

OCTOBER
2025

Application Form (Draft EIA Report)

For

Proposed Rough Stone & Gravel Quarry –
1.31.00 Ha

at

S.F.Nos. 11/2B1, 11/2B2 & 14/2 of Kottaiyur Village,
Virudhunagar Taluk, and Virudhunagar District

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

Category of the Project: B1 Cluster Mining

Baseline Period: June, July & August 2025

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



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

Proponent details:

Thiru.S.Krishnasamy,
S/o.Thiru. Singadurai,
D.No. 3/10, East Street,
Kalaperumalpatti Village,
Virudhunagar Taluk,
Virudhunagar - 626 204.

Thiru.S.Krishnasamy,
S/O. Thiru. Singadurai,
D.No. 3/10, East Street
Kalaperumalpatti Village
Virudhunagar Taluk & District

UNDERTAKING

I, Thiru.S. Krishnasamy, undertaking that the Draft Environmental Impact Assessment (EIA) Report for Rough Stone and Gravel Quarry over an extent of 1.31.0 Ha at S.F.No. 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District, Tamilnadu State under project category B1 and Schedule S.No.1(a)

TOR issued by the State Expert Appraisal Committee, TN vide File No: 12068 & ToR Identification No: T025B0108TN5619439N Dated: 02.07.2025.

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: Virudhunagar

Date:

Yours faithfully

Thiru.S.Krishnasamy

PLOT No 48A, 2nd Main Road,
Ram Nagar, South Extension,
Pallikarantal, Chennai - 600 100
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Website : www.ecotechlabs.in
CIN : U74900TN2014PTC094895

UNDERTAKING

I, Dr. A. Dhamodharan, Managing Director confirms that this Draft EIA Report of Rough Stone and Gravel Quarry over an extent of 1.31.0 Ha at S.F.No. 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District, Tamil Nadu State has been prepared at M/s. Ecotech Labs Pvt. Ltd., Chennai.

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

Signature:

Name: Dr. A. Dhamodharan

Designation: Managing Director

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

NABET Certificate No: NABET/EIA/25 – 28/SA 0400

Date:

Place: Chennai

Declaration of Experts contributing to the EIA

Declaration by experts contributing to the EIA report for Rough Stone Quarry (minor mineral) mining project of Thiru. S. Krishnasamy Rough Stone and Gravel Quarry over a total extent of 1.31.00 Ha at S.F.No. 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District, Tamil Nadu State.

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

Project	Rough Stone Quarry – 1.31.00 Ha
Type & Category	1 (a) Mining of Minerals
Project Proponent	Thiru. S. Krishnasamy
Environment Consultant with their Accreditation Status	M/s. Eco Tech Labs Pvt. Ltd., QCI Accredited
NABET Certificate No	NABET/ EIA/25-28/ SA 0400
EIA Coordinator Name	Dr. A. Dhamodharan (Mining of Minerals)
Signature	 Dr. A. DHAMODHARAN (NABET APPROVED EIA COORDINATOR) NABET/EIA/25-28 / RA 0400 Environmental Consultant Eco Tech Labs Pvt. Ltd Plot No. 48A, 2nd Main Road, Ram Nagar South Extn: Pallikaranai, Chennai - 600 100.
Period of Involvement	June to August 2025
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 Expert	Involvement Period & Task	Signature
1	AP	Mr. P.Gopinath	Selection of baseline monitoring stations based on the wind direction, interpretation of baseline data by comparing it with standards prescribed by CPCB against the type of area. Identification of sources of air pollution and suggesting mitigation measures to minimize impact	
2	WP	Dr. A. Dhamodharan	Selection of baseline Monitoring locations for Ground water analysis and also identifying nearest surface to be studied, preparing water balance for the project based on the anticipated occupancy load. Interpretation of baseline data collected, Identification of impacts based on the baseline study conducted and also to the ground water and nearby surface water due to the proposed project Preparation of suitable and appropriate	

			mitigation plan	
3	SHW	Dr. A. Dhamodharan. Mrs. K.Amudha (FAE for HW only)	Identification of nature of solid waste generated, Categorization of the generated waste and estimating the quantity of waste to be generated based on the per capita basis. Identification of impacts of SHW on Environment, Suggesting suitable mitigation measures by recommending appropriate disposal method for each category of waste generated.	 
4	SE	Mr. S. Pandian	Primary data collection through the census questionnaire, Secondary data interpretation from authenticated sources, Impact assessment & proposing suitable mitigation plan. CSR budget allocation	
5	EB	Dr. A. Dhamodharan	Primary data collection through field survey and sheet observation for ecology and biodiversity, Secondary Collection through various authenticated sources, Prediction of anticipated impacts and suggesting appropriate mitigation measures.	
6	HG	Mr. R. Alagumuthuselvam	Field survey for assessing regional and local geology, aquifer	

			distribution, water resource evaluation, change in ground water level throughout the year. Determination of groundwater use pattern, development of rainwater harvesting program, estimation of ground water direction.	
7	GEO	Dr. T. P. Natesan	Field survey for assessing regional and local geology, aquifer distribution. Determination of groundwater use pattern, development of rainwater harvesting program.	
8	SC	Dr. A. Dhamodharan	Interpretation of baseline report, Identification of possible impacts on soil, prediction of soil conservation and suggesting suitable mitigation measures.	
9	AQ	Mr. P.Gopinath	Collection of Meteorological data for the baseline study period, plotting wind rose diagram and thereby selecting the monitoring locations based on the wind pattern, estimation of sources of air emissions and air quality modeling is done. Interpretation of the results obtained, Identification of the impacts and suggesting	

			suitable mitigation measures.	
10	NV	Mrs. K. Vijayalakshmi	Selection of monitoring locations, Interpretation of baseline report, Prediction of impacts due to noise pollution and suggestion of appropriate mitigation measures.	
11	LU	Mr. P.Gopinath	Preparation of land use, land cover maps for the study area using satellite imagery.	
12	RH	Mrs. K. Vijayalakshmi	Identification of the risk and Interpreting consequence contours.	

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 on the mining project at Survey Nos. 11/2B1, 11/2B2 & 14/2 of Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District, Tamil Nadu State.

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

Signature:




Name: Dr. A.Dhamodharan

Designation: Managing Director

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

NABET Certificate No: NABET/EIA/25-28/RA 0400

<i>Project</i>	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.S.Krishnasamy</i>	
<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

DRAFT EIA REPORT

<i>Project</i>	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</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 **1.31.00 Ha**, It is a Patta land **S.F. No: 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk and Virudhunagar District of Tamil Nadu**. The category of project is B1, It is a Rough stone and Gravel quarry in Kottaiyur village. The lease area exhibits plain terrain topography with very gentle slope towards south and covered by brownish gravel with red soil in small pockets followed by weathered rock formation and massive Charnockite rock formation.

The quarry operation is proposed to carry out with open cast mechanized mining with **5.0meter bench for Gravel** followed by charnockite rock / **Rough Stone 6.0meter** vertical bench with a bench width not less than the bench height. The quarry operation involves shallow jack hammer drilling, slurry blasting, Loading and transportation of Rough stone and Gravel to the needy nearby crusher units / road formation works.

The quarry operation is proposed up to **depth** for **29.0m** Below ground level for the proposed mining plan. The Total **Geological reserve** is about **2,79,648 m³ of Rough stone** and **58,260m³ of Gravel**. The **Mineable Reserves** are **43,770m³ of Rough stone** and **33,895m³ of Gravel** for a period of **5 years**. Production schedule is proposed for the period of five years.

The precise area communication letter was received from The Assistant Director, Geology & Mining, Virudhunagr vide letter no **Na. Ka. No: KV1/567/2023 Dated 20.02.2025** for lease period of **5 years** and The Mining Plan was approved by the Assistant Director, Geology & Mining, Virudhunagr vide letter **Roc.No.KV1/567/2023, dated 14.03.2025** for the period of **5 years**. There is no CRZ zone, Western Ghats, notified Bird sanctuaries, wildlife sanctuaries as per Wildlife Protection Act 1972, within the radius of 15Km.

The project area does not fall in the Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries, wildlife sanctuaries as per Wildlife

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Protection Act 1972, within the radius of 15Km.

2. Nature & Size of the Project

The Existing Rough Stone Quarry over an extent of 1.31.00 Hectares land is located at Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District.

Mineral intends to quarry : Rough stone and Gravel Quarry

District : Virudhunagar

Taluk : Virudhunagar

Village : Kottaiyur

S. F. Nos. : 11/2B1, 11/2B2 and 14/2

Extent : 1.31.00 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	09 ° 26'10.00" to 09° 26' 15.00" N
2	Longitude	77° 58' 42.70" to 77° 58' 49.36" E
3	Site Elevation above MSL	The altitude of the lease area is 108m above MSL.
4	Mining plan period	5 Years
5	Topography	Plain topography
6	Land use of the site	Patta Land
7	Extent of lease area	1.31.00 Ha
8	Nearest highway	SH 42 – Srivilluputhur – Pathibanoor Road – 12.78 Km – NEN NH 44 – Kanniyakumari – Srinagar Road – 5.93 Km - W
9	Nearest railway station	Tulukapati Railway Line – 5.57 km, W
10	Nearest airport	Madurai International Airport – 45.68 Km - N
11	Nearest town / city	Town - Sattur – 11. 8Km - SWS City - Virudhunagar – 14.62 Km - N District – Virudhunagar – 14.62 Km - N

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12	Rivers / Canal / Dam	✓ Mannarkottai River – 2.42 Km, W ✓ Arjuna River – 3.3 Km, SSW ✓ Golwarpatti reservoir – 3.89 Km, S ✓ Vaippar River – 10.80 Km, SSW ✓ Irukkangudi Dam – 11.04Km, S ✓ Kullursandai reservoir – 12.03 Km, N
13	Lake/Pond	✓ Mannarkottai Lake – 1.61 Km, NW ✓ Kalaperumalpatti Lake – 1.75 Km, WSW ✓ Golwarpatti Periyakanmai – 4.61 Km, S ✓ Vadiyur Lake – 10.49 Km, W ✓ Sattur Lake – 10.69 Km, SW ✓ Pottireddiyapatti Lake – 11.85 Km, S ✓ Periagollapatti Lake – 11.96 Km, SSW ✓ Periyakanmai – 13.92 Km, NE ✓ Malai Arasan Koil Lake – 14.00 Km, ENE
14	Hills / valleys	Nil in 15 km radius
15	Archaeologically places	Tirumalai Nayak's Palace, Srivilliputhur – 38.89 Km - WNW
16	National parks / Wildlife Sanctuaries	Grizzled Squirrel Wildlife Sanctuary – 38.83 km, W
17	Reserved / Protected Forests	Venkatewarapuram RF – 42.59 Km – NW
18	Seismicity	Proposed Lease area comes under Seismic zone-II (Low risk area)

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 Gravel extracted will be transported to be Stone crusher of district Virudhunagar.
- ❖ 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.

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- ❖ 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 artificial recharge to the nearby wells.
- ❖ No damage to the land is caused, no reclamation or backfilling is required.

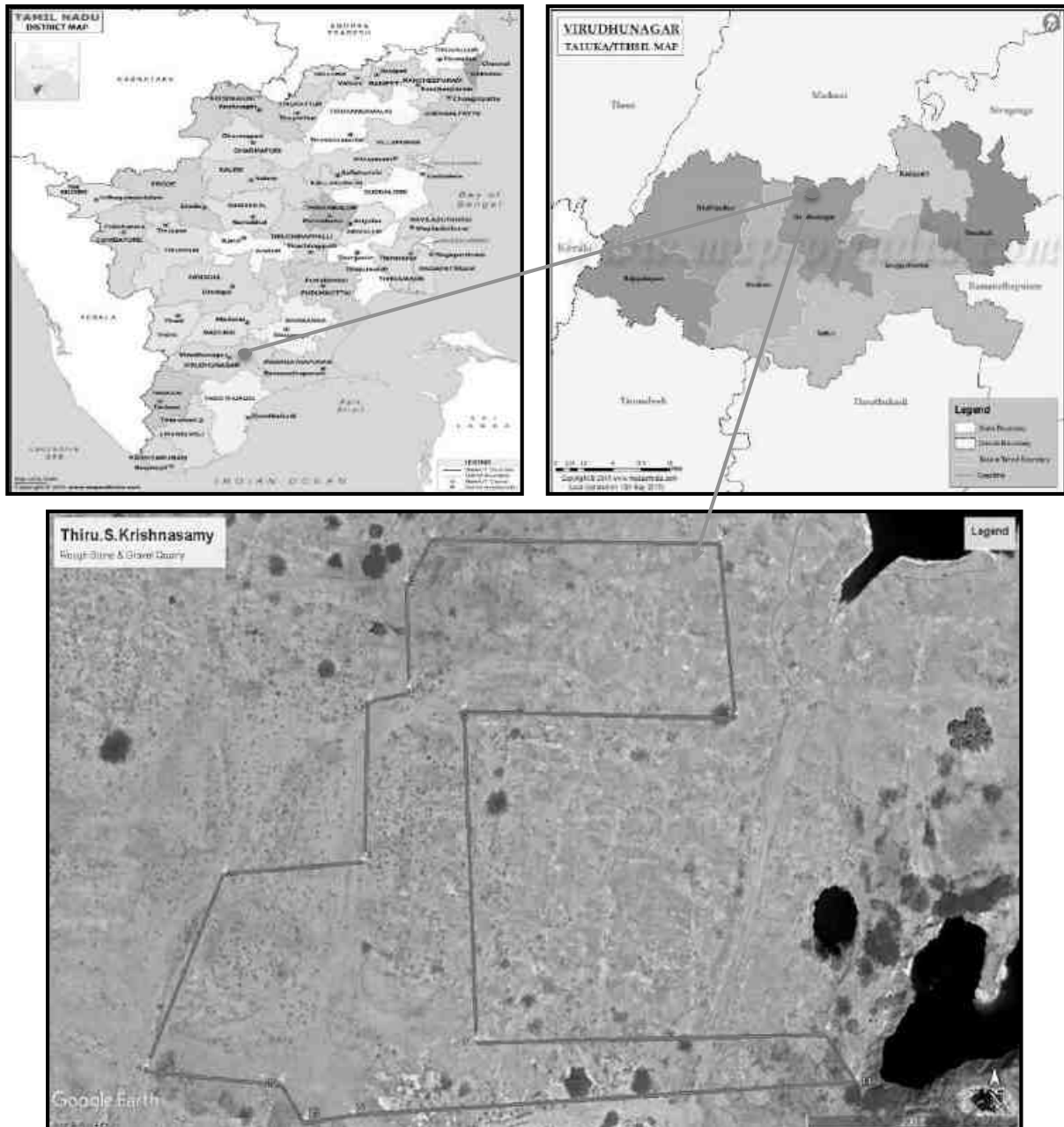


Figure 1: Location Map of the Project Site

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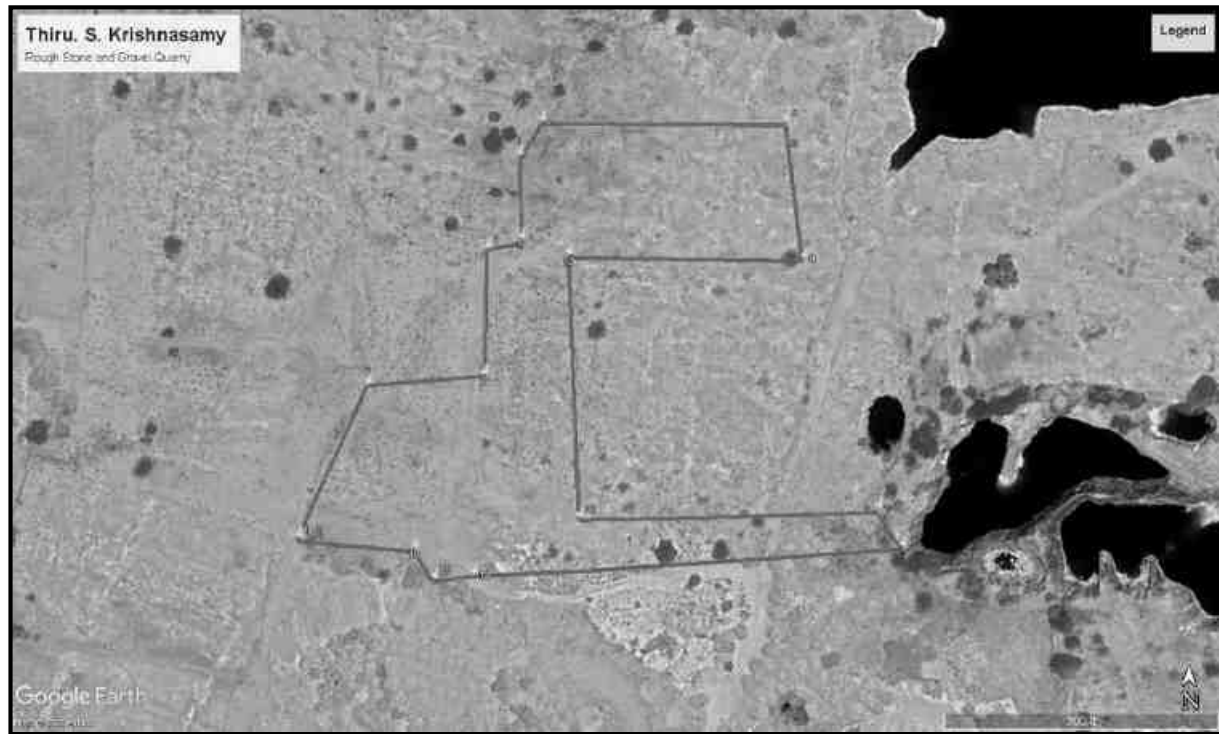


Figure 2: Google Image of the Project Site

4. Charnockite

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

5. Geological Resources

The geological reserves have been calculated based on the cross-section method and the availability of Geological Resources in this land is given below.

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Table 2. Geological resources

Section	Length (m)	Width (m)	Height (m)	Rough stone volume m ³	Gravel Volume m ³
A-A' & C-C'	91	64	5.0	-	29,120
	91	64	24.0	1,39,776	-
B-B' & C-C'	31	53	5.0	-	8,215
	31	53	24.0	39,432	-
D-D' & E-E'	93	45	5.0	-	20,925
	93	45	24.0	1,00,440	-
TOTAL GEOLOGICAL RESERVES				2,79,648	58,260

Gravel Formation : 2,79,648 m³

The Geological Resources of Rough stone : 58,260 m³

Mineable Resources:

The available mineable reserves are calculated for the proposed lease period of 5 years based on the total minable reserves calculated by safety distances of 10.0m to the Cart Track at west side and 7.5m to the adjoining patta land on all other sides of the boundary side of the applied area and Bench losses.

Table 3. Mineable Resources

SECTION	BENCH	LENGTH (m)	WIDTH (m)	HEIGHT (m)	ROUGH STONE VOLUME (m ³)	GRAVEL VOLUME (m ³)
A-A' & C-C'	I	72	56	5.0	-	20,160
	II	61	50	6.0	18,300	-
	III	49	38	6.0	11,172	-
	IV	37	26	6.0	5,772	-
	V	25	14	6.0	2,100	-
B-B' & C-C'	I	15	45	5.0	-	3,375

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D-D' & E-E'	I	74	28	5.0	-	10,360
	II	63	17	6.0	6,426	-
TOTAL MINEABLE RESERVES					43,770	33,895

The available mineable reserves have been computed as **43,770m³ of Rough Stone** and **33,895m³ of Gravel** up-to the depth of **29.0 meters from** the ground level.

Table 4. Year wise Production Plan

Section	Year	Bench	Length (m)	Width (m)	Height (m)	Rough stone Volume (m³)	Gravel volume (m³)	
A-A' & C-C'	I-Year	I	32	56	5.0	-	8,960	
		II	21	50	6.0	6,300	-	
I – YEAR PRODUCTION						6,300	8,960	
A-A' & C-C'	II-Year	I	20	56	5.0	-	5,600	
		II	20	50	6.0	6,000	-	
		III	15	38	6.0	3,420	-	
II – YEAR PRODUCTION						9,420	5,600	
A-A' & C-C'	III-Year	I	20	56	5.0	-	5,600	
		II	20	50	6.0	6,000	-	
		III	15	38	6.0	3,420	-	
III – YEAR PRODUCTION						9,420	5,600	
A-A' & C- C'	IV-YEAR	III	19	38	6.0	4,332	-	
		IV	24	26	6.0	3,744	-	
I		15	45	5.0	-	3,375		
I		25	28	5.0	-	3,500		
		II	14	17	6.0	1,428	-	
B-B' & C-C'		IV – YEAR PRODUCTION						9,504

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A-A' & C-C'	V-YEAR	IV	13	26	6.0	2,028	-
		V	25	14	6.0	2,100	-
D-D' & E-E'		I	49	28	5.0	-	6,860
		II	49	17	6.0	4,998	-
V – YEAR PRODUCTION						9,126	6,860
TOTAL PRODUCTION FOR FIVE YEARS						43,770	33,895

Year wise Production summary:

YEAR	ROUGH STONE VOLUME (m ³)	GRAVEL VOLUME (m ³)
I – Year	6,300	8,960
II – Year	9,420	5,600
III – Year	9,420	5,600
IV – Year	9,504	6,875
V – Year	9,126	6,860
Total I to V Years	43,770	33,895

6. Mining

Opencast Mining

Open cast Semi-Mechanized Mining with **5.0meter bench for Gravel** followed by charnockite rock / **Rough Stone 6.0meter** vertical bench with a bench width not less than the bench height. The Quarry operation involves shallow jack hammer drilling, blasting, loading and transportation.

Process Description

- The reserves and resources are arrived based upon the Geological investigation
- Removal of Gravel by Excavators and directly Loaded into Tippers.
- Removal of Rough Stone by Excavators by Drilling and Blasting.

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- Shallow Drilling With Jackhammer of 30-32 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 2.5 KLD. Domestic water will be sourced from nearby MC Puram Village and other water will be sourced from nearby road tankers supply.

Table 5. Water Balance

Purpose	Quantity	Sources
Drinking Water	0.5 KLD	Packaged Drinking water vendors available in M.C.puram village which is about 0.59 Km-N from the project site.
Afforestation & Green belt	0.5 KLD	Other domestic activities through road tankers supply
Dust suppression Sprinkling	1.5 KLD	From road tankers supply
Total	2.5 KLD	

8. Manpower

Total manpower required for the project is approximately 10 persons. The workers will be from nearby villages.

Table 6. Man Power

S.No.	Levels & Details		Persons
1.	Skilled	Operators	1
		Mechanic	1
		Blaster/Mate	1
2.	Semi – skilled	Drivers	1

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3.	Unskilled	Musdoor/Labours	3
		Cleaners	1
		Office Boy	1
4.	Management & Supervisory staff		1
Total			10

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

9. Solid Waste Management

Table 7 Solid Waste Management

S. No	Type	Quantity	Disposal Method
1	Organic	1.8 kg/day	Municipal bin including food waste
2	Inorganic	2.7 kg/day	TNPCB authorized recyclers

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

Table 8. 500m Radius Cluster Mine

S. No.	Quarry details	Village	S.F. Nos & Extent (Ha)	Proceeding No & Lease Period
I. Existing Quarries				
1	Tmt. C . Vannamuthu W/o. Chellakani	Kottaiyur	13/3A1 0.46.00 Ha	KV1/482/20184 dated: 18.07.2020 & 26.08.2020 to 25.08.2025
TOTAL			0.46.00 Ha	
II. Abandoned Quarry				
1.	Thiru.S.L. Muniyasamy S/o. Lakshmanan	Kottaiyur	11/2A, 11/2C, 11/2D, 11/2E, 11/2F, 11/2G, 11/2I, 2.74.00 Ha	KV1/620/2014 dated: 22.09.2014 24.09.2014 to 23.09.2019
2.	Thiru.R. Rajaeshkanna S/o. P Ramraj	Kottaiyur	2/3, 2/6, 2/7 1.20.50 Ha	KV1/15033/2015 dated: 27.12.2017 to 26.12.2022
TOTAL			3.94.50 Ha	
III. Present Proposed Quarry:				

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1.	Thiru.S. Marimuthu S/o. Sundaram	Kottaiyur	10/12, 11/2A, 11/2C, 11/2D, 11/2D, 11/2E, 11/2F, 11/2G(P), 11/2H(P), 11/2I(P) etc., 4.24.00 Ha	KV1/519/2020
2.	Thiru.R. Boopathi S/o. Rajeshkanna	Kottaiyur	2/5, 2/8 3/1, 3/2 2.15.00 Ha	KV1/1470/2022
3.	Thiru.V. Thirumalaiselvan S/o. Vengadasamy	Mannarkoyyai	133/14, 33/1B 134/4 (P), 134/5 (P), 136/8 136/9 3.21.50 Ha	KV1/894/2023
4.	Thiru.S. Krishnasamy S/o. Singathurai	Kottaiyur	11/2B1, 11/2B2, 14/2 1.31.00 Ha	KV1/567/ 2023
Total Cluster area			10.91.50 Ha	

10. Land Requirement

The total extent area of the project is **1.31.00 Ha**, Patta Land in Kottaiyur Village of Virudhunagar Taluk, Virudhunagar District.

Table 9 Land Use Breakup

S. No.	Land Use	Present Area (Ha)	Area after the quarrying period of 5 years (Ha)
1.	Area under quarrying	Nil	0.67.70
2.	Infrastructures	Nil	0.01.00
3.	Roads, cart tracks etc.,	Nil	0.02.00
4.	Green Belt	Nil	0.60.30
5.	Unutilized Area	1.31.00	Nil
	Total	1.31.00	1.31.00

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11. Human Settlement

There are no habitations within 300m radius. There are villages located in this area within a 5 km radius of the quarry.

Table 10 Habitation

SL. NO	DIRECTION	VILLAGE	POPULATION	DISTANCE
1	North	M. Chinnaiyapuram	1,000	0.5 Km
		Valayapatti	1,150	2.0 Km
		Meenakshipuram	550	3.0 Km
		Chokkalingapuram	500	4.0 Km
2	NE	Koothiparai	500	4.0 Km
3	NW	Ramakudumbanpatti	350	3.0 Km
		Sanapatti	450	4.0 Km
		Vachakarapatti	4,700	5.0 Km
4	South	Virarpatti	1,000	2.0 Km
		Appaiyanaickerpatti	1,500	3.0 Km
		Puthupatti	650	3.5 Km
		Nallamanaickerpatti	1,200	4.5 Km
5	SE	Sundaralingapuram	400	4.5 Km
6	SW	Golwarpatti	450	4.5 Km
7	East	Kottaiyur	1,000	1.5 Km
		Bommaiyapuram	550	4.0 Km
8	West	Mannarkottai	1350	2.0 Km
		Aavudaiyapuram	3500	3.5 Km

12. Power Requirement

The proposed Rough stone quarrying does not require any power supply for the quarrying operation.

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 Topsoil.

13. Scope of the Baseline Study

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

1. Micro – Meteorology

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

13.1 Micro – Meteorology

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

- i) Average Minimum Temperature : 30° C
- ii) Average Maximum Temperature: 38°C
- iii) Average Annual Rainfall of the area: 829 mm

13.2 Air Environment

Ambient air monitoring was carried out on a monthly basis in the surrounding areas of the Mine Lease area to assess the ambient air quality at the source. To know the ambient air quality at a larger distance i.e. in the study area of 10 km. radius, air quality survey has been conducted at 7 locations. Major air pollutants like Particulate Matter (PM₁₀), Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂) were monitored, and the results are summarized below.

The baseline levels of PM₁₀ (40– 58 µg/m³), PM_{2.5} (12 – 28 µg/m³), SO₂ (5 – 22 µg/m³), NO₂ (10 – 43 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from June 2025 to August 2025.

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 66 dB(A) and 41 dB(A) respectively in Kurunthamadam Gvt.high.school and Project site respectively . The minimum Day Noise and Night

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noise were 53 dB(A) and 35 dB(A) measured in Kurunthamadam Gvt.high.school and Shri Perumal temple sennalkudi which was observed in project site. The observed values are all well within the Standards prescribed by CPCB.

13.4 Water Environment

Bore well:

- The average pH ranges from 7.23 – 8.11.
- TDS value varied from 248 mg/l to 2001 mg/l.
- Hardness varied from 166 to 1307 mg/l.
- Chloride varied from 14.7 to 516 mg/l.

Surface Water:

- The average pH ranges from 8.05 – 8.11.
- TDS value varied from 166 mg/l to 1498 mg/l.
- Hardness varied from 46.2 to 365 mg/l.
- Chloride varied from 33.8 to 379 mg/l.

13.5 Land Environment

The analysis results show that the majority of soil in the project and surrounding area is slightly alkaline in nature and pH value ranges from 6.24 to 7.96 with organic matter 0.26 to 0.60 %. 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 mine is Patta land. There is no displacement of the population within the project area and adjacent nearby area. Social development of nearby villages will be considered in this project.

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement.

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15. Greenbelt Development

1. The development of greenbelt in the peripheral buffer zone of the mine area.
2. Green belt has been recommended as one of the major components of Environmental Management Plan, which will improve ecology, environment and quality of the surrounding area.
3. Local trees like Neem, Vilvam, Pungam, etc will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 655 trees per annum with interval 5m.
4. The rate of survival expected to be 70% in this area

Table.11 Plantation/ Afforestation Program

SCIENTIFIC NAME	COMMON NAME	PLANTED TREES
<i>Aegle marmelos</i>	Vilvam	200
<i>Azadirachta indica</i>	Neem	300
<i>Pongamia pinnata</i>	Pungam	155
TOTAL		655

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

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17. Responsibilities for Environmental Management Cell (EMC)

The responsibilities of the EMC include the following:

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

18. Environmental Monitoring Program

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

19. Project Cost

The total project cost is **Rs 40,49,000/-** for deployment of machinery and creation of infrastructural facilities like approach road, mine office / Workers Shed, First Aid Room etc., including electrifications and water supply

Table .12 Project Cost details

S. No	DETAILS	COST in Rs. /-
i)	Lease rent / Land Cost	4,50,000
ii)	Machinery to be used	Hired machinery
iii)	Fencing	1,50,000
iv)	Labourers Shed	50,000
v)	Sanitary facility	25,000
vi)	Other Items	25,000
TOTAL		7,00,000

(a) Expenditure/ Production Cost. (1Unit= 2.83m³)

Drilling and Blasting cost / unit production = **Rs.150/-** including loading & breaking.

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(i) Mining cost for rough stone up to 5 Years planned production quantity

Total Minal quantity in m³ = 43,770 m³ (15,466 Units)

Total cost of mining Rough Stone = 15,466 X Rs. 150/-

= Rs. 23,90,900/-

(ii) Mining cost for gravel for 5 Years planned production quantity

Total Minal quantity in m³ = 33,895 m³ (11,977 Units)

Total cost of mining - Gravel = 11,977 X Rs. 80/-

= Rs. 9,58,160/-

Total Cost for Mining = Rs. 33,49,060/-

Say = Rs. 33,49,060/-

Total Project Cost (a+b) = Rs. 40,49,000/-.

20. Corporate Environmental Responsibility

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

Table 13 CER Cost

Si. No.	CER Activity	CER value (Rs)
1.	Panchayat Union School in Kottaiyur village (1.5 Km), Virudhunagar (Via). Providing facilities are: ➤ Renovation of damaged old school building and construction of a classroom building and storeroom (Stock room) and ➤ Basic amenities such as Environmental awareness books (Tamil) in Library for students, Green Belt development, RO water purifiers, Hygienic Toilet and maintenance of toilet upto lease period.	5,00,000
Total		5,00,000

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

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<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

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

Virudhunagar is endowed with minor mineral resources like, granite (Leptynite), blue metal, gravel, brick soil, Limekankar, Clay (others) and sand deposit and the crystalline limestone is major mineral resource in the District. As a result of developmental activities and market demand for minor minerals, mining of minor mineral is vital. The mining if not carried out systematically, will result in ill-effects and environmental degradation in project effected area. Therefore, a sustainable development of the area involving extraction of mineral wealth vis-à-vis protection of environment is the ultimate solution for betterment of mankind.

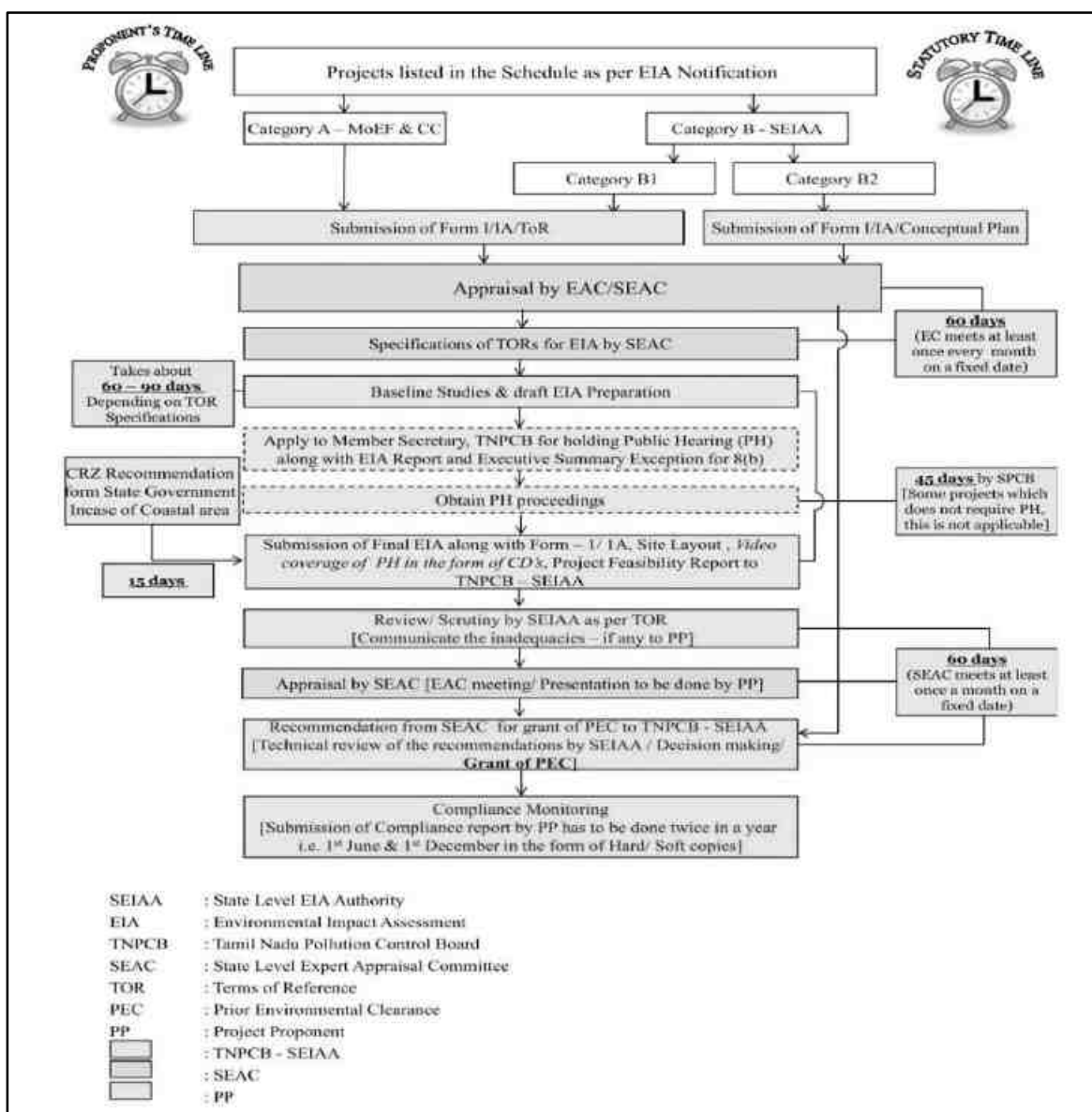
The Mining of minor minerals like Limekankar, Blue metal, Dimension stone, brick sand and Gravels are active in the district. Private companies play a major role in mining activity for minor minerals, whereas the Government agency takes part in mining dimension stones in the district. In total, 121 no's quarry leases for blue metal/rough stone have been sanctioned for road and building material, some leases for making M-sand, 31 granite (leptynite) quarry leased for dimension stone, 30 leases were granted for limestone to private parties to supply as a raw materials for cement manufacturing and soap industries, 7 gravel and 10 brick earth quarries are leased for road material and making bricks in the Virudhunagar district. As per District Survey Report For Rough stone Virudhunagar District 2018-2019 Prepared as per Gazette Notification S.O.3611 (E) dated 25.07.2018 of Ministry of Environment, Forest and Climatic Change, the total production of Rough Stone in the year 2018-2019 was 5,64,375 million Cum.

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1.3 ENVIRONMENTAL CLEARANCE

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

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



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<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

1.4 TERMS OF REFERENCE (TOR)

The Terms of Reference have been issued by SEAC TN vide Letter No. SEIAA-TN/F. No. 12068 Dated: 02.07.2025 & ToR identification number TO24B0108TN5619439N. 55 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 the 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 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 project, need for the project, project location, layout, project activities during construction and operational phases, capacity of the project, project

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<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

operation i.e., land availability, utilities (power and water supply) and infrastructure facilities such as roads, railways, housing and other requirements. If the project site is near a sensitive area it is to be mentioned clearly why an alternative site could not be considered. The project implementation schedule estimated cost of development as well as operation etc should be also included.

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 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, and the cost involved to implement the EMP, both during the construction

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<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

and operational phase and provisions made towards the same in the cost estimates of project construction and operation. This chapter should also describe the proposed post-monitoring scheme as well as inter-organizational arrangements for effective implementation of the mitigation measures.

Chapter 11: Summary and Conclusions. This chapter gives the summary of the full EIA report condensed to ten A-4 pages at the maximum. It should provide overall justification for the 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.S. Krishnasamy,
Status of the Proponent	: Individual
Proponent's name & address	: Thiru.S. Krishnasamy, S/o.Singamuthu, D. No.3/10, West Street, Kalaperumalpatti Village, Virudhunagar Taluk & District.
Pin Code	: 626204

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 mining project by open cast mechanized method on allotted mine lease area at kottaiyur Village, Virudhunagar Taluk of Virudhunagar District, Tamil Nadu. It is a plain terrain. The total allotted mine lease for the proposed project is 1.31.00 Ha with

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their maximum production capacity i.e. **43,770 m³ of Rough stone** and **33,895 m³ of Gravel** upto a restricted depth of **29.0m** for the period of **Five years** only.

