carrying the Blasting work without untoward any incident.

We are willing to undertake Blasting work on Contract basis at your proposed Quarry at SF. No. 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 over in 2.33.5 Hectors in Thollamur Village, Vanur Taluk, Villupuram District, Tamilnadu.

Thanking you and assuring you of our best attention always, we remain

Yours faithfully

For **KUBERAN EXPLOSIVES & Co**

Authorised Signatory

Encl: Explosives License.

K. Gnanasekaran



भारत सरकार | Government of India

वाणिज्य और उद्योग मंत्रालय | Ministry of Commerce & Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पेसो) | Petroleum & Explosives Safety Organisation (PESO)

पूर्व नाम- विस्फोटक विभाग | Formerly- Department of Explosives

A और D - विंग ब्लॉक 1-8, दूसरा तल, शास्त्री भवन | A & D - Wing, Block 1-8, 1st Floor, Shastri Bhavan

26 हड्डोउरा रोड, नुंगम्बक्कम चेन्नै | 26 Haddous Road, Nungambakkam Chennai 600006

फोन (Phone) - 28281023 | फैक्स (Fax) - 28284848

ई-मेल Email: jteccocheennai@explosives.gov.in

संख्या (No.): E/HQ/TN/22/298(E56920)

दिनांक (Date) 07/04/2021

संवा में | To,

M/s. Kuberan Explosives & Co.,
D. No. 164, Varanavasi Village, Barrutti (Post), Theneri (Via), Town/Village - Kanchipuram
District-KANCHIPURAM, State-Tamil Nadu, Pincode -

08 APR 2021

विषय : Survey No(s) 592/2B 1A, ग्राम 164, Arugunam village, Madurantakam Taluk, जिला KANCHIPURAM, राज्य Tamil Nadu में विस्फोटक के मैगजीन में उपयोग के लिए कब्जा हेतु विस्फोटक नियम, 2008 के अंतर्गत LE-3 में जारी अनुज्ञप्ति सं E/HQ/TN/22/298(E56920) के नवीनीकरण संदर्भ में।

Subject: Possession for Use of Explosives from magazine situated at Survey No(s): 592/2B 1A, 164, Arugunam village, Madurantakam Taluk, Dist. KANCHIPURAM, Tamil Nadu - Licence No.: E/HQ/TN/22/298(E56920) granted in Form LE-3 of Explosives Rules, 2008 - Renewal regarding

महोदय | Sir,

आपका उपर्युक्त विषय पर फ़ॉर संख्या X दिनांक 23/03/2021 का संदर्भ ग्रहण करें। विस्फोटक नियम, 2008 के अंतर्गत प्ररूप LE-3 में जारी अनुज्ञप्ति दिनांक 31/3/2026 तक नवीनीकृत कर इस पत्र के साथ भेजी जा रही है।

Reference to your letter No.: X dated: 23/03/2021, the subject licence duly renewed upto 31/3/2026 and issued in Form LE-3 of Explosives Rules, 2008 is forwarded herewith.

अनुज्ञप्ति के आगामी नवीकरण हेतु कृपया निम्नलिखित दस्तावेज दिनांक 31/03/2026 से पहले इस कार्यालय को भेजे जाएं।

For further renewal of licence, please submit the following documents so as to reach this office on or before 31/3/2026.