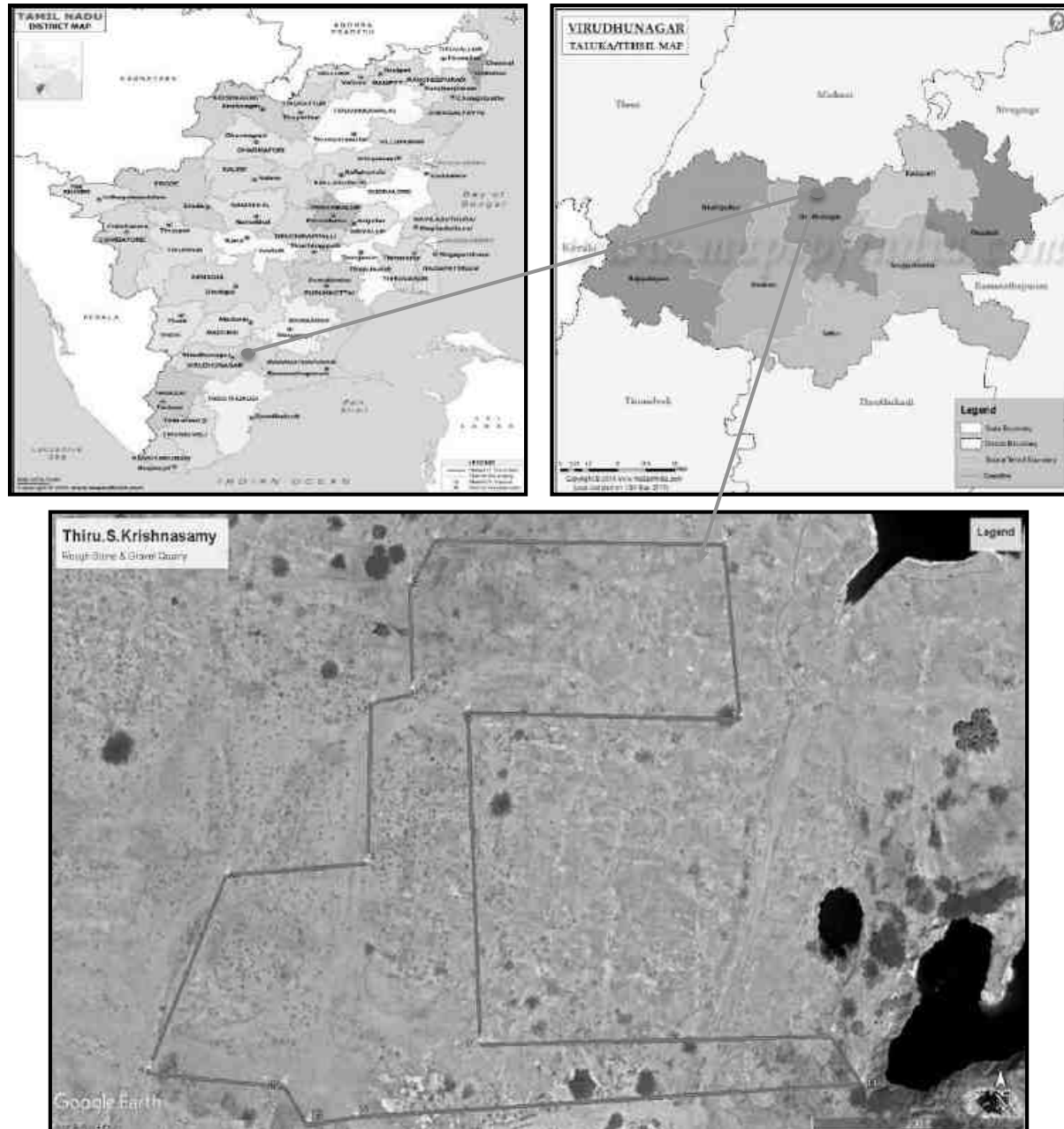


Figure 1-1: Location map of the Project site

<i>Project</i>	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.S.Krishnasamy</i>	
<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

2 Project Description

This chapter furnishes detailed descriptions 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 mining project by open cast mechanized method on allotted mine lease area at **Kottaiyur** Village, Virudhunagar Taluk of Virudhunagar District, Tamil Nadu. It is a Plain terrain. We have obtained fresh mining plan from 2025 to 2030 from Department of Geology and Mining, Virudhunagar District for 3.25.50 Ha land area in the S.F.Nos. **11/2B1, 11/2B2** and **14/2** for a proposed mining depth of **29 m** below ground level and five years production of **43,770m³** of **Rough stone** and **33,895m³** of **Gravel**.

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 final EIA report on the basis of baseline & impact assessment study is carried out. Also, before appraisal, under 7(III) of EIA notification 2006, the project involves Public Consultation and the same will be conducted under SPCB (TN) in Virudhunagar 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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Project Proponent	Thiru.S.Krishnasamy	
Project Location	Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District	

Table 2-1: Quarry within 500m Radius

S. No.	Quarry details	Village	S.F. Nos & Extent (Ha)	Proceeding No & Lease Period
I. Existing Quarries				
1	Tmt. C . Vannamuthu W/o. Chellakani	Kottaiyur	13/3A1 0.46.00 Ha	KV1/482/20184 dated: 18.07.2020 & 26.08.2020 to 25.08.2025
TOTAL			0.46.00	
II. Abandoned Quarry				
1.	Thiru.S.L. Muniyasamy S/o. Lakshmanan	Kottaiyur	11/2A, 11/2C, 11/2D, 11/2E, 11/2F, 11/2G, 11/2I, 2.74.00 Ha	KV1/620/2014 dated: 22.09.2014 24.09.2014 to 23.09.2019
2.	Thiru.R. Rajaeshkanna S/o. P Ramraj	Kottaiyur	2/3, 2/6, 2/7 1.20.50 Ha	KV1/15033/2015 dated: 27.12.2017 to 26.12.2022
TOTAL			3.94.50	
III. Present Proposed Quarry:				
1.	Thiru.S. Marimuthu S/o. Sundaram	Kottaiyur	10/12, 11/2A, 11/2C, 11/2D, 11/2D, 11/2E, 11/2F, 11/2G(P), 11/2H(P), 11/2I(P) etc., 4.24.00 Ha	KV1/519/2020
2.	Thiru.R. Boopathi S/o. Rajeshkanna	Kottaiyur	2/5, 2/8 3/1, 3/2 2.15.00 Ha	KV1/1470/2022
3.	Thiru.V. Thirumalaiselvan S/o. Vengadasamy	Mannarkoyyai	133/14, 33/1B 134/4 (P), 134/5 (P), 136/8 136/9 3.21.50 Ha	KV1/894/2023
4.	Thiru.S. Krishnasamy S/o. Singathurai	Kottaiyur	11/2B1, 11/2B2, 14/2 1.31.00 Ha	KV1/567/ 2023
Total Cluster area			10.91.50 Ha	

<i>Project</i>	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.S.Krishnasamy</i>	
<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

The Total extent of the Existing / Lease expired / Proposed quarries are **10.91.50 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.

Rocks and minerals of economic importance found to occur in Virudhunagar District are Roughstone deposits suitable for the production of Jelly, Cut stones and Pillar Stones.

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.

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Project Proponent	Thiru.S.Krishnasamy	
Project Location	Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District	

2.2 BRIEF DESCRIPTION OF THE PROJECT

Table 2-2 Salient Features of the Project

S. No.	Description	Details
1	Project Name	Thiru. S. Krishnasamy Rough Stone and Gravel Quarry
2	Proponent	Thiru. S. Krishnasamy
3	Mining Lease Area Extent	1.31.00 Ha
4	Location	11/2B1(0.49.53Ha.), 11/2B2(0.40.47Ha.) and 14/2(0.41.00 Ha.).
5	Latitude	09°26'10.00" to 09°26'15.00" N
6	Longitude	77° 58' 42.70" to 77° 58' 49.36" E
7	Topography	Plain terrain
8	Site Elevation above MSL	The altitude of the lease area is 108 m above MSL.
9	Topo sheet No.	58 G/15
10	Minerals of Mine	Rough Stone and Gravel Quarry
11	Proposed production	43,770 m ³ of Rough stone and Gravel 33,895 m ³
12	Ultimate depth of Mining	29 m below ground level
13	Method of Mining	Open cast mechanized mining
14	Water demand	2.5 KLD
15	Source of water	Water will be supplied through tankers supply
16	Manpower	10 Nos.
17	Mining Plan Approval	Mining Plan was approved by The Assistant Director, Dept. of Geology & Mining, Virudhunagar Vide Roc. No. KV1/567/2023, dated: 14.03.2025.

Project	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
Project Proponent	<i>Thiru.S.Krishnasamy</i>	
Project Location	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

18	Precise area communication letter	Precise area communication letter received from The Assistant Director, Dept. of Geology & Mining, Virudhunagar vide Na. Ka. No. KV1/567/2023, dated 20.02.2025
19	Production details	Geological reserves: 2,79,648 m ³ of Rough stone and 58,260 m ³ of Gravel. Proposed year wise reserves: Rough stone 43,770 m ³ and Gravel 33,895 m ³ for a period of five years.
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 is in the form of gravel formation. It will be quarried for filling purposes to nearby end users and part of soil will be preserved all along the boundary as barrier for afforestation. This will be done only after obtaining permission and paying the necessary seigniorage fees to the Government.
22	Ground water	Depth of water table (based on nearby wells and water bodies). The water table is below 60 mts from ground level, which is observed from the nearby bore wells and the data obtained from existing panchayat and Private borewells. The quarry operation is proposed up to a depth of 29.0mts below the ground level.
23	Habitations within 300m radius of the Project Site	There is no Habitation within 300m radius of the project site.

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24	Drinking water	Packaged Drinking water vendors are available in M.C.puram village which is about 0.59 Km-N from the project site.
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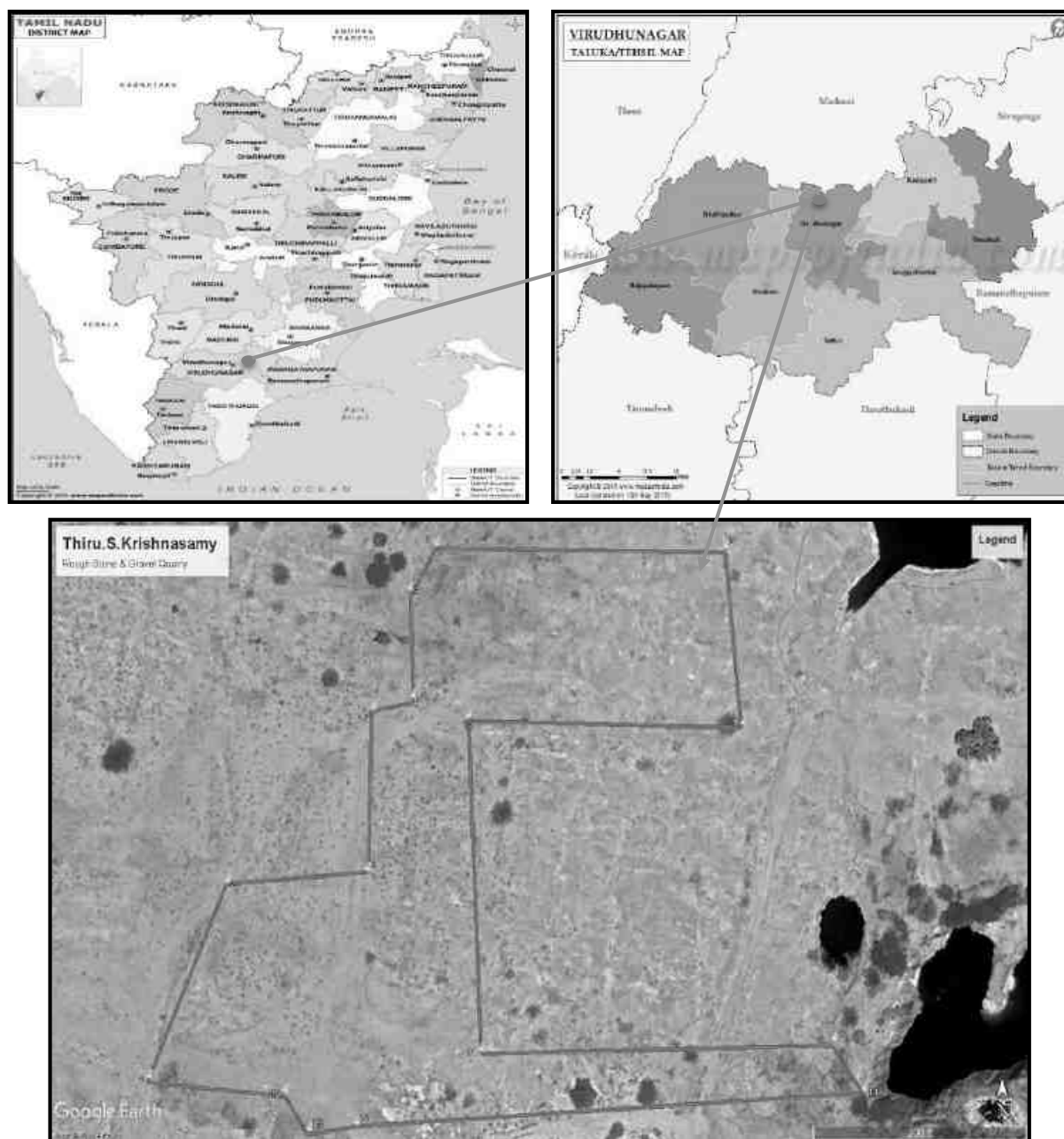


Figure 2-1: Location Map of the Project Site

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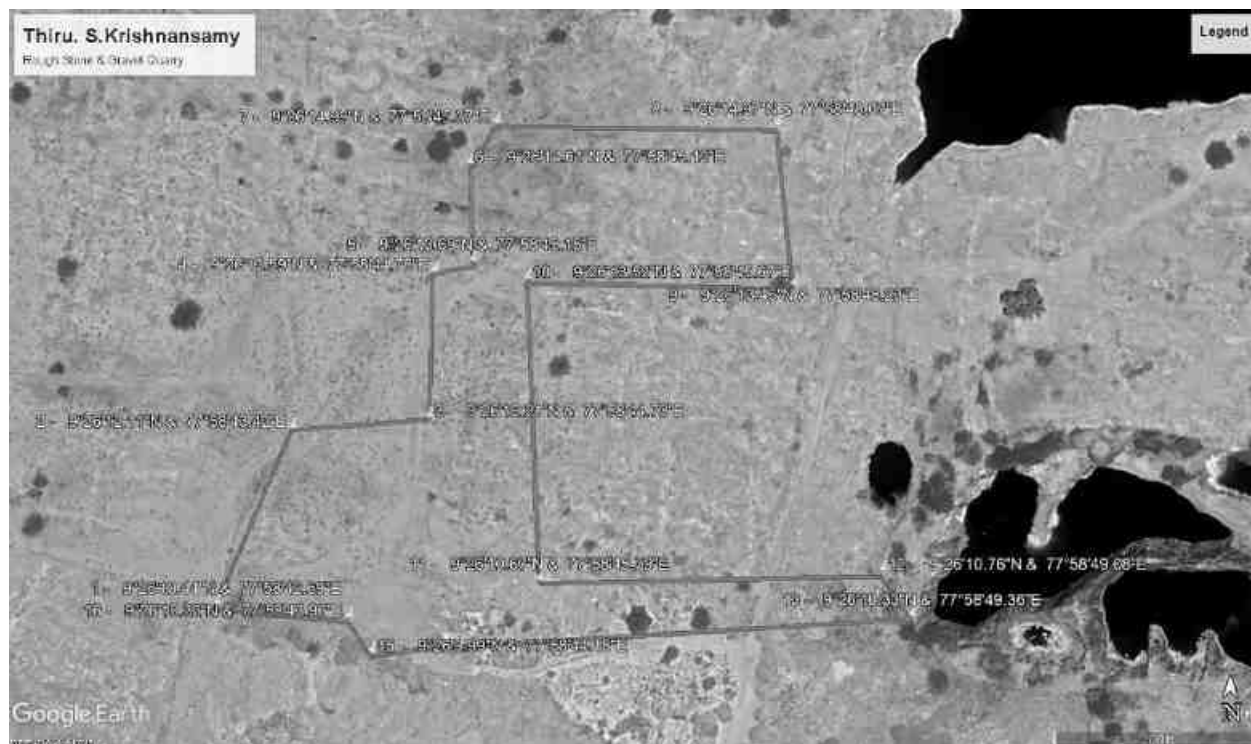


Figure 2-2: Google Earth Image and Coordinates of the Project Site

2.2.1 Site Connectivity:

The site is connected to the roadways as follows.

NH 44 – Kanniyakumari – Srinagar Road – 5.93 Km, W.

SH 42 – Srivilliputhr – Pathibanoor Road – 12.78 Km – NEN

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Figure 2-3: Site Connectivity

2.3 LOCATION DETAILS:

Table 2-3: Location Details

S. No	Particulars	Details
1.	Latitude	09° 26'10.00" to 09° 26' 15.00"N
2.	Longitude	77° 58' 42.70" to 77° 58' 49.36" E
3.	Site Elevation above MSL	The altitude of the lease area is 108 m above MSL
4.	Topography	Plain Terrain
5.	Land use of the site	Patta land
6.	Extent of lease area	1.31.00 Ha

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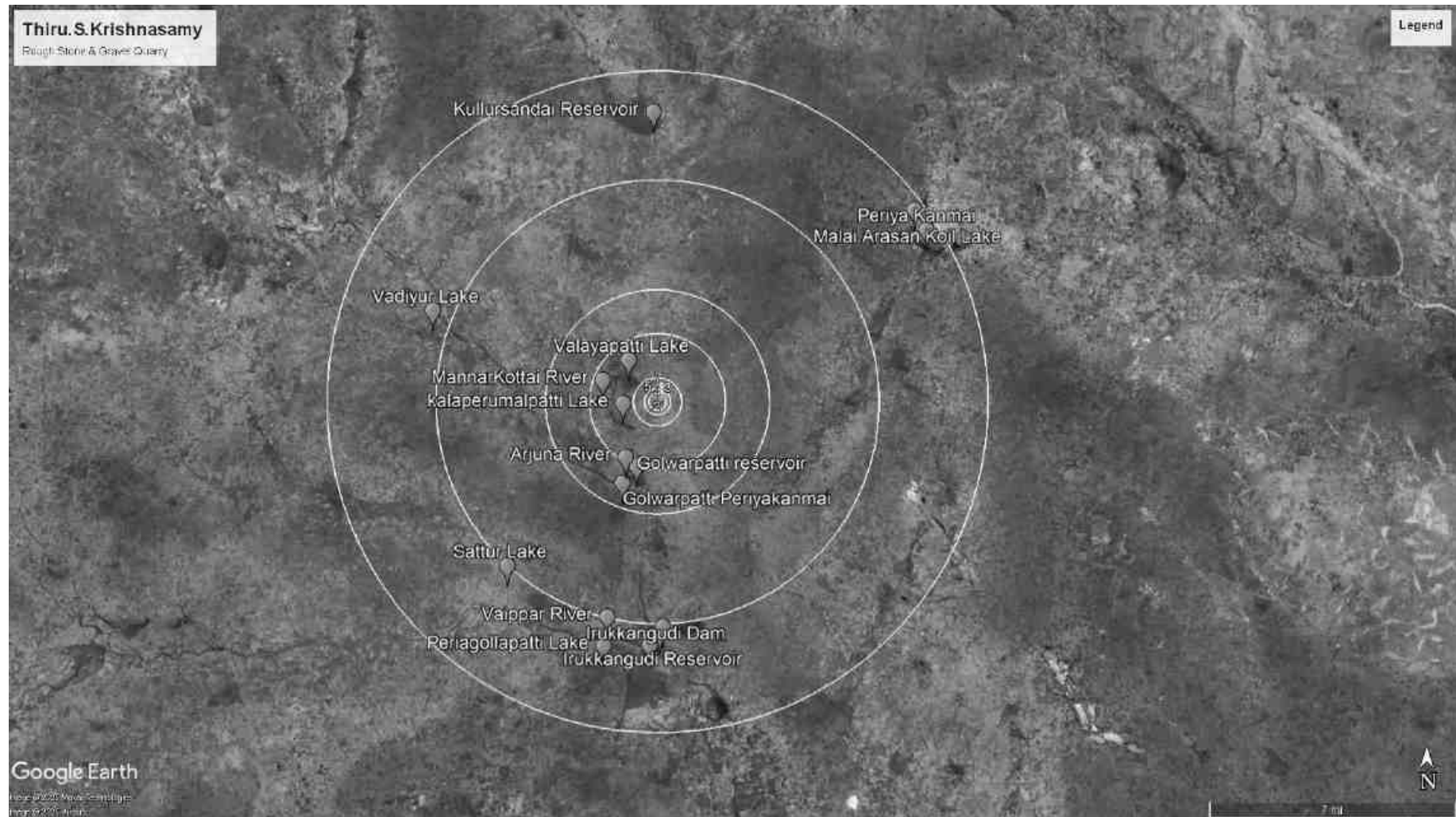


Figure 2-5: Environmental Sensitivity within 15km radius

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2.3.1 Site Photographs

The site photographs of the project site are as follows



Figure 2-6: Site Photographs

2.3.2 Land Use Breakup of the Mine Lease Area

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

Table 2-4: Land use pattern

S. No.	Land Use	Present Area (Hect)	Area after the quarrying period of 5 years (Hect)
1.	Area under quarrying	Nil	0.67.70

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2.	Infrastructures	Nil	0.01.00
3.	Roads, cart tracks etc.,	Nil	0.02.00
4.	Green Belt	Nil	0.60.30
5.	Unutilized Area	1.31.0	Nil
	Total	1.31.00	1.31.00

2.3.3 Human Settlement

There are no habitations within the radius of 300m. There are villages located in this area within a 5 km radius of the quarry.

Table 2-5: Habitation

SL. NO	DIRECTION	VILLAGE	POPULATION	DISTANCE
1	North	M. Chinnaiyapuram	1,000	0.5 Km
		Valayapatti	1,150	2.0 Km
		Meenakshipuram	550	3.0 Km
		Chokkalingapuram	500	4.0 Km
2	NE	Koothiparai	500	4.0 Km
3	NW	Ramakudumbanpatti	350	3.0 Km
		Sanapatti	450	4.0 Km
		Vachakarapatti	4,700	5.0 Km
4	South	Virarpatti	1,000	2.0 Km
		Appaiyanaickerpatti	1,500	3.0 Km
		Puthupatti	650	3.5 Km
		Nallamanaickerpatti	1,200	4.5 Km
5	SE	Sundaralingapuram	400	4.5 Km
6	SW	Golwarpatti	450	4.5 Km
7	East	Kottaiyur	1,000	1.5 Km
		Bommaiyapuram	550	4.0 Km
8	West	Mannarkottai	1350	2.0 Km
		Aavudaiyapuram	3500	3.5 Km

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2.4 LEASEHOLD AREA

The Rough Stone and Gravel Quarry mine of 1.31.00 Ha is a patta land. The lease area falls in **S.F. No: 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk, Virudhunagar 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.

2.5 GEOLOGY

Virudhunagar district is bordered by Western Ghats (Ridge and valley complex) in the West. Valley fill area is observed in Watrap block. A major part of the district constitutes a plain terrain with a gentle slope toward East and Southeast, except for the hilly terrain in the west. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are; 1. Flood Plain, 2. Bazada, 3. Pediment, 4. Shallow & deep buried Pediments and 6. Structural Hills. (Source – CGWB).

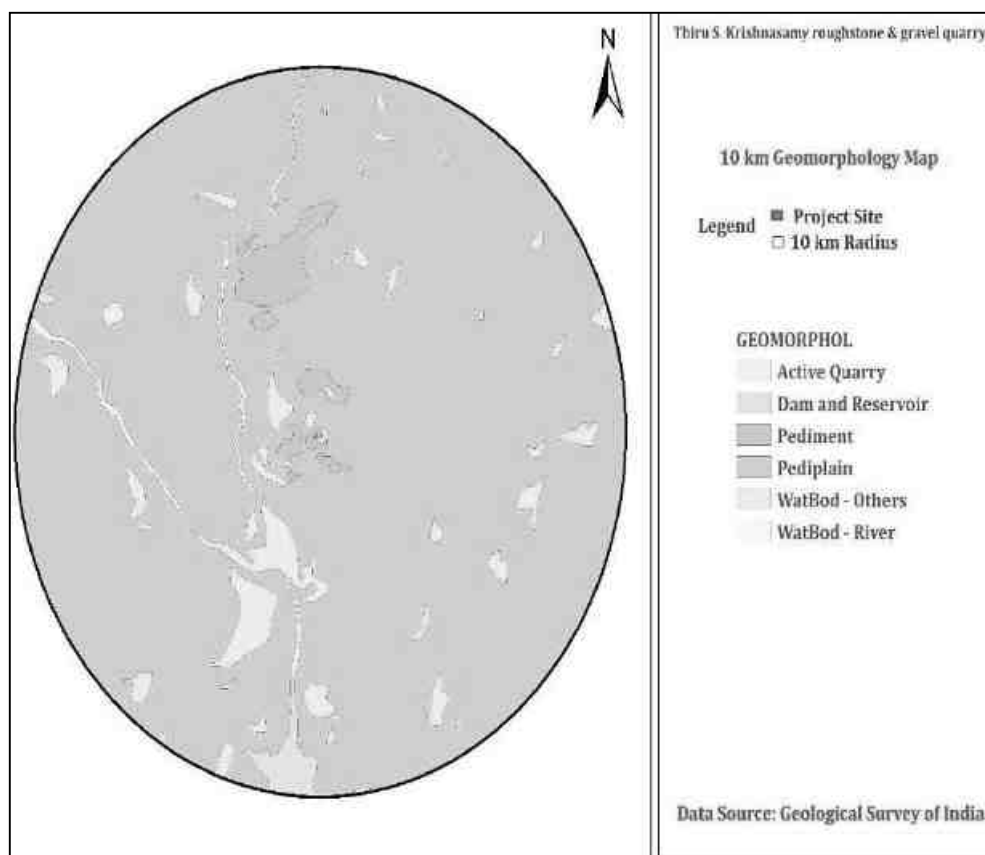


Figure 2-7: Geomorphology

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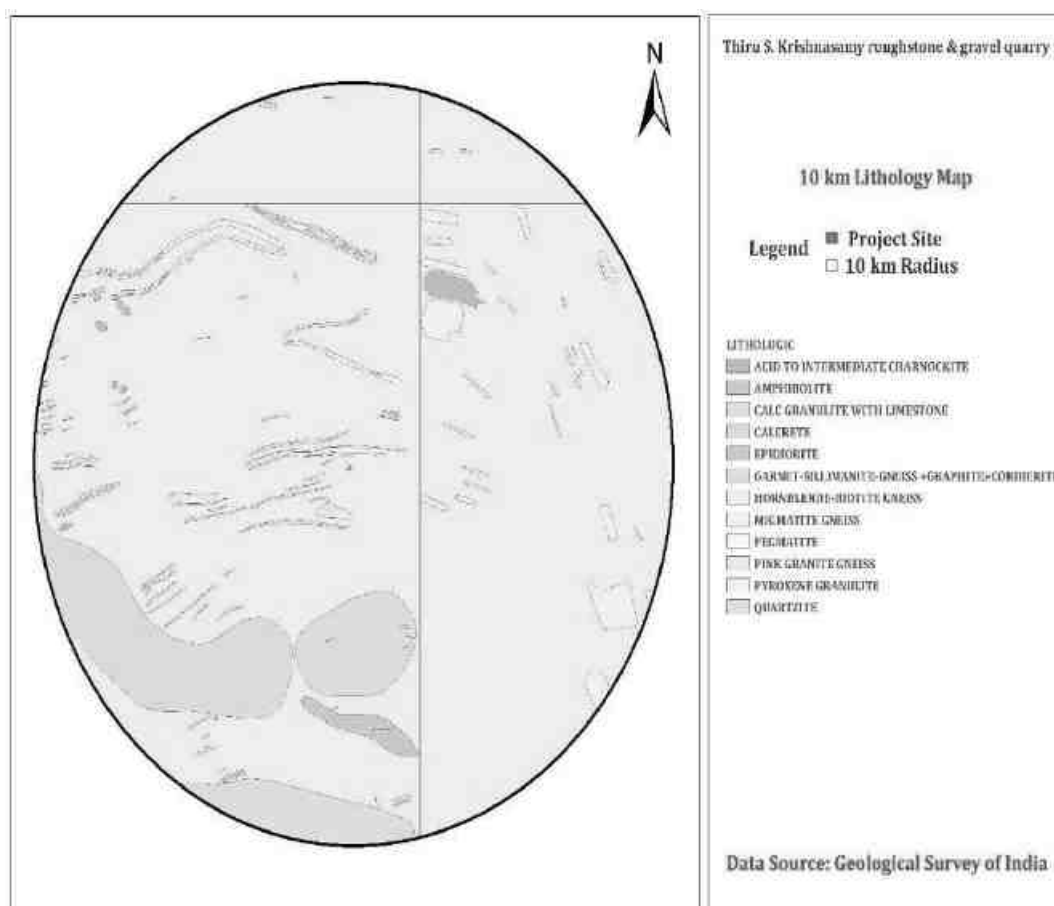


Figure 2-8 Lithology Map

2.6 QUALITY OF RESERVES:

The mining lease area is **1.31.00 Ha**, with production capacity of **43,770 m³** of Rough Stone and **33,895 m³** Gravel. Due to significant role in the domestic as well as infrastructural market, making the mining of Stone and gravel along with associated minor minerals is economically viable.

Table 2-6: Details of Mining

S. No	Particulars	Details
1	Method of Mining	Open Cast mechanized
2	Geological Reserves	2,79,648 m ³ of Rough stone and 58,260 m ³ of Gravel
3	Recoverable Reserves	43,770 m ³ of Rough stone and 33,895 m ³ of Gravel
4	Proposed Production	43,770 m ³ of Rough stone and 33,895 m ³ of Gravel
5	Elevation Range of the Mine Site	108 m AMSL

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2.6.1 Geological Reserves

Topsoil: The total volume of topsoil in the form of Gravel will be 58,260 Cum

Rough Stone and Gravel:

The Availability of Geological Reserve is estimated as 2,79,648 Cum respectively upto the permissible depth. Topsoil/ Gravel is calculated upto a depth of 5.0m and Rough stone at a depth of 24.0m. Total depth – 29.0m below ground level.

Table 2-7: Geological Reserves

Section	Length (m)	Width (m)	Height (m)	Rough stone volume m ³	Gravel Volume m ³
A-A' & C-C'	91	64	5.0	-	29,120
	91	64	24.0	1,39,776	-
B-B' & C-C'	31	53	5.0	-	8,215
	31	53	24.0	39,432	-
D-D' & E-E'	93	45	5.0	-	20,925
	93	45	24.0	1,00,440	-
TOTAL GEOLOGICAL RESERVES				2,79,648	58,260

Gravel Formation : 2,79,648 m³

The Geological Resources of Rough stone : 58,260 m³

2.6.2 Mineable Reserves

Topsoil:

The thickness of the topsoil in this area is 5m and the total volume of topsoil will be 33,895 Cum

Rough stone:

The available mineable reserves are calculated for the proposed lease period of 5 years based on the total minable reserves calculated by safety distances of 10.0m to the Cart Track at west side and 7.5m to the adjoining Patta land on all other sides of the boundary side of the applied area and Bench losses.

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<i>Project Proponent</i>	<i>Thiru.S.Krishnasamy</i>	
<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

Mineable and is estimated as 43,770 Cum of Rough Stone and 33,895 Cum of gravel for five years and upto the permissible depth. Total depth – 29 m below ground level.

Table 2-8: Mineable Reserves

SECTION	BENCH	LENGTH (m)	WIDTH (m)	HEIGHT (m)	ROUGH STONE VOLUME (m ³)	GRAVEL VOLUME (m ³)
A-A' & C-C'	I	72	56	5.0	-	20,160
	II	61	50	6.0	18,300	-
	III	49	38	6.0	11,172	-
	IV	37	26	6.0	5,772	-
	V	25	14	6.0	2,100	-
B-B' & C-C'	I	15	45	5.0	-	3,375
D-D' & E-E'	I	74	28	5.0	-	10,360
	II	63	17	6.0	6,426	-
TOTAL MINEABLE RESERVES					43,770	33,895

2.6.3 Year wise Production Plan

The proposed rate of production of Rough Stone is about 43,770 m³. Total Depth – 29 m (5 m Top soil + 24 m Rough Stone).

Table 2-9: Year wise Production Plan

Section	Year	Bench	Length (m)	Width (m)	Height (m)	Rough stone Volume (m³)	Gravel volume (m³)
A-A' & C-C'	I-Year	I	32	56	5.0	-	8,960
		II	21	50	6.0	6,300	-
I – YEAR PRODUCTION						6,300	8,960

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<i>Project Proponent</i>	<i>Thiru.S.Krishnasamy</i>	
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A-A' & C-C'	II-Year	I	20	56	5.0	-	5,600
		II	20	50	6.0	6,000	-
		III	15	38	6.0	3,420	-
II – YEAR PRODUCTION						9,420	5,600
A-A' & C-C'	III-Year	I	20	56	5.0	-	5,600
		II	20	50	6.0	6,000	-
		III	15	38	6.0	3,420	-
III – YEAR PRODUCTION						9,420	5,600
A-A' & C- C'	IV-YEAR	III	19	38	6.0	4,332	-
		IV	24	26	6.0	3,744	-
B-B' & C-C'		I	15	45	5.0	-	3,375
D-D' & E-E'		I	25	28	5.0	-	3,500
		II	14	17	6.0	1,428	-
IV – YEAR PRODUCTION						9,504	6,875
A-A' & C-C'	V-YEAR	IV	13	26	6.0	2,028	-
		V	25	14	6.0	2,100	-
D-D' & E-E'		I	49	28	5.0	-	6,860
		II	49	17	6.0	4,998	-
V – YEAR PRODUCTION						9,126	6,860
TOTAL PRODUCTION FOR FIVE YEARS						43,770	33,895

<i>Project</i>	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.S.Krishnasamy</i>	
<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

Year wise Production summary:

YEAR	ROUGH STONE VOLUME (m³)	GRAVEL VOLUME (m³)
I – Year	6,300	8,960
II – Year	9,420	5,600
III – Year	9,420	5,600
IV – Year	9,504	6,875
V – Year	9,126	6,860
Total I to V Years	43,770	33,895

Project	Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy	Draft EIA Report
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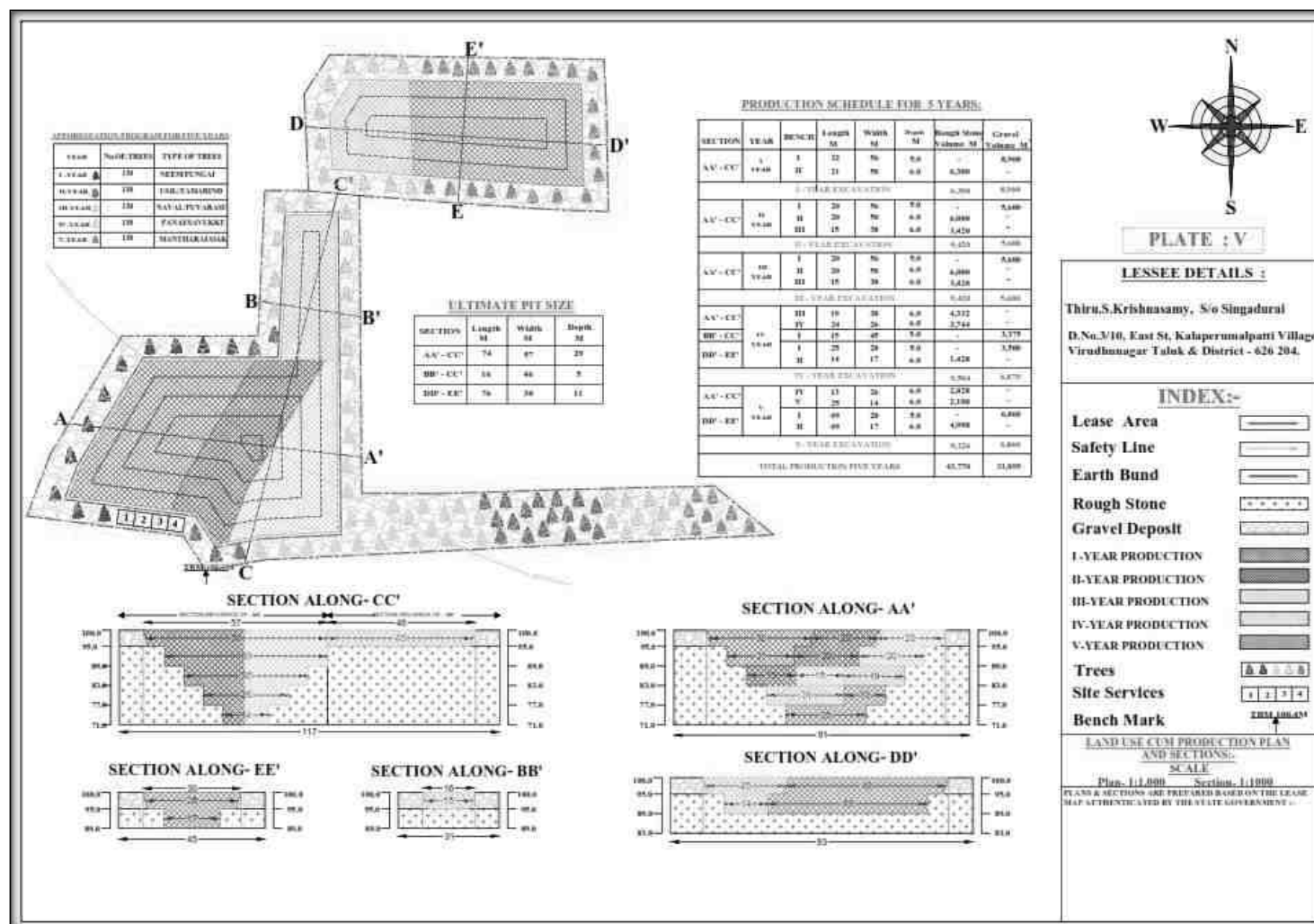


Figure 2-9 Year wise Production Plan

Project	Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy	Draft EIA Report
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2.7 TYPE OF MINING

The proposed project is an open cast mechanized mining with a bench height of 5m for Gravel and bench height of 6m for Rough Stone. 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 Regulation 106(2) (b) of MMR-1961, under Mines Act- 1952.

2.7.1 *Method of Working:*

The Rough stone is proposed to quarry at 6m bench height & 5m width with conventional Open cast mechanized method. The quarrying operation will be carried out in conjunction with conventional methods of mining using Jack hammer drilling and blasting for shattering effect and loosen the Rough stone.

2.7.2 *Overburden*

The overburden is in the form of gravel formation. It will be quarried for filling purposes to nearby end users and part of soil will be preserved all along the boundary as barrier for afforestation. Hence there is no waste anticipated during the Rough stone quarry operation, the excavated rough stone will be directly loaded into the tippers for selling purpose locally.