- प्ररूप आरई-1 में विधिवत पूर्ण एवं हस्ताक्षरित आवेदन।
Application in Form RE-1 duly filled in and signed.
- एक से पाँच वर्ष के अनुज्ञप्ति शुल्को का, विस्फोटक नियम, 2008 के तहत ऑनलाइन आवेदन पोर्टल पर उपलब्ध ई-भुगतान सुविधा के माध्यम से लाइसेंस शुल्क ऑनलाइन जमा किया जाना है।
Licence fees renewable for one to five years, to be submitted online through e-payment facility available on online application portal under the Explosives Rules, 2008.
- अनुमोदित प्लान के साथ मूल अनुज्ञप्ति।
Original licence with approved plan.
- कृपया इस संबंध में विस्फोटक नियम, 2008 के नियम 112 का भी संदर्भ ग्रहण करें।
In this connection, please also refer to Rule 112 of Explosives Rules, 2008.
- विस्फोटकों के क्रय हेतु आरई-11 में मांगपत्र (इंडेंट) आपूर्तिकर्ता को दिया जाए और उसी की एक प्रति इस कार्यालय को भेजी जाए (अतिशबाजी गोदाम के लिए लागू नहीं)।
Indent for purchase of explosives shall be placed in RE-11 with the supplier and copy of the same shall be sent to this office. (Not applicable for fireworks store house)
- कृपया विस्फोटकों की त्रैमासिक विवरणी हर तिमाही के अंत में आरई-7 में प्रस्तुत की जाए। विवरणी इस कार्यालय के कार्यालय में आगामी तिमाही के 10 तारीख से पहले पहुंच जानी चाहिए (अतिशबाजी गोदाम के लिए लागू नहीं)। Please submit quarterly returns of explosives in RE-7 at the end of every quarter so as to reach this office by 10th of the succeeding quarter. (Not applicable for fireworks store house)
- सभी ब्लास्टिंग ऑपरेशन एक सक्षम द्वारा की जाएगी जो उपरोक्त नियमों के तहत एक वैध शॉट फायर प्रमाणपत्र धारक हो। हालांकि, खान अधिनियम 1952 के अधीन आने वाले खानों में ब्लास्टिंग ऑपरेशन करने वाले ब्लास्टर की योग्यता उसी अधिनियम से निर्धारित हो।
All blasting operations shall be carried out by a competent person holding a valid shot firer's permit granted under above rules. However, blasting operations in mines coming under the purview of the Mines Act 1952, the blaster shall have qualifications prescribed in the regulations framed under the said Act.

भवदीय | Your's faithfully

(डॉ. ए. शेख हुसैन | Dr. A SHEKH HUSSAIN)

उप विस्फोटक नियंत्रक | Dy. Controller of Explosives

कृते संयुक्त मुख्य विस्फोटक नियंत्रक | For Joint Chief Controller of Explosives

दक्षिणांचल, चेन्नै | South Circle, Chennai

प्रतिलिपि प्राप्ति | Copy Forwarded to:

1. जिला मजिस्ट्रेट (District Magistrate), KANCHIPURAM (Tamil Nadu)- सूचना के लिए (for information.)

कृते संयुक्त मुख्य विस्फोटक नियंत्रक | For Joint Chief Controller of Explosives

दक्षिणांचल, चेन्नै | South Circle, Chennai

(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क आदि के लिए हमारा वेबसाइट <http://peso.gov.in> देखें।)
(For more information regarding status, fees and other details please visit our website <http://peso.gov.in>)

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

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

(विस्फोटक नियम, 2008 का अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) दाखिए।)
(See article 3(a) to (d) of Part 1 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 रख-
Licence to possess : (c) for use, explosives of class 1, 2,3,4,5,6 or 7 in a magazineअनुज्ञापित सं. (Licence No.): E/HQ/TN/22/298(E56920)
वार्षिक फीस रूपए (Annual Fee Rs): 12400/-

1. Licence is hereby granted to

M/s. Kuberan Explosives & Co. (अधिभोगी / Occupier : K. DhanaKoteswaran), D. No. 164, Varanavasi Village, Banruti (Post), Thenneri (Via), Town/Village - Kanchipuram, District-KANCHIPURAM, State-Tamil Nadu, Pincode -

को अनुज्ञापित अनुदत्त की जाती है।

2. अनुज्ञापितधारी की प्रारिथ्यता | Status of licensee : Individual

3. अनुज्ञापित निम्नलिखित प्रयोजनों के लिए विधिमान्य है।
Licence is valid only for the following purpose.

possess for use of Nitrate Mixture, Detonating Fuse, Detonators, के उपयोग के लिए

4. अनुज्ञापित 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. सं.	नाम और विवरण	वर्ग और प्रभाग	उप-प्रभाग	मात्रा किसी एक समय में
Sr. No.	Name and Description	Class & Division	Sub-division	Quantity at any one time
1.	Nitrate Mixture	2,0	0	6400 Kg
2.	Detonating Fuse	6,2	0	50000 Mtrs
3.	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 अनुज्ञापित के लिए]

20 times
as above.

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

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञापित परिसर की पुष्टि होती है।
The licensed premises shall conform to the following drawing(s):रेखाचित्र क्र. (Drawing No.) E/HQ/TN/22/298(E56920)
दिनांक (Dated) 10/01/2012

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

Survey No(s). 592/2B 1A, ग्राम (Town/Village) : 164, Arugunam village, Madurantakam Taluk पुलिस थाना (Police Station) : Maduranthagam
जिला (District) KANCHIPURAM राज्य (State) Tamil Nadu पिनकोड (Pincode)
दूरभाष (Phone) 9444814614 ई-मेल (E-Mail) फक्स (Fax)7. अनुज्ञापित परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट हैं।
The licensed premises consist of following facilities.

a main magazine room, a lobby and a detonators store room.

8. अनुज्ञापित समय - समय पर यथासंशोधित 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 दर्शित करते हुए)।
Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
- अनुज्ञापित प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञापित 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 अनुज्ञापित तारीख 31 मार्च 2012 तक विधिमान्य रहेगी। This licence shall remain valid till 31st day of March 2012.

यह अनुज्ञापित, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपबर्णित इस अनुज्ञापित की शर्तों का अधिकमण करने या यदि अनुज्ञापित परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंज्ञित की जा सकती है, जहां वह लागू हो।
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 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 - 10/01/2012

मुख्य विस्फोटक नियंत्रक | Chief Controller of Explosives

Sd/-

Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 01/08/2012
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 08/03/2013
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 18/07/2014

नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

नवीकरण का तारीख Date of Renewal	समाप्त का तारीख Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of licensing authority and stamp
07/04/2021	31/03/2026	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.

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

**ANNEXURE-IX AFFIDAVIT AND CER
DETAILS**



தமிழ்நாடு தமில்நாடு TAMILNADU

19 APR 2022

CN 981447

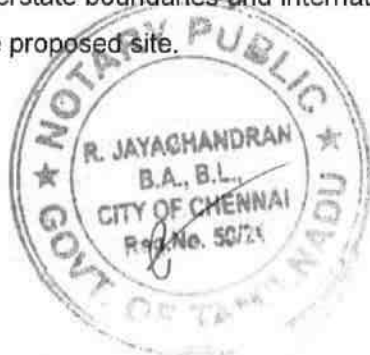
M. Gnanasekaran
Karasanur Village Vanur Taluk
Viluppuram - 605 109

M. KAILASH CHAND
STAMP VENDOR-L.No.11727/C/91
SAIDAPET, CHENNAI-15. ☎:9840173098

AFFIDAVIT TO SEIAA, TAMIL NADU

Thiru.K.Gnanasekaran, S/o. Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram – 605 109. Do hereby solemnly declare and sincerely affirm that, I have applied for getting environment clearance to SEIAA, Tamil Nadu for quarry lease for Rough Stone and Earth quarry over an extent is 2.38.5 hectares of Patta lands in S.F.Nos. 29/2, 29/3, 30/4, 30/9, 30/12 and 30/13 of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State,

- I swear to state and confirm that within 10km area of the quarry site, we have applied for environmental clearance, none of the following is situated
 - Protected areas notified under the wild life (Protection) Act, 1972 .
Wildlife Sanctuary: Nil within 10km Radius
 - Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and control of Pollution) Act 1974.
 - Interstate boundaries and international boundaries within 10km radius from the boundary of the proposed site.



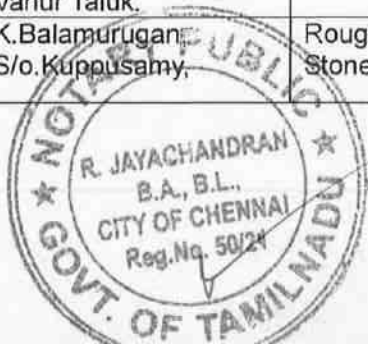
6. சிவசுப்பிரமணியன்

2. I will complete the following Corporate Environment Responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	Project cost (Rs)	CER cost 2.0% of Project cost (Rs)
Carrying out various developmental works in the nearby Government school based on the need.	Rs.35,32,000/-	Rs.70,640/-
Total cost Allocation	Rs.35,32,000/-	Rs.70,640/-

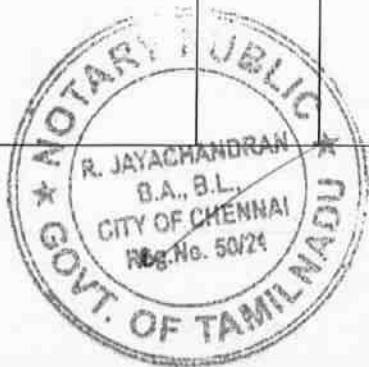
Details of quarry within 500m radius from the applied area