2.7.3 *Machineries to be used*

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

Table 2-10: List of Machineries used

For Mining operation	Excavator of 0.9 Cu.m bucket capacity (with Rock Breaker attachment) – 1 No. Jack Hammer (30-32 mm Dia) – 1 set (2 Nos.) Tractor mounted compressor (2 Jack Hammer Capacity) – 1 No.
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Loading Equipment	Excavator of 0.9 Cu.m bucket capacity, Same excavator for mining will be used for loading purpose with bucket only.
Transportation	Tipper 1 No. of 10/20 M.T capacity

2.7.4 **Blasting:**

2.7.4.1 **Blasting Pattern:**

The quarrying operation will be carried out 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

Diameter of the hole	:	32-36 mm
Spacing	:	0.5m
Depth	:	1.2m to 1.5m
Burden per hole	:	0.5m
Pattern of hole	:	Zig Zag Staggered in 2 to 3 rows
Inclination of holes	:	80° from the horizontal.
Use of delay detonators	:	25 milli-second delays
Detonating fuse	:	NONEL “Detonating” Cord

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

Slurry Class 3 explosives, a 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.

Table 2-12: Controlled Blasting Details

Parameters	Details
Number of holes	Total – 28 holes per shot of blasting per day.
Powder factor	6 Ts/Kg of explosives
Total explosive required/day	14.0 kg Slurry explosive (Max Capacity)
Charge/Hole	0.5kg
Blasting time	12.00-2.00 PM / 4.30-5.30 PM

2.7.4.5 Storage & Safety measures taken during blasting:

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

2.8 MAN POWER REQUIREMENTS

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

Table 2-13: Man Power Requirements

S. No.	Levels & Details		Persons
1.	Skilled	Operators	1
		Mechanic	1
		Blaster/Mate	1

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2.	Semi – skilled	Drivers	1
3.	Unskilled	Musdoor/Labours	3
		Cleaners	1
		Office Boy	1
4.	Management & Supervisory staff		1
Total			10

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 2.5 KLD. Domestic water will be sourced from nearby MC Puram village and other water will be sourced from nearby road tankers supply.

Table 2-14: Water Requirement

Purpose	Quantity	Sources
Drinking Water	0.5 KLD	Packaged Drinking water vendors are available in M.C.puram village which is about 0.59 Km-N from the project
Afforestation & Green belt	0.5 KLD	Other domestic activities through road tankers supply
Dust suppression Sprinkling	1.5 KLD	From road tankers supply
Total	2.5 KLD	

2.9 PROJECT IMPLEMENTATION SCHEDULE

The implementation schedule of the proposed Mine Lease of Thiru.S.Krishnasamy (1.31.00 ha) is as follows.

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Table 2-15: Mining Schedule

MINING SCHEDULE					
Activity	Jan -26	Jan-27	Jan-28	Jan-29	Jan-30
Site Clearance					
Excavation – Rough stone/Overburden					
I Year Production – 6300 Cum of Rough Stone and 8960 Cum of Gravel					
II Year Production – 9420 Cum of Rough Stone and 5600 Cum of Gravel					
III Year Production – 9420 Cum of Rough Stone and 5600 Cum of Gravel					
IV Year Production - 9504 Cum of Rough Stone and 6875 Cum of Gravel					
V Year Production – 9126 Cum of Rough Stone and 6860 Cum of Gravel					

Year wise Production summary:

YEAR	ROUGH STONE VOLUME (m³)	GRAVEL VOLUME (m³)
I – Year	6,300	8,960
II – Year	9,420	5,600
III – Year	9,420	5,600
IV – Year	9,504	6,875
V – Year	9,126	6,860
Total I to V Years	43,770	33,895

<i>Project</i>	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.S.Krishnasamy</i>	
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2.10 SOLID WASTE MANAGEMENT

Table 2-15: Solid Waste Management

S. No	Type	Quantity	Disposal Method
1	Organic	1.8 kg/day	Municipal bin including food waste
2	Inorganic	2.7 kg/day	TNPCB authorized recyclers

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

2.11 MINE DRAINAGE

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

The water table is below 60 mts from ground level which is observed from the nearby bore wells and the data obtained from existing panchayat and Private borewells. The quarry operation is proposed up to a depth of **29.0**mts below the ground level.

2.12 POWER REQUIREMENT

This Rough stone quarry project does not require huge amounts of 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 excavation of Topsoil needed.

2.13 PROJECT COST

Project Cost

(a) Investment Cost

S. No	DETAILS	COST in Rs. /-
i)	Lease rent / Land Cost	4,50,000
ii)	Machinery to be used	Hired machinery
iii)	Fencing	1,50,000

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iv)	Labourers Shed	50,000
v)	Sanitary facility	25,000
vi)	Other Items	25,000
TOTAL		7,00,000

(b) Expenditure/ Production Cost. (1Unit= 2.83 m³)

Drilling and Blasting cost / unit production = **Rs.150/-** including loading & breaking.

(iii) Mining cost for rough stone up to 5 Years planned production quantity

Total Minalable quantity in m³ = 43,770 M³ (15,466 Units)

Total cost of mining Rough Stone = 15,466 X Rs. 150/-

= Rs. 23,90,900/-

(iv) Mining cost for gravel for 5 Years planned production quantity

Total Minalable quantity in m³ = 33,895 m³ (11,977 Units)

Total cost of mining - Gravel = 11,977 X Rs. 80/-

= Rs. 9,58,160/-

Total Cost for Mining = Rs. 33,49,060/-

Say = Rs. 33,49,060/-

Total Project Cost (a+b) = Rs. 40,49,000/-.

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(c) EMP Cost:

	Mitigation Measure	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	13100	13100
	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	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sandbags / 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	316603
	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	5000	500
	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	26200

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	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
Noise Environment	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	204740
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	25000	20000
		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
Mine Closure	1. Progressive Closure Activity - Surface Runoff Management	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	13100	5000
	2. Progressive Closure Activity 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	262000	10000
	3. Progressive Closure Activity 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)	52400	7860

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		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	117900	11790
	4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year.	For Final Closure activities 15% of the proposed closure cost will be spent during final mine closure stage - Last year	72008	0
	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budget and not necessarily implemented in the Project Site	583742	0
	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
Implementation of EC, Mining Plan &	Air, Water, Noise and Soil Quality sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50000
	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)	40000	10000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	10000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	2620

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	Slope Stability Action Plan	Slope Stability action plan in the end of fourth year plan period	300000	0
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	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	65500	10000
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
Total (Rs)			1899000	1585413
Grand Total (Rs)			3484413	

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

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Table. 2-17 Plantation/ Afforestation Program

SCIENTIFIC NAME	COMMON NAME	PLANTED TREES
<i>Aegle marmelos</i>	Vilvam	200
<i>Azadirachta indica</i>	Neem	300
<i>Pongamia pinnata</i>	Pungam	155
TOTAL		655

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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 Environment – the area, the soil properties, the geological characteristics, the topography, etc
- Chemical Environment – water, air, noise and soil pollution levels, etc.
- Biological Environment – 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 Environment – 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.

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We have obtained Terms of Reference from SEIAA vide Letter No. SEIAA-TN/ F. No. 12068 Dated: 02.07.2025. The baseline monitoring is carried out in June 2025 to August 2025, and the analysis is briefed in the EIA report. The proponent has engaged M/s. Ecotech labs Pvt. Ltd to carry out the existing baseline study.

3.1.2 *Instruments Used*

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

- 1) Respirable Dust Sampler with attachment for gaseous Pollutants, Envirotech APM 460, APM411.
- 2) Fine Particulate Matter (FPM) Sampler, APM 550
- 3) Sound Level Meter Model SL-4010
- 4) 2000 series watchdog automatic weathering monitoring station

3.1.3 *Baseline Data Collection Period:*

The baseline data is collected in accordance with the CPCB Guidelines. The Baseline study is carried out from June 2025 to August 2025.

3.1.4 *Frequency of Monitoring*

Table 3-1: Frequency of Sampling and Analysis

Attributes	Sampling	Frequency
Air environment – Meteorological (wind speed, wind direction, rainfall, humidity, temperature)	Project site	1 hourly continuous
Air environment – Pollutants PM 10 PM 2.5 SO ₂ NO _x Lead in PM	7 locations	24 hourly twice a week 4 hourly. Twice a week, One non-monsoon season 8 hourly, twice a week 24 hourly, twice a week
Noise	7 locations	24 hourly Once in 7 locations

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Water (Ground water) pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Fluoride, Nitrate, Sodium, Potassium, Salinity, Total nitrogen, Total Coliforms, Fecal Coliforms	7 locations	Once in 7 locations
Water (surface water) pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Fluoride, Nitrate, Sodium, Potassium, Salinity, Total nitrogen, Total Coliforms, Fecal Coliforms	Sample from nearby lakes/river	One-time Sampling
Soil (Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	7 locations	Once in 7 locations
Ecology and biodiversity Study	Study area covering 10 km radius	One-time Sampling
Socio- Economic study (Population, Literacy Level, employment, Infrastructure like school, hospitals & commercial establishments)	Villages around 10 km radius	One-time Sampling

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3.1.5 Secondary data Collection

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

- Flora & Faunal Study
- Land use study
- Demography and Socio-Economic Analysis
- Meteorological data, from Indian Meteorological Department (IMD)

3.1.6 Study area details

Table 3-2 Study area details

S. No	Description	Details	Source
1.	Project Location	S.F.No. 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk and District of Tamil Nadu.	Field Study
2.	Latitude & Longitude	Latitude : 09° 26' 10.00" to 09° 26' 15.00"N Longitude: 77° 58' 42.70" to 77° 58' 49.36"E	Topo Sheet
3.	Topo Sheet No.	58 G/15	Survey of India Topo sheet
4.	Mine Lease Area	1.31.00 Ha	--
Demography in the study area (as per Census 2011)			
5.	Total Population	6393	Census Survey of India
6.	Total Number of Households	1882	
7.	Maximum Temperature (°C)	38.5	IMD
8.	Minimum Temperature (°C)	30	
9.	Ecological Sensitive Areas - Wetlands, watercourses or other	River: ➤ Mannarkottai River – 2.42 Km, W. ➤ Arjuna River – 3.3 Km, SSW. ➤ Vaippar River – 10.80 Km, SSW.	Google Earth/Field Study

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	waterbodies, coastal zone, biospheres, mountains, forests	Lake: ➤ Mannarkottai Lake – 1.61 Km, NW ➤ Kalaperumalpatti Lake – 1.75 Km, WSW ➤ Golwarpatti Periyakanmai – 4.61 Km, S ➤ Vadiyur Lake – 10.49 Km, W ➤ Sattur Lake – 10.69 Km, SW ➤ Pottireddiyapatti Lake – 11.85 Km, S ➤ Periagollapatti Lake – 11.96 Km, SSW ➤ Periyakanmai – 13.92 Km, NE ➤ Malai Arasan Koil Lake – 14.00 Km, ENE Dam: ➤ Irukkangudi Dam – 11.04Km, S. Reservoir: ➤ Golwarpatti reservoir – 3.89 Km, S. ➤ Kullursandai reservoir – 12.03 Km, N.																			
10.	Densely Populated area	M.Chinnaiyapuram villages – 0.59 Km, N																			
11.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	<table> <tr> <th>S. No.</th> <th>Places</th> <th>Distance From Project Site</th> </tr> <tr> <td colspan="3">Schools & Colleges</td> </tr> <tr> <td>1</td> <td>MCNUPDA Higher secondary School, MC Puram</td> <td>0.74 Km - NNE</td> </tr> <tr> <td>2</td> <td>Panchayat Union School Kottaiyur</td> <td>1.5 Km - NE</td> </tr> <tr> <td>3</td> <td>Government School PMannarkottai</td> <td>1.6 Km - WNW</td> </tr> <tr> <td>4</td> <td>Government Higher Secondary School Veearpatti - Appayanaickenpatti</td> <td>1.90 Km - SE</td> </tr> </table>	S. No.	Places	Distance From Project Site	Schools & Colleges			1	MCNUPDA Higher secondary School, MC Puram	0.74 Km - NNE	2	Panchayat Union School Kottaiyur	1.5 Km - NE	3	Government School PMannarkottai	1.6 Km - WNW	4	Government Higher Secondary School Veearpatti - Appayanaickenpatti	1.90 Km - SE	Google Earth/ Field Study
S. No.	Places	Distance From Project Site																			
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		5	Government Higher Secondary School Avudaiyapuram	3.07 Km - NW
		6	Government school subbaiyapuram	3.71 Km - NW
		7	Panchayat Union Middle School, Koothiparai	4.18Km - NNE
		8	Ramco Vidy Alaya Thammanayakkanpatti,	5.81 Km - NW
		9	Sri Ram Primary School Thammanayakkanpatti,	5.86 Km - NW
		10	MCNUPDA Higher Secondary School - Vachakkarapatti	5.89 Km - NW
		11	Government Hr. Sec. School - Kattalampatti	9.45 Km - S
		12	Sri S.Ramasamy Naidu Memorial Polytechnic College - Sattur	9.61 Km - SW
		13	Sri Vatsa College of Education, Mettamalai	9.71 Km - W
		14	P.S.N.L College of Education, Sattur	11.31 Km - WSW
		Hospital		
		15	Govt Hospital, Auvudaiyapuram	3.12 Km - NW
		16	Kanniseri pudhur Govt Primary Health Center	8.34 Km - NW
		17	Holy Cross Hospital, Virudhunagar	10.27 km - N
		18	New Govt Hospital, Sattur	10.61 Km - SW
		Temples		

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		19	Kottur Gurusamy Sidhar temple - Kottaiyur,	1.11 Km - NE
		20	Sakthi Temple ,valayapatt	2.01 Km - N
		21	Paal Mariyamman Temple - Ramagoundanpatti	2.04 Km - N
		22	Avudaiyapuram Jumma Masjid	2.85 Km - NW

3.1.7 Site Connectivity:

The site is connected to

NH 44 – Kanniyakumari – Srinagar Road – 5.93 Km, W.

SH 42 – Srivilliputhr – Pathibanoor Road – 12.78 Km – NEN



Figure 3-1: Site Connectivity

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3.2 LAND USE ANALYSIS

3.2.1 *Land Use Classification*

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

3.2.2 *Methodology*

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

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

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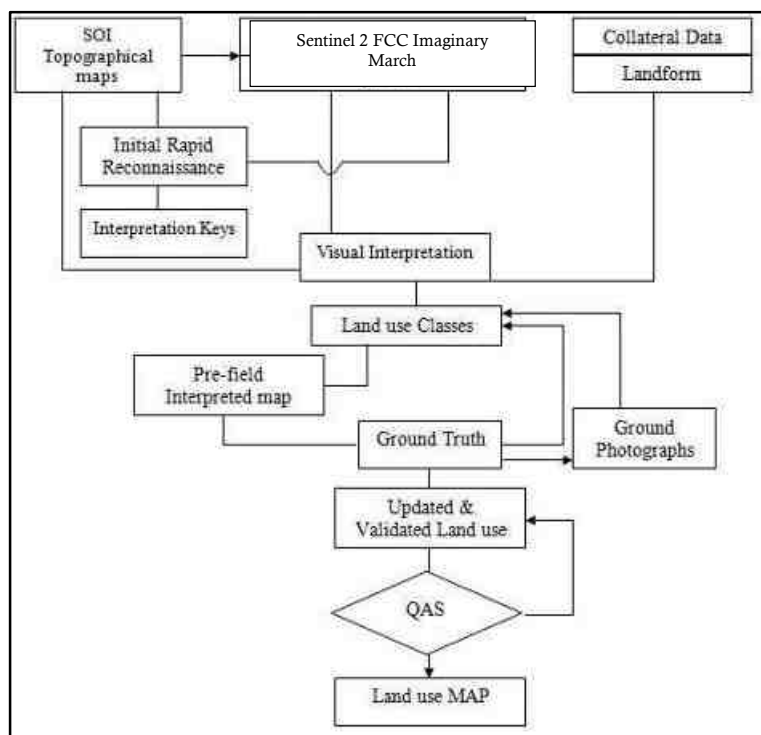


Figure 3-2 Flow Chart showing Methodology of Land use mapping

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 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,

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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 sentinel 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, wetlands, and water bodies. These are followed by level II where built-up land is divided into towns/cities as well villages. The Agriculture land is divided into different classes such as cropland, Fallow, Plantation, while wastelands are broadly divided into, Land with scrub and without Scrub and Mining and Industrial wasteland. The wetlands are classified into inland wetlands, coastal wetlands and islands. The water bodies are classified further into River/stream, Canal, Tanks and bay. In the present study level II classification has been undertaken. 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

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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 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.

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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.

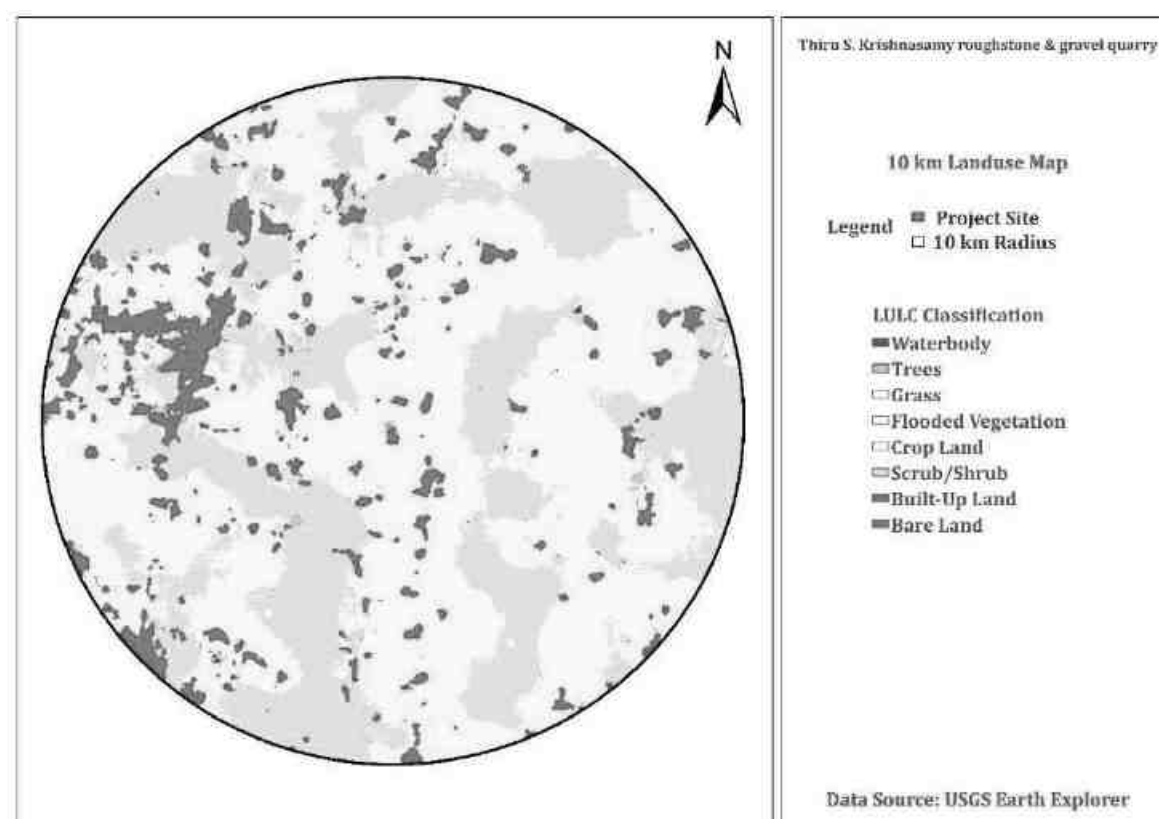


Figure 3-3 Land use classes around 10 km radius from the project site

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

Table 3-3 Land use pattern

Si.No	Categories	Area in Sq.Km
1	Water Body	0.18
2	Trees	0.29
3	Grass	0.12
4	Flooded vegetation	0.005
5	Crops	185.59
6	Scrub/Shrub	103.17
7	Built-up Area	25.30
8	Barren Land	0.13

3.3 WATER ENVIRONMENT

3.3.1 *Contour & Drainage*

The project site is 108 m AMSL.

3.3.2 *Geomorphology*

Virudhunagar district is bordered by Western Ghats (Ridge and valley complex) in the West. Vally fill area is observed in Watrap block. A major part of the district constitutes a plain terrain with a gentle slope toward East and Southeast, except for the hilly terrain in the west. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are;

- Flood Plain,
- Bazada,
- Pediment,
- Shallow & deep buried Pediments and
- Structural Hills.

Soils

Soils in the area have been classified into

- Deep red Loam

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- Black soil
- Red sandy soil.

The majority of the study area is covered by Black soil. Ferruginous red soils are also seen at places. Black soils are deep to very deep and generally occurs in the depressions adjacent to hilly areas, in the western and central part of district. Alluvial soils occur along the river courses. Red sandy soil is seen all around the Sattur, Kariyapatti, Aruppukotai and Thiruchuli blocks.

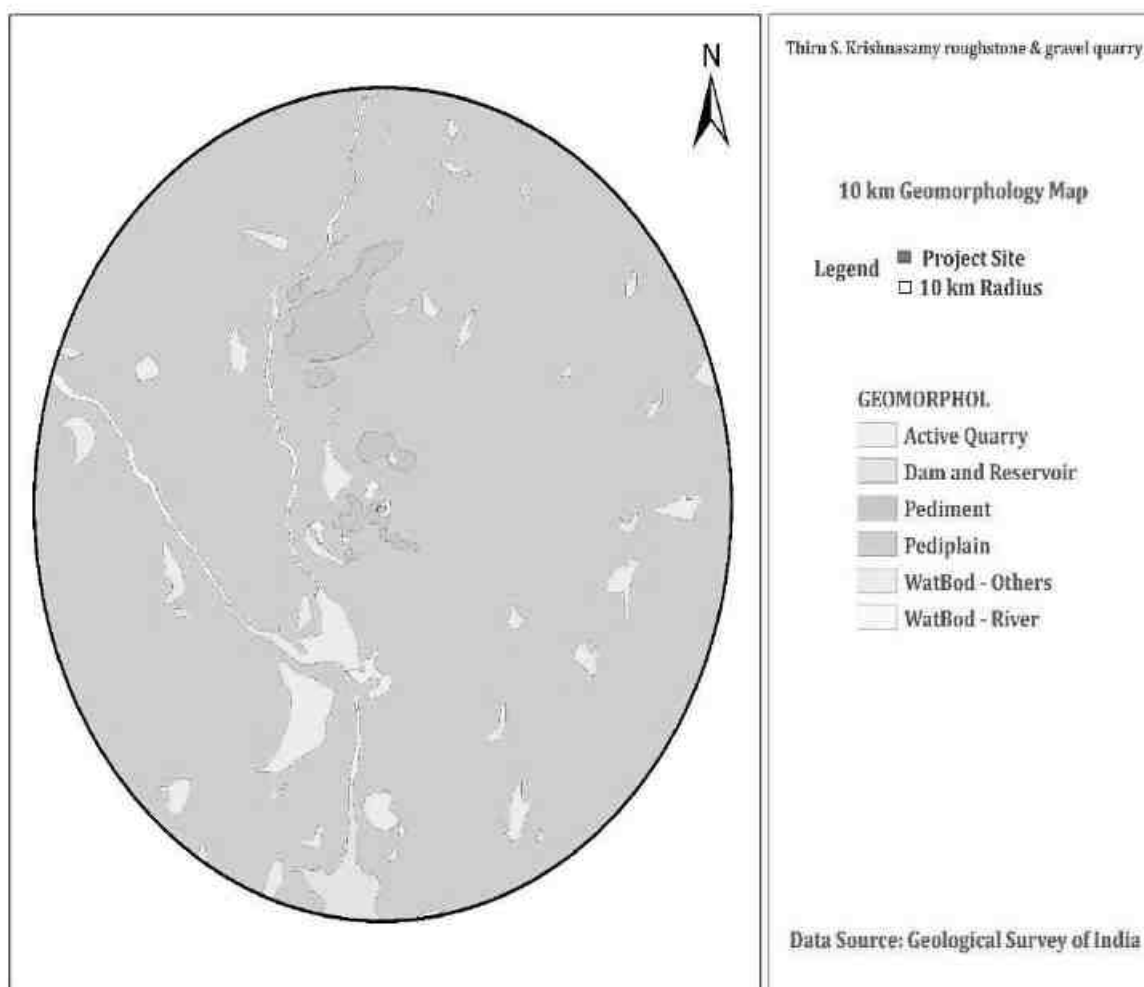


Figure 3-4 Geomorphology within 10km from the project site

3.3.3 *Geology:*

Most of the area in Virudhunagar District is covered by a vast tract of black soil with residual hills and knolls. Since the area is covered by thick pediments, the geology of the area is studied

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in available exposure and quarry section opened up for limestone, dimension stone and blue metals for various purposes. The area exposed,

- Charnockite.
- Migmatite.
- Calc Gneiss.
- Garnetiferous Quartzofeldspathic Gneiss.
- Crystalline Carbonate Rock.
- Pink Granite.
- Quartz Vein.
- Limekankar.
- Soil.
- Clay.

Khondalite Group of rocks and migmatite gneisses of Precambrian (V.R.Sowmi Narayanan, etal.,). The Khondalite Group of rocks comprises Charnockite, crystalline limestone/calc gneiss, garnetiferous quartzofeldspathic gneiss (leptynite), all these litho units probably represent a sequence of metamorphosed sedimentary units of arenaceous, calcareous and argillaceous composition with various intermixtures of different proportions (V.R.Sowmi Narayanan, etal.,). Granite and quartz veins form the younger intrusive.

Charnockite:

- The Charnockite is grey to greenish colored, coarse to medium grained, greasy nature with or without garnet.
- Charnockite is inter banded nature with crystalline carbonate rocks are observed in most of the limestone quarry in Pandalgudi, Lakshmipuram, Gopalapuram villages.
- Weathering of the Charnockite on the surface gives a deceptive look of gneiss and in the quarry sections at depth the fresh charnockite is exposed, which are well exemplified in almost all the Charnockite quarry sections.
- The specks of pyrites within the charnockite are seen in the Duraisampuram village.
- Banded charnockite is observed in Gopalapuram rough stone quarry.

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Migmatite:

- The Charnockite shows migmatization is noticed in hill located East of Kalasalingam university.
- The rock exposes segregation of mafic and felsic layers with pygmatic folds showing conversion of Charnockite into hornblende biotite gneiss, the occurrences of garnet parallel to the foliation is also observed.

Calc Gneiss:

- Calc gneiss are characterized by alternating layer of carbonate rich and diopside rich layers are noticed in outcrop in association with garnetiferous quartzofeldspathic gneiss.
- It is medium to coarse grained and is made up of calcite, diopside, biotite and garnet.
- The exposures are seen in quarry section in Nadikudi, Erichanatham, Kanjanpatti, Sundakottai, Aladipatti, Kadambankulam villages.
- Kanker is forming as a weathering product of calcgneiss, containing CaO content more than 30% is mined by RAMCO cements in Maravarperungudi village and in many local quarries for various purposes.

Garnetiferous Quartzofeldspathic Gneiss:

- The coarse to medium grained garnetiferous quartzofeldspathic gneiss occurs as bands along the foliation in the charnockite, also as enclaves engulfed by charnockite.
- It consists of quartz, feldspar and garnet with subordinate biotite.
- The rock is exposed in association with calc gneiss and Charnockite as observed in quarries in Pandalgudi, Duraisamipuram, Thiruthangal villages.

Crystalline Carbonate Rock:

- The rock is white, pale grey and pink in color, medium to coarse grained and consists essentially of calcite with mafic minerals (diopside) unevenly distributed.
- The crystalline limestone is associated with calc gneiss in Pandalgudi, K.Pudhur villages and it associated with Charnockite in Gopalapuram, Cholapuram villages.
- At places the limestone show compositional variation to dolomitization due to presence of mineral sapphire.
- The presence of quartz vein within the limestone degrades the quality of cement grade purposes. In Cholapuram area, the remobilization of carbonate rock is noticed within the Charnockite.

Pink Granite:

- The pink granite occurs as veins intruding into the above all litho units.

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- It is coarse grained, consists of quartz, pink feldspar, with biotite in lesser proportion. It is associated with Charnockite is observed in Kothankulam and Aladipatti villages.

Quartz Vein:

- Quartz veins are cutting across into the litho units like charnockite, crystalline limestone, calc gneissic.
- The presence of garnet in the quartz vein is noticed in the village Kothankulam is associated with Charnockite.
- The quartz vein in limestone makes unsuitable for cement grade purposes.

Limekankar:

- The deposits are all superficial, limited to depth of 1 to 2 meters.
- The Limekankar in this region is generally overlain by Clay.
- Limekankar is widely used for manufacturing burned lime and also being used for Cement Manufacturing.
- The estimated limekankar reserves of about 8 lacs tons for the average lime kankar thickness of 1.5 m.
- Potential deposits of Limekankar is also occurring in Kallurani, Muthuramalingapuram, Narttampatti, Sudhamadam, Vadakkunatham, Sallukuvarpatti, Velayuthapuram and T.Koppuchittampatti Villages of Aruppukottai Taluk.
- The average thickness of Limekankar deposit in these regions is 1.0 meters and the estimated Resources.

Soil:

- The area is mostly covered by black soil for 0 – 6m thickness, at places reddish in colour where laterite formation are prominent as observed in gravel quarry in Kariapatti village.
- Moreover, the black and red soil formations in the district are being quarried for manufacture of bricks and few good qualities of black soil is using in cement industries.

Clay:

- A fine to silty clayey nature black soil (commonly known as black cotton soil) occurrence is identified in various parts of the District.
- The Clay layer is of 0 – 5m thickness and generally underlined by Limekankar or basement gneissic formation.

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- This Clay deposit in the form of black cotton soil has a wide spread occurrence in the district.
- The clay is rich in Alumina and occurring in Kallurani, Muthuramalingapuram, Narttampatti, Sudhamadam, Vadakkunatham & T.Koppuchittampatti Villages of Aruppukottai Taluk.

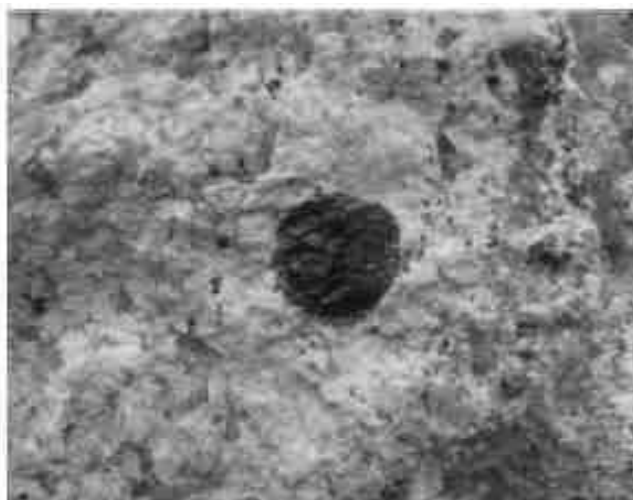
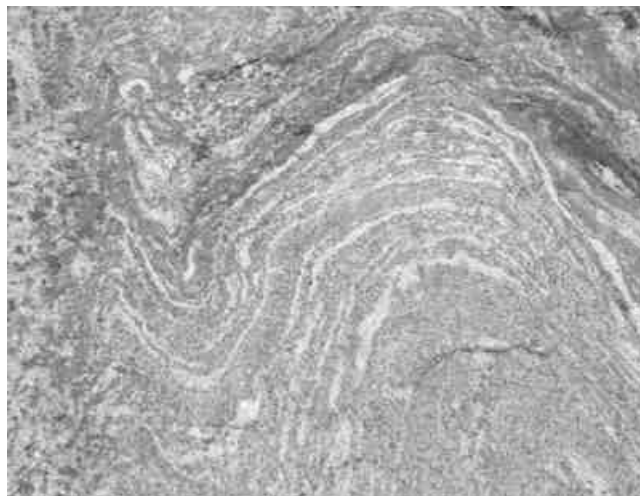


Figure 3-5 Geological Formations of Virudhunagar District

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

3.3.4 Hydrogeology

The district is underlain by both porous and fissured formations (Plate-II). Unconsolidated & Semi-consolidated formations and Weathered, Fissured and Fractured crystalline rocks constitute the important aquifer systems in the district.

The porous formations in the district include sandstones and clays of Recent to subrecent and Tertiary age (Quaternary). The alluvial formations comprising mainly sands, clays and gravels are confined to major drainage courses in the district. The maximum thickness of alluvium is 35.0 m. whereas the average thickness is about 25.0 m. Ground water occurs under phreatic to semi-confined conditions in these formations and is being developed by means of dug wells and filter points. Alluvium,

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which forms a good aquifer system along the Vaippar and Gundar river bed, which is one of the major sources of water supply to the villages.

The water-bearing properties of crystalline formations, which lack primary porosity, depend on the extent of development of secondary intergranular porosity. The occurrence and movement of ground water in these rocks are generally confined to such spaces. These aquifers are highly heterogeneous in nature due to variation in lithology, texture and structural features even within short distances.

Ground water generally occurs under phreatic conditions in the weathered mantle and under semiconfined conditions in the fissured and fractured zones at deeper levels. The thickness of weathered zone in the district is in the range of 4 to 15 m. The depth of dug wells ranged from 10 to 15 m bgl. The yield of large diameter wells in the district, tapping the weathered mantle of crystalline rocks ranges from 40 to 110 lpm and are able to sustain pumping for 2 to 6 hours per day. The Specific capacity of large diameter wells tested in crystalline rocks ranges from 6.26 to 183.8 lpm / m. of drawdown. The yield characteristics of wells vary considerably depending on the topographic set-up, lithology and nature of weathering.

The yield of bore wells drilled down to a depth of 40 to 70 m, by various state agencies mainly for domestic purposes ranged from 10 to 250 lpm. The yield of successful bore wells ranged up to 6 lps for the drawdown varying between 5.76 and 17.56 m and drilled down to a depth of 200 m bgl during the ground water exploration programme of Central Ground Water Board.

The depth to water level in the district varied between 0.67 and 12.12 m bgl during pre-monsoon (May 2006) and varied between 0.49 and 8.78 m bgl during post monsoon (Jan 2007). The seasonal fluctuation shows a rise in water level which ranges from 0.35 to 2.8 m. The piezometric head varied between 3.49 and 16.23 m bgl during pre-monsoon (May 2006) and 1.29 and 8.06 m bgl during post monsoon (Jan 2007).

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Aquifer Parameters:

Formation	Transmissivity (m ² /day)	Storability	Specific Yield(%)
Weathered Crystalline	-	-	<2
Fractured Crystalline	1-548	3.41X10 ⁻⁵ to 7.0X10 ⁻³	-

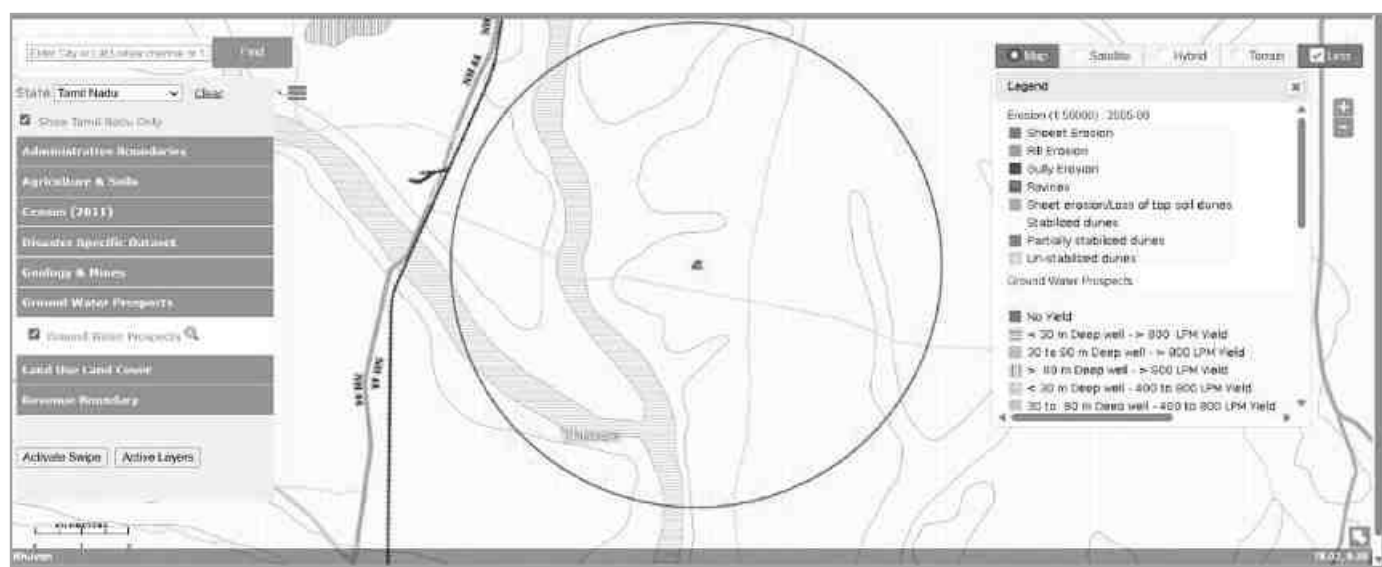


Figure 3-7 Ground water prospects within 5 km radius of the project site

3.3.5 Ground water quality monitoring

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

Table 3-4 Ground water Quality Analysis

Environmental Parameters: Ground water Quality Analysis	
Monitoring Period	June 2025 to August 2025
Design Criteria	Based on the Environmental settings in the study area

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Monitoring Locations	Project Site -GW 1 Kaliyammann Temple, Pudupatti – GW2 St. Joseph church, E. Muthulingapuram - GW 3 Kurunthamadam Govt High School - Virudhunagar - GW 4 Karuppasamy karmegam temple - kanmaepatti - GW 5 Arulmigu Muthalamman Temple – GW 6 Shri Perumal Temple, Sennalkudi – GW 7
Methodology	Water Samples were collected in 5 Litre fresh cans as per IS 3025 Part I and transported to the laboratory in Iceboxes
Frequency of Monitoring	Once in a season

3.3.5.1 Sampling Procedure

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

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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	GW 1	GW 2	GW 3	GW 4	GW 5	GW 6	GW 7
1	pH (at 25°C)	-	7.58	8.11	7.23	8.12	8.02	7.98	8.08
2	Electrical Conductivity	µS/cm	1410	396	557	458	3580	1185	1520
3	Colour	Hazen Unit	BQL (LOQ:5)	40	BQL (LOQ:5)	BQL (LOQ:5)	BQL (LOQ:5)	BQL (LOQ:5)	BQL (LOQ:5)
4	Turbidity	NTU	BQL (LOQ:1)	6	BQL (LOQ:1)	BQL (LOQ:1)	BQL (LOQ:1)	BQL (LOQ:1)	BQL (LOQ:1)
5	Total Dissolved Solids	mg/L	785	248	342	276	2001	805	858
6	Total Suspended Solids	mg/L	BQL (LOQ:2)	4	BQL (LOQ:2)	BQL (LOQ:2)	BQL (LOQ:2)	BQL (LOQ:2)	BQL (LOQ:2)
7	Total Hardness as CaCO ₃	mg/L	519	BQL (LOQ:5)	166	189	1307	304	488
8	Calcium Hardness as CaCO ₃	mg/L	290	BQL (LOQ:2)	131	136	717	152	290
9	Magnesium Hardness as CaCO ₃	mg/L	229	BQL (LOQ:2)	35.6	52.8	590	156	198
10	Calcium as Ca	mg/L	116	BQL (LOQ:1)	52.3	54.6	287	60.8	116
11	Magnesium as Mg	mg/L	55.7	BQL (LOQ:1)	8.56	12.7	143	36.9	48.2
12	Chloride as Cl	mg/L	83.3	97.8	84	14.7	516	212	187

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13	Sulphate as SO ₄	mg/L	281	38	49	20.8	260	79	115
14	Total Alkalinity as CaCO ₃	mg/L	201	34.2	70	230	358	236	258
15	Iron as Fe	mg/L	BQL (LOQ:0.1)	0.34	BQL (LOQ:0.1)	BQL (LOQ:0.1)	BQL (LOQ:0.1)	BQL (LOQ:0.1)	BQL (LOQ:0.1)
16	Silica as SiO ₂	mg/L	33.1	1.5	17.7	10.1	89	54	27
17	Fluoride as F	mg/L	BQL (LOQ:0.2)	BQL (LOQ:0.2)	BQL (LOQ:0.2)	1.05	0.43	0.21	2.63
18	Nitrate as NO ₃		23.3	13.7	14.4	13.3	15.9	20.5	22.4
19	Potassium as K	mg/L	5.9	5.2	8.1	2.0	81.8	9.3	28.9
20	Sodium as Na	mg/L	66.6	71.6	71.2	10	401	189	155

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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 below the detectable limit and the maximum value is reported in the GW sampling location 2, 40HU which is beyond both acceptable and permissible limits prescribed by IS 10500: 2012 (referred as “Standards” from herein). This indicates that water in GW2 is unappealing in nature. The colored water will stain laundry, fixtures, glasses etc., and produces unpleasant odour and taste.

pH:

Value observed in the Project Site: 7.23 – 8.12

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 Alkaline in nature.