S. No	Name and address of the lessee	Name of the Mineral	Village & Taluk	S, F, Nos,	Extent in Hectare	Lease Period	Remarks
a. Existing Quarries							
1	K.Gnanasekaran, S/o. Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram – 605 109	Rough stone	Vanur & Thollamur	12 /4 12/5A	0.59.5 0.65.0 1.24.5	24.09.2 017 to 23.09.2 022	-
2	V.Sadaiyappan, No.18, Amal Nagar West Tambaram, Chennai-600 045.	Rough Stone & Gravel	Vanur & Thollamur	1 /34 12/3 12/ 581	0.58.0 0.60.5 2.38.5 3.57.0	16.08.2 018 to 15.08.2 023	-
3	G.Raja, S/o. Gopal, Sivaraj Street, Thiruneermalai, Chennai.	Rough Stone & Gravel	Vanur & Thollamur	26/1	2.42.5	16.08.2 018 to 15.08.2 023	-
4	R.Muralidaran, Mamager, OM sakthi Constructions, Thollamur Village, Vanur Taluk.	Rough Stone & Gravel	Vanur & Thollamur	38/2A 35/1C 39/1B	0.96.0 0.10.0 1.00.0 2.06.0	16.08.2 018 to 15.08.2 023	-
5	K.Balamurugan, S/o.Kuppusamy,	Rough Stone &	Vanur & Thollam	11/4A2 15/2	0.16.0 0.44.0	27.04.2 018	-



K. Shanmugasundaram

	Karasanur & Post, Vanur Taluk.	Gravel	ur	15/3A 15/3B 15/4/	0.50.0 0.56.0 0.46.0 2.12.0	to 26.08.2 023	
b. Proposed Area							
S. No	Name and address of the lessee	Name of the Mineral	Village & Taluk	S, F, S.F. Nos,	Extent in Hectare	Remarks	
1	S.V. Venkatesh, Sri Santhosh Blue Metals, No.173, Sarkar Thopu, Tindivanam, Viluppuram District.	Rough Stone & Gravel	Vanur & Thollam ur	8/ 1B 8/2	0.61.5 1.44.5 2.06.0	-	
2	K. Gnanasekaran S/o.Kannadi counder, Mettu Street, Karasanur Village, Vanur Taluk, Viluppuram District.	Rough Stone & Gravel	Vanur & Thollam ur	29/2 29/3 30/4 30/9 30/12 30/13	0.51.0 0.06.0 0.29.5 0.28.5 0.58.0 0.60.5 2.33.5	-	
3	V.Ramesh, S/o.J.Venkatapathy, No.5, Thangaraj Street, HLL Colony, Pammal, Chennai-75.	Rough Stone & Gravel	Vanur & Thollam ur	16/11, 16/12, 17/1 & 18/3B	0.45.0 0.74.5 1.63.5 0.70.0 3.53.0	-	
4	G.Arjunan, S/o.Govindasamy, No.63, Throupathi Amman Koil Street, Thiruvakkarai Village, Vanur Taluk	Rough Stone & Gravel	Vanur & Thollam ur	11/5A 11 /6 11/7 16 /2 16/4 16/5 16/6 16/7 16/8B 16/9 16/10	0.14.0 0.17.0 0.19.0 0.11.0 0.15.0 0.12.0 0.16.0 0.24.0 0.23.0 0.08.5 7.62.0 3.21.5	-	

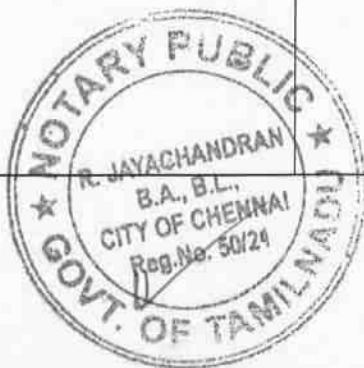


6- 6/10/2021

5	I.Justin Prabu, S/o.V.Iyyadurai, 1/56,D9, Church Street, Christopher Nagar, Peruvilai, Kanniyakumari District.	Rough Stone & Gravel	Vanur & Karasan ur	43/4A 43/48 43/4C, 43/5 43/6 44/6	0.35.5 0.35.5 0.35.0 0.71.0 1.27.0 0.63.0 3.67.0		
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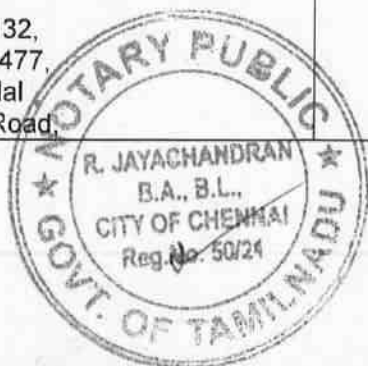
d. Abandoned Quarries

S. No	Name and address of the lessee	Name of the Mineral	Village & Taluk	S, F, Nos,	Extent in Hectare	Lease Period	Remark
1	R.Alagurajan, S/o.Ramaswamy, No.41, Erikaran Street, Nerkundram, Chennai- 107.	Rough Stone	Vanur & Thollamur	35/1B 35/2A2 (P) 35/28 (P)	1.04.0 0.19.5 / 0.48.0 0.23.0 / 0.48.0 1.46.5	25.03.2015 to 24.03.2020	-
2	K.Dharmalingam, S/o.Kannaiyan, 2/6, Kalaingar Street, Erumaiyur, Chennai-44.	Rough Stone	Vanur & Thollamur	12 /5B	2.52.0	20.04.2013 to 19.04.2018	-
3	S.Nanthini, W/o. Sankar, No. 14, 3rd Sheet, Jayapuram, Tindivanam Taluk.	Rough Stone	Vanur & Thollamur	11/5A 11/6 11/7 16 /2 16/3 16/4 16/5 16/6 16/7	0.14.0 0.17.0 0.19.0 0.11.0 0.11.0 0.11.0 0.15.0 0.72.0 0.16.0 0.24.0	31.12.2015 to 30.12.2020	-



6. Shree...

				16 /8B 16 /9 16/10	0.23.0 0.08.5 1.62.0 3.32.5		
4	C.Ganesan, S/o.Chinnaiya Gounder, 168, Mettu Street, Karasanur Village, V.Parangani Post, Vanur Taluk.	Rough Stone	Vanur & Thollamur Nemili	13/3 14/7 15/1 118/ 11 118 /2 118/3 11814A	1.50.0 0.39.5 0.48.5 0.56.0 0.18.5 0.71.0 0.44.0 4.27.5	22.08.2016 to 21.08.2021	-
5	V.Sankar, S/o.Vivekanandan, 14, Jayapuram Colony, Tindivanam Town & Taluk, Viluppuram District	Rough Stone	Vanur & Thollamur	2/1 2/2 2/3 2/4 2/5 3/1 3/2 3/3 3/4 3/5 3/6 3/7	0.45.5 0.22.0 0.22.0 0.23.5 0.25.0 0.32.5 0.33.5 0.81.0 0.20.0 0.22.5 0.21.0 0.18.0 3.66.5	20.09.2016 to 79.09.2021	-
6	D.Sundaramurthy, Santhosh Blue Metals, Thollamur Village, Eraiur Post, Vanur Taluk.	Rough Stone	Vanur & Thollamur	35/2A1 & 9/3	1.06.0 0.33.5 1.39.5	26.04.2013 to 25.04.2018	-
7	V.Elumalai, S/ o. N.Varadappa Chettiar, Old No.132, New No.477, Jawaharlal Nehruji Road,	Rough Stone	Vanur & Nemili	117 /2 177 /3 117 /4 117 /5	0.19.0 0.20.0 0.49.0 0.23.0 1.11.0	18.06.2012 to 17 .06.2017	-

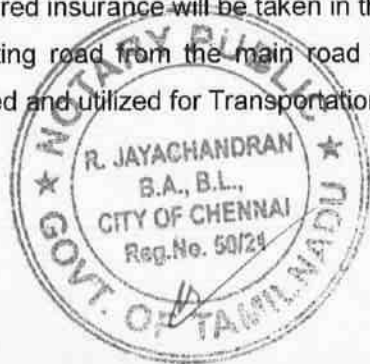


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	Viluppuram - 605 602						
8	S. Irusappa Gounder, S/o. Srinevasa gounder, Karasanur Village, Vanur Taluk.	Rough Stone	Vanur & Thollamur	4/1 4/2A 4/28 4/2c 6/2B	0.40.0 0.04.5 0.10.0 0.80.5 0.61.0 1.96.0	01.09.2008 to 31.08.2013	-
9	R. Periyasamy, S/o. Rangasamy, Karasanur Village, V. Parangini post, Vanur Taluk.	Rough Stone	Vanur & Thollamur	1/3B	1.52.0	01.09.2008 to 31.08.2013	-
10	K.Gnanasekaran, S/o.Kannadi Gounder, Mettu Street Karasanur village Vanur taluk Viluppuram District	Rough Stone	Vanur & Thollamur	29/1 29/2 29/3 30/4 30/9 30/12 30/13	0.34.5 0.51.0 0.06.0 0.29.5 0.28.5 0.58.0 0.60.5 2.68.0	28.02.2008 to 24.02.2013	-
11	V.Kannan, Thollamur Village, Vanur Taluk	Rough Stone	Vanur & Thollamur	5 11 /3	1.42.5 3.13.0 4.55.5	12.05.2003 to 11.05.2008	-

The total lease within the 500m radius (Proposed + Existing + Abandoned) (5no + 5no+4No) works out to 38.96.0ha including this lease area.