Turbidity:

Value observed in the Project Site: At maximum location BQL (LOQ:1) except GW2 which is 6NTU.

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 very slightly turbid.

Total Dissolved Solids:

Value observed in the Project Site: 2001 mg/L.

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

The TDS is the presence of 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 topsoil 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: 287 mg/L.

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

Calcium is the essential macronutrient. The value of the calcium is slightly greater than prescribed permissible standards. The higher level of calcium may cause hardening in domestic equipment and will also reduce 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: 590 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 the both acceptable limit and permissible limit. The increase in the level of magnesium will cause diarrhea and vomiting in children.

Chloride

Value observed in the project site: 516 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: 358 mg/L.

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

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

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Hardness:

Value observed in the Project Site: 1307 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 both acceptable and 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 **Sattur Tank and Malaipatti Periya Kanmoi**. The results are summarized below.

Table 3-7 Surface Water Sample Results

S. No	Parameters	Units	Sattur Tank.	Malaipatti Periya Kanmoi
1	pH (at 25°C)	-	8.11	8.05
2	Electrical Conductivity	µS/cm	2250	298
3	Colour	Hazen Unit	BQL(LOQ:5)	52
4	Turbidity	NTU	BQL(LOQ:1)	40
5	Total Dissolved Solids	mg/L	1498	166
6	Total Suspended Solids	mg/L	BQL(LOQ:2)	24
7	Total Hardness as CaCO ₃	mg/L	365	46.2
8	Calcium Hardness as CaCO ₃	mg/L	290	28
9	Magnesium Hardness as CaCO ₃	mg/L	75	19
10	Calcium as Ca	mg/L	116	11.2
11	Magnesium as Mg	mg/L	18.2	4.54
12	Chloride as Cl	mg/L	379	33.8
13	Sulphate as SO ₄	mg/L	317	21.2
14	Total Alkalinity as CaCO ₃	mg/L	365	77.3
15	Iron as Fe	mg/L	0.172	0.866

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16	Silica as SiO ₂	mg/L	16.3	7.42
17	Fluoride as F	mg/L	2.70	1.791
18	Nitrate as NO ₃	mg/L	18.2	13.3
19	Potassium as K	mg/L	85.5	5.4
20	Sodium as Na	mg/L	289	23.2
21	Total Kjeldahl Nitrogen as N	mg/L	13.3	10.1
22	Biochemical oxygen Demand @ 27°C	mg/L	23.5	24.6
23	Chemical Oxygen Demand	mg/L	81.5	88.3
24	Coliform		300	900
25	E.coli		6	4

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.

3.3.7.1 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

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i) Climate

The Eastern part of the district experiences hot climate and Western part has a contrasting pleasant cold climate. The district is hot and dry in summer i.e., from March to June. From July to November is rainy season and between December to February winter prevails with very cold and misty.

ii) Temperature

The maximum temperature is around 36°C and minimum temperature is 28°C.

iii) Rainfall

Virudhunagar district receives rainfall from both the northeast and the southwest monsoons. Monsoon season is from the months of July to November. During this time, temperature is mild and pleasant. Heavy rainfall is expected in short intervals during this period. December to February are winter months.

This district gets maximum rainfall in November (274.7mm).

VIRUDHUNAGAR DISTRICT -NORMAL AND ACTUAL RAINFALL

Unit in mm.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F	R/F
2016	3	0.0	1.7	3.1	77.6	6.9	60.0	24.0	25.7	72.5	42.9	57.9
2017	23.2	6.2	38.1	14.2	92.4	10.0	24.1	122.5	137.0	125.7	67.6	139.0
2018	0.1	28.4	26.3	62.7	149.0	8.0	52.5	58.5	108.4	182.7	75.2	7.5
2019	8.1	3.5	6.8	0.5	6.0	29.3	12.8	89.7	178.7	203.5	111.9	62.8
2020	7.7	0.0	0.0	32.6	80.4	24.0	78.8	47.9	79.4	127.6	284.0	97.9

Source: District survey report

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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 June to August 2025.

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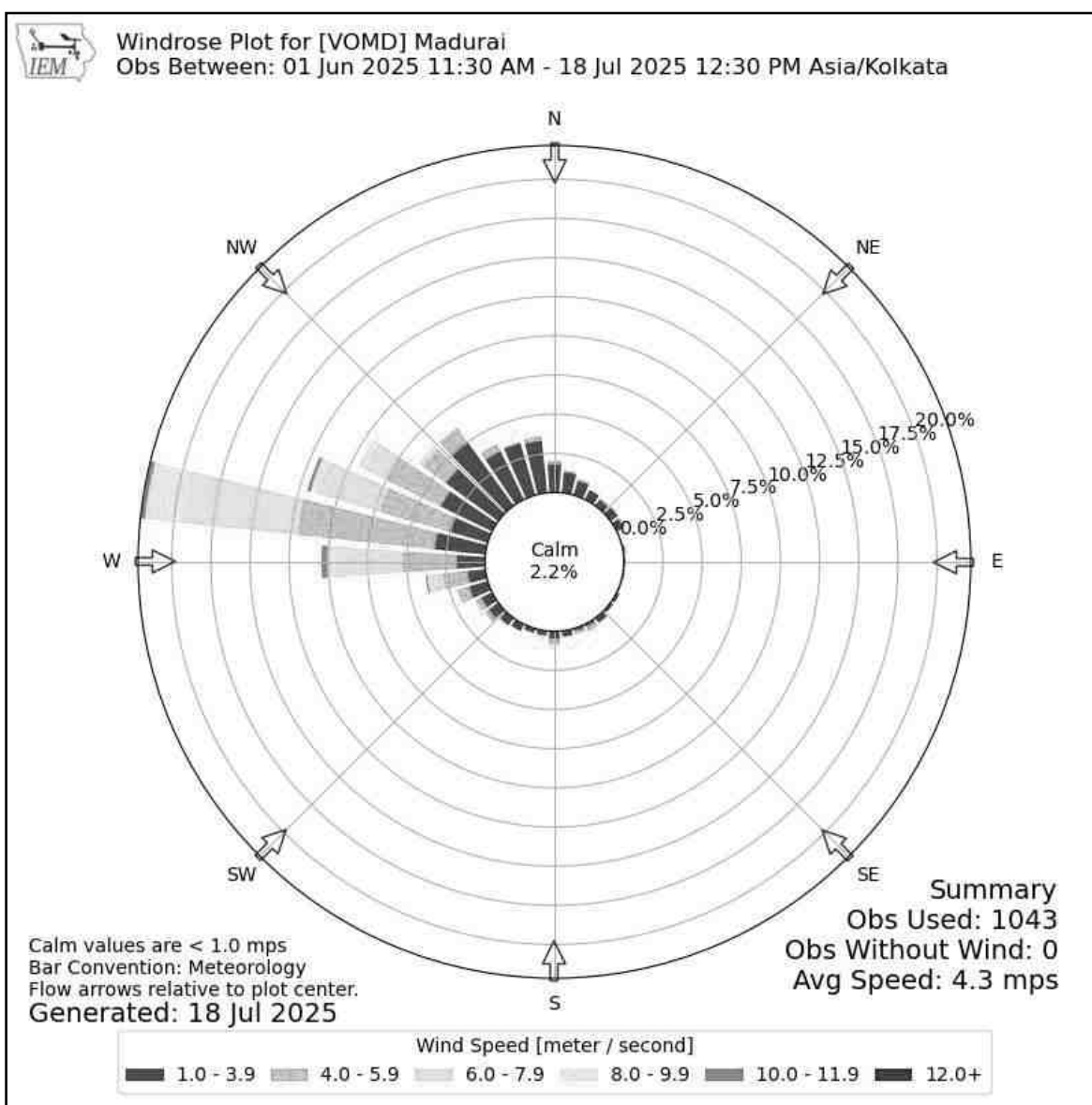


Figure 3-8 Wind rose

3.3.8 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.

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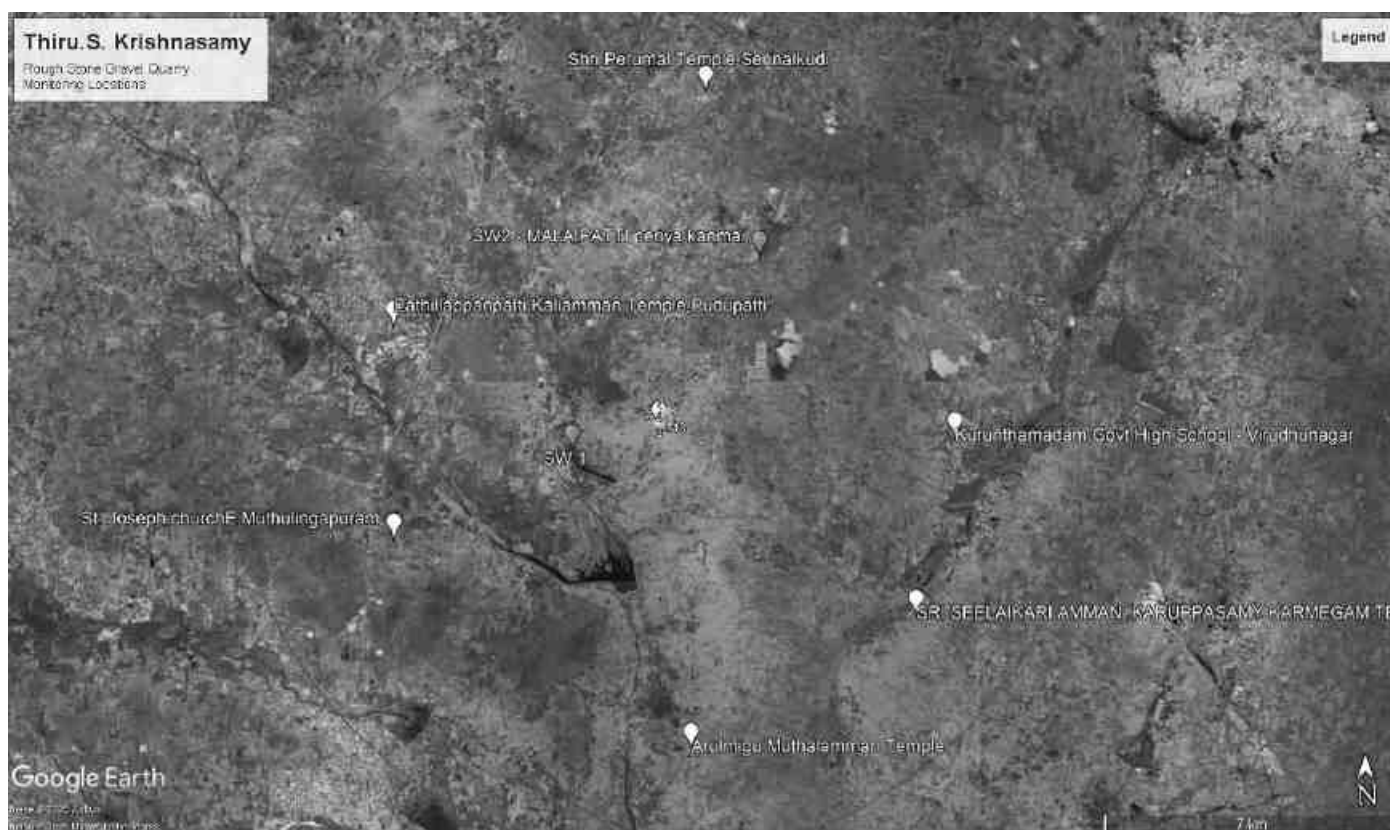


Figure 3-9: Monitoring Locations

3.4 AMBIENT AIR QUALITY

Table 3-8: Selection of Sampling Location

Environmental Parameters: <i>Ambient Air</i>
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Monitoring Period	June 2025 to August 2025		
Design Criteria	The monitoring stations are selected based on factors like topography/terrain, prevailing meteorological conditions like predominant wind direction (June 2025 to August 2025), etc, play a vital role in the selection of air sampling stations. Based on these criteria, 7 air sampling stations were selected in the area as shown below.		
Monitoring Locations	Project site	-	-
	Eathillappanpatti Kaliasman Temple, Pudupatti	6.71 km	Upwind WN
	St. Joseph church, E. Muthulingapuram	6.71 km	Upwind WS
	Kurunthamadam Govt High School - Virudhunagar	6.85 km	Downwind E
	karuppasamy karmegam temple - kanmaepatti	7.32 km	Crosswind ES
	Arulmigu Muthalamman Temple	7.42 km	Crosswind S
	Shri Perumal Temple, Sennalkudi	7.89 Km	Crosswind N
Methodology	Respirable Particulate Matter (PM10) - Gravimetric (IS 5182: Part 23:2006) Particulate Matter PM2.5 - Gravimetric (Fine particulate matter) Sulphur Dioxide - Calorimetric (West & Gaeke Method) (IS 5182: Part 02: 2001) Nitrogen Dioxide - Calorimetric (Modified Jacob & Hocheiser Method) (IS 5182: Part 06:2006)		
Frequency of Monitorin	2 days 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 (µg/m ³)			PM 2.5 (µg/m ³)			SO ₂ (µg/m ³)			NO _x (µg/m ³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
AAQ 1	Project Site	41	55	46	16	24	18	6	11	7	11	23	15
AAQ 2	Eathillappanpatti Kaliyammann Temple, Pudupatti	48	58	52	20	28	23	7	16	8	14	31	17
AAQ 3	St. Joseph church, E. Muthulingapuram	38	47	40	15	22	18	5	13	6	10	20	13
AAQ 4	Kurunthamadam Govt High School - Virudhunagar	36	50	41	14	21	16	6	11	7	12	23	15
AAQ 5	karuppasamy karmegam temple - kanmaepatti	41	53	44	16	22	17	6	13	8	11	19	14
AAQ 6	Arulmigu Muthalamman Temple	36	50	41	12	24	14	6	16	7	12	23	15
AAQ 7	Shri Perumal Temple Sennalkudi	56	67	59	26	34	27	16	22	18	27	43	30
NAAQ Standards - Residential Area		100 (µg/m ³)			60(µg/m ³)			80 (µg/m ³)			80 (µg/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 (67($\mu\text{g}/\text{m}^3$), PM 2.5 (34 ($\mu\text{g}/\text{m}^3$), SO_x (22 ($\mu\text{g}/\text{m}^3$), NO_x (27($\mu\text{g}/\text{m}^3$) is observed in different places.

Inference:

The monitoring results for PM₁₀, PM_{2.5}, Sox, NO_x was found to be high in Shri Perumal Temple Sennalkudi which is due to the movement of vehicles .

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

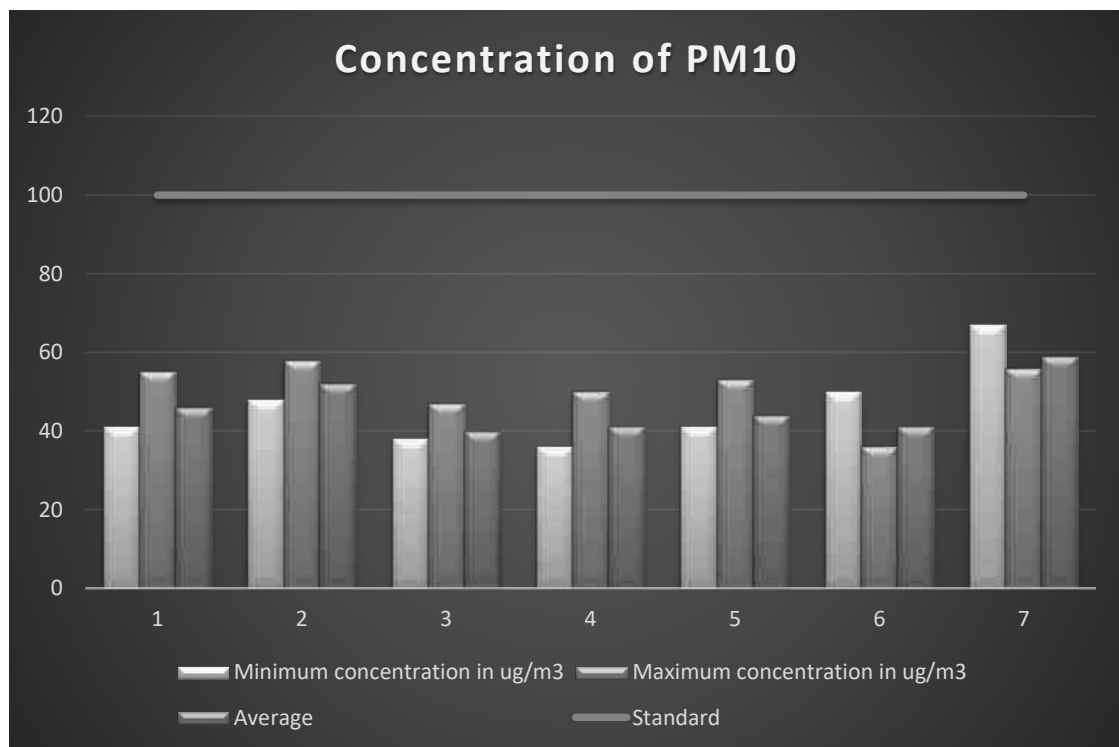


Figure 3-10 Concentration of PM₁₀ ($\mu\text{g}/\text{m}^3$) in Study Area

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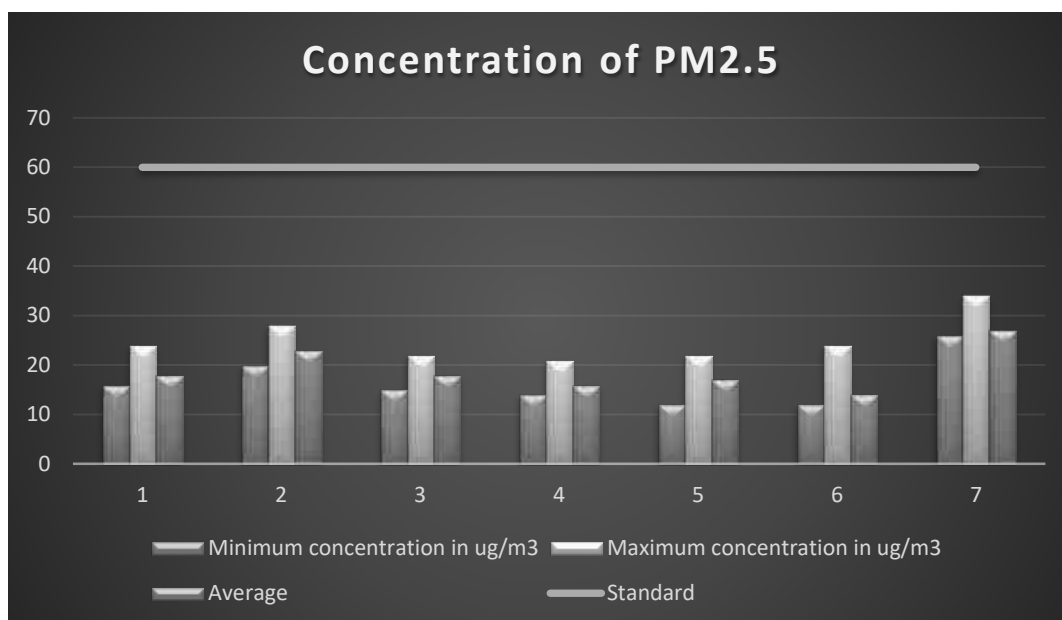


Figure 3-11 Concentration of PM2.5 ($\mu\text{g}/\text{m}^3$) in Study Area

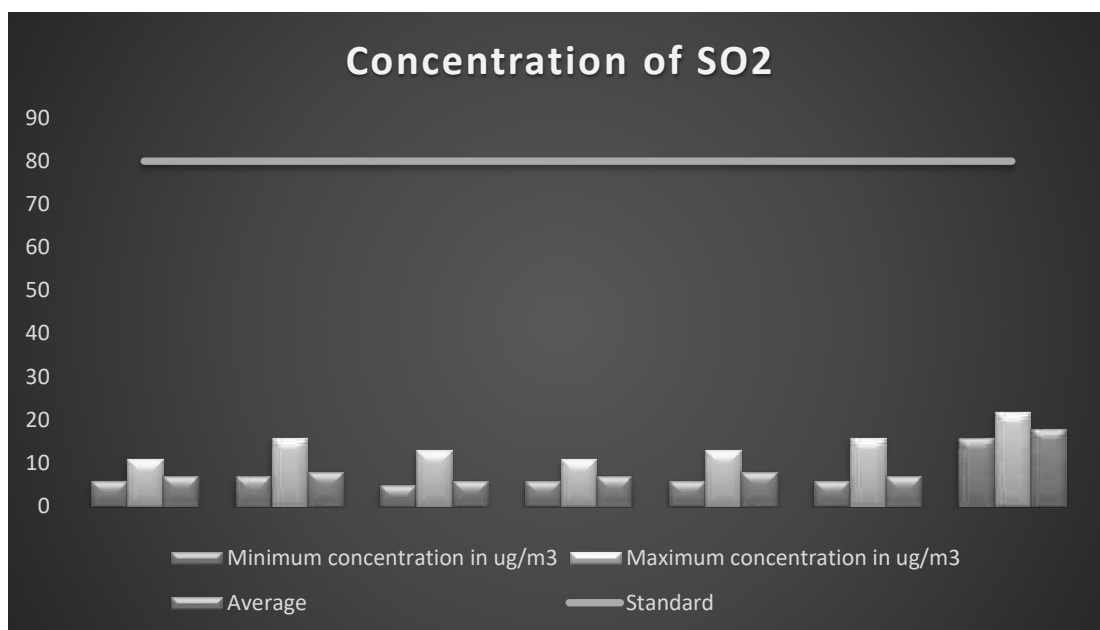


Figure 3-12 Concentration of SOx ($\mu\text{g}/\text{m}^3$) in Study Area

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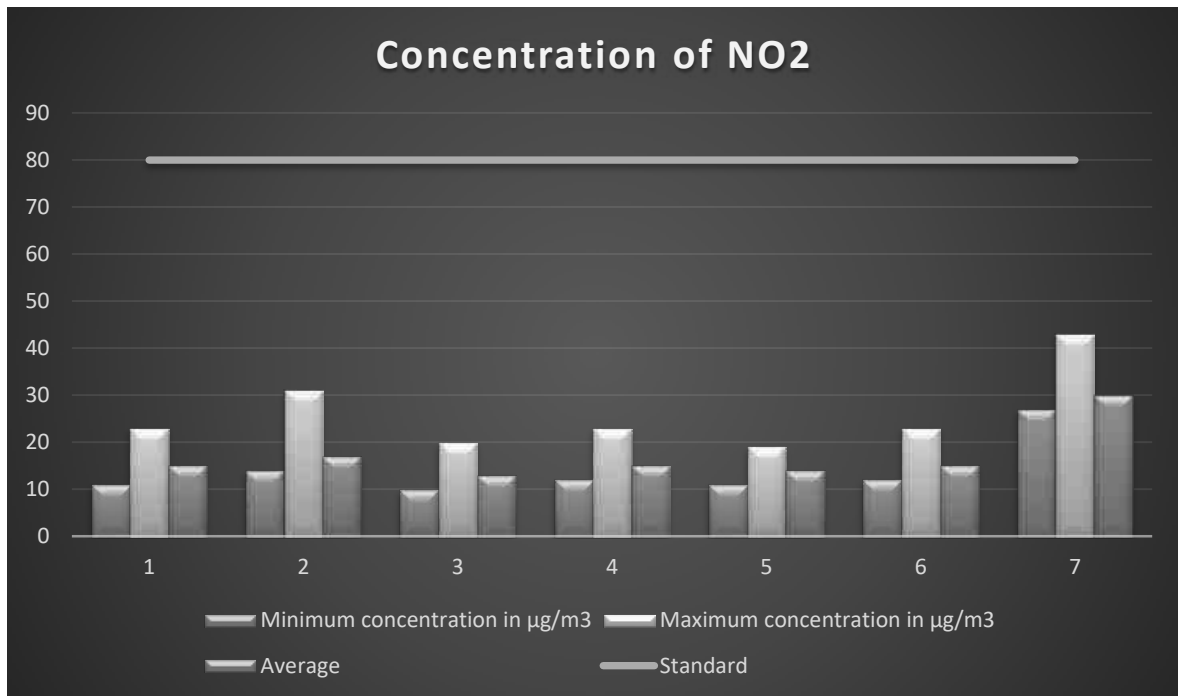


Figure 3-13 Concentration of NOx (µg/m³) in Study Area

3.5 NOISE ENVIRONMENT:

Table 3-10 Noise Analysis

Environmental Parameters: <i>Noise Analysis</i>	
Monitoring Period	June 2025 to August 2025
Design Criteria	Based on the Sensitivity of the area
Monitoring Locations	Project Site – N 1 Kalamman Temple, Pudupatti – N2 St. Joseph church, E. Muthulingapuram - N 3 Kurunthamadam Govt High School - Virudhunagar - N 4 Karuppasamy karmegam temple - kanmaepatti - N 5 Arulmigu Muthalamman Temple – N 6 Shri Perumal Temple, Sennalkudi – N 7

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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 7 Locations including the project Site and the monitoring results are summarized below

3.5.1 Day Noise Level (Leq day)

Table 3-11 Day Noise Level (Leq day)

Location	Leq day in dB(A)		
	Max	Min	Average
Project Site	51	41	48
Eathillappanpatti Kalamman Temple, Pudupatti	57	46	53
St. Joseph church, E. Muthulingapuram	65	55	60
Kurunthamadam Govt High School - Virudhunagar	66	56	61
karuppasamy karmegam temple - kanmaepatti	55	45	52
Arulmigu Muthalamman Temple	60	49	55
Shri Perumal Temple, Sennalkudi	55	43	50

3.5.2 Night Noise Level (Leq Night)

Table 3-12 Night Noise Level (Leq Night)

Location	Leq day in dB(A)		
	Max	Min	Average
Project Site	43	36	39
Kalamman Temple, Pudupatti	47	39	42
St. Joseph church, E. Muthulingapuram	52	45	48
Kurunthamadam Govt High School - Virudhunagar	53	46	49

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karuppasamy karmegam temple - kanmaepatti	44	36	40
Arulmigu Muthalamman Temple	46	39	42
Shri Perumal Temple, Sennalkudi	42	35	38

Observation:

The maximum Day noise and Night noise were found to be 66 dB(A) and 53 dB(A) respectively in Kurunthamadam Govt High School - Virudhunagar. The minimum Day Noise and Night noise were 41 dB (A) and 35 dB(A) respectively which was observed in Project site. 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.

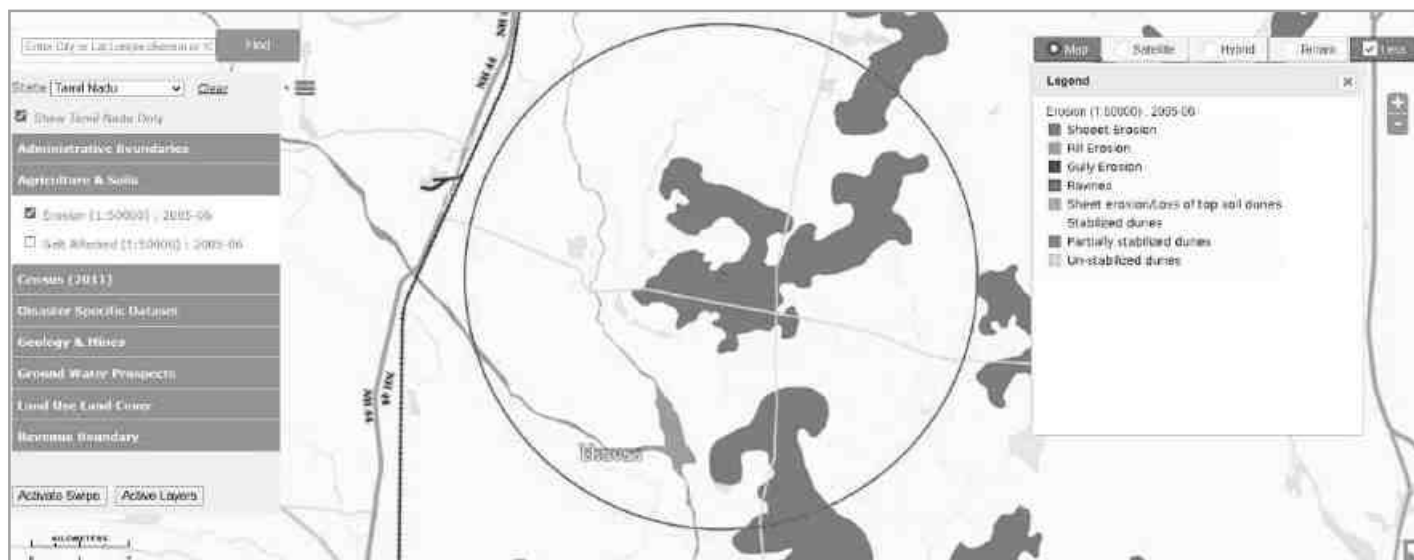


Figure 3-14 Soil Erosion pattern within 5 km radius of the project site

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3.6.1 *Baseline Data:*

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

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

Table 3-13 Soil Quality Analysis

Environmental Parameters: <i>Soil Quality Analysis</i>	
Monitoring Period	June 2025 to August 2025
Design Criteria	Based on the environmental settings of the study area
Monitoring Locations	Project Site – SQ1 Kaliyammann Temple, Pudupatti – SQ2 St. Joseph church, E. Muthulingapuram - SQ3 Kurunthamadam Govt High School - Virudhunagar - SQ 4 Karuppasamy karmegam temple - kanmaepatti – SQ 5 Arulmigu Muthalamman Temple – SQ 6 Shri Perumal Temple, Sennalkudi – SQ 7
Methodology	Composite soil samples using sampling augers and field capacity apparatus
Frequency of Monitoring	Soil samples were collected from 7 locations Once in a season

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

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Table 3-14 Soil Quality Analysis

Parameters	Unit	SQ 1	SQ 2	SQ 3	SQ 4	SQ5	SQ6	SQ7
pH (at 25°C)	-	6.56	6.69	6.24	7.96	8.12	7.90	7.77
Electrical Conductivity	ms/cm	0.13	0.14	0.19	0.16	0.25	0.32	0.62
Water Holding Capacity	ml/L	4.9	6.0	5.4	4.7	7.3	6.60	4.2
Chloride	mg/Kg	257	307	222	232	119	0	263
Calcium	mg/Kg	54	45	23	24	38	122	50.1
Sodium	mg/Kg	309	287	336	375	368	295	362
Potassium	mg/Kg	276	272	315	325	351	282.0	358
Organic matter	%	0.32	0.28	0.39	0.26	0.53	0.6	0.33
Magnesium	mg/Kg	29	69	70	29	52	48	52.5
Sulphate	mg/Kg	80	162	180	23	91	354	105
CEC	meq/100g	12.2	21	23	19	20	0	16.6
Carbonate	mg/Kg	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Bicarbonate	mg/Kg	756	77	78	137	195	141	131
TKNS	%	0.021	0.020	0.028	0.031	0.022	6.8	0.12
Bulk Density	g/cm ³	1.1029	1.3808	1.4466	1.3466	1.2240	1.1803	1.33
Phosphorous	mg/Kg	9.38	7.56	6.21	3.54	5.90	156	195
Sand	%	67	35	45	46	49	41	55

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Clay	%	13	17	30	11	21	8	30
Silt	%	20	49	25	43	30	51	15
SAR	meq/Kg	8.4	6.3	7.8	12.2	9.1	5.7	8.5
Silicon	%	0.74	0.81	0.81	0.69	0.9	0.89	3.6

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3.6.1.1 Physical Properties:

Regular cultivation practices increase the bulk density of soils thus inducing compaction. This results in reduction in water percolation rate and penetration of roots through soils. The soils with low bulk density have favorable physical conditions whereas those with high bulk density exhibit poor physical conditions for agriculture crops. The bulk density of the soil in the study area ranged between 1.10 to 1.44 meq/100g which indicates favorable physical condition for plant growth. The water holding capacity was found in the range of 4.2 ml/l to 7.3 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 6.24 to 8.12, which indicates majority of pH of the soil is slightly alkaline. The soil in the project site is sodic in nature, which challenges because they tend to have very poor structure which limits or prevents water infiltration and drainage. The organic matter varies from 0.26 to 0.60 %, 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.

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

3.7.1 *Methods available for floral analysis:*

3.7.1.1 Plot Sampling Methods

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

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

3.7.1.2 Plot less Sampling Methods

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

3.7.2 Field study & Methodology adopted:

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

3.7.3 Study outcome:

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

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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

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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
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	Stachytarpheartusifolia	Rat tail	13	9	24	0.63	0.38	1.67	7.73	9.09	Not Assessed
9	Woodfordiafruticosa	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	Unnichi	8	6	24	0.38	0.25	1.5	4.64	6.06	Not Assessed
12	Parthenium hysterophorous	Vishapoond	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

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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
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

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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
Tabernaemontanadivaticata	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
Stachytarphaeurticifolia	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

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Euphorbia geniculata	Amman Pacharisi	5	0.028736	-3.54962	-0.102
Total		174			-2.2234

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

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controlled generation of plant species with older strands. Higher herb species diversity can be interpreted as a greater number of successful species and a more stable ecosystem where more ecological niches are available, environmental change is less likely to be damaging to the ecosystem. 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: The important crops of this district are Paddy, Maize, Ragi, Banana, Sugarcane, Cotton, Tamarind, Coconut, Mango, Groundnut, Vegetables and Flowers 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), *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.

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

Methodology Adopted:

Point Survey method was adopted for this development project where observations were made in each site for 15 minutes duration (10 times).

Study in the core zone:

Point Survey method was adopted for the study within 2 km radius and the following species were observed.

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

Avifauna: Since birds are 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

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Herestes edwardsii	Common Mangoose	IV	Not listed
Mus musculus	Common Mouse	IV	Least Concern
Bandicota indica	Rat	IV	Least Concern
Lepus nigricollis	Indian Hare	IV	Least Concern
Felis catus	Cat	Not listed	Not listed
Canis lupus familiaris	Indian dog	Not listed	Not listed
Bos Indicus	Indian Cow	Not listed	Not listed
Bubalus bubalis	Buffalo	I	Not listed
Sus scrofa domesticus	Domestic pig	Not listed	Not listed
Birds			
Milvus migrans	Black kite	IV	Least concern
Saxicoloides fulicatus	Indian Robin	IV	Least concern
Pycnonotus cafer	Red vented Bulbul	IV	Least concern
Phragamaticola aedon	Thick billed warbler	IV	Least concern
Pericrocotus cinnamomeus	Small Minivet	IV	Least concern
Eudynamys scolopaceus	Koel	IV	Least concern
Psittacula krameni	Rose ringed parakeet	IV	Least concern
Dicrurus marcocercus	Black drongo	IV	Least concern
Columba livia	Rock pigeon	IV	Least concern
Corvus splendens	House crow	IV	Least concern
Alcedo atthis	Small blue kingfisher	IV	Least concern
Cuculus canorus	Common Cukoo	IV	Least concern
Reptiles & Amphibians			
Chameleon zeylanicum	Chameleon	IV	Not listed

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Calotes versicolor	Common garden lizard	II	Not listed
Bungarus caeruleus	Common krait	IV	Not listed
Ophisops leschenaultia	Snake eyed lizard	--	Not listed
Bufo melanostictus	Toad	IV	Least concern
Ptyas mucosa	Rat snakes	IV	Least concern
Hemidactylus sp.	House lizard	--	Not listed
Butterflies			
Danaus chrysippus	Plain Tiger	--	Not listed
Papilio demoleus	Common lime	--	Not listed
Euploea core	Common crow	--	Least concern
Danaus genutia	Common tiger	--	Not listed
Eurema brigitta	Small grass yellow	--	Least concern

3.8 DEMOGRAPHY AND SOCIO ECONOMICS

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

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Avudaiyapuram	1100	3975	2032	1943	84.90	59.49	233	0
Chettikurichi	1487	4958	2458	2500	88.25	72.73	805	0
Chettipatti	235	742	363	379	96.26	81.18	101	0
Chinnakamanpatti	831	2894	1421	1473	88.78	68.56	220	0
Chainnavadi	422	1410	720	690	82.82	59.30	399	0
Endappuli	508	1893	984	909	79.38	54.94	1404	0
Golwarpatti	753	2667	1321	1346	89.13	67.68	2599	0
Kadambankulam	842	3084	1569	1515	88.61	65.09	404	0
Kalangaperi	1050	3784	1872	1912	87.71	72.69	1296	0
Kallumarpatti	586	1962	990	972	81.82	56.78	41	0
Kasireddiapatti	620	2709	1414	1295	73.73	54.07	512	6
Kattalampatti	574	2192	1093	1099	54.14	45.86	1648	0
koilvirarpatti	170	698	355	343	82.65	54.43	102	0
kosukkundu	854	2974	1473	1501	56.62	43.38	398	0
kottainattam	326	1183	571	612	89.44	71.79	934	0
kottaiyur	1882	6393	3203	3190	85.04	66.85	1743	0
kotthiparai	995	1187	585	602	53	47	154	0
Kumaralingapuram	724	2590	1293	1297	82.06	65.02	247	0
kundalakkuttu	407	1327	639	688	87.44	64.87	187	0
kurundamadam	398	1251	598	653	86.23	65.22	608	0
Mannarkottai	380	1332	651	681	88.32	73.46	204	0
Maruluthu	335	1297	657	640	87.63	64.82	788	0
Melamadi	1652	5619	2811	2808	83.37	65.34	1482	0
Mettamalai	1476	5175	2499	2676	55	45	1506	0
Mettukkundu	737	2604	1288	1316	83.74	67.57	969	0
Muthulingapuram	583	2042	977	1065	736	604	390	0

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N. Mettupatti (Nenmani)	698	2425	1176	1249	59	41	632	0
N. Mettupatti	594	2184	1145	1039	60	40	963	0
Nallamanayakkanpatti	117	425	204	221	79.41	64.71	149	0
Ondippulinayakkanur	2113	7395	3633	3762	70.39	78.81	519	0
Pandandal	270	942	460	482	89.32	77.61	356	0
Pappakudi	617	2205	1157	1048	84.90	66.95	284	0
Pattampudur	828	3032	1560	1472	82.60	63.92	578	0
Podampatti	229	766	367	399	82.39	64.02	136	0
Pudupatti	685	2409	1167	1242	85.09	63.97	1065	0
Pudur	1010	3518	1778	1740	89.50	74.67	1243	0
Puliyangulam	117	435	229	206	95.41	80.53	146	0
Sandaiyur	353	1233	584	649	85.05	64.81	965	0
Sattur	8093	29398	14400	14998	93.03	80.88	2257	238
Sennalkudi	705	2433	1216	1217	75.49	54.14	100	0
Sindapalli	690	2481	1225	1256	87.15	65.40	1676	0
Sirukulam	457	1478	741	737	90.73	66.32	420	0
Soolakkarai	11269	4990	2478	2512	90.03	75.90	998	0
Sundralingapuram	97	319	157	162	81.02	52.98	88	0
T.Meenakshipuram	226	727	360	367	93.85	79.47	120	0
Thammanayakkanpatti	1088	3824	1928	1896	93.00	74.64	217	0
Thiruvirunthalpuram	423	1450	719	731	84.48	63.10	109	0
Tulukkapatti	366	1433	723	710	90.34	75.13	764	0
Vachakkarapatti	1308	4754	2407	2347	90.78	76.92	701	0
Vadi	1325	4937	2418	2519	86.70	67.25	2024	0
Vaduvarpatti	342	1229	588	641	85.93	68.46	374	0
Vaipputtanpatti	42	179	84	95	68.06	56.98	178	0

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Valyapatti	286	1138	578	560	83.14	56.92	8	0
Vepilaipatti	148	449	222	227	79.19	54.76	174	0

Source: Census of India, 2011

3.9 TRAFFIC IMPACT ASSESSMENT

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



Figure 3-16: Site Connectivity

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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
MDR-937				
1	Cars	417	1	417
2	Buses	203	3	609
3	Trucks	159	3	477
4	Two wheelers	507	0.5	254
5	Three wheelers	173	1.5	260
Total			1459	-

Table 3-23: Existing Traffic Scenario and LOS

Road	V (Volume in PCU/hr)	C (Capacity in PCU/hr)	Existing V/C Ratio	LOS
MDR-937	2017/24=84	221	0.38	B

Note: The existing level may be “Very Good” for MDR - 937.