3. There will not be hindrance or disturbance to the people living no enrooted/ nearby our quarry site while transporting the mineral and due to quarrying activities.
4. There is no approved habitation within 300m radius from the periphery of our quarry.
5. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
6. The required insurance will be taken in the name of the laborers working in our quarry site.
7. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough Stone and Earth.



6. Shanmugasundaram

8. I will not engage any child labor in our quarry site and I aware that engaging child labor is punishable under the law.
9. All types of safety / protective equipment will be provided to all the laborers working in our quarry.
10. No permanent structures, temple etc., are located within 500m radius from the periphery of our quarry.

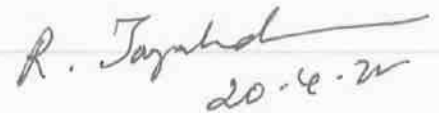
I ensure to do the social and Environment commitment as mentioned in the Mining plan to the best of our knowledge.

Notary Sign & Seal

Quarry owner sign & Seal



K. Gnanasekaran



20-4-21



R. JAYACHANDRAN
ADVOCATE & NOTARY
Saidpet Bar Association
Saidpet Court, Chennai - 15.

ANNEXURE – X
EXISTING PIT LETTER

From
Tmt.N.Vijayalakshmi, M.Sc.,
Deputy Director,
Department of Geology & Mining,
Viluppuram.

To
Thiru K.Gnanasekaran,
S/o.Kannadi Gounder,
Karasanur Village,
Vanur Taluk,
Viluppuram District.

Rc.No.A/G&M/277/2018 Dated 20.06.2022

Sub: Mines & Minerals - Minor Mineral - Rough stone and Gravel - Viluppuram District - Vanur Taluk - Thollamur Village - over an extent of 2.33.5 hectares of Patta lands - S.F.Nos.29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 - Quarry lease application preferred by Thiru.K.Gnanasekaran - Precise area communicated - Mining Plan approved - Further particulars called for - Furnished -Reg.

- Ref: 1. Quarry lease application dated 02.07.2018 preferred by Thiru.K.Gnanasekaran, S/o.Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District.
2. District Collector, Viluppuram Letter Rc.No.A/G&M/277/2018 Dated 13.11.2019.
3. Mining Plan submitted by Thiru K.Gnanasekaran, S/o.Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District Dated 23.12.2019.
4. Mining plan approved by Deputy Director of Geology and Mining, Viluppuram letter Rc.No.A/G&M/277/2018 Dated 26.12.2019.
5. Representation of Thiru K.Gnanasekaran, S/o.Kannadi Gounder Dated 14.06.2022.

In the reference 5th cited, Thiru K.Gnanasekaran, S/o.Kannadi Gounder has requested to furnish details of previously granted lease pit dimensions for the area for which precise area communication was issued vide reference 2nd cited.

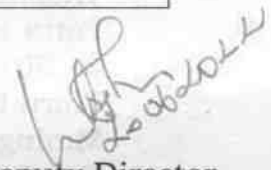
In this connection, the following details are furnished.

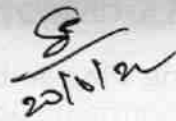
Previously a quarry lease was granted to Thiru K.Gnanasekaran for quarrying Rough stone over an extent of 2.68.0 hecets. of patta lands in S.F.Nos.29/1, 29/2, 29/3, 30/4, 30/9, 30/12 & 30/13 of Thollamur Village, Vanur Taluk, Villuppuram District vide District Collector, Viluppuram

Proceedings Rc.No.B/2657/2007 Dt.07.02.2008 for a period of five years from 28.02.2008 to 24.02.2013.

Due to the removal of minerals by Thiru K.Gnanasekaran during the above mentioned lease period quarry pit exists in the applied area and previously lease granted area with the following dimensions.

Length (meter)	Width (meter)	Depth (meter)
47	38	7 m below ground level


Deputy Director,
Geology and Mining,
Viluppuram.


20/10/22

ANNEXURE – XI
NABET CERTIFICATE



**QUALITY COUNCIL
OF INDIA**
Creating an Ecosystem for Quality



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.