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

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4 Anticipated Environmental Impacts & Mitigation Measures

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

4.1 INTRODUCTION

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

Environmental Impacts can be group into Primary impacts & Secondary Impacts

Primary Impacts: These impacts are directly attributed by the project

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

Assessment of impacts is done for the following Environmental Parameters:

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

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4.2 LAND ENVIRONMENT:

Aspect	Impact	Mitigation Measures																
Mining of rough stone and Gravel	The proposed 1.31.00 Ha mine located in Kottaiyur Village having 43,770m ³ of Rough stone and 33,895m ³ of Gravel. The quarry operation is proposed to carry out with conventional open cast mechanized mining with a vertical bench of 6.0 meter for Rough stone and 5.0 meter for Gravel bench width not less than bench height. At the end of 5 years, mining lease area will be converted into ultimate pit.	The proposed project site is not prone to any kind of soil erosion (Source: Bhuvan) .																
		In addition, garland drainage of 1m x 1m will be provided to avoid storm water run- off.																
		It is proposed to plant 655 No's of local tree species (Neem, Vilvam, Pungam Maram etc.,) along the roads, outer periphery of the mining area which enhances the binding property of the soil.																
		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.																
		The source of dust generation is majorly due to drilling, blasting, loading &																
	<table><tr><th>Description End of the lease period</th><th>Length (Max) (m)</th><th>Width (Max) (m)</th><th>Depth (Max) (m)</th></tr><tr><td>A-A' & C-C'</td><td>74</td><td>57</td><td>29</td></tr><tr><td>B-B' & C-C'</td><td>16</td><td>46</td><td>5</td></tr><tr><td>D-D' & E-E'</td><td>76</td><td>30</td><td>11</td></tr></table>	Description End of the lease period	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)	A-A' & C-C'	74	57	29	B-B' & C-C'	16	46	5	D-D' & E-E'	76	30	11	
Description End of the lease period	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)															
A-A' & C-C'	74	57	29															
B-B' & C-C'	16	46	5															
D-D' & E-E'	76	30	11															
	The main impact of open cast mining on land-use is land degradation. The land is bound to be excavated for mining of Rough Stone Quarry.																	

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	Impact on soil of the study area will be minimal as there are no wastewater generated, heavy metal infusion, stack emissions. Impact due to transformation of terrain characteristics over the large area results in soil degradation. 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.	unloading of the mined-out mineral, the impact will be mitigated by water sprinkling regularly once in 3hrs. The proposed mining activity is carried out in plain terrain. 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. 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.
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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 ground water depletion may occur due to mining activity Chemicals consisting of nitrate used for blasting may pollute the surface run off.	The water table will not be intersected during mining, as the ultimate depth is limited upto 29m (below ground level), whereas the ground water table is at 60 m below the ground level. The municipal wastewater will be disposed into septic tanks of 5 cum and soak pit. No chemicals consisting of toxic elements will be used for carrying out mining activity. The ground water table is at a depth of 60 m BGL, the mining operation will not affect the aquifer. The ultimate pit at the end of the mining operation will be used for rainwater storage, the stored water will be used for green belt development and further the stored water will be used for domestic purposes (other than drinking) after proper treatment. Further, the run-off water will be stored in sumps and after proper treatment; water will

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

Aspect	Impact	Mitigation Measures
<i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i>	<i>Impacts during Operation Phase</i> During mining operation, fugitive dust and other air pollutants like particulate matter (PM10 & PM 2.5) will be generated. The main source of pollutants arises due to drilling and blasting. 5 Nos of Tipper will be used for loading and unloading, 2 Nos of Hydraulic Excavator (0.90m³) bucket capacity and 4 Nos Jack Hammer will be used for excavation of the mineral which	<i>Mitigation Measures during Operation Phase</i> It is proposed to plant 655 Nos of local species 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 and Vilvam) in two tier to combat air pollution and with herbs (Nerium) in between the tree species. Planning transportation routes of the mined

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	contributes to the generation of fugitive dust. In addition, blasting will be done using explosives leading to the generation of dust. <u><i>Effect on Human</i></u> • 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. <u><i>Effect on Plants</i></u> • Stomatal index may be minimized due to dust deposit on leaf.	out mineral, so as to reach the nearest paved roads (an approach road) by shortest route connecting to NH 44. Alternatively, gravelled road may be constructed between mine lease area and nearest paved road connectivity. The speed of trucks plying on the haul road will be limited to 20km/hr to avoid generation of dust. The trucks will be covered by tarpaulin. Overloading will be avoided. 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. 1.5 KLD of water will be proposed for sprinkling on unpaved roads to avoid dust generation during transportation.
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Air Quality Modeling:

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

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

4.4.1 Source Characterization

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

The emission Sources from the proposed operation are

Point Sources:

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

1. Hydraulic excavator – 0.90 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 June 2025 to

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August 2025 emissions were estimated. Emissions due to haul road and general plant traffic on the unpaved road network were modelled as volume sources. The model volume source parameter for the haul roads initially utilized USEPA developed emission factors for hauling trucking. The haul road sources utilized source to source spacing of 6 meters along the simulated haul roads. The initial lateral dimension of the sources were set to 3 m were used as an input to replicated a 2 truck travel adjacent for a typical mining scenario.

The parameters considered for the hauling operation include the following,

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

Other fugitive particulate emission sources:

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

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

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Post Project Scenario

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

Predicted maximum ground level concentrations considering micro meteorological data of June to August 2025 are superimposed on the maximum baseline concentrations obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase. The overall scenario with predicted concentrations over the maximum baseline concentrations is shown in the following table along with isopleths.

Table 4-1 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)	

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Rough stone mining	Wet drilling	8.00E-5 lbs PM10/ Ton produce	EPA. August, 2004. Section 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.
	Loading	1.00E-4 lbs PM10/ Ton produce	

4.5 NOISE ENVIRONMENT:

Aspect	Impact	Mitigation Measures
<i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i>	Usage of Equipments (Excavator, Tipper, Jack Hammer), Machinery and trucks used for transportation will generate noise. Noise from the machinery can cause hypertension, high stress level, hearing loss, sleep disturbance etc due to prolonged exposure.	• The machinery will be maintained in good running condition so that noise will be reduced to minimum possible level. • Awareness will be imparted to the workers once in six months about the permissible noise level and effect of maximum exposure to those levels. Adequate silencers will be provided in all the diesel engines of vehicles. • It will be ensured that all transportation vehicles carry a valid PUC Certificates.

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	Number of vehicles will be increased due to the proposed mining activity hence vehicle may collide which may result in unwanted sound and can also cause impact on human health like breathing and respiratory system, damage to lung tissue, influenza or asthma.	• Speed of trucks entering or leaving the mine will be limited to moderate speed (20km/hr) to prevent undue noise from empty vehicles. The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments. • It is proposed to plant 655 Nos. of local species (Neem, Mandharai, Athi, Tamarind, Ashoka, Casuarinas and Villam) to reduce the impact of noise in the study area. The development of green belts around the periphery of the mine will be implemented to attenuate noise. • The trucks will be diverted on two roads viz. MDR – 937 & NH 44 to avoid traffic congestion. • Health check-up camps will be organized once in six month.
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		• Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas. • Provision of quiet areas, where employees can get relief from workplace noise.
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4.6 BIOLOGICAL ENVIRONMENT:

Aspect	Impacts	Mitigation Measures
Site Clearance	Loss of habitat due to site clearance which may lead to ecological disturbance.	The proposed mining lease is already a dry land hence no site clearance is required. Only few shrubs and herbs like parthenium sp., prosopis juliflora were present.
Planting of trees	Development of afforestation in the mine lease area will have a positive impact as the land was initially a barren.	Safety distance will be provided all along the boundary of the mine lease area and safety. Around 0.60.30 Ha of land is utilized for greenbelt development (655 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 Thiru.S. Krishnasamy 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 M.C.Puram village which is 0.59 km, N 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 movement of the vehicles may affect/injure the animals	It is proposed to use gravelled road and nearest paved road and preferred not to use unpaved roads. In addition to that, the speed of trucks will be limited to 20km/hr to avoid any accidents.
Employment opportunity	The project will improve the livelihood of the local people	After the development of the proposed mine, it will improve the livelihood of local people and also provide the direct and indirect employment opportunities. The rough stone for the infrastructural development in the area will be made available from the local markets at reasonably lower price.

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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 to Panchayat Union School in Kottaiyur – 626 149, Virudhunagar (Taluk & District). Providing facilities are: ✓ Renovation of damaged old school building and construction of a classroom building and storeroom (Stock room) and ✓ Basic amenities such as Environmental awareness books (Tamil) in Library for students, Green Belt development, RO water purifiers, Hygienic Toilet and maintenance of toilet upto lease period.
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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 – 12.00-2.00 PM / 4.30-5.30 PM (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 labours 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

An analysis of alternatives is a significant aspect in planning and designing any project. Cost benefit analysis should be worked out along with other parameters while choosing an alternative in such a way that the production is maximum and the mining operation is environmentally friendly and cost effective. The mine plan and mine closure plan Mining Plan was approved by The Assistant Director, Geology & Mining, Virudhunagar District prior to submission of the Form-1 and PFR.

ToR issued by the SEIAA-TN vide Letter No. SEIAA-TN/ F. No. 12068 Dated: 02.07.2025 & ToR Identification number is TO25B0108TN5619439N. 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 Gravel Quarry, and it 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/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 Kottaiyur and MC puram village so they will either reach mine site by bicycle or by foot. Benefits: Cost of transportation of labors will be negligible
4.	Material transportation	Public transport	Private transport	Material will be transported through trucks/trolleys on the contract basis. Benefits: It will give indirect employment.
5.	Water	Tanker supplier	Ground water/	Tanker supply will be preferred. Water will be sourced from Kottaiyur village which is about 1.5 km E 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 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.

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Table 6-1: Environmental Monitoring Programme

Parameters	Sampling	Frequency	Location
Air environment – Pollutants ➤ PM 10 ➤ PM 2.5 ➤ SO ₂ ➤ NO _x	7 locations	24 hourly twice a week 4 hourly. Twice a week, One non monsoon season 8 hourly, twice a week 24 hourly, twice a week	➤ Project Site – AQ1 ➤ Kaliamman Temple, Pudupatti – AQ2 ➤ St. Joseph church, E. Muthulingapuram – AQ3. ➤ Kurunthamadam Govt High School - Virudhunagar – AQ4. ➤ Karuppasamy karmegam temple - kanmaepatti – AQ5. ➤ Arulmigu Muthalamman Temple – AQ6. ➤ Shri Perumal Temple, Sennalkudi – AQ7.
Noise	7 locations	24 hourly Once in 7 locations	
Water (Ground water) ➤ pH ➤ Temperature ➤ Turbidity ➤ Magnesium Hardness ➤ Total Alkalinity ➤ Chloride ➤ Sulphate ➤ Fluoride ➤ Nitrate ➤ Sodium ➤ Potassium ➤ Salinity ➤ Total nitrogen	7 locations	Once in 7 locations	

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➤ 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	Sattur Tank. Malaipatti Periya Kanmoi.
Soil (Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	7 locations	Once in 7 locations	➤ Project Site – AQ1 ➤ Kaliamman Temple, Pudupatti – AQ2 ➤ St. Joseph church, E. Muthulingapuram – AQ3. ➤ Kurunthamadam Govt High School - Virudhunagar – AQ4. ➤ Karuppasamy karmegam temple - kanmaepatti – AQ5. ➤ Arulmigu Muthalamman Temple – AQ6.

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			➤ Shri Perumal Temple, Sennalkudi – AQ7.
Ecology and biodiversity Study	Study area covering 7 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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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**- Tmt.C.Vannamuthu – 0.46.0Ha.

Abandoned /Old Quarries – Thiru.S.L. Muniyasamy – 2.74.00 Ha and Thiru.R. Rajeshkanna – 1.20.50 Ha.

Proposed Quarries – Thiru.S. Marimuthu – 4.24.00 Ha, Thiru. R. Boopathi – 2.15.00 Ha, Thiru. N. Thirumalaiselvan – 3.21.50 Ha and Thiru. S. Krishnasamy – 1.31.00 Ha.

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

7.1.2 *Risk assessment:*

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

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7.1.3 Identification of Hazard

7.1.3.1 Blasting Pattern:

The quarrying operation will be carried out in conjunction with conventional method of mining using Jack hammer drilling and blasting for shattering effect and loosen the Rough stone.

7.1.3.2 Drilling and Blasting:

Drilling and Blasting parameters are as follows:

Diameter of the hole	:	32-36 mm
Spacing	:	0.5m
Depth	:	1.2m to 1.5m
Burden per hole	:	0.5m
Pattern of hole	:	Zig Zag Staggered in 2 to 3 rows
Inclination of holes	:	80° from the horizontal.
Use of delay detonators	:	25 milli-second delays
Detonating fuse	:	NONEL “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 500 m from the nearby villages. Controlled blasting measures will be adopted for minimizing ground vibration and fly of rock. Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give the shattering effect in rough stone for easy excavation and to control fly of rocks.

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Number of holes	:	Totally – 28 holes per shot of blasting per day.
Powder Factor	:	6 Ts/Kg of explosives.
Total explosive required / day	:	14.0 kg Slurry explosive (Max capacity)
Charge / Hole	:	0.5 kg
Blasting Time	:	12.00 – 2.00 PM / 4.30 – 5.30 PM.

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 operation	Excavator of 0.9 Cu.m bucket capacity (with Rock Breaker attachment) – 1 No. Jack Hammer (30-32 mm Dia) – 1 set (2 Nos.) Tractor mounted compressor (2 Jack Hammer Capacity) – 1 No.
Loading Equipment	Excavator of 0.9 Cu.m bucket capacity, Same excavator for mining will be used for loading purpose with bucket only.
Transportation	Tipper 1 No. of 10/20 M.T capacity

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.

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b. Mitigation measures to minimize the risk

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

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

- In order to take care of above hazard/disaster, the following control measures will be adopted:
- All safety precautions and provisions of Mine Act,1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations.
- Entry of unauthorized people will be prohibited.
- Firefighting and first-aid provisions in the ECC and mining area.
- Provisions for all the safety appliances such as safety boots, 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 footwear and safety helmets.
- Cleaning of mine faces will be regularly done.
- Handling of explosives, charging and blasting will be carried out by highly skilled laborers only.

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- 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 with Safety Rules/ Statutory Provisions will be ensured. The safety officer will be engaged, meeting the requirement of Mines Act and their duties and responsibilities. The safety officer will be responsible for identification of the hazardous conditions and unsafe acts of workers and advice on corrective actions, conduct safety audit, organize training programs and provide professional expert advice on various issues related to occupational safety and health. Organizing safety training will be conducted to employees and contractor labors periodically.

7.1.6 Emergency Control Centre

The emergency control center will be provided to handle the emergency. The site main controller, key personnel and the senior officers of the fire and police services will attend it. The center will be equipped to receive and transmit information and directions from and to the incident controller and other areas of the works, as well as outside. The emergency control center will be situated 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.

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

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

Major objectives of this onsite – offsite emergency plan are:

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

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

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

- Onsite (Within ML boundary)
- Offsite (Outside ML boundary)

7.2.1 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.

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

7.2.3 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.

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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 economic resources for construction. Due to the demand supply chain, excavated mineral (Rough stone) will be sold in the market at the affordable price.

Infrastructure: The excavated rough stone 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 655 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:

Renovation of damaged old school building and construction of a classroom building and storeroom (Stock room) and Basic amenities such as Environmental awareness books (Tamil) in Library for students, Green Belt development, RO water purifiers, Hygienic Toilet and

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maintenance of toilet upto lease period to Panchayat Union School in Kottaiyur 626149, Virudhunagar (Taluk & District).

8.3 PROJECT COST / INVESTMENT DETAILS

Project Cost

(a) Investment Cost

S. No	DETAILS	COST in Rs. /-
i)	Lease rent / Land Cost	4,50,000
ii)	Machinery to be used	Hired machinery
iii)	Fencing	1,50,000
iv)	Labourers Shed	50,000
v)	Sanitary facility	25,000
vi)	Other Items	25,000
TOTAL		7,00,000

IV. Expenditure/ Production Cost. (1Unit= 2.83m³)

Drilling and Blasting cost / unit production = **Rs.150/-** including loading & breaking.

(i) Mining cost for rough stone up to 5 Years planned production quantity

Total Minalable quantity in m³ = 43,770 m³ (15,466 Units)

Total cost of mining Rough Stone = 15,466 X Rs. 150/-

= Rs. 23,90,900/-

(ii) Mining cost for gravel for 5 Years planned production quantity

Total Minalable quantity in m³ = 33,895 m³ (11,977 Units)

Total cost of mining - Gravel = 11,977 X Rs. 80/-

= Rs. 9,58,160/-

Total Cost for Mining = Rs. 33,49,060/-

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Say = Rs. 33,49,060/-

Total Project Cost (a+b) = Rs. 40,49,000/-.

Total Project Cost: **Rs. 40,49,000/-** (Forty Lakhs and Forty Nine Thousand rupees only).

Environmental Management Plan Cost:

	Mitigation Measure	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	13100	13100
	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	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sandbags / 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	316603

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	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	5000	500
	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	26200
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
Noise Environment	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	204740
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	25000	20000
		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

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Mine Closure	1. Progressive Closure Activity - Surface Runoff Management	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	13100	5000
	2. Progressive Closure Activity 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	262000	10000
	3. Progressive Closure Activity 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)	52400	7860
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	117900	11790
	4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year.	For Final Closure activities 15% of the proposed closure cost will be spent during final mine closure stage - Last year	72008	0
	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated	583742	0

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		as part of EMP Budget and not necessarily implemented in the Project Site		
	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
Implementation of EC, Mining Plan & DGMS Condition	Air, Water, Noise and Soil Quality sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50000
	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)	40000	10000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	10000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	2620
	Slope Stability Action Plan	Slope Stability action plan in the end of fourth year plan period	300000	0
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000

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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	65500	10000
Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
Total (Rs)		1899000	1585413
Grand Total (Rs)		3484413	

Year	Cost (@ 5% per year inflation adjustment) in Rs
1 st Year	3484413
2 nd Year	1664684
3 rd Year	1747918
4 th Year	1835314
5 th Year	1927079
Total	10659408

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TOTAL PROJECT COST: **Rs. 40,49,000/-** (Forty Lakhs and Forty-Nine Thousand Rupees Only).

TOTAL Environmental Management Plan Cost: **1,06,59,408/-** (One Crore Six Lakhs Fifty Nine Thousand Four Hundred and Eight 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, and 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, Virudhunagar. Subsidence/slope failures are not envisaged because there are no loose strata overlying the deposit (mineral to be excavated). The bench height will be 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 waste will be deposited into the nearby area. Regular checking will be carried out to find any

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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. S. Krishnasamy 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 tanks 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 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.

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4.	Land	Improper management of Storm water Runoff	Storm water Runoff may result in Soil Erosion	Garland drainage of 1m x 1m will be provided to avoid storm water run- off.
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 ✓ 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

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				✓ Providing First Aid room, conducting frequent health checkups to labor and conducting free medical camps ✓ Providing safety helmet, Gloves, Jacket & Boots. ✓ Providing measures to prevent fires. Fire fighting extinguishers and buckets of sand will be provided in the construction site
6.	Building materials resource conservation	Building Material consumption	Use of farfetched construction materials than the locally available construction materials may lead to over exploitation of natural resources & increase in carbon footprint.	✓ Use of locally available construction materials.

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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. S. Krishnasamy site is a cluster of Seven mining projects. Total cluster area is 11.37.50 Ha. The individual lease area is 1.31.00 Ha of Rough Stone and Gravel Quarry located at S.F.Nos. 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District.

10.2 PROJECT OVERVIEW

Table 10-1: Project Overview

S. No.	Description	Details
1	Project Name	Thiru. S. Krishnasamy Rough Stone and Gravel Quarry
2	Proponent	Thiru. S. Krishnasamy
3	Mining Lease Area Extent	1.31.00 Ha
4	Location	11/2B1(0.49.53Ha.), 11/2B2(0.40.47Ha.) and 14/2(0.41.00 Ha.).
5	Latitude	09°26'10.00" to 09°26'15.00" N
6	Longitude	77° 58' 42.70" to 77° 58' 49.36" E
7	Topography	Plain terrain
8	Site Elevation above MSL	The altitude of the lease area is 108 m above MSL.
9	Topo sheet No.	58 G/15
10	Minerals of Mine	Rough Stone and Gravel Quarry
11	Proposed production	43,770 m ³ of Rough stone and Gravel 33,895 m ³
12	Ultimate depth of Mining	29 m below ground level
13	Method of Mining	Open cast mechanized mining
14	Water demand	2.5 KLD
15	Source of water	Water will be supplied through tankers supply

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16	Manpower	10 Nos.
17	Mining Plan Approval	Mining Plan was approved by The Assistant Director, Dept. of Geology & Mining, Virudhunagar Vide Roc. No. KV1/567/2023, dated: 14.03.2025.
18	Precise area communication letter	Precise area communication letter received from The Assistant Director, Dept. of Geology & Mining, Virudhunagar vide Na. Ka. No. KV1/567/2023, dated 20.02.2025
19	Production details	Geological reserves: 2,79,648 m ³ of Rough stone and 58,260 m ³ of Gravel. Proposed year wise reserves: Rough stone 43,770 m ³ and Gravel 33,895 m ³ for a period of five years.
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 is in the form of gravel formation. It will be quarried for filling purposes to nearby end users and part of soil will be preserved all along the boundary as barrier for afforestation. This will be done only after obtaining permission and paying the necessary seigniorage fees to the Government.
22	Ground water	Depth of water table (based on nearby wells and water bodies). The water table is below 60 mts from ground level, which is observed from the nearby bore wells and the data obtained from existing panchayat and Private borewells. The quarry operation is proposed up to a depth of 29.0mts below the ground level.

Project	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
Project Proponent	<i>Thiru.S.Krishnasamy</i>	
Project Location	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

23	Habitations within 300m radius of the Project Site	There is no Habitation within 300m radius of the project site.
24	Drinking water	Packaged Drinking water vendors are available in Kottaiyur village which is about 1.5 km E from the project site.

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.

The most of the area in Virudhunagar District is covered by a vast tract of black soil with residual hills and knolls. Since the area is covered by thick pediments, the geology of the area is studied in available exposure and quarry section opened up for limestone, dimension stone and blue metals for various purposes. The area exposes Khondalite Group of rocks and migmatite gneisses of Precambrian (V.R.Sowmi Narayanan, etal.,). The Khondalite Group of rocks comprises Charnockite, crystalline limestone/calc gneiss, garnetiferousquartzofeldspathic gneiss (leptynite), all these litho units probably represent a sequence of metamorphosed sedimentary units of arenaceous, calcareous and argillaceous composition with various intermixtures of different proportions (V.R.Sowmi Narayanan, etal.,). Granite and quartz veins form the younger intrusive.

<i>Project</i>	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.S.Krishnasamy</i>	
<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar 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.

Project	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
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Project Location	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar 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 Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.S.Krishnasamy</i>	
<i>Project Location</i>	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar 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.

Project	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
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Project Location	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar 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.

Declaration by Experts contributing to the EIA of Rough Stone Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy at S.F.No. 11/2B1, 11/2B2 & 14/2 of Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District, Tamil Nadu State.

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

EIA Coordinator: Dr. A. Dhamodharan


Dr. A. DHAMODHARAN
 (NABET APPROVED EIA COORDINATOR)
 NABET/EIA/25-28 / RA 0400
 Environmental Consultant
 Eco Tech Labs Pvt. Ltd
 Plot No. 48A, 2nd Main Road, Ram Nagar South Extn:
 Pallikaranai, Chennai - 600 100.

Signature:

Period of involvement:

Contact information: M/s. Ecotech Labs Pvt Ltd.,

No. 48, 2nd Main Road, Ram Nagar South Extension,

Pallikaranai, Chennai – 600 100

Project	Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy	Draft EIA Report
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S. No.	Functional Areas	Name of Expert	Involvement Period & Task	Signature
1	AP	Mr. P.Gopinath	Selection of baseline monitoring stations based on the wind direction, interpretation of baseline data by comparing it with standards prescribed by CPCB against the type of area. Identification of sources of air pollution and suggesting mitigation measures to minimize impact	
2	WP	Dr. A. Dhamodharan	Selection of baseline Monitoring locations for Ground water analysis and also identifying nearest surface to be studied, preparing water balance for the project based on the anticipated occupancy load. Interpretation of baseline data collected, Identification of impacts based on the baseline study conducted and also to the ground water and nearby surface water due to the proposed project Preparation of	

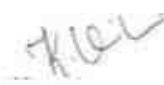
Project	Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy	Draft EIA Report
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Project Location	Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District	

			suitable and appropriate mitigation plan	
3	SHW	Dr. A. Dhamodharan. Mrs. K.Amudha (FAE for HW only)	Identification of nature of solid waste generated, Categorization of the generated waste and estimating the quantity of waste to be generated based on the per capita basis. Identification of impacts of SHW on Environment, Suggesting suitable mitigation measures by recommending appropriate disposal method for each category of waste generated.	 
4	SE	Mr. S. Pandian	Primary data collection through the census questionnaire, Secondary data interpretation from authenticated sources, Impact assessment & proposing suitable mitigation plan. CSR budget allocation	
5	EB	Dr. A. Dhamodharan	Primary data collection through field survey and sheet observation for ecology and biodiversity, Secondary Collection through	

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			various authenticated sources, Prediction of anticipated impacts and suggesting appropriate mitigation measures.	
6	HG	Mr. R. Alagumuthuselvam	Field survey for assessing regional and local geology, aquifer distribution, water resource evaluation, change in ground water level throughout the year. Determination of groundwater use pattern, development of rainwater harvesting program, estimation of ground water direction.	
7	GEO	Dr. T. P. Natesan	Field survey for assessing regional and local geology, aquifer distribution. Determination of groundwater use pattern, development of rainwater harvesting program.	
8	SC	Dr. A. Dhamodharan	Interpretation of baseline report, Identification of possible impacts on soil, prediction of soil conservation and suggesting suitable mitigation measures.	
9	AQ	Mr. P.Gopinath	Collection of Meteorological data for	

Project	Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy	Draft EIA Report
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			the baseline study period, plotting wind rose diagram and thereby selecting the monitoring locations based on the wind pattern, estimation of sources of air emissions and air quality modeling is done. Interpretation of the results obtained, Identification of the impacts and suggesting suitable mitigation measures.	
10	NV	Mrs. K. Vijayalakshmi	Selection of monitoring locations, Interpretation of baseline report, Prediction of impacts due to noise pollution and suggestion of appropriate mitigation measures.	
11	LU	Mr. P.Gopinath	Preparation of land use, landcover maps for the study area using satellite imagery.	
12	RH	Mrs. K. Vijayalakshmi	Identification of the risk and Interpreting consequence contours.	

Project	<i>Rough stone and Gravel Quarry – 1.31.00 Ha by Thiru.S.Krishnasamy</i>	<i>Draft EIA Report</i>
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Project Location	<i>Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District</i>	

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

I, Dr. A. Dhamodharan, hereby, confirm that the above-mentioned experts prepared the EIA report of mining project at Survey Nos. 11/2B1, 11/2B2 & 14/2 of Kottaiyur Village, Virudhunagar Taluk, Virudhunagar 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/25-28/RA 0400

ANNEXURE – I
APPROVED TOR



File No: 12068
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA),
TAMIL NADU)



Dated **02/07/2025**



To,

Thiru.S.Krishnasamy
3/10, East Street, Kalaperumalpatti village, Pudupatti Post, Sattur Taluk, Virudhunagar District, Tamil Nadu-626204
veeramanisrec@gmail.com

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

Sir/Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference along with Public Hearing (ToR) for the Proposed Rough Stone and Gravel Quarry lease over an extent 1.31.0 Ha at S.F.Nos. 11/2B1, 11/2B2 & 14/2, Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District, Tamil Nadu by Thiru.S.Krishnasamy– “B1” and Schedule S.No1 (a) – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

Ref: 1. Online proposal No. SIA/TN/MIN/534055/2025, Dated: 30.05.2025.

2. Your application submitted for Terms of Reference dated: 16.04.2025.

3. Minutes of the 572nd Meeting of SEAC held on 30.05.2025.

4. Minutes of the 844th Meeting of Authority held on 23.06.2025.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO25B0108TN5619439N
(ii) File No.	12068
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals,1(a) Mining of minerals
(vii) Name of Project	Thiru. S. Krishnasamy Rough Stone & Gravel Quarry
(viii) Name of Company/Organization	KRISHNASAMY
(ix) Location of Project (District, State)	VIRUDHUNAGAR, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. 1.In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.
- 2.The above-mentioned proposal has been considered by SEIAA in the meeting held on 23.06.2025 The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
- 3.The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects recommended the proposal for grant of Terms of Reference with public hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
- 4.The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to issue the following Terms of Reference with public hearing for instant proposal Thiru.S.Krishnasamy under the provisions of EIA Notification, 2006 and as amended thereof.
- 5.The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
- 6.The Terms of Reference with public hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
- 7.This issues with the approval of the Competent Authority.
- 8.The TORs with public hearing prescribed shall be valid for a period of three years from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

Copy To

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Additional Chief Secretary to Government, Environment and Forests Department, Tamil Nadu.
3. The Additional Chief Secretary to Government, Natural Resources Department, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st& 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chair Person, TNPC Board,76, Mount Salai, Guindy, Chennai-32
7. The District Collector, Virudhunagar District,
8. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. Assistant Director, Department of Geology & Mining, Virudhunagar District,
10. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
11. File Copy.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seac Conditions - Site Specific

S. No	Terms of Reference
1.1	1. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form

S. No	Terms of Reference
	of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities. 2. The Boundary pillars to be erected as per the mine rules and the evidence should be submitted along with the EIA report. 3. Since the fireworks industry is situated at a distance of 330m, the PP shall carry out a detailed impact study of the mining operation in the fireworks industry and anticipated mitigation measures should be submitted along with the EIA report. 4. EIA Coordinator shall furnish an explanation for not disclosing the coordinator details in the ToR application and shall make necessary arrangement for including the same while submitting the EIA Application. 5. The details of enumeration of structures including schools, colleges, primary health centres should be submitted along with the EIA report. 6. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations. 7. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 8. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report. 9. 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. 10. The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures. 11. For the safety of the persons employed in the quarry, the PP shall carry out the scientific studies to assess the slope stability of the existing quarry wall (exists without benches) for spelling out the slope stability action plan with mitigation measures and working methodology, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Dept of Mining Engg., Anna University Chennai. A copy of such scientific study report shall be submitted with an action plan accommodating the inclusion of haul road accessibility with maintaining the proper gradient by ensuring the slope stability of the working benches to be constructed and existing quarry wall. 12. The PP shall install the CCTV camera for the continuous surveillance of mining activity & furnish the photographic/videographic evidence along with the EIA report.

2. Seac Standard Conditions

S. No	Terms of Reference
2.1	1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated.

S. No	Terms of Reference
	(iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. 2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site. 3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc. 4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry. 5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report. 6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site. 7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC. 8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level. 9. 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. 10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site. 11. 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. 12. 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, 13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines? 14. Quantity of minerals mined out. · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted.

S. No	Terms of Reference
	· Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. 15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone). 16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc., 17. 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. 18. 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. 19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment. 20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. 21. 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. 22. 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. 23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted. 24. 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. 25. 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. 26. 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. 27. 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. 28. Impact on local transport infrastructure due to the Project should be indicated. 29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both

S. No	Terms of Reference
	within the mining lease applied area & 300m buffer zone and its management during mining activity. 30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific. 31. 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. 32. 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. 33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner 34. 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. 35. 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. 36. 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. 37. 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. 38. 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. 39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given. 40. 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. 41. 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. 42. 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. 43. 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.

3. Seiaa Specific Conditions:

S. No	Terms of Reference
3.1	The authority noted that the subject was placed in the 572nd SEAC-II meeting held on 23.06.2025. After detailed discussions, the Authority accepts the recommendation of SEAC-II and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 43,770m³ of Rough Stone and 33,895m³ of Gravel up to the depth of 29m BGL. The annual peak production is 9,504m³ of Rough Stone and 6,875m³ of gravel as per the approved mining plan , under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC-II & normal conditions & the following conditions.

4. Seiaa Standard Conditions:

S. No	Terms of Reference
4.1	<u>Cluster Management Committee</u> - Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry. - The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc., - The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines. - Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network. - The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan. - The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the Environmental policy devised shall be given in detail in the EIA Report. - The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner. - The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity. <u>Agriculture & Agro-Biodiversity</u> - Impact on surrounding agricultural fields around the proposed mining Area. - Impact on soil flora & vegetation around the project site. - Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP. - The Environmental Impact Assessment should study the agro-biodiversity, agro- forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem. - Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services. - The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock. <u>Forests</u> - The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife.

S. No	Terms of Reference
	16. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna. 17. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection. 18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site. <u>Water Environment</u> 19. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period. 20. Erosion Control measures. 21. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas. 22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. 23. The project proponent shall study and furnish the details on potential fragmentation impact on natural Environment, by the activities. 24. 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. 25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components. 26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites. 27. The EIA shall include the impact of mining activity on the following: - 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. <u>Energy</u> 28. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished. <u>Climate Change</u> 29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities. 30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features. 31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood. <u>Mine Closure Plan</u> 32. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued. <u>EMP</u> 33. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs. 34. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.

S. No	Terms of Reference
	<u>Risk Assessment</u> 35. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining. <u>Disaster Management Plan</u> 36. 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. <u>Others</u> 37. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc. 38. 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. 39. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the Environment. The ecological risks and impacts of plastic & microplastics on aquatic Environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	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
1.2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given
1.3	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
1.4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the areashould 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)
1.5	Information should be provided in Survey of India Toposheet 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
1.6	Details about the land proposed for mining activities should be givenwith 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

S. No	Terms of Reference
1.7	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
1.8	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
1.9	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
1.10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given
1.11	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
1.12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees
1.13	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
1.14	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
1.15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given
1.16	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
1.17	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.

S. No	Terms of Reference
	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
1.18	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 alongwith 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
1.19	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 Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered
1.20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)
1.21	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
1.22	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
1.23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map
1.24	The water requirement for the Project, its availability and source should be furnished. A detailed

S. No	Terms of Reference
	water balance should also be provided. Fresh water requirement for the Project should be indicated
1.25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided
1.26	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
1.27	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
1.28	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 State Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished
1.29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out
1.30	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
1.31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution
1.32	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
1.33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report
1.34	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
1.35	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

S. No	Terms of Reference
	mitigation measures with required facilities proposed in the mining area may be detailed
1.36	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
1.37	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
1.38	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
1.39	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
1.40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given
1.41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out
1.42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report
1.43	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
1.44	Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) 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. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) 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 be followed. g) 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. h) 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. i) 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

S. No	Terms of Reference
	and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area



A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.

- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects

- due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
 - 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
 - 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
 - 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
 - 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented

date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM₁₀, particularly for free silica, should be given.

- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided

both in AMSL and Bgl. A schematic diagram may also be provided for the same.

- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural

and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.

- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed: -
 - 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.

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 its 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, 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.
- 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.

COMPLIANCE
OF
STANDARD TOR CONDITIONS WITH
ADDITIONAL TOR POINTS

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

COMPLIANCE OF TOR CONDITIONS

Point wise compliance of ToR points issued by SEIAA, TN vide F. No. 12068, TOR Identification No: TO25B0108TN5619439N Dated: 02.07.2025 for Mining of Minor Minerals in the Mine of “Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha at S.F.No. 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District, Tamilnadu State.

Standard Terms of Reference for (Mining of minerals)

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.	Precise Area Communication Letter received from Assistant Director, Department of Geology and Mining; Virudhunagar vide letter Na.Ka.No:KV1/567/2023 Dated 20.02.2025. Mining Plan was approved by the Assistant Director, Geology & Mining, Virudhunagar vide letter Roc.No.KV1/567/2023, dated 14.03.2025. As area is being exploited for the first time hence Year-wise production details since 1994 and before 1994 are not relevant or applicable.	Chapter-2 Table No.2.2 Page No.38

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

		<table><tr><th>Year</th><th>Rough stone (m³)</th><th>Gravel (m³)</th></tr><tr><td>I</td><td>6300</td><td>8960</td></tr><tr><td>II</td><td>9420</td><td>5600</td></tr><tr><td>III</td><td>9420</td><td>5600</td></tr><tr><td>IV</td><td>9504</td><td>6875</td></tr><tr><td>V</td><td>9126</td><td>6860</td></tr><tr><td>Total</td><td>43770</td><td>33895</td></tr></table> Proposed Production of Rough Stone & Gravel for five years is proposed in the EIA/EMP in chapter no-2.	Year	Rough stone (m³)	Gravel (m³)	I	6300	8960	II	9420	5600	III	9420	5600	IV	9504	6875	V	9126	6860	Total	43770	33895	
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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 1.31.0 hectare in Kottaiyur Village for Rough stone and Gravel quarry approved by Assistant Director, Dept. of Geology & Mining, Virudhunagar vide Roc.No.KV1/567/2023, dated 14.03.2025.	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	All the documents i.e., Mining Plan and Draft EIA Report 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.	Annexure – VI Chapter- II																					

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	technology and should be in the name of the lessee.	The mining plan of the project site has been submitted to The Assistant Director, Dept. of Geology & Mining, Virudhunagar.	
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 Draft EIA/ EMP Report.	Chapter-2, Fig no. 2.2 Page. no. 41
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.	Topo map as attached in Chapter-2	Chapter-2, Fig no. 2.4 Page. No. 43
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	Details about the land proposed for mining activities should be given Chapter 2.	Chapter-2 Page. No. 42

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	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.	Noted.	

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	It is an open cast mining project. Blasting details are incorporated in chapter 2	Chapter-2, Page no.54
9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc should be for the life of the mine / lease period.	Study area comprises of 10 km radius from the mine lease boundary. Key Plan showing core zone (ML area).	Chapter-2 Fig no. 2.5 Page no.44
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post	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 Draft EIA / EMP Report. There is no wildlife sanctuary and	Chapter-2, Table no. 2.4 Page no.45

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	operational phases and submitted. Impact, if any, of change of land use should be given.	national park, migratory routes of fauna in the study area.	
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.	This area is covered 5.0 m Gravel in this mine area. Gravel formation will be removed and transported to the needy end user, only after obtaining permission and paying necessary seigniorage fees to the Government. The Gravel of the lease area 33895 m ³ .	Chapter-2, Page no.50
12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of	Complied. The proposed mining lease area is not falling under forest land.	

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	the State Forest Department to assist the Expert Appraisal Committees.		
13	Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	The proposed mining lease area is not falling under forest land.	
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest	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 Draft EIA/EMP Report.	Chapter-3 Page. No. 109

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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 other protected area and accordingly detailed mitigative measures required, should be worked out	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, 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	There is no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger / Elephant Reserves / Critically Polluted areas within 10 km radius of the mining lease area.	
18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)]	Details biological study (flora & fauna) within 10 km radius of the project site have been incorporated in Chapter-3 of	Chapter-3 Pg No. 109

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	EIA/ EMP Report. 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.	
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	The proposed mining lease area is not falling under critically polluted area.	

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.		
20	Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease 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).	There is no Coastal Zone within 15km radius of the project site.	
21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should 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	There is no Rehabilitation and resettlement is involved. Land classified as Patta land.	

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	undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village located in the mine lease area will be shifted or not. The issues relating to shifting of Village including their R&R and socio-economic aspects should be discussed in the report.		
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	Baseline data collected during Pre-Monsoon Season and Monsoon (June to August 2025) has been incorporated in Draft EIA/EMP report. The key plan of monitoring station has been discussed in Chapter-4. Locations of the monitoring stations have been selected keeping in view the pre- dominant downwind direction and location of the sensitive receptors and also that they represent whole of the study	Chapter 3

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	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.	area.	
23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive	Air quality modelling & Impact of Air quality will be furnished in Final EIA report Transportation of mineral during operation of mines will be done by road & MDR-937 through dumpers and the impact of movement of vehicles are incorporated in Draft EIA/EMP report.	Chapter-3 Page No.127

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	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.	Total water requirement: 2.5 KLD Dust Suppression: 0.5 KLD Domestic Purpose: 0.5 KLD Plantation :1.5 KLD Domestic Water will be sourced from nearby MCpuram which is about 0.59 Km-N of the area.	Chapter-2 Page No.57
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 Draft EIA/EMP report.	Chapter-4 Page No.132

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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.	Maximum working depth: 29 m BGL The ground water table is reported as 60m below surface ground level in nearby wells of this area. The proposed depth of mining is above the water table and hence, quarrying may not affect the ground water So mine working will not be intersecting the ground water table.	Chapter-2 Page no. 38
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.	There is no any stream crossing in the proposed quarry	Executive Summary

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30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and Bgl. A schematic diagram may also be provided for the same.	Highest elevation: 108 AMSL Depth: 60 m Below Ground Level	Chapter-2 Table no. 2.2 Page no. 38
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to	Green Belt Development plan is proved given in Chapter 2.	Chapter-2

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	pollution.		
32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project proponent shall conduct impact of Transportation study as per Indian Road Congress Guidelines	Impact on local transport infrastructure due to the project has been assessed. There shall not be much impact on local transport. Traffic density from the proposed mining activity has been incorporated in EIA/EMP report.	Chapter-3 Page No.127
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 Draft EIA/EMP	Chapter-2

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34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Conceptual post mining land use and Reclamation and restoration sectional plates are given in Mining Plan followed by Scheme of mining.	Mining plates Annexure VI
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed 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. 172
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. 175
37	Measures of socio-economic significance and influence to the local	Suitable measures has been discussed in Chapter 4 of Draft EIA Repot.	Chapter-4 Pg No. 129

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	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 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 Draft EIA/EMP Report.	Chapter-9 Pg No. 167
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.	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	Not applicable No. litigation is pending against the project in any court.	

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	should be given.														
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><tr><th>S. No</th><th>Description</th><th>Cost</th></tr><tr><td>1</td><td>Fixed Asset Cost</td><td>8,25,000</td></tr><tr><td>2</td><td>Operational Cost</td><td>1,09,67,765</td></tr><tr><td></td><td>Total</td><td>40,49,000/- -</td></tr></table> EMP Cost: 106,59,408/-	S. No	Description	Cost	1	Fixed Asset Cost	8,25,000	2	Operational Cost	1,09,67,765		Total	40,49,000/- -	Chapter-8 Pg No. 160
S. No	Description	Cost													
1	Fixed Asset Cost	8,25,000													
2	Operational Cost	1,09,67,765													
	Total	40,49,000/- -													
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 of Draft EIA Report.	Chapter-7 Pg No. 151												
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 been incorporated in Draft EIA Report.	Chapter-8 Pg No. 159												
44	Besides the above, the below mentioned general points are also to be followed:														
(a)	Executive Summary of the EIA/EMP report	Executive Summary of EIA Report is given from page													

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		No.11 – 28	
(b)	All documents to be properly referenced with index and continuous page numbering.	Complied	
(c)	Where data are presented in the report especially in tables, the period in which the data were collected and the sources 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	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)	

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	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.	dated 4th August 2009.	
(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	Draft EIA report is prepared as per the submitted Form-1 & PFR. And there are no changes in the basic scope and project parameters prepared.	
(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	Will be complied after grant environment clearance from SEIAA, Tamilnadu	

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	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 (iii) sections of mine pit and external dumps, if any clearly showing the features of the adjoining area.	All Sectional Plates of Quarry is enclosed in Mining Plan.	

SEAC Conditions – Site Specific:

S. NO.	Description	Response	Page Ref. in EIA Report
1.1	1. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads,	A Cluster Management Committee (CMC) will be constituted including all the mines in the cluster and will be incorporated in the Final EIA report.	

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	authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities.		
	2. The Boundary pillars to be erected as per the mine rules and the evidence should be submitted along with the EIA report.	Lease boundary area will be fenced and the photos will be updated in Final EIA Report.	
	3. Since the fireworks industry is situated at a distance of 330m, the PP shall carry out a detailed impact study of the mining operation in the fireworks industry and anticipated mitigation measures should be submitted along with the EIA report.	Detailed study on impacts of mining activity on fireworks industry along with mitigation measures will be incorporated in the Final EIA Report.	
	4. EIA Coordinator shall furnish an explanation for not disclosing the coordinator	Due to some technical issues the EIA coordinator details was not updated in the ToR	

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	details in the ToR application and shall make necessary arrangement for including the same while submitting the EIA Application.	application and it will be corrected while submitting EIA application for EC processing.	
	5. The details of enumeration of structures including schools, colleges, primary health centres should be submitted along with the EIA report.	Enumeration of structure including schools, colleges etc., has been incorporated in chapter – 3 of Draft EIA report.	Chapter-3 Table No:3-2 Page No: 69
	6. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations.	As per approved mining plan there is no habitation within 300m radius of the project site. Habitation details along with population for the radius of 5Km has been included in the Chapter – 2 of Draft EIA report.	Chapter – 2 Table No:2-5 Page No: 46
	7. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including	Fencing and Green belt development photos will be attached in Final EIA Report. Garland drainage system with siltation tank will be attached in	

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	the Final EIA report.	
	8. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.	Biodiversity Report has been incorporated in chapter-3 of Draft EIA report.	Chapter – 3 Page No: 109
	9. 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.	EMP for the entire life of mine is included in Chapter-2 of the Draft EIA/EMP report. And sworn affidavit stating to accept and follow the EMP for entire life of mine will be attached with Final EIA report.	Chapter – 2 Page No: 61
	10. The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures.	It is a fresh quarry. Details on drilling and blasting is discussed in Chapter – 2 of Draft EIA Report.	Chapter – 2 Page No: 55
	11. For the safety of the persons employed in the	It is a fresh quarry. The proposed depth of mining is	

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	quarry, the PP shall carry out the scientific studies to assess the slope stability of the existing quarry wall (exists without benches) for spelling out the slope stability action plan with mitigation measures and working methodology, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Dept of Mining Engg., Anna University Chennai. A copy of such scientific study report shall be submitted with an action plan accommodating the inclusion of haul road accessibility with maintaining the proper gradient by ensuring the slope stability of the working benches to be constructed and existing quarry wall.	29m.	
	12. The PP shall install the CCTV camera for the	CCTV cameras will be installed during the commencement of	

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	continuous surveillance of mining activity & furnish the photographic/ videographic evidence along with the EIA report.	mining activity. Photographic and videographic evidences of the project site will be attached with Final EIA report.	
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SEAC Standard Conditions:

Si.No	Description	Response	Page Ref. in EIA Report
1	In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan	It is a fresh Quarry.	

ToR Reply of Proposed Rough stone & Gravel Quarry Over an Extent of 1.31.00 Ha

	showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.		
2.	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	There is no Habitation within 300m Radius from the applied lease area. VAO Certificate is obtained from Village Administrator, Kottaiyur Village, Virudhunagar Taluk, District.	Annexure – VII
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.,	Enumerated structures will be submitted along with final EIA report.	
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like	Hydrological Report will be submitted along with Final EIA report.	

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	lake, water tanks, etc are located within 1 km of the proposed quarry.		
5	The Proponent shall carry out Biodiversity study through reputed Institution and the same shall be included in EIA Report.	Biodiversity study has been conducted and detailed study is discussed in chapter-3 of Draft EIA report.	Chapter – 3 Page No: 109
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	Not Applicable. There is no RF, Protect Area, Sanctuaries and Tiger reserves within 25Km from the Proposed site.	
7.	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions -CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept	It is a fresh quarry.	

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	of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.		
8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	Ultimate Depth of Project is 29m BGL.	
9	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.	We have enclosed blasting agreement as annexure along with Draft EIA Report.	Annexure - VIII
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry	We will enclose blasting design along with final EIA Report.	

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	such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.		
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	It is a fresh Quarry. Proponent is well experienced in rough stone quarry operation of more than 15 years. Proposed quarry has lease executed for 5 years, we will incorporate the Drone video and site Photographs along with Final Presentation.	
12	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,	It is a fresh quarry.	
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	It is a fresh quarry hence Not applicable	

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14	Quantity of minerals mined out Highest production achieved in any one year ➤ Detail of approved depth of mining. ➤ Actual depth of the mining achieved earlier. ➤ Name of the person already mined in that leases area. ➤ If EC and CTO already obtained, the copy of the same shall be submitted. ➤ Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	It is a Fresh Quarry	
15	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	All corner coordinates of the lease area, Toposheet, Geomorphology, Lithology are incorporated in Chapter-3 of EIA Report.	
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing, Etc.,	Drone video survey will be carried out and incorporated along with final Presentation.	

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17	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 as per the provisions provided as per the	Photographs of Fencing, Greenbelt along with Periphery safe distance will be incorporated along with final Presentation	
18	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,	We have discussed the Quantity of Geological, Mineable and Yearwise reserve along with Methodology in Chapter-2 of Draft EIA Report.	Chapter – 2 Page No: 49
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Complied. Manpower requirements table attached in Draft EIA Report Chapter-2.	Chapter – 2 Table: 2-13. Page No: 56
20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the	Hydro Geological study report will be submitted during final Presentation.	

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	water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.		
21	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 quantity, air quantity, soil quantity & Flora/fauna including traffic / vehicular movement study details attached in chapter-3 of Draft EIA report.	Chapter – 3
22	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with	Noted. Agree to Comply.	

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	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.		
23	Rainwater harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Noted. Agree to Comply.	
24	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Current land use and Post land use of the study area has been attached in Draft EIA report chapter-2.	Chapter – 2 Table: 2-4 Page No: 45

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25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	The overburden is in the form of Gravel formation. It will be quarried for filling purposes to nearby end users and part will be preserved all along the boundary as barrier for afforestation.	
26	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.	
27	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.	
28	Impact on local transport infrastructure due to the Project	Traffic impact assessment has given in Draft EIA report chapter	Chapter – 3 Page No:

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	should be indicated.	3.	127
29	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.	No tree species were found inside the project site. Tree survey study details given in EIA report chapter-3.	Chapter – 3
30	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, Virudhunagar District.	
31	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.	
32	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	Noted. Agree to comply.	

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	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.		
33	Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	The Green belt development plan is enclosed with mining plates in Annexure VI	Annexure VI
34	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.	Disaster management plan has prepared and enclosed in Chapter 7.	Chapter – 7
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete	Risk assessment and management plan has prepared and enclosed in chapter 7.	Chapter – 7

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	life of the proposed quarry (or) till the end of the lease period.		
36	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.	Occupational Health impacts of the project has prepared and incorporated in Chapter-10 of Draft EIA report.	
37	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.	
38	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	The socio-economic study has been discussed in chapter-3.	Chapter – 3 Page No: 123

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	possible, quantitative dimensions may be given with time frames for implementation.		
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No. litigation is pending against the project in any court.	
40	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 Draft EIA report chapter-8	Chapter – 8 Page No: 159
41	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.	
42	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	EMP for the entire life of mine is included in Chapter-2 of the Draft EIA/EMP report. And sworn affidavit stating to accept	Chapter – 2 Page No: 61

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	of mine.	and follow the EMP for entire life of mine will be attached with Final EIA report.	
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted.	

SEIAA Standard Condition

S.No	Condition	Compliance	Page Ref. in EIA Report
CLUSTER MANAGEMENT COMMITTEE			
1	Cluster Management Committee, which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Noted All the proponents in the cluster is discussed in Chapter-2.	Chapter – 2 Page No: 36
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation,	Green belt development, water sprinkling, tree plantation is discussed in chapter-2 of Draft EIA Report.	Chapter – 2 Page No: 65

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	blasting etc.,		
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Agreed to comply.	
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Agreed to comply. It will be furnished in final EIA report.	
5	The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Risk management plan is discussed in Chapter-7 in Draft EIA report.	Chapter – 7 Page No:151
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role	Agreed to comply. It will be furnished in final EIA report.	

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	played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.		
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed to comply. It will be furnished in final EIA report.	
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.	Health of workers and staff is discussed in Chapter 9 of Draft EIA report.	
AGRICULTURE & AGRO – BIODIVERSITY			
9	Impact on surrounding agricultural fields around the proposed mining area.	There is no agricultural fields around the proposed mining area	
10	Impact on soil flora & vegetation around the project site	Impact on soil flora & vegetation around the project site discussed in Chapter-4 of Draft EIA Report.	Chapter – 4 Page No:129
11	Details of type of vegetation's including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation's all along the boundary of the proposed mining	There is no plantation within the mining area. Type of vegetation no.of trees & shrubs in buffer zone is discussed in Chapter 3 of Draft EIA Report.	Chapter – 3

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	area shall committed mentioned in EMP.		
12	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 of Draft EIA Report..	Chapter – 3 Page No:109
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted and will be complied.	
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The detailed study will be carried out and furnished in the Final Presentation.	
FORESTS			
15	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	Not Applicable. There is no reserve forest within 15km radius of the project site. Venkatewarapuram RF – 42.59 Km – NW	
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The biological environment impacts, and its mitigation measures has been given in Chapter – 4 of Draft EIA Report.	Chapter – 4 Page No:129

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17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	There is no existing trees in the project site and surrounding the project site.	
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Not Applicable. There is no protected area, RF, National Parks etc., within 25km of the proposed project site.	
WATER ENVIRONMENT			
19	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	The hydro-geological study will be conducted and submitted in Final presentation.	

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20	Erosion Control measures.	The soil erosion map 5km surrounding the project site has been given in chapter 3. The soil samples have been collected surrounding the project site and physical, chemical components and microbial components study has been carried out and the results are tabulated in chapter 3	Chapter – 3 Page No: 105
21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	The water environment impacts and its mitigation measures has been given in Chapter 4	Chapter – 4 Page No:129
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	There is no water bodies within 0.50 km radius, Water gets stagnant only during rainy season. Hence there won't be much impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	There is no existing trees in the project site and surrounding the project site.	
24	The project proponent shall study	The water environment impacts	Chapter – 4

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	and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible landform changes visual and aesthetic impacts.	and its mitigation measures has been given in Chapter 4	Page No:129
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The soil erosion map 5km surrounding the project site has been given in chapter 3. The soil samples have been collected surrounding the project site and physical, chemical components and microbial components study has been carried out and the results are tabulated in chapter 3.	Chapter – 3 Page No: 105
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The biological environment impacts, and its mitigation measures has been given in Chapter 4	Chapter – 4 Page No:129
27	The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and	Noted and Agreed to comply.	

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	its footprints including environmental stress. c) Sediment geochemistry in the surface streams.		
ENERGY			
28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	Measures taken to control Noise, Air, water, Dust control is discussed in Chapter-4 of Draft EIA Report.	Chapter – 4 Page No:129
CLIMATE CHANGE			
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Noted and agree to comply.	
30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.	The biodiversity has been studied and discussed in chapter 3. The soil erosion map 5km surrounding the project site has been given in chapter 3.	
31	Impact of mining on pollution leading to GHGs emissions and	Noted. Agree to comply.	

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	the impact of the same on the local livelihood.		
MINE CLOSURE PLAN			
32	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 VI
EMP			
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and scope for achieving SDGs.	Environment Management Plan has been described in detail in Chapter-2 of the Draft EIA/EMP Report.	
34	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 of Draft EIA Report.	Chapter – 8 Page No:159
RISK ASSESSMENT			
35	To furnish 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.	
DISASTR MANAGEMNET PLAN			
36	To furnish disaster management	Disaster Management and Risk	Chapter – 7

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	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.	Assessment has been incorporated in Chapter-7 of Draft EIA Report.	Page No:151
OTHERS			
37	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.,	Obtained and the same has been attached as Annexure VII	Annexure VII
38	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 in Final EIA report.	
39	The project proponent shall study	There will not be any plastic and	

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	and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and freshwater systems due to activities, contemplated during mining may be investigated and reported.	microplastic pollution due to mining activity. Also, we ensure that we won't use any single use plastics in the project site.	
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ANNEXURE – II

PRECISE AREA COMMUNICATION

LETTER

புவியியல் மற்றும் சுரங்கத்துறை

ந.க.எண்:கேவி1/567/2023

உதவி இயக்குநர் அலுவலகம்,
மாவட்ட ஆட்சியர் அலுவலக வளாகம்,
விருதுநகர்.

நாள்:20. 02.2025.

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - விருதுநகர் மாவட்டம் மற்றும் வட்டம் - கோட்டையூர் கிராமம் - பட்டா புல எண்கள்.11/2B1 (0.49.53), 11/2B2 (0.40.47) மற்றும் 14/2 (0.41.00) விஸ்தீர்ணம் 1.31.00 ஹெக்டேர்ஸ் - 05 (ஐந்து) வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கல் - உகந்த பரப்பு (Precise Area) தேர்வு செய்யப்பட்டது - சுரங்கத்திட்டம் மற்றும் மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்க கோருவது - தொடர்பாக.

- பார்வை:**
1. திரு.சி.கிருஷ்ணசாமி, த/பெ.சிங்கதுரை, காளபெருமாள்பட்டி கிராமம், விருதுநகர் வட்டம், விண்ணப்ப நாள்.இல்லை கிடைக்கப்பெற்ற நாள்.24.04.2023.
 2. இவ்வலுவலக கடிதம் எண் ந.க.கேவி1/567/2023, நாள்: 02.05.2023 (வருவாய் கோட்டாட்சியர், சாத்தூர் அவர்களுக்கு முகவரியிட்டது).
 3. சாத்தூர், வருவாய் கோட்டாட்சியர் கடித எண் மூ.மு.அ2/56/3/2023, நாள்:05.08.2023.
 4. உதவி புவியியலாளர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் புலத்தணிக்கை அறிக்கை நாள்:13.02.2025.
 5. 1959 -ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 41 மற்றும் 42.
 6. அரசாணை எண்.169 தொழில் (எம்.எம்.சி.1) துறை, நாள்: 04.08.2020.
 7. தொடர்புடைய ஆவணங்கள்.

விருதுநகர் மாவட்டம் மற்றும் வட்டம், கோட்டையூர் கிராமம் புல எண்கள். 11/2B1 (0.49.53), 11/2B2 (0.40.47) மற்றும் 14/2 (0.41.00) விஸ்தீர்ணம் 1.31.00 ஹெக்டேர்ஸ் பரப்பில் 05 (ஐந்து) ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்கக்கோரி விருதுநகர் மாவட்டம் மற்றும் வட்டம், காளபெருமாள்பட்டி கிராமம் என்ற முகவரியில் வசித்து வரும் திரு.சி.கிருஷ்ணசாமி, த/பெ.சிங்கதுரை என்பவர் பார்வை 1-ல் காணும் விண்ணப்பத்தினை உரிய ஆவணங்களுடன் சமர்ப்பித்துள்ளார்.

வருவாய் கோட்டாட்சியர், சாத்தூர் அவர்களது அறிக்கையில் குவாரி உரிமம் வழங்கக் கோரிய விருதுநகர் மாவட்டம் மற்றும் வட்டம், கோட்டையூர் கிராமம் புல எண்கள். 11/2B1 (0.49.53), 11/2B2 (0.40.47) மற்றும் 14/2 (0.41.00) விஸ்தீரணம் 1.31.00 ஹெக்டேர்ஸ் நிலங்களானது பட்டா எண்.1926, புல எண்.11/2B1 (0.49.53) மற்றும் பட்டா எண்.747, புல எண்.11/2B2 (0.40.47), 14/2 (0.41.00) மொத்தம் 1.31.00 ஹெக்டேர் பரப்பு நிலம் சிங்கத்துரை மகன் கிருஷ்ணசாமி பெயரில் கிராமக்கணக்கில் தாக்கலாகியுள்ளது எனவும்,

மேற்படி நிலங்களைப் புலத்தணிக்கை செய்யும் போது 300 மீட்டர் சுற்றளவில் குடியிருப்பு பகுதிகள் ஏதும் இல்லை. 300 மீட்டர் சுற்றளவில் புல எண்.13/13ய1 விருதுநகர் மாவட்ட ஆட்சியர் அவர்களின் செயல்முறை ஆணைகள் கேவி1/482/2018, நாள்.18.07.2020-ன் படி 25.08.2025 வரை உரிமம் உள்ள திரு.வண்ணமுத்து என்பவரது செயல்படும் குவாரி உள்ளது. 50 மீட்டர் சுற்றளவில் வனக்காடுகள், சாலைகள், இரயில் இருப்பு பாதைகள், பள்ளிகள், புராதான சின்னங்கள், கோவில்கள், உயர் மின் அழுத்த கம்பிகள், உரிமம் கோரியுள்ள புல எண்.14/2-க்கு கிழக்கு பகுதியில் மட்டும் பாறை, ஊரணி என கிராமக்கணக்கில் தாக்கலாகியுள்ளது எனவும்,

மேற்படி நிலத்திற்குள் அணுகு பாதையானது வலையபட்டி முதல் அ.புதுப்பட்டி வரை செல்லும் வண்டிபாதை வழியாக உள்ளது எனவும், மேற்படி புல எண்கள் மன்னார்கோட்டை ஊராட்சி எல்லைக்கு உட்பட்டது எனவும், பொது மக்களிடம் ஆட்சேபணை ஏதும் உள்ளதா, என்பது குறித்த அ1 நோட்டீஸ் விளம்பரம் செய்யப்பட்டதில் பொது மக்களிடமிருந்து ஆட்சேபணை ஏதும் வரப்பெறவில்லை எனவும் தெரிவித்துள்ளனர்.

நான்குமால் விவரம்:-

புல எண்.11/2B1

வடக்கு புல எண்.11/2B2 - கிருஷ்ணசாமி
தெற்கு புல எண்.14/2 - கிருஷ்ணசாமி
கிழக்கு புல எண்.11/2C - செல்வராஜ் பாண்டி
மேற்கு புல எண்.11/3 - வண்டிபாதை, 12/9, 10 - ஆதிசேசன்

புல எண்.11/2B2

வடக்கு புல எண்.11/2A -செல்வராஜ் பாண்டி
தெற்கு புல எண்.11/2B1 - கிருஷ்ணசாமி, 11/2C,2D,2E -செல்வராஜ்பாண்டி
கிழக்கு புல எண்.11/2G, 2F- செல்வராஜ் பாண்டி
மேற்கு புல எண்.11/3-வண்டிப்பாதை,12/9,10- ஆதிசேசன்

புல எண்.14/2

வடக்கு புல எண்.11/2B1 — கிருஷ்ணசாமி, 11/2C,2D,2E - செல்வராஜ்பாண்டி
தெற்கு புல எண்.14/3- செல்வராஜ் பாண்டி, 13/7, 13/8- செல்வராஜ்பாண்டி
கிழக்கு புல எண்.15/1- பாறை, ஊரணி
மேற்கு புல எண்.14/1- வண்டிபாதை

மேற்படி நிலத்திற்கு அணுகு பாதையானது வலையபட்டி முதல் அ.புதுப்பட்டி வரை செல்லும் வண்டிபாதை வழியாக உள்ளது எனவும்,

எனவே, புல எண்.14/2ன் கிழக்கு பகுதியில் கிராமக்கணக்கில் பாறை ஊரணி என தாக்கலாகியுள்ள புல எண்.15/1ல் அமைந்துள்ள நிலத்திற்கு எவ்வித பாதிப்பும் ஏற்படுத்தக்கூடாது என்ற நிபந்தனையுடன் திரு.கிருஷ்ணசாமி, த/பெ.சிங்கத்துரை என்பவருக்கு விருதுநகர் மாவட்டம் மற்றும் வட்டம், கோட்டையூர் கிராமம், புல எண்கள். 11/2B1 (0.49.53), 11/2B2 (0.40.47) மற்றும் 14/2 (0.41.000) மொத்தம் 1.31.00 ஹெக்டேர்ஸ் பரப்பு நிலத்தில் ஐந்து வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் தமிழ்நாடு சிறுகனிம விதிகளுக்கு உட்பட்டு வழங்க பரிந்துரை செய்கிறேன் என தெரிவித்துள்ளார்.

மேலும், புவியியல் மற்றும் சுரங்கத்துறை, உதவி புவியியலாளர் தனது அறிக்கையில் விண்ணப்பிக்கப்பட்ட புலங்கள் புஞ்சை வகைப்பாடுடைய தரிசு நிலங்களாகும். புலங்களின் மேற்பரப்பு சமதளமாகவும், விவசாய பணிகள் ஏதுமின்றி தரிசாக உள்ளது. புலங்களின் மேற்பரப்பில் காணப்படும் மண், சிதைந்த பாறைகளை (Weathered Rock), தொடர்ந்து சார்னகைட் (Charnockite) எனப்படும் கடின பாறைகள் (Hard rock) உள்ளது அருகில் உள்ள குவாரியில் ஆய்வு செய்ததில் தெரியவருகிறது. கடின பாறைகளில் காணப்படும் வேறுபட்ட நிறங்கள் (Different in colours), இணைப்புகள் (Joints), பிளவுகள், கீரல்கள் (Cracks) வெடிப்புகள் மற்றும் மாறுபட்ட அளவு கொண்ட கனிமங்கள் காரணமாக இப்பாறைகளில் மெருகேற்றக் கூடிய வண்ண கற்களை (Polished Granite / Blocks) உற்பத்தி செய்ய இயலாது. இவ்வகை பாறைகளில் இருந்து கட்டிடப்பணிகள் மற்றும் சாலை / இரயில்வே பணிகளுக்கு தேவைப்படும் கற்கள், ஜல்லிகள் மற்றும் எம்-சாண்ட் ஆகியவற்றை உற்பத்தி செய்ய இயலும்.

விண்ணப்பிக்கப்பட்ட புலங்களை சுற்றிலும் 300 மீட்டர் சுற்றளவில் குடியிருப்புகள், பள்ளிகள், கோயில்கள், மசூதிகள், சுடுகாடு ஏதும் இல்லை. புல எண்.13/3A1 விருதுநகர் மாவட்ட ஆட்சியர் அவர்களின் செயல்முறை ஆணைகள் கேவி1/482/2018, நாள்.18.07.2020 ன்படி 25.08.2025 வரை உரிமம் உள்ள வண்ணமுத்து என்பவரது செயல்படும் குவாரி உள்ளது. 50 மீட்டர் சுற்றளவில் தேசிய / மாநில நெடுஞ்சாலைகள், ஆறுகள், கட்டிடங்கள், உயர் /தாழ்வழுத்த மின்கம்பிகள் இல்லை. உயர்வகை மரங்கள் ஏதுவும் இல்லை. வனத்துறையால் பாதுகாக்கப்பட்ட பகுதியாக அறிவிக்கப்பட்ட சரணாலையங்கள், தேசிய பூங்காக்கள் சுற்றுச்சூழல் உணர் திறன் மிக்க பகுதிகள் (ECO-SENSITIVE ZONE), 1 கி.மீட்டர் சுற்றளவில் காடுகள், 500 மீட்டர் சுற்றளவில் அருங்காட்சியக துறையின் மூலம் பாதுகாக்கப்பட்ட பகுதிகளாக அறிவிக்கப்பட்ட இடங்கள் மற்றும் வரலாற்று சின்னங்கள் ஏதும் இல்லை. ஊரிமம் கோரியுள்ள புல எண்.14/2க்கு கிழக்கு பகுதியில் மட்டும் பாறை, ஊரணி என கிராமக்கணக்கில் தாக்கலாகியுள்ளது. மேற்படி, நிலத்திற்குள் அணுகு பாதையானது வலையபட்டி முதல் அபுதுப்பட்டி வரை செல்லும் வண்டிபாதை வழியாக உள்ளது. மேற்படி புல எண்கள் மன்னார்கோட்டை ஊராட்சி எல்லைக்கு உட்பட்டது எனவும்

எனவே, விண்ணப்பதாரர் திரு.சி.கிருஷ்ணசாமி, த/பெ.சிங்கதுரை என்பவர் விருதுநகர் மாவட்டம் மற்றும் வட்டம், கோட்டையூர் கிராமம் புல எண்கள்.11/2B1 (0.49.53), 11/2B2 (0.40.47), 14/2 (0.41.00) விஸ்தீரணம் 1.31.00 ஹெக்டேரில் உடைகல் மற்றும் கிராவல் குவாரி உரிமம் ஐந்து ஆண்டுகளுக்கு (05) தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதிஎண்.19 மற்றும் 20-ன் படி பின்வரும் நிபந்தனைகளுக்குட்பட்டு வழங்க பரிந்துரை செய்கிறேன் எனவும் தெரிவித்துள்ளார்.

நிபந்தனைகள்:

1. அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீ பாதுகாப்பு இடைவெளி விடுத்து குவாரி செய்தல் வேண்டும்.
2. விண்ணப்ப புலத்திற்கு கிழக்கே 275 மீட்டரில் இருக்கும் வெடிமருந்து தயாரிக்கும் கட்டிடத்திற்கு 300 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.
3. புல எண்.11/2B1, 11/2B2 க்கு மேற்கு பகுதியில் செல்லும் வண்டிப்பாதைக்கு பாதிப்பு ஏற்படாத வண்ணம் குவாரி பணி செய்தல் வேண்டும்.
4. புல எண்.14/2-ன் கிழக்கு பகுதியில் கிராமக்கணக்கில் பாறை மற்றும் ஊரணி மற்றும் மேற்கு பகுதியில் செல்லும் வண்டிப்பாதைக்கு எவ்வித தேசமும் ஏற்படாதவாறு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
5. புல எண்.13/3A1 -ல் திரு.வண்ணமுத்து அவர்களின் செயல்படாத குவாரிக்கு பாதிப்பு ஏற்படாத வண்ணம் குவாரி பணி மேற்கொள்ள வேண்டும்.
6. புல எண்.15 & 11 ல் உள்ளசெயல்படாத குவாரிக்கு பாதிப்பு ஏற்படாத வண்ணம் குவாரி பணி மேற்கொள்ள வேண்டும்.
7. பொதுமக்கள் / விவசாய நிலங்களுக்கு பாதிப்பு ஏற்படாத வகையில் தகுதி வாய்ந்த அங்கீகரிக்கப்பட்ட நபர்கள் மூலம் வெடிமருந்துகள் சேமிக்கப்பட்டு குவாரியில் வெடித்தல் வேண்டும். குவாரியில் குறைந்த சக்தி கொண்ட வெடி மருந்துகளை பயன்படுத்தல் வேண்டும்.
8. சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தடையில்லாச் சான்று குத்தகை உரிமம் வழங்குவதற்கு முன் சமர்ப்பிக்க வேண்டும்.
9. குவாரியில் வேலை செய்யும் தொழிலாளர்கள் தொழிலாளர் நலவாரியம் மற்றும் காப்பீடு திட்டத்தில் பதிவு செய்து தொழிலாளர் நலன் பேண்பட வேண்டும்.
10. குழந்தை தொழிலாளர்களை குவாரி பணியில் அமர்த்தக் கூடாது.
11. கனிமங்களை வாகனங்களில் கொண்டு செல்லும் போது பாதசாரிகள், பொது மக்கள் மற்றும் பிற வாகனங்கள் பாதிக்காதவண்ணம் தார்பாய்கள் கொண்டு மூடி எடுத்துச் செல்ல வேண்டும்.

எனவே, துறை அலுவலர்களின் பரிந்துரையினை ஏற்றும் நிபந்தனைகளுக்கு உட்பட்டும், விருதுநகர் மாவட்டம் மற்றும் வட்டம், கோட்டையூர் கிராமம் புல எண்கள். 11/2B1 (0.49.53), 11/2B2 (0.40.47) மற்றும் 14/2 (0.41.00) விஸ்தீர்ணம் 1.31.00 ஹெக்டேர்ஸ் பரப்பில் 1959 -ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண்: 19 (1) மற்றும் 20 -ன் படி ஐந்து (05) வருடகாலத்திற்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க தகுதி வாய்ந்த நிலப்பரப்பாக (Precise Area) கருதப்படுகிறது.

தமிழ்நாடு சிறுகனிம சலுகை விதிகள்-1959 விதி எண்:41-ன்படி குவாரி பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்கத் திட்டத்தினை (Mining Plan) 90 தினங்களுக்குள்ளும் விதி எண்:42-ன்படி மாநில அளவிலான சுற்றுசூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (State Level Environmental Impact Assessment Authority) இசைவினைப் பெற்று சமர்ப்பிக்குமாறும் மனுதாரர் திரு.சி.கிருஷ்ணசாமி, த/பெ.சிங்கதுரை என்பவர் கேட்டுக் கொள்ளப்படுகிறார்.


உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
விருதுநகர்.


20/2/2024

பெற்றுநர்
திரு.சி.கிருஷ்ணசாமி,
த/பெ.சிங்கதுரை,
காளபெருமாள்பட்டி கிராமம்,
விருதுநகர் வட்டம்.

நகல்
உறுப்பினர் செயலர்,
மாநில சுற்றுசூழல் தாக்க மதிப்பீட்டு ஆணையம் (SEIAA),
சென்னை.

ANNEXURE – III
MINING PLAN APPROVED LETTER

From

Dr.S.Suhatharahima, M.Sc.,Ph.D.,
Assistant Director,
Geology and Mining,
Virudhunagar.

To

Thiru.S.Krishnasamy
S/o. Thiru.Singadurai
D.No.3/10, East Street,
Kalaperumalpatti Village,
Virudhunagar &
District - 626 204

Roc. No: KV1/567/2023, Dated: 14.03.2025.

Sir,

Sub: Mines and Minerals - Minor Mineral -Virudhunagar District -Virudhunagar Taluk - Kottaiyur Village -Patta Land-SF.No: 11/2B1 (0.49.53), 11/2B2 (0.40.47) and 14/2 (0.41.00) - Extent - 1.31.00 Hectares - Quarry lease application preferred by Thiru.S.Krishnasamy for quarrying Rough Stone and Gravel - Approval of Mining Plan - Regarding.

- Ref: 1. Thiru.S.Krishnasamy S/o. Thiru.Singadurai, letter, dated:24.04.2023.
2. The Assistant Director, Geology and Mining, Virudhunagar Rc.No.KV1/567/2023, Dated: 20.02.2025.
3. Thiru.S.Krishnasamy S/o. Thiru.Singadurai, letter, dated: 25.02.2025.

Thiru.S.Krishnasamy, S/o.Thiru.Singadurai has preferred an application for the grant of quarrying lease to quarry Rough Stone and Gravel over an extent of 1.31.00 Hectares of Patta Land in S.F.Nos : 11/2B1 (0.49.53), 11/2B2 (0.40.47) and 14/2 (0.41.00) of Kottaiyur Village , Virudhunagar Taluk , Virudhunagar District for a period of 05 (Five) Years Under Rule 19 of Tamil Nadu Minor Mineral Concession Rules 1959.

2) The application was examined and consented to grant lease to quarrying Rough Stone and Gravel over an extent of 1.31.00 Hectares of Patta Land in S.F.No: 11/2B1, 11/2B2 and 14/2 for a period of 05 (Five) years subject to produce Mining Plan for approval and to obtain Environment Clearance from SEIAA in the reference 2nd cited.

3) The applicant has submitted the Mining Plan, prepared as per the guidelines issued by the Commissioner of Geology and Mining and as per

the Rules and Acts. The Geological reserves, Mineable reserves and yearwise production are discussed in Part A Table 1,2 and 3 of the mining plan. The Geological reserves is estimated as 2,79,648 cbm Roughstone and 58,260 cbm of Gravel upto a depth of 29 m below ground level. The mineable reserves is estimated as 43,770 cbm of Roughstone and 33,895 cbm of Gravel upto a depth of 29 m from the ground level for the period of 05 (Five) years.

4)The applicant can quarry the mineral in the following measurements:-

MINEABLE RESERVES

The Yearwise Production and Development Table

Table No – 3

SECTION	YEAR	BENCH	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M³)	GRAVEL VOLUME (M³)
A-A' & C-C'	I-Year	I	32	56	5.0	-	8,960
		II	21	50	6.0	6,300	-
I – YEAR PRODUCTION						6,300	8,960
A-A' & C-C'	II-Year	I	20	56	5.0	-	5,600
		II	20	50	6.0	6,000	-
		III	15	38	6.0	3,420	-
II – YEAR PRODUCTION						9,420	5,600
A-A' & C-C'	III-Year	I	20	56	5.0	-	5,600
		II	20	50	6.0	6,000	-
		III	15	38	6.0	3,420	-
III – YEAR PRODUCTION						9,420	5,600
A-A' & C-C'	IV-YEAR	III	19	38	6.0	4,332	-
		IV	24	26	6.0	3,744	-
I		15	45	5.0	-	3,375	
D-D' & E-E'		I	25	28	5.0	-	3,500
	II	14	17	6.0	1,428	-	
IV – YEAR PRODUCTION						9,504	6,875
A-A' & C-C'	V-YEAR	IV	13	26	6.0	2,028	-
		V	25	14	6.0	2,100	-
D-D' & E-E'		I	49	28	5.0	-	6,860
		II	49	17	6.0	4,998	-
V – YEAR PRODUCTION						9,126	6,860
TOTAL PRODUCTION FOR FIVE YEARS						43,770	33,895

5) The available mineable reserves have been computed as, 43,770 m³ as Rough Stone and Gravel as 33,895 m³ up to the depth of 29 meters from the ground level.

6) The Environmental Management Plan and Mine closure plan are discussed in Part B, Chapter 10 and 11 and all conditions has been incorporated in the Mining Plan as laid down by the authorities.

7) In view of the above, in exercise of the powers delegated under Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the Mining Plan submitted by Thiru.S.Krishnasamy, S/o. Thiru.Singadurai for quarrying Rough Stone and Gravel over an Extent 1.31.00 Hectares of patta lands in SF.Nos. 11/2B1 (0.49.53), 11/2B2 (0.40.47) and 14/2 (0.41.00) of Kottaiyur Village , Virudhunagar Taluk, Virudhunagar District for a period of Five years (05 -Years) to obtain Environment Clearance from SEIAA, Chennai subject to the following conditions:

1. The Mining Plan is approved without prejudice to any other law applicable to the quarry permission from time to time where such Laws are made by the State Government or any other authority.
2. This approval of the Mining Plan does not in any way imply the approval of the Government in terms of any other provisions of the Tamil Nadu Minor Mineral Concession Rules, 1959.
3. The Mining Plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
4. The approval of the Mining Plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Amendment Act, 2015 or any other connected Laws including, Environment Protection.
5. Act, 1986, and the Rules made there under in Tamil Nadu Minor Mineral Concession Rules, 1959.

Encl: Two copies of Mining Plan.


Assistant Director,
Geology and Mining,
Virudhunagar.


14/3/25

ANNEXURE – IV
500M RADIUS LETTER

From

Dr.S.Suhatharahima, M.Sc.,Ph.D.,
Assistant Director,
Geology and Mining,
Virudhunagar.

To

Thiru.S.Krishnasamy
S/o. Thiru.Singadurai
D.No.3/10, East Street,
Kalaperumalpatti Village,
Virudhunagar District

Roc. No: KV1/567/2023, Dated: 14.03.2025.

Sir,

Sub: Mines and Minerals - Minor Mineral - Virudhunagar District - Virudhunagar Taluk - Kottaiyur Village Village - Patta Land-SF.No: 11/2B1, 11/2B2 and 14/2 - Extent - 1.73.50 Hectares - Quarry lease application preferred by Thiru.S.Krishnasamy, for quarrying Rough Stone and Gravel - Details of quarries in 500 meter radius - Regarding.

Ref: 1. Thiru.S.Krishnasamy S/o. Thiru.Singadurai, letter, dated: 10.07.2024.
2. The Assistant Director, Geology and Mining, Virudhunagar Rc.No.KV1/567/2023, Dated: 18.02.2025.
3. Thiru.S.Krishnasamy S/o. Thiru.Singadurai, letter, dated: 25.02.2025.

Thiru.S.Krishnasamy, S/o.Thiru.Singadurai has preferred an application for the grant of quarrying lease to quarry Rough Stone and Gravel over an extent of 1.31.00 Hectares of Patta Land in S.F.Nos : 11/2B1 (0.49.53), 11/2B2 (0.40.47) and 14/2 (0.41.00) of Kottaiyur Village , Virudhunagar Taluk , Virudhunagar District for a period of 05 (Five) Years Under Rule 19 of Tamil Nadu Minor Mineral Concession Rules 1959.

2) The application was examined and consented to grant lease to quarrying Rough Stone and Gravel over an extent of 1.31.00 Hectares of Patta Land in S.F.No: 11/2B1, 11/2B2 and 14/2 for a period of 05 (Five) years subject to produce Mining Plan for approval and to obtain Environment Clearance from SEIAA in the reference 2nd cited.

3) The applicant has submitted the Mining Plan, prepared as per the guidelines issued by the Commissioner of Geology and Mining and as per the Rules and Acts. The Geological reserves, Mineable reserves and yearwise production are discussed in Part A Table 1,2 and 3 of the mining plan. The Geological reserves is estimated as 2,79,648 cbm Roughstone and 58,260 cbm of Gravel upto a depth of 29 m below ground level. The mineable reserves is estimated as 43,770 cbm of Roughstone and 33,895 cbm of Gravel upto a depth of 29 m from the ground level for the period of 05 (Five) years.

4) The applicant Thiru.S.Krishnasamy, S/o.Thiru.Singadurai in the reference third cited has requested to furnish details of quarries situated within 500 m radial distance from the applied area.

5) In this connection, it is informed that the details of quarry situated within 500 meter radius from the proposed area for Environmental Clearance as detailed below:

1) Details of quarry within 500 m radius from the applied area

S.No	Quarry Detail	Village	S.F.No.& Extent (Hect)	Proceedings No.& Lease Period
I	Existing Quarries :			
1.	Tmt.C.Vannamuthu W/o.Chellakani 2/183A, Thathampatti T.Sedapatti Post	Kottaiyur	13/3A1 0.46.0 Hect	KV1/482/2018 Dated::18.07.2020 26.08.2020 to 25.08.2025
Total:			0.46.00 Hect	
II	Abandoned Quarry :NIL			
1.	Thiru.S.L.Muniyasamy, S/o.Lakshmanan Door No. 8/17, Mavadikaal, Kadayanallur Post, Tenkasi Taluk, Thirunelveli District	Kottaiyur	11/2A 11/2C 11/2D 11/2E 11/2F 11/2G 11/2I 2.74.00 Hec.,	KV1/620/2014, Dated: 22-09-2014 24.09.2014 to 23.09.2019
2.	Thiru. R. Rajeshkanna, S/o. P. Ramraj, Andipatti, Pandalgudi Post, Aruppukottai Taluk, Virudhunagar District	Kottaiyur	2/3 2/6 2/7 1.20.50 Hec.,	KV1/15033/2015, dated: 16.11.2017 27.12.2017 To 26.12.2022

S.No	Quarry Detail	Village	S.F.No.& Extent (Hect)	Proceedings No.& Lease Period
Total:			3.94.50 Hect	
III Present Proposed Quarry:				
1.	Thiru.S.Marimuthu S/o. Sundharam 4/117, Mela Street, Kadaneri Village A.Thulukkappatti post Vattraeruppu Taluk	Kottaiyur Village	10/12, 11/2A 11/2C, 11/2D 11/2E, 11/2F 11/2G(P) 11/2H(P) 11/2I(P) etc., 4.24.0 Hect.,	KV1/519/2020
2.	Thiru.R.Boopathi S/o. Rajeshkanna 457, Andipatti, Pandalkudi Aruppukottai Taluk.	Kottaiyur Village	2/5, 2/8 3/1, 3/2 2.15.00 Hect.,	KV1/1470/2022
3.	Thiru.V.Thirumalaiselvan S/o, Vengadasamy 1/983, Kajavinayagar Kovil Street, R.R.Nagar, Vatchakarapatti Post, Virudhunagar.	Mannarkottai Village	133/1A, 133/1B 134/4 (P), 134/5 (P), 136/8 136/9 3.21.50 Hect.,	KV1/894/2023
4.	Thiru.S.Krishnasamy S/o.Singathurai 3/10, East Street, Kalaperumalpatti Virudhunagar	Kottaiyur Village	11/2B1 11/2B2, 14/2 1.31.00 Hect.,	KV1/567/2023
Total:			10.91.50 Hect	

Assistant Director,
Geology and Mining,
Virudhunagar.

Copy to:

The Member Secretary,
State Level Environmental Impact
Assessment Authority,
PanagalMaligai,
No. I Jeenis Road, Saidapet, Chennai -15.

S.No	Quarry Detail	Village	S.F.No.& Extent (Hect)	Proceedings No.& Lease Period
Total:			3.94.50 Hect	
III	Present Proposed Quarry:			
1.	Thiru.S.Marimuthu S/o. Sundharam 4/117, Mela Street, Kadaneri Village A.Thulukkappatti post Vattraeruppu Taluk	Kottaiyur Village	10/12, 11/2A 11/2C, 11/2D 11/2E, 11/2F 11/2G(P) 11/2H(P) 11/2I(P) etc., 4.24.0 Hct.,	KV1/519/2020
2.	Thiru.R.Boopathi S/o, Rajeshkanna 457, Andipatti, Pandalkudi Aruppukottai Taluk.	Kottaiyur Village	2/5, 2/8 3/1, 3/2 2.15.00 Hct.,	KV1/1470/2022
3.	Thiru.V.Thirumalaiselvan S/o, Vengadasamy 1/983, Kajavinayagar Kovil Street, R.R.Nagar, Vatchakarapatti Post, Virudhunagar.	Mannarkott ai Village	133/1A, 133/1B 134/4 (P), 134/5 (P), 136/8 136/9 3.21.50 Hct.,	KV1/894/2023
4.	Thiru.S.Krishnasamy S/o.Singathurai 3/10, East Street, Kalaperumalpatti Virudhunagar	Kottaiyur Village	11/2B1 11/2B2, 14/2 1.31.00 Hct.,	KV1/567/2023
Total:			10.91.50 Hect	


 Assistant Director,
 Geology and Mining,
 Virudhunagar.

Copy to:

The Member Secretary,
 State Level Environmental Impact
 Assessment Authority,
 PanagalMaligai,
 No. I Jeenis Road, Saidapet, Chennai -15.

ANNEXURE – V
FMB, A – REGISTER, PATTÀ



தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : விருதுநகர்

வட்டம் : விருதுநகர்

வருவாய் கிராமம் : கோட்டையூர்

பட்டா எண் : 747

உரிமையாளர்கள் பெயர்

1. சிங்கத்துரை

மகன்

சி.கிருஷ்ணசாமி



புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
11	2B2	0 - 40.47	0.80	--	--	--	--	2022/0105/26/230568- -2022/26/05/000130SD ----- 16-12-2022
11	2J1	0 - 27.50	0.60	--	--	--	--	D2005/06--2005/06 --- ----- 25-04-2005
13	5	0 - 36.50	0.50	--	--	--	--	2022/0103/26/150121- ----- 23-03-2022
14	2	0 - 41.00	0.57	--	--	--	--	D2005/06----- 25-04-2005
15	2A	0 - 20.50	0.50	--	--	--	--	----- 30-09-2015
17	3	0 - 30.00	0.41	--	--	--	--	2022/0103/26/150121- ----- 23-03-2022
		1 - 95.97	3.38					

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 26/05/050/00747/80028 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 01-07-2024 அன்று 01:30:56 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.

S. Aris In Gnanu



தமிழ்நாடு அரசு

வருவாய்த் துறை

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



மாவட்டம் : விருதுநகர்

வட்டம் : விருதுநகர்

வருவாய் கிராமம் : கோட்டையூர்

பட்டா எண் : 1926

உரிமையாளர்கள் பெயர்

1. சிங்கதுரை

மகன்

கிருஷ்ணசாமி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
11	2B1	0 - 49.53	1.00	--	--	--	--	2023/0103/26/190600- -2022/26/05/000130SD ----- 31-03-2023
11	4	0 - 3.50	0.07	--	--	--	--	2023/0103/26/190600- -- ----- 31-03-2023
		0 - 53.03	1.07					

குறிப்பு :



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து

1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 26/05/050/01926/20018 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

2. இத் தகவல்கள் 01-07-2024 அன்று 01:29:39 PM நேரத்தில் அச்சடிக்கப்பட்டது.

3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.

S. Krishnasamy

வட்டம்

S. Kirschmayer



2	3	4	5	6	7	8	9	10	11
0-3	ர	பு	..	7-3	4	2.00	0.03.0	0.06	191, த. சிவசாமி நாடார்.
10	ர	பு	..	7-3	4	2.00	0.31.5	0.63	606, ச. காகி (1), இராச (2).
11	ர	பு	..	7-3	4	2.00	0.75.0	1.50	606, ச. காகி (1), இராச (2).
12	ர	பு	..	7-3	4	2.00	0.58.0	1.16	191, த. சிவசாமி நாடார்.
13	ர	பு	..	7-3	4	2.00	0.14.5	0.29	191, த. சிவசாமி நாடார்.
14	ர	பு	..	7-3	4	2.00	0.21.0	0.42	191, த. சிவசாமி நாடார்.
15	ர	பு	..	7-3	4	2.00	0.08.0	0.16	348, மா. பாண்டிய நாடார்.
							4.46.0	8.88	
1-1	ர	பு	..	7-3	4	2.00	0.03.0	0.06	75, பா. கந்தசாமி, கார் டியன் தாயார் கிருஷ்ணம்மாள்.
2பா	ர	பு	..	7-3	4	2.00	0.90.0	1.80	479, க. முனிராஜ் நாடார்.
3பா	ர	பு	..	7-3	4	2.00	0.24.5	0.49	75, பா. கந்தசாமி, கார் டியன் தாயார் கிருஷ்ணம்மாள்.
4பா	ர	பு	..	7-3	4	2.00	0.24.5	0.49	299, க. தங்கப்பாண்டி நாடார்.
5பா	ர	பு	..	7-3	4	2.00	0.52.0	1.04	438, க. மாரிப்பாண்டி நாடார்.
6பா	ர	பு	..	7-3	4	2.00	0.23.0	0.46	299, க. தங்கப்பாண்டி நாடார்.
7பா	ர	பு	..	7-3	4	2.00	0.70.0	1.41	438, க. மாரிப்பாண்டி நாடார்.
8பா	ர	பு	..	7-3	4	2.00	0.52.5	1.04	299, க. தங்கப்பாண்டி நாடார்.
9பா	ர	பு	..	7-3	4	2.00	0.53.0	1.06	75, எழைநி-பா. கந்த சாமி, கார்டியன் தாயார் கிருஷ்ணம்மாள்.
10பா	ர	பு	..	7-3	4	2.00	0.55.0	1.10	479, க. முனிராஜ் நாடார்.
11	ர	பு	..	7-3	4	2.00	0.03.0	0.06	479, க. முனிராஜ் நாடார்.
12	ர	பு	..	7-3	4	2.00	0.03.5	0.07	479, க. முனிராஜ் நாடார்.
							4.51.0	9.50	

ப.கை.

வண்ணம்
பாண்டி.சுதரக்
கிணறு,
சமாதி.வண்ணம்
பாண்டி.

2000/11/12
சுதரக் கிணறு
கோட்டையூர்
விருதுநகர் வட்டம்

S. Krishnasamy



11/2B1 - 11/2B1n - 74 - 73 4. 2.00 0.99.53 1.00 479: முனியல் கருங்கத்தூறை
 2B2 " " " " 0.40.47 0.80 747: கிருஷ்ணா கவி

புது: 2022/26/0001305D 090.00 1.80
 16-12-22
 9075

புனியல் கருங்கத்தூறை
 கருங்கத்தூறை
 கோடடைபுர்
 விருதுநகர் வட்டம்

S. Krishnasamy



1	2	3	4	5	6	7	8	9	10	11	12
12-1	12-1	ச	4	..	8-3	5	1	38	0 21.5	0 45	இரத்தின நாதர்.
3	3	ச	4	..	8-3	5	1	38	0 32.5	0 45	290, ச. சேனலாசா நாதர்.
3	3	ச	4	..	8-3	5	1	38	1 28.0	1 77	379, ச. பெரியசாமி நாதர்.
4	4	ச	4	..	8-3	5	1	38	0 22.5	0 31	171, மு. சந்தைமான்
5	5	ச	4	..	8-3	5	1	38	0 24.5	0 34	314, ச. பாலசாமி நாதர்.
6	6	ச	4	..	8-3	5	1	33	0 30.0	1 11	7, ஆ. அமிர்தபாண்டி
7	7	ச	4	..	8-3	5	1	38	0 32.5	0 46	37, ல. கருப்பையா நாதர்.
8	8	ச	4	..	..	..	..	..	0 07.5	..	...
9	9	ச	4	..	8-3	5	1	38	0 63.0	0 96	87, க. கருப்பையா நாதர்.
10	10	ச	4	..	8-3	5	1	38	0 00.5	0 12	87, ல. கருப்பையா நாதர்.
									3 71.5	5 06	
13-1	13-1	ச	4	..	..	..	..	..	0 08.0	..	...
2	2	ச	4	..	8-3	5	1	38	0 27.5	0 33	292, அ. சவுந்திரசாசன்
3A	3A	ச	4	..	8-3	5	1	38	0 50.5	0 70	296, க. பூச்சாணி
3B	3B	ச	4	..	8-3	5	1	38	0 51.0	0 71	705, த. குமாரசாமி நாதர்.
4	4	ச	4	..	8-3	5	1	38	0 43.5	0 67	290, ச. சேனலாசா
5	5	ச	4	..	8-3	5	1	38	0 38.5	0 60	319, பெ. தேனம்மாள்
6	6	ச	4	..	..	..	..	..	0 52.5	..	...
7	7	ச	4	..	8-3	5	1	38	0 41.5	0 67	487, ல. மேரி புகழம்
8	8	ச	4	..	8-3	5	1	38	0 30.5	0 42	11, ம. அய்யாச்சாமி நாதர்.
									3 41.5	5 95	
14-1	14-1	ச	4	..	..	..	..	..	0 01.0	..	...
2	2	ச	4	..	8-3	5	1	38	0 41.0	0 57	86, அ. கருப்பையா நாதர்.
3	3	ச	4	..	8-3	5	1	38	1 09.0	2 76	347, க. கருப்பையா நாதர்.

12/05/2023
கிராம நிர்வாக அலுவலர்
கோட்டையூர்
விருதுநகர் வட்டம்

S. Krishnasamy

இதனால் அறிவிக்கப்படுவது என்னவென்றால்

[illegible][illegible]

புல எண்கள்



நிலத்தில் உடைகல் மற்றும் கிராவல் குவாரி அமைக்க துடையின்மை சான்று வழங்குவது தொடர்பாக ஆட்சேபணையுடைய நபர்கள் அதுன் வியர்த்ததை இந்த அறிக்கை பிரசுரிக்கப்படும் தேதியில் இருந்து பதினைந்து தினங்கள் கொண்ட கால அளவிற்குள் மேற்படி கிராமத்தில் கிராம நிர்வாக அலுவலர் மற்றும் வட்டாட்சியரிடம் தெரிவிக்க வேண்டும்

1. P. சரள்திரஸ்
2. D. பிழ
3. M. Kanar Palle
4. V. P. K. K.
5. K. P. K.
6. S. K. K.
7. K. Palasamudra
8. P. P. K.
9. Kanthavel
10. K. K. K.

S. K. K.

ANNEXURE – VI
MINING PLAN & PLATES

MINING PLAN

***and* PROGRESSIVE MINE CLOSURE PLAN**

ROUGH STONE and GRAVEL QUARRY

(PREPARED UNDER RULE 12 OF MINOR MINERAL CONSERVATION & DEVELOPMENT RULES, 2010 & AS PER AMENDMENT UNDER RULE No. 41 & 42 of TAMILNADU MINOR MINERAL CONCESSION RULES, 1959)

Lease Period – Five (5) Years

LOCATION OF THE QUARRY LEASE AREA

EXTENT	: 1.31.00 Hectares
SURVEY Nos.	: 11/2B1, 11/2B2 & 14/2.
VILLAGE	: KOTTAIYUR
TALUK	: VIRUDHUNAGAR
DISTRICT	: VIRUDHUNAGAR

Applicant

Thiru.S.KRISHNASAMY,
S/o.Thiru.SINGADURAI
D.No.3/10, East Street,,
KALAPERUMALPATTI VILLAGE,
VIRUDHUNAGAR TALUK & DISTRICT - 626 204.

Prepared by

R.GURURAMACHANDRAN, M.Sc.,
QUALIFIED PERSON (RQP/MAS/224/2010/A)

Thiru.S.KRISHNASAMY
S/o. Thiru.SINGADURAI
D.No.3/10, East Street,
KALAPERUMALPATTI VILLAGE,
VIRUDHUNAGAR TALUK & DISTRICT – 626 204.



CONSENT LETTER OF THE APPLICANT

I hereby give my consent to prepare the Mining Plan for the grant of Quarry Lease for quarrying Rough Stone & Gravel over a total extent of 1.31.00 Hectares in SF. Nos.: 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk and District for a period of Five years vide Assistant Director, Geology and Mining, Virudhunagar District letter Na.Ka.No.KV1/567/2023 dated 20.02.2025 and submit for approval before the Competent Authority by

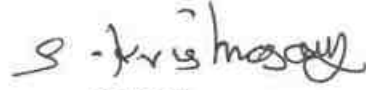
Mr. R. Gururamachandran, M.Sc.,
Qualified Person (RQP/MAS/224/2010/A.)

I request the Assistant Director, Geology and Mining, Virudhunagar to make further correspondence regarding the modification of the Mining Plan if any with said Recognized Qualified Person in the following address :

No. 4/864-15, Gandhi Nagar,
Opp.V.T.Mill / behind HP Petrol Pump,
Soolakkarai Medu,
Virudhunagar - 626 003.
Cell :9443434288 / 9750309288
email : gruram@gmail.com

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

Place : Virudhunagar
Date : 28-02-2025


S.Krishnasamy
Signature of the Applicant.

Thiru.S.KRISHNASAMY

S/o. Thiru.SINGADURAI

D.No.3/10, East Street,

KALAPERUMALPATTI VILLAGE,

VIRUDHUNAGAR TALUK & DISTRICT – 626 204.

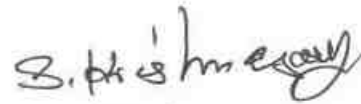
DECLARATION OF THE APPLICANT

The Mining Plan in respect of the grant of quarry lease for quarrying of Rough Stone & Gravel over a total extent of 1.31.00 Hectares in SF. Nos.: 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk and District for a period of Five years has been prepared and submitted for approval in full consultation with me.

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

Place : Virudhungar

Date : 28-02-2025



S.Krishnsamy

Signature of the Applicant.

R.Gururamachandran , M.Sc.,
No. 4/864-15, Gandhi Nagar,
Opp.V.T.Mill / behind HP Petrol Pump,
Soolakkarai Medu,
Virudhunagar – 626 003.
Cell :9443434288 / 9750309288
email : gruram@gmail.com



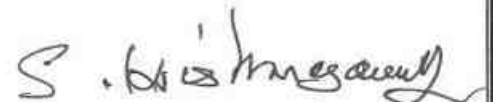
CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the provisions of the Mines Act, Rules and Regulations, Minor Mineral Conservation and Development Rules, 2010 & as per Amendment Rules under Tamil Nadu Minor Mineral Concession Rules, 1959 etc., made there under have been observed in the preparation of Mining Plan for Rough stone and Gravel quarry for Thiru.S.Krishnasamy over an extent of 1.31.00 Hectares in SF. Nos.: 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk and District for a period of Five years.

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

Place : Virudhunagar
Date : 28-02-2025


R. GURURAMACHANDRAN, M.Sc.,
Qualified Person
(RQP / MAS / 224 / 2010/A)
Qualified Person





CERTIFICATE FROM THE QUALIFIED PERSON

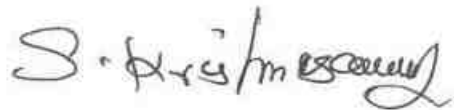
This is to Certify that, I R.Gururamachandran M.Sc., (App.Geology), having an office at No.4/864-15, Gandhi Nagar, Opp.V.T.Mill / behind HP Petrol Pump, Soolakkarai Medu, Virudhunagar - 626 003. I am a Post Graduate in Applied Geology from Madras University, AC Tech Campus.

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

Accordingly, I prepared this Mining Plan for Rough stone and Gravel quarry for Thiru.S.Krishnasamy over an extent of 1.31.00 Hectares in SF. Nos.: 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk and District.

Place : Virudhunagar
Date : 28-02-2025


R. GURURAMACHANDRAN, M.Sc.,
Qualified Person
(RQP / MAS / 224 / 2010/A)
Qualified Person





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S. Krishnasamy



LIST OF ANNEXURES

S.NO	DESCRIPTION	ANNEXURE
1	Copy of Precise Area Communication	I
2	Copies of Aadhar & PAN card - Id Proof of Applicant	II
3	Copy of FMB & Revenue department FMBs	III
4	Copy of Patta, Adangal, A-Register & A1-Notice	IV
5	Copy of Qualified Person Certificates	V

LIST OF PLATES

S.NO	DESCRIPTION	PLATE No.	SCALE
1	LOCATION PLAN	I	Not to Scale
2	ROUTE /KEY MAP	I A	Not to Scale
3	KEY PLAN	II	1 : 75,000
4	MINING LEASE PLAN	III	1 : 1,000
5	SURFACE & GEOLOGICAL PLAN & SECTIONS	IV	1 : 1,000
6	YEARWISE PRODUCTION PLAN & SECTIONS	V	1 : 1,000
7	CONCEPTUAL PLAN & SECTIONS	VI	1 : 1,000
8	SATTELITE IMAGERY WITH ENVIRONMENTAL FEATURES	VII	1 : 10,000
9	VILLAGE MAP SHOWING ENVIRONMENTAL FEATURES	VII A	1 : 10,000
10	ENVIRONMENTAL AND LAND USE PLAN	VII B	1 : 10,000
11	PROGRESSIVE MINE CLOSURE PLAN & SECTIONS	VIII	1 : 1,000

S⁶. P. V. & M. S. S. S.



MINING PLAN

**and PROGRESSIVE MINE CLOSURE PLAN
for ROUGH STONE & GRAVEL QUARRY**

**OVER an EXTENT of 1.31.00 Hectares in
SF.Nos. 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village,
Virudhunagar Taluk & District.**

(Prepared Under Rule 12 of Minor Mineral Conservation and Development Rules, 2010 and as per Amendment under Rule 41& 42 of Tamil Nadu Minor Mineral Concession Rules, 1959)

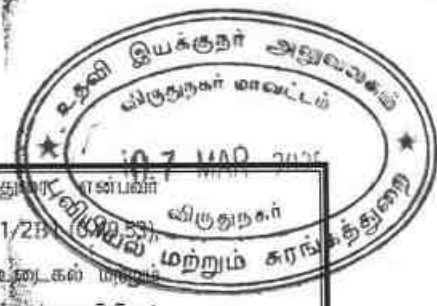
INTRODUCTION and EXECUTIVE SUMMARY :

This Mining Plan is prepared for Quarrying of Rough Stone and Gravel by systematic and scientific quarrying and to obtain Environment Clearance from State level Environmental Impact Assessment Authority (SEIAA), Chennai. The applicant Thiru.S.Krishnasamy of Kalaperumalpatti Village, Virudhunagar Taluk-626204 is an individual having skill on Rough Stone and Gravel Quarrying by working in the stone quarries. The Rough Stone is mainly used for crushing blue metal stone aggregates of various sizes and M-Sand for concrete mixing for building, road, bridges, etc., and Gravel for filling purposes for road and buildings.

The applicant applied this virgin area for quarrying & transportation of Rough Stone and Gravel over an extent of 1.31.00 Hectares in SF. Nos.: 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk and District under Rule 19 & 20 of Tamil Nadu Minor Mineral Concession Rules 1959 and the Assistant Director, Geology & Mining, Virudhunagar District communicated the precise area over an extent of 1.31.00 Hectares in SF. Nos.: 11/2B1, 11/2B2 and 14/2 of Kottaiyur Village, Virudhunagar Taluk and District for the grant vide letter Na.Ka.No:KV1/567/2023 dated 20.02.2025 for a period of 5 years under Rule 19 & 20 of Tamil Nadu Minor Mineral Concession Rules 1959 subject to the following conditions:

7
S. Krishnasamy


R. GURURAMACHANDRAN, M.Sc.
Qualified Person
(RQP / MAS / 224 / 2010)



எனவே, விண்ணப்பதாரர் திரு.சி.கிருஷ்ணசாமி, க/பெ.சிங்கதுரை என்பவர் விருதுநகர் மாவட்டம் மற்றும் வட்டம், கோட்டையூர் கிராமம் புல எண்கள்-11/2B1 (0.49.53), 11/2B2 (0.40.47), 14/2 (0.41.00) விஸ்தீர்ணம் 1.31.00 ஹெக்டேரில் உடைகல் மற்றும் கிராவல் குவாரி உரிமம் ஐந்து ஆண்டுகளுக்கு (05) தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதிஎண்.19 மற்றும் 20-ன் படி பின்வரும் நிபந்தனைகளுக்குட்பட்டு வழங்கப் பரிந்துரை செய்கிறேன் எனவும் தெரிவித்துள்ளார்.

நிபந்தனைகள்:

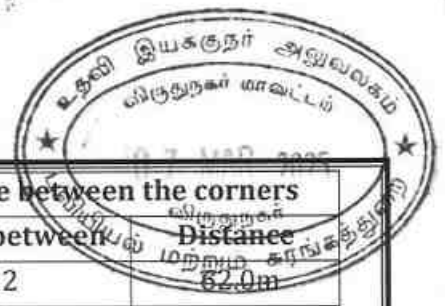
1. அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீ பாதுகாப்பு இடைவெளி விடுத்து குவாரி செய்தல் வேண்டும்.
2. விண்ணப்ப புலத்திற்கு கிழக்கே 275 மீட்டரில் இருக்கும் வெடிமருந்து தயாரிக்கும் கட்டிடத்திற்கு 300 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.
3. புல எண்.11/2B1, 11/2B2 க்கு மேற்கு பகுதியில் செல்லும் வண்டிப்பாதைக்கு பாதிப்பு ஏற்படாத வண்ணம் குவாரி பணி செய்தல் வேண்டும்.
4. புல எண்.14/2-ன் கிழக்கு பகுதியில் கிராமக்கணக்கில் பாறை மற்றும் ஊரணி மற்றும் மேற்கு பகுதியில் செல்லும் வண்டிப்பாதைக்கு எவ்வித தேசமும் ஏற்படாதவாறு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
5. புல எண்.13/3A1 -ல் திரு.வண்ணமுத்து அவர்களின் செயல்படாத குவாரிக்கு பாதிப்பு ஏற்படாத வண்ணம் குவாரி பணி மேற்கொள்ள வேண்டும்.
6. புல எண்.15 & 11 ல் உள்ளசெயல்படாத குவாரிக்கு பாதிப்பு ஏற்படாத வண்ணம் குவாரி பணி மேற்கொள்ள வேண்டும்.
7. பொதுமக்கள் / விவசாய நிலங்களுக்கு பாதிப்பு ஏற்படாத வகையில் தகுதி வாய்ந்த அங்கீகரிக்கப்பட்ட நபர்கள் மூலம் வெடிமருந்துகள் சேமிக்கப்பட்டு குவாரியில் வெடித்தல் வேண்டும். குவாரியில் குறைந்த சக்தி கொண்ட வெடி மருந்துகளை பயன்படுத்தல் வேண்டும்.
8. கரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் துடையில்லாச் சான்று குத்தகை உரிமம் வழங்குவதற்கு முன் சமர்ப்பிக்க வேண்டும்.
9. குவாரியில் வேலை செய்யும் தொழிலாளர்கள் தொழிலாளர் நலவாரியம் மற்றும் காப்பீடு திட்டத்தில் பதிவு செய்து தொழிலாளர் நலன் பேண்பட வேண்டும்.
10. குழந்தை தொழிலாளர்களை குவாரி பணியில் அமர்த்தக் கூடாது.
11. கனிமங்களை வாகனங்களில் கொண்டு செல்லும் போது பாதுகாப்பிகள், பொது மக்கள் மற்றும் பிற வாகனங்கள் பாதிக்காதவண்ணம் தார்பாய்கள் கொண்டு மூடி எடுத்துச் செல்ல வேண்டும்.

எனவே, துறை அலுவலர்களின் பரிந்துரையினை ஏற்றும நிபந்தனைகளுக்கு உட்பட்டும், விருதுநகர் மாவட்டம் மற்றும் வட்டம், கோட்டையூர் கிராமம் புல எண்கள். 11/2B1 (0.49.53), 11/2B2 (0.40.47) மற்றும் 14/2 (0.41.00) விஸ்தீர்ணம் 1.31.00 ஹெக்டேர்ஸ் பரப்பில் 1959 -ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண்: 19 (1) மற்றும் 20 -ன் படி ஐந்து (05) வருடகாலத்திற்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க தகுதி வாய்ந்த நிலப்பரப்பாக (Precise Area) கருதப்படுகிறது.

This Mining Plan is prepared under Rule 41(4) & 42 of Tamil Nadu Minor Mineral Concession Rules 1959 for approval in order to obtain the Environmental Clearance from SEIAA-Chennai.

Sd. /s/ Masavay

S. Lucimazey



Corners	Co- ordinates		Distance between the corners	
	Latitude	Longitude	Corners between	Distance
1	9°26'10.44"N	77°58'42.70"E	1 - 2	82.0m
2	9°26'12.11"N	77°58'43.42"E	2 - 3	41.4m
3	9°26'12.21"N	77°58'44.73"E	3 - 4	44.2m
4	9°26'13.60"N	77°58'44.78"E	4 - 5	13.6m
5	9°26'13.70"N	77°58'45.15"E	5 - 6	36.0m
6	9°26'14.61"N	77°58'45.12"E	6 - 7	14.2m
7	9°26'15.00"N	77°58'45.37"E	7 - 8	84.4m
8	9°26'14.97"N	77°58'48.07"E	8 - 9	46.8m
9	9°26'13.46"N	77°58'48.23"E	9 - 10	76.4m
10	9°26'13.52"N	77°58'45.67"E	10 - 11	90.4m
11	9°26'10.67"N	77°58'45.80"E	11 - 12	108.0m
12	9°26'10.76"N	77°58'49.08"E	12 - 13	23.6m
13	9°26'10.33"N	77°58'49.36"E	13 - 14	156.0m
14	9°26'10.04"N	77°58'44.62"E	14 - 15	18.0m
15	9°26'10.00"N	77°58'44.18"E	15 - 16	12.8m
16	9°26'10.32"N	77°58'43.96"E	16 - 1	47.6m

- xv. The diagram of proposed mining area showing the dimensions of the pit, its proposed Depth of mining, proposed area is enclosed as Plate Nos. V & VI.
- xvi. There is no wastages anticipated during this quarry operation and the top soil will be stacked along the boundary barrier and safety zones for afforestation purpose in the lease area.
- xvii. Around 10 employees are proposed to be deployed for quarrying operation.
- xviii. Environmental parameters,
- There is no interstate boundary around 10Kms radius.
 - There is no Wild Life Sanctuaries within 10 kms under the Wildlife (Protection) Act, 1972.
 - There is no Reserved Forest within 10 kms from the proposed area.
- xix. **TOTAL COST OF THE PROJECT:**
- | | | | |
|---------------------------------|---|------------|--------------------|
| A. Investment cost | = | Rs. | 7,00,000/- |
| B. Mining cost | = | Rs. | 33,49,000/- |
| Total Project Cost (A+B) | = | Rs. | 40,49,000/- |
- xx. **EMP Cost** = **Rs.** **7,70,000/-**
- xxi. **CER Cost@2.0% over (A+B)** = **Rs.** **2,00,000/-**
(allocation Rs.2.0 lacs)

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1. GENERAL INFORMATION :

1.1	a)	Name of the applicant	Thiru. S.KRISHNASAMY, S/o.Thiru.SINGAMUTHU.
	b)	Address of the applicant (with phone No. & e-mail)	Address : D.No.3/10, West Street, Kalaperumalpatti Village, Virudhunagar Taluk – 626 204. District : Virudhunagar Pin Code : 626 204. Mobile No : Email id:
	c)	Status of the applicant (Individual / Company / Firm)	Individual.
1.2	a)	Mineral which the applicant intends to mine	Rough Stone and Gravel.
	b)	Precise area communication letter details received from the Competent authority of the Government	Assistant Director, Geology & Mining Department, Virudhunagar District Precise area communication letter Na.Ka.No:KV1/567/2023 dated 20.02.2025.
	c)	Period of permission / lease to be granted	Period of lease to be granted for 5 years as per Rule 19 & 20 of Tamil Nadu Minor Mineral Concession Rules -1959.
	d)	Name and address of the RQP / Authorized person preparing the mining plan	Name : R. Gururamachandran, M.Sc., Address : No.4/864-15, Gandhi Nagar, Opp.V.T.Mill/behind HP Petrol Pump, Soolakkarai Medu, Virudhunagar – 626 003. Cell : 9443434288 / 9750309288. E-Mail : gruram@gmail.com Registration No : RQP/MAS/224/2010/A.

2. LOCATION :

2.1	a)	Details of the area with location map
		There are no villages within the radius of 500m. The area bounded by following villages within 5 kms circle. - refer Plate-IA & Plate-II.

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Table -1

DIREC-TION	VILLAGE	POPULATION	DIS-TANCE
North	M.Chinnaiyapuram	1,000	0.5 Km
	Valayapatti	1,150	2.0 Km
	Meenakshipuram	550	3.0 Km
	Chokkalingapuram	500	4.0 Km
NorthEast	Koothiparai	500	4.0 Km
NorthWest	Ramakudumbanpatti	350	3.0 Km
	Sanapatti	450	4.0 Km
	Vachakarapatti	4,700	5.0 Km
South	Virarpatti	1,000	2.0 Km
	Appaiyanaickerpatti	1,500	3.0 Km
	Puthupatti	650	3.5 Km
	Nallamanaickerpatti	1,200	4.5 Km
SouthEast	Sundaralingapuram	400	4.5 Km
SouthWest	Sundarlingapuram	500	4.0 Km
	Golwarpatti	450	4.5 Km
East	Kottaiyur	1,000	1.5 Km
	Bommaiyapuram	550	4.0 Km
West	Mannarkottai	1350	2.0 Km
	Aavudaiyapuram	3,500	3.5 Km

	i)	District, Taluk and Village	District : Virudhunagar Taluk : Virudhunagar Village : Kottaiyur
	ii)	Survey Nos.	11/2B1(0.49.53Hc.), 11/2B2(0.40.47Hc.) and 14/2(0.41.00 Hc.).
	iii)	Total Extent in Ha.	1.31.00 Hectares
2.2	b)	Classification of the area (Ryotwari/ Poramboke/ others)	Patta Lands (Ryotwari)
2.3	c)	Ownership / Occupancy of the applied area (surface right)	As per village accounts the land stands in the name of the applicant Thiru.S.Krishnasamy, S/o. Singadurai vide Patta Nos. 747 & 1926 of Kottaiyur Revenue Village, Virudhunagar Taluk. As such the applicant has got surface rights over the lands applied for the grant of quarry lease for Rough Stone and Gravel.
2.4	d)	Topo sheet No. with latitude and longitude	Topo Sheet No. : 58 G/15. Latitude between : 09° 26' 10.00" to 09° 26' 15.00"N Longitude between: 77° 58' 42.70" to 77° 58' 49.36"E
2.5	e)	Existence of public road / Railway line, if any nearby and approximate distance:	

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SITE PHOTOS:



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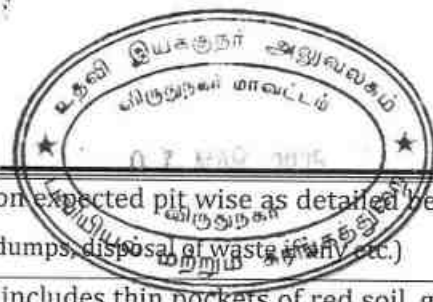
PART – A

3. GEOLOGY AND MINERAL RESERVES :

3.1	Brief description of the Topography and general Geology of the area (with plans) :									
	The area applied for quarry lease is with ground level of 108m above MSL, plain terrain with very gentle slope towards south and covered by brownish gravel with red soil in small pockets followed by weathered rock formation and massive Charnockite rock formation. The massive rock formation is noticed / occurred at an average depth 5.0 mts from the surface i.e. below top soil, gravel and weathered rock formation. The top gravel sandy brownish soil and weathered rock portion used for formation of Roads, filling the low lying areas, etc., The massive charnockite occur below the weathered zone is hard, medium to coarse grained with intrusions. The charnockite is played a vital role in construction and road formation civil works. Water table is found at a depth of 60m below ground level in this particular area. Average annual rainfall is about 935mm during SW and NE monsoons. Peninsular gneiss forms the oldest rock formations of Archean age, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite formations trends along NE-SW with a dip of 70° SE. The general geological sequences of the rocks in this area are given below. <table><tr><td>AGE</td><td>FORMATION</td></tr><tr><td>Recent</td><td>- Quaternary weathered Rock Formation</td></tr><tr><td colspan="2">.....Unconformity</td></tr><tr><td>Archean</td><td>- Charnockites Peninsular Gneiss complex.</td></tr></table>		AGE	FORMATION	Recent	- Quaternary weathered Rock Formation	Unconformity		Archean	- Charnockites Peninsular Gneiss complex.
AGE	FORMATION									
Recent	- Quaternary weathered Rock Formation									
.....Unconformity										
Archean	- Charnockites Peninsular Gneiss complex.									
3.2	Details of exploration already carried out if any	Exploration does not arise, since the gravel & massive Rough stone formation visible from the nearby old quarry pits with in 500 mts radius from proposed site on east, northeast, south and west sides.								
3.3	Estimation of reserves									
	a) Geological reserves with geological sections on a scale of 1:1000 / 1:2000:									

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

The overburden is in the form of gravel includes thin pockets of red soil, gravel and weathered rock formation, it will be removed during the quarrying operation, the top soil preserved all along the boundary barrier for afforestation and remaining is salable. Hence there is no waste anticipated during the Rough stone quarry operation, The excavated rough stone will be directly loaded into the tippers to the end points.

The Year wise production and Development plan and sections indicating the Pit lay out, Green belt development and sections are shown in Plate-V and presented in the Table-3 & Table-3A are as follows.

Table-3
Year wise - Production Schedule

SECTION	YEAR	BENCH	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M³)	GRAVEL VOLUME (M³)
A-A' & C-C'	I-Year	I	32	56	5.0	-	8,960
		II	21	50	6.0	6,300	-
I - YEAR PRODUCTION						6,300	8,960
A-A' & C-C'	II-Year	I	20	56	5.0	-	5,600
		II	20	50	6.0	6,000	-
		III	15	38	6.0	3,420	-
II - YEAR PRODUCTION						9,420	5,600
A-A' & C-C'	III-Year	I	20	56	5.0	-	5,600
		II	20	50	6.0	6,000	-
		III	15	38	6.0	3,420	-
III - YEAR PRODUCTION						9,420	5,600
A-A' & C-C'	IV- YEAR	III	19	38	6.0	4,332	-
		IV	24	26	6.0	3,744	-
B-B' & C-C'		I	15	45	5.0	-	3,375
D-D' & E-E'		I	25	28	5.0	-	3,500
	II	14	17	6.0	1,428	-	
IV - YEAR PRODUCTION						9,504	6,875
A-A' & C-C'	V- YEAR	IV	13	26	6.0	2,028	-
		V	25	14	6.0	2,100	-
D-D' & E-E'		I	49	28	5.0	-	6,860
		II	49	17	6.0	4,998	-
V - YEAR PRODUCTION						9,126	6,860
TOTAL PRODUCTION FOR FIVE YEARS						43,770	33,895

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Year wise Production summary:

YEAR	ROUGH STONE VOLUME (M ³)	GRAVEL VOLUME (M ³)
I - Year	6,300	8,960
II - Year	9,420	5,600
III - Year	9,420	5,600
IV - Year	9,504	6,875
V - Year	9,126	6,860
Total for 5 Years	43,770	33,895

The applicant has proposed to carry out **43,770m³** of Rough Stone and **33,895m³** of Gravel production for the period of first **FIVE** years up to a depth of **29.0 m** from the ground level (Table-3).

4.5	Machineries to be used	
	a) For Mining :	
		Excavator of 0.90Cbm bucket capacity (with Rock breaker attachment) - 1 No. Jack hammers 30-32mm dia. - 1 set (2 Nos.) Tractor mounted compressor (2 jack hammer capacity) -1 No.
	b) Loading equipment	Excavator of 0.90Cbm bucket capacity, same excavator for mining will be used for loading purpose with bucket only.
	c) Transportation (includes within the mine and mine to destination)	Tipper 1 No. of 10/20 tons capacity (from quarry to needy peoples & local crushers).
4.6	Disposal of overburden / waste	
		The overburden is in the form of top soil & gravel formation. It will be quarried for filling purposes to nearby end users and top soil will be preserved all along the boundary as barrier for afforestation.
4.7	Brief note on conceptual mining plan for the entire lease period base on the geological, mining and environmental 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., The ultimate pit limit (dimension) at the end of ten years mining lease period is given below:

Table-4

Description End of the lease period	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)
A-A' & C-C'	74	57	29.0
B-B' & C-C'	16	46	5.0
D-D' & E-E'	76	30	11.0

Afforestation has been proposed in the 7.5m safety barrier by planting 650 nos. Trees of native species during the five years period is proposed to plant. All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out as per the MOEF Norms.

Please refer plate No. V & VI.

5. BLASTING :

5.1 Blasting pattern

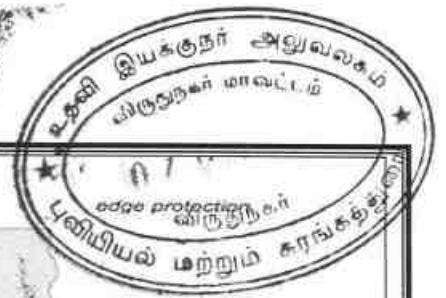
The quarrying operation will be carried out in conjunction with conventional method of mining using Jack hammer drilling and blasting for shattering effect and loosen the Rough stone.

Drilling and Blasting:

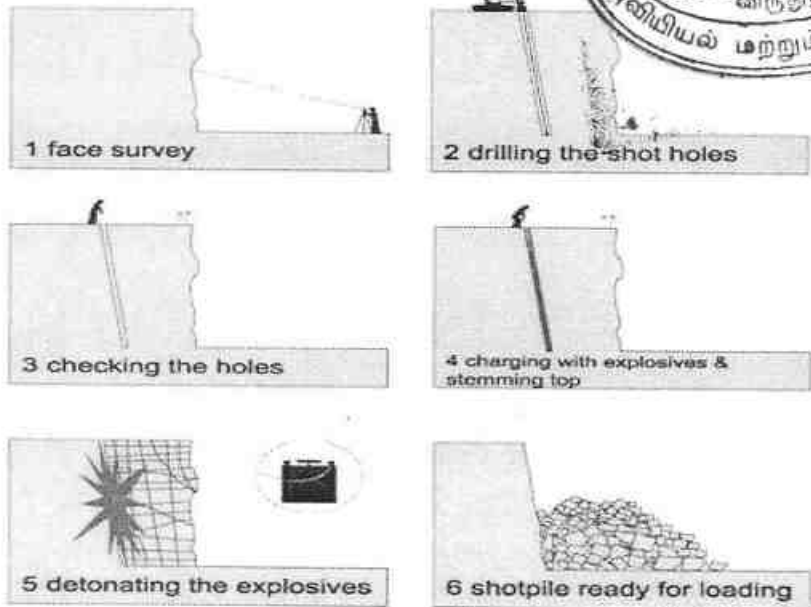
Drilling and blasting parameters are as follows:

Diameter of the hole	:	32-36 mm
Spacing	:	0.5m
Depth	:	1.2m to 1.5m
Burden per hole	:	0.5m
Pattern of hole	:	Zig Zag Staggered in 2 to 3 rows
Inclination of holes	:	80° from the horizontal.
Use of delay detonators	:	25 milli-second delays
Detonating fuse	:	NONEL "Detonating" Cord

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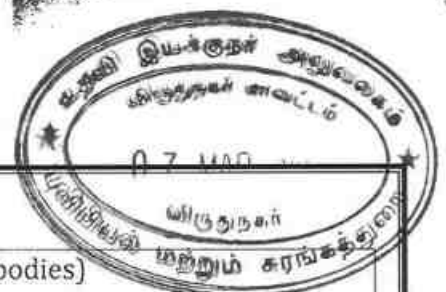


ROCK BLASTING



5.2	Type of explosives to be used															
	Small Dia. 25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.															
5.3	Measures proposed to minimize ground vibration due to blasting															
	Controlled blasting measures will be adopted for minimizing ground vibration and fly of rock by NONEL initiation based controlled blasting. Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly of rock. <table><tr><td>Number of holes</td><td>:</td><td>Total- 28 holes per shot of blasting per day.</td></tr><tr><td>Powder factor</td><td>:</td><td>6 Ts/Kg of explosives</td></tr><tr><td>Total explosive required/day</td><td>:</td><td>14.0 Kg slurry explosives (Max capacity)</td></tr><tr><td>Charge / hole</td><td>:</td><td>0.5Kg</td></tr><tr><td>Blasting time</td><td>:</td><td>12.00-2.00 PM / 4.30-5.30 PM</td></tr></table>	Number of holes	:	Total- 28 holes per shot of blasting per day.	Powder factor	:	6 Ts/Kg of explosives	Total explosive required/day	:	14.0 Kg slurry explosives (Max capacity)	Charge / hole	:	0.5Kg	Blasting time	:	12.00-2.00 PM / 4.30-5.30 PM
Number of holes	:	Total- 28 holes per shot of blasting per day.														
Powder factor	:	6 Ts/Kg of explosives														
Total explosive required/day	:	14.0 Kg slurry explosives (Max capacity)														
Charge / hole	:	0.5Kg														
Blasting time	:	12.00-2.00 PM / 4.30-5.30 PM														
5.4	Storage and safety measures to be taken while blasting															
	The lessee 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.															

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6. MINE DRAINAGE :

6.1	Depth of water table (based on nearby wells and water bodies)
	The water table is below 60 mts from ground level which is observed from the nearby bore wells and the data obtained from existing panchayat and Private borewells. The quarry operation is proposed up to a depth of 29.0mts below the ground level.
6.2	Arrangements and places where the mine water is finally proposed to be discharged
	The water encountered during quarrying inside the pit due to rain water and seepage, will be pumped out by 5HP water pumps to the Green belt development areas and excess water to the down side village water tanks (ponds) through a de-silting trap pit for use of agricultural purposes. Also the water will be used for dust suppression on haul roads during Haulage of machineries.

7. OTHER PERMANENT STRUCTURES (also shown in the map):

7.1	Habitations / village natham :
	There are no habitations within the Radius of 300m. The nearby village habitations are tabulated in Table - 5 as below.
7.2	Power lines (HT/ LT):
	There are no Electric Power line within 50 mts distance from the lease area.
7.3	Water bodies (river, pond, lake, odai, canal etc.,)
	The nearest Village pond is Yedan Urani in M.Chinnaiyapuram village at 280m northeast. The nearest odai located at 70m south side drains rain water to another small urani at south side village tank. There are no major water bodies like river, lake, etc., within 50m radial distance. The nearest village tank is Mannarkottai Kanmoi located at 1.5 Kms northwest.
7.4	Archaeological / historical monuments
	There are no Archaeological / historical monuments within 500m radial distance from the area.
7.5	Road (NH, SH others)
	The National Highway (NH-44) Srinagar to Kanniyakumari is about 6 Km on Western side of the area. The District Road DR-937 from Paalavanatham to Irukangudi is located 1.0 Km eastern side of the area. The Village panchayat road from Thulukkapatti to Kottaiur Road is about 0.5 Km on Northern side of the area.

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7	Hospital	Auvudaiyapuram PHC	3.5 Km
8	School	Panchayat Union School Kottaiyur	1.5 Km
9	Railway station	Thulukkappatti / Sattur	5.0 Km / 15.0 Km
10	Airport	Madurai	55 Km
11	Sea Port	Thoothukudi	85 Km

8. EMPLOYMENT POTENTIAL & WELFARE MEASURES :

8.1 Employment potential (skilled, semi skilled, unskilled)

Table 7. Man Power

S.No.	Levels & Details	Persons
1.	Skilled	Operators
		Mechanic
		Blaster/Mate
2.	Semi - skilled	Drivers
3.	Unskilled	Musdoor/Labours
		Cleaners
		Office Boy
4.	Management & Supervisory staff	1
Total		10

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 is been ensured that no labour employed less than 21 years (child labours) or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

8.2 Welfare measures

a) Drinking water/other water requirements:

Table 8. Water Requirement

Purpose	Quantity	Source
Drinking & Domestic use	0.5 KLD	Purified water for drinking purposes and others uses by road tankers supply. Requirement will be arranged from nearby sources
Afforestation / Green belt	0.5 KLD	
Dust suppression sprinkling	1.5 KLD	
Total	2.5 KLD	

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b) Sanitary facilities	Sanitary facilities will be constructed with in the quarry lease area as permanent structure and it will be maintained periodically.
c) First Aid facility	First aid kits will be kept in Mines office room, in case of such eventualities, the victim will be given first aid immediately at the site and injured person will be taken to the hospital. Hospitals are available at distance of 3.5 Kms in Auvudaiyapuram PHC. The competent and Statutory Foreman/ Permit Manager will be in charge of first aid.
d) Labor Health	Periodically medical checkup related to occupational health safety will be conducted to all the workers.
e) Precautionary safety measures to the laborers	All the quarry workers will be provided with safety equipments like helmets, Mine Goggles, Ear plugs, Ear muffs, Dust mask, reflector jackets and Safety Shoes as personal protective device as per the specification approved by Director of Mines Safety. Periodically medical checkup will be conducted for all workers for any mine health related problems. Proper training and induction will be given by qualified and experienced safety officer to all employees about the safe and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically to carry out the quarrying operations scientifically to safe guard the men machinery and mineral and to create awareness of conventional opencast quarrying operations.

PART – B

9. ENVIRONMENT MANAGEMENT PLAN :

9.1	Existing land use pattern:
	The lease area is plain terrain with very gently sloping towards south. The proposed lease area is dry barren lands and occasionally covered by thorny bushes. The area is mostly dry and barren. The dry crop agricultural activities are noticed sporadically within 1 km scattered manner and remaining area is mostly dry. Land use pattern in percentage wise within 1.0 Km radius is follows:

S. Krishnagowdy

1. Quarries (Old & proposed area) - 18.0%
2. Stone Crusher - 3.0%
3. Fire crackers unit - 2.5%
4. Habitations - 3.0%
5. Roads & cart tracks - 6.0%
6. Water bodies odai, Urani & Kanmoi - 2.5%
7. Dry Lands & open scrubs - 37.0%
8. Green Belt - 1.0%
9. Seasonal dry Agricultural crops - 27.0%



The land use pattern within the proposed lease area at present and at the end of the lease period:

Table 9 Land Use Pattern

S. No.	Land Use	Present Area (Hect)	Area after the quarrying period of 5 years (Hect)
1.	Area under quarrying	Nil	0.67.70
2.	Infrastructures	Nil	0.01.00
3.	Roads, cart tracks etc.,	Nil	0.02.00
4.	Green Belt	Nil	0.60.30
5.	Unutilized Area	1.31.00	Nil
	Total	1.31.00	1.31.00

Details furnished in the **Plate Nos. VIIA, VIIB & VIII.**

9.2 Water regime

This proposed quarry operation is up to a maximum depth of 29.0m below the ground level will not be affected by the ground water table below 60 mts from ground level. There are no agricultural open wells within 500m of the project area. Mostly, wells situated more than 1 km surrounding area are abandoned condition and others, during monsoon and rainy seasons the water level is at 5mts BGL and during summer it becomes dry. The panchayat borewells near the villages found the water level at 60mts below ground level.

9.3 Flora and fauna

Except grass, acacia bushes, no other valuable trees are noticed in the applied area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.

9.4 Climatic conditions

The area receives annual rainfall of about 935mm and the rainy season is mainly from Oct. – Dec. during North East monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 23°C.

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9.5	Human settlement	There are few villages located in this area within 5km radius, the approximate distance and population are given in Table -5 as above. Basic human welfare Amenities such as Health Center, Schools, Communication Facilities, and Commercial Centers etc., are available at Auvudaiyapuram village and Sattur town located at a distance of 3.5 kms / 15.0 Kms respectively.
9.6	Plan for air, dust suppression	The Air quality will be affected during the quarrying period due to blasting and jack hammer drilling, which will be within prescribed limits. Mist Water spraying will be carried out to suppress the dust in day time often as and when required.
9.7	Plan for noise level control	Shallow holes of 32mm diameter and 1.5 feet depth will be drilled and conventional low power explosives such as Slurry Explosives, ordinary safety fuse only will be used for rough stone. Hence, ground vibration and noise pollution will be minimal and restricted within the quarry workings. Noise level monitoring and other Mitigation measures will be carried out to reduce Noise and Vibration. The drivers will be strictly instructed to move the vehicle during the transportation not exceeding 40 km per hour. Sentries with flags & whistle will be posted in village junction and regulate traffic.
9.8	Environmental impact assessment statement describing impact of mining on the next five years	The mining plan is for production of Rough stone involving deep hole drilling and heavy blasting. The mining activity will be carefully carried without causing any impact adversely on environment as far as pollution of air, water and noise is concerned. Anyhow periodical quarterly environmental impact studies will be conducted as per EIA notification issued by MOEF.
9.9	Proposal for waste management	The Air quality will be affected during the quarrying period due to blasting and jack hammer drilling, which will be controlled by spraying Mist Water to suppress dust.
9.10	Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.)	The project proposed area will be fenced with stone pillars with 3mts interval and covered barbed wires with only one entry point for transport. There is no refilling is planned since all the quarried rough stone and gravel is salable and the pit after quarry completion will be filled with rain water from the nearby sources which will act as recharge body for ground water for the influence of the surrounding agricultural wells for agricultural purposes.

9.11	Program of afforestation (indicate extend, number, name of species to be afforested)
------	--

The 7.5m safety distance along the lease boundary has been identified to be utilized for afforestation. Appropriate native species of Neem trees will be planted in a phased manner as described below.

Table - 6

Year	No. of tress proposed to be planted	Survival rate %	Area to be covered Sq.m	Name of the species	No. of trees expected to be grown
I	130	80%	1206	NEEM / PUNGAI	104
II	130	80%	1206	USILAM / TAMARIND	104
III	130	80%	1206	NAVAL / PUVARASU	104
IV	130	80%	1206	PANAI / SAVUKKU	104
V	130	80%	1206	MANTHARAI / OAK	104

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

I. Project Cost :

(a). Investment Cost :

S. No	DETAILS	COST in Rs. /-
i)	Lease rent / Land Cost	4,50,000
ii)	Machinery to be used	Hired machinery
iii)	Fencing	1,50,000
iv)	Labourers Shed	50,000
v)	Sanitary facility	25,000
vi)	Other Items	25,000
TOTAL		7,00,000

(b). Expenditure/ Production Cost. (1Unit= 2.83m³)

Drilling and Blasting cost / unit production including loading & breaking. = Rs.150/-

i) Mining cost for rough stone up to 5 Years planned production quantity

Total Movable quantity in M ³	-	43,770 M ³ (15,466 Units)
Total cost of mining Rough Stone	=	15,466 X Rs. 150/-
	=	Rs. 23,90,900/-

ii) Mining cost for gravel for 5 Years planned production quantity

Total Movable quantity in M³ - 33,895 M³ (11,977 Units)

Total cost of mining - Gravel = 11,977 X Rs. 80/-

= Rs. 9,58,160/-

Total Cost for Mining - Rs. 33,49,060/-

Say - Rs. 33,49,000/-

Total Project Cost (a+b) = Rs. 40,49,000/-.

S. Idris, M. Ismail

II. EMP Cost :

Sl. No.	DETAILS	COST per MONTH (Rs.)	Total Cost per Year (Rs.)	TOTAL COST for 5 years LEASE PERIOD (Rs.)
i)	Drinking Water facility for 20 peoples from water vendors	1000	12,000	60,000
ii)	Sanitary maintenance for Rest rooms	750	9,000	45,000
iii)	Safety kits(mask, helmet, sanitizer, gloves, etc.,)	500	6,000	30,000
iv)	Water Sprinkling using own tractor for the area	5,000	60,000	3,00,000
v)	Afforestation, Plantation & Maintenance	25,000 (annual)	25,000	1,25,000
vi)	Environmental parameters testing expenses fees for every six months	(bi-annual)		2,10,000
	a. Air Monitoring	10,000	20,000	
	b. Water analysis	5,000	10,000	
	c. Noise Monitoring	3,000	6,000	
	d. Soil Testing	3,000	6,000	
TOTAL				7,70,000

III. CER cost @2% on Project cost (a+b) - Rs. 2,00,000/-

CER Activity	CER cost (Rs)
Carrying out provisions for Drinking Water with dispenser, Library Racks & books and Toilet /sanitary facilities for students in Panchayat Primary School, Kottaiyur Panchayat, Virudhunagar Block & District. @2% of the total project cost (Rs.40,49,000/-)	81,000/-
Revised Cost Allocation	2,00,000/-

10. MINE CLOSURE PLAN :

10.1	Steps proposed for phased restoration, reclamation of already mined out areas
	There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of the life of lease will be fenced to prevent inherent entry of public and cattle's and will be used for Rain Water harvesting.
10.2	Measures to be under taken on mine closure as per Act & Rules
	Measure will be taken as per Act & Rules, there is no proposal for back filling, reclamation and rehabilitation. The quarry pit will be fenced by barbed wire to prevent inherent entry of public and cattle. The quarried out pit will be allowed to collect rain water which will act as a reservoir for storage and recharge pit for ground water which will enhance the static water level of nearby wells.

10.3	MITIGATION MEASURE TO BE UNDERTAKEN FOR SAFETY AND RESTORATION / RECLAMATION OF THE ALREADY MINED OUT AREA.
	AIR QUALITY: Air quality will be degrade due to the drilling, blasting, mining operation and transportation.
	Mitigation measures: Drilling will be carried out by wet drilling mode to control the dust propagation into the air. Controlled Blasting will be carried out on limited scale. Mist Water spraying on haul road is proposed to prevent the dust propagation into the air.
	NOISE AND VIBRATION: The noise will be formed due to the drilling, blasting, loading and movement of Machineries.
	The applicant has proposed to carry out the plantation all along the boundary to prevent Noise besides wet drilling will be practiced to prevent dust. All the machineries will be maintained in good conditions as per RTO and TNPCB Norms to prevent Noise, Smoke and vibration to maintain noise levels below 80dB.
	WATER REGIME :
	The quarry operation (29.0m depth below Ground level) is well above the water table (below 60 mts from ground level), hence the water table will not be affected in any manner. The seepage and rain water will be drained out from the pit by 5H.P motor pump and will be discharged through a silt trap / filter media to boundary barrier for afforestation and excess water will be sprayed on haul roads to prevent dust propagation in to the atmosphere. The rough stone quarry will not produce any harmful toxic effluence in the form of solid, liquid or gas.
	HUMAN HEALTH & SAFETY: Dust will be limited due to the mine operation.
	All the laborers will be provided with safety equipment's like helmet, Safety Goggles, Ear muff, Hand gloves, safety jacket, safety belt, and Mine boots etc., at applicant's cost, as per the specifications of Director of mines safety. The competent qualified person foreman/Permit Mines Manager will provide first aid and will take care of small & minor injuries. If any accident happens, the victim will be taken to the nearby hospital by the applicants van which is always kept in the mines office. Hospitals are available at distance of 3.5 Kms in Auvudaiyapuram PHC or at 15.0 kms Sattur Town GH or private hospitals

11. ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT:

- ❖ This mining plan for Rough stone (Charnockite) quarry is prepared as per the Minor Mineral Conservation and Development Rules, 2010 and amendments in the Tamil Nadu Minor Mineral Concession Rules, 1959.
- ❖ The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied with, so that the safety of the mine, machinery and person will be well protected.
- ❖ Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety.
- ❖ Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Department.

Place : Virudhunagar

Date : 28.02.2025

QUALIFIED PERSON

R. GURURAMACHANDRAN, M.Sc.,

Qualified Person

(RQP / MAS / 224 / 2010/A)

This Mining is approved based on guidelines/ Instructions issued in the CGM, Letter No.3868/LC/2012 dated 19.11.2012 and incorporation of the particulars specified in the latter Rec.No. Ku.1564/2023

Dated 28.2.25 of the Deputy Director of Geology and Mining, Virudhunagar and s. to further Fulfillment of the conditions laid down 41,42 of Tamil Nadu Minor Mineral Concession

Assistant Director of Geology & Mining
Virudhunagar

This Mining Plan is approved Subject to the conditions / S. in indicated in the Mining Plan Approved

By Ku.1564/2023

Dated

S. Prithvi Ganesan

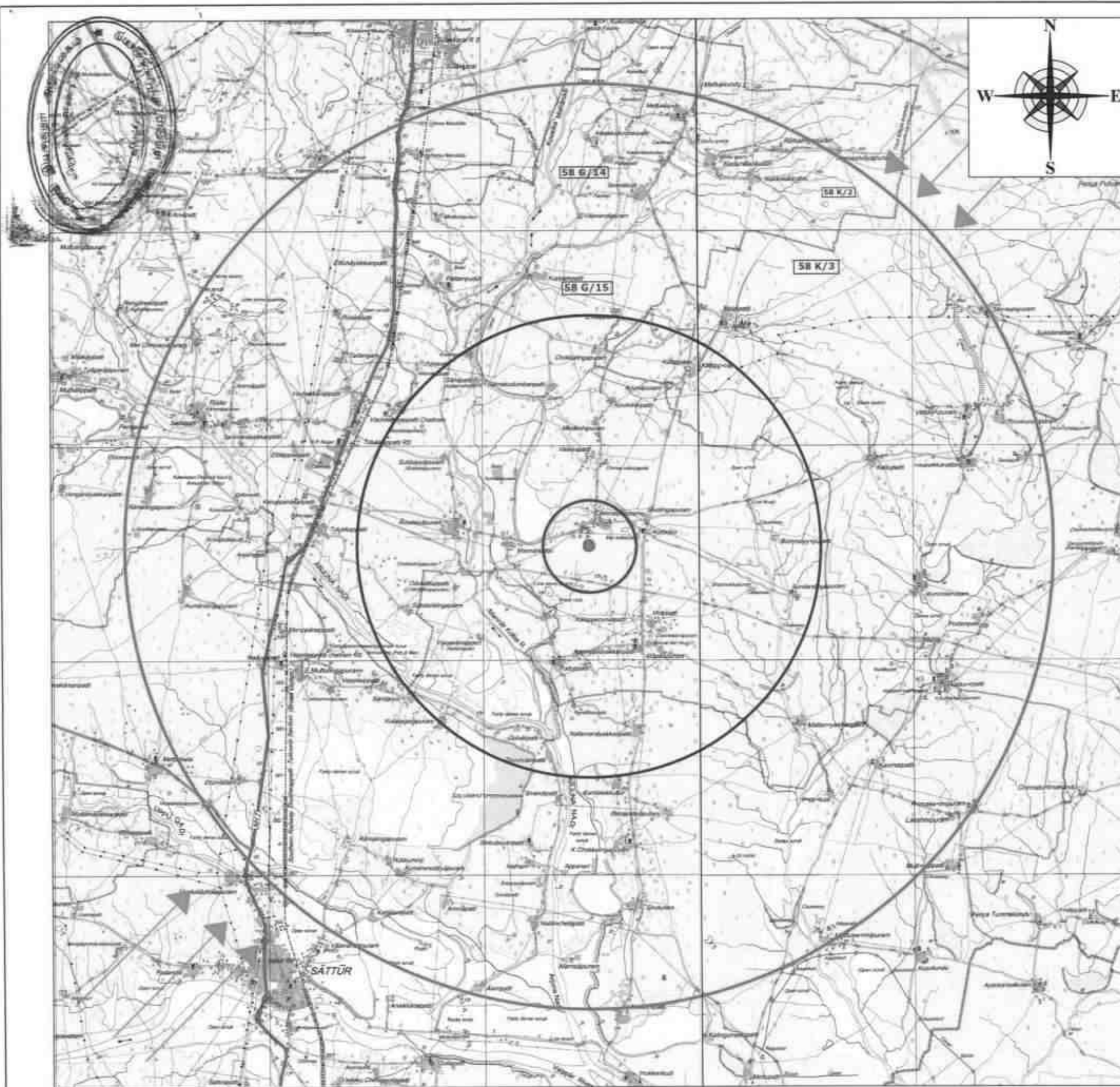


PLATE : II

LESSEE DETAILS :

Thiru.S.Krishnasamy, S/o Singadurai

D.No.3/10, East St, Kalaperumalpatti Village,
Virudhunagar Taluk & District - 626 204.

LOCATION OF THE SITE :

EXTENT : 1.31.00 Hect.

S.F Nos : 11/2B1,2B2 & 14/2.

VILLAGE : KOTTAIYUR

TALUK : VIRUDHUNAGAR

DISTRICT : VIRUDHUNAGAR

TOPO SHEET No:- 58G/15

Latitude : 9° 26' 10.00" N to 9° 26' 15.00" N

Longitude : 77° 58' 42.70" E to 77° 58' 49.36" E

Lease Area

Wind Direction

1 KM Radius

5 KM Radius

10 KM Radius

CONVENTIONAL SYMBOLS

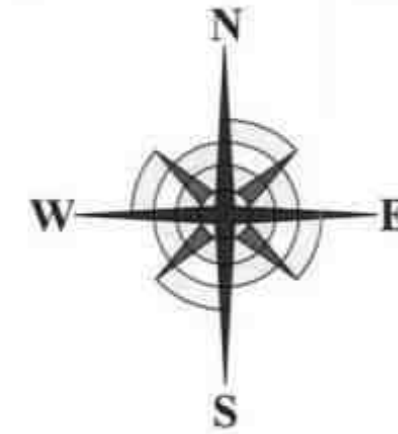
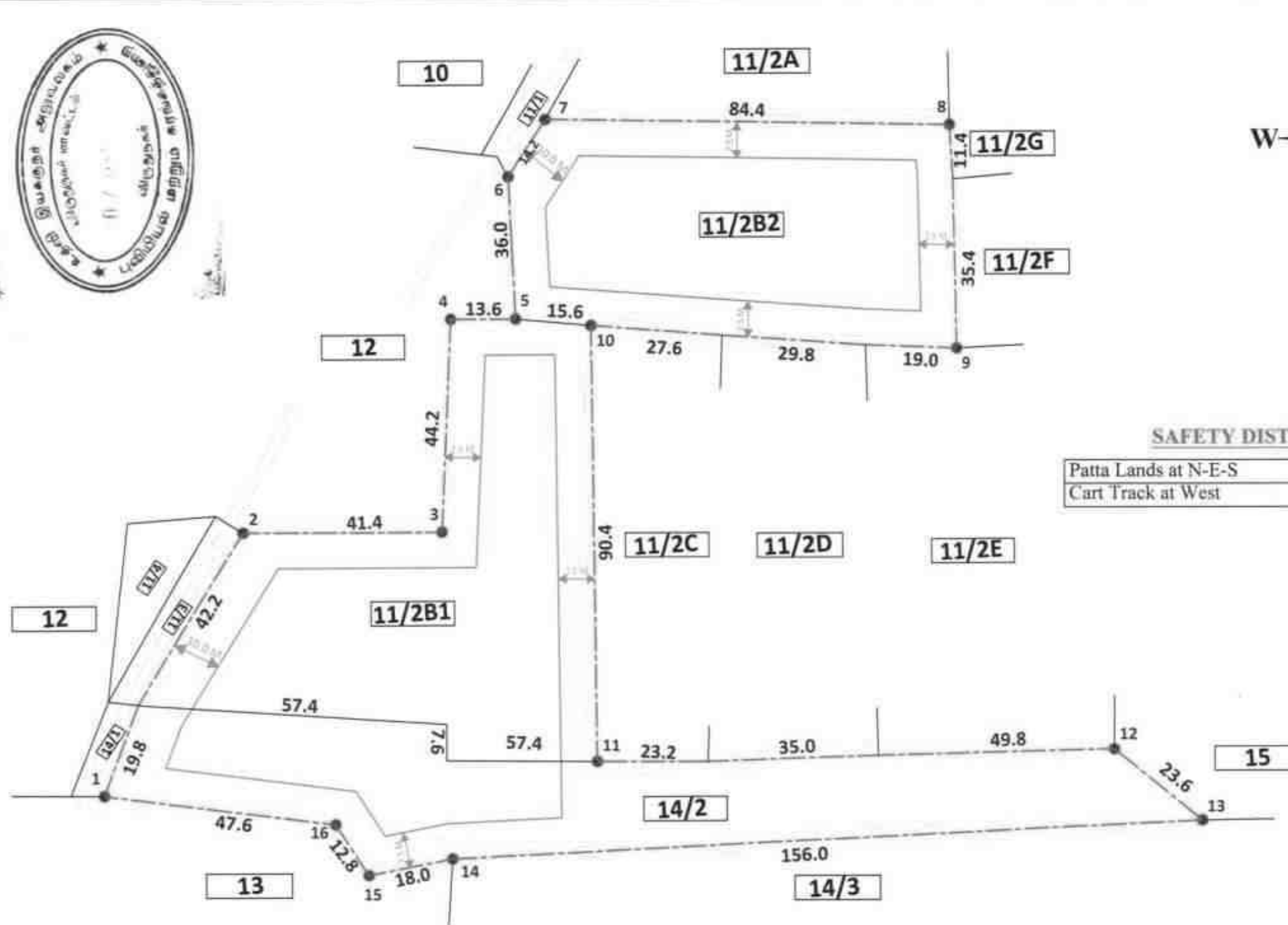
Express highway, with toll, with bridge, with distance stone	
Roads, metalled, according to importance	
Roads, double cartage way, according to importance	
Unmetalled road, Cart-track, Pack-track with pass, Foot-path	
Streams, with track in bed, undefined, Canal	
Dam, masonry or rock-filled, earthwork, Weir	
River, dry with water channel, with island & rocks, Tidal river	
Submerged rocks, Shoal, Swamp, Reeds	
Wells, lined, unlined, Tube-well, Spring, Tanks, perennial, dry	
Embankments, road or rail, tank, Broken ground	
Railways, broad gauge, double, single with station, under construction	
Railways, other gauges, double, single with distance stone, do.	

KEY PLAN:-

SCALE 1:75,000

PLANS & SECTIONS ARE PREPARED BASED ON THE LEASE
MAP AUTHENTICATED BY THE STATE GOVERNMENT :-

R. GURURAMACHANDRAN, M.Sc.
Qualified Person
(RQP/MAS/224)



SAFETY DISTANCES :

Patta Lands at N-E-S	- 7.5 Mts
Cart Track at West	- 10 Mts

CORNERS GPS CO-ORDINATES :

PILLAR	LATITUDE	LONGITUDE	PILLAR	LATITUDE	LONGITUDE
* 1	9° 26' 10.44" N	77° 58' 42.70" E	* 9	9° 26' 13.46" N	77° 58' 48.23" E
* 2	9° 26' 12.11" N	77° 58' 43.42" E	* 10	9° 26' 13.52" N	77° 58' 45.67" E
* 3	9° 26' 12.21" N	77° 58' 44.73" E	* 11	9° 26' 10.67" N	77° 58' 45.80" E
* 4	9° 26' 13.60" N	77° 58' 44.78" E	* 12	9° 26' 10.76" N	77° 58' 49.08" E
* 5	9° 26' 13.70" N	77° 58' 45.15" E	* 13	9° 26' 10.33" N	77° 58' 49.36" E
* 6	9° 26' 14.61" N	77° 58' 45.12" E	* 14	9° 26' 10.04" N	77° 58' 44.62" E
* 7	9° 26' 15.00" N	77° 58' 45.37" E	* 15	9° 26' 10.00" N	77° 58' 44.18" E
* 8	9° 26' 14.97" N	77° 58' 48.07" E	* 16	9° 26' 10.32" N	77° 58' 43.96" E

LEASE AREA DETAILS :

SF.No.	Applied Extent in Hects.
11/2B1	0.49.53
11/2B2	0.40.47
14/2	0.41.00
TOTAL	1.31.00

PLATE : III

LESSEE DETAILS :

Thiru.S.Krishnasamy, S/o Singadurai

D.No.3/10, East St, Kalaperumalpatti Village,
Virudhunagar Taluk & District - 626 204.

LOCATION OF THE SITE :

EXTENT : 1.31.00 Hect.

S.F Nos : 11/2B1,2B2 & 14/2.

VILLAGE : KOTTAIYUR

TALUK : VIRUDHUNAGAR

DISTRICT : VIRUDHUNAGAR

INDEX:-

Lease Area	
Safety Line	
Approach Road	
Boundary Pillars	

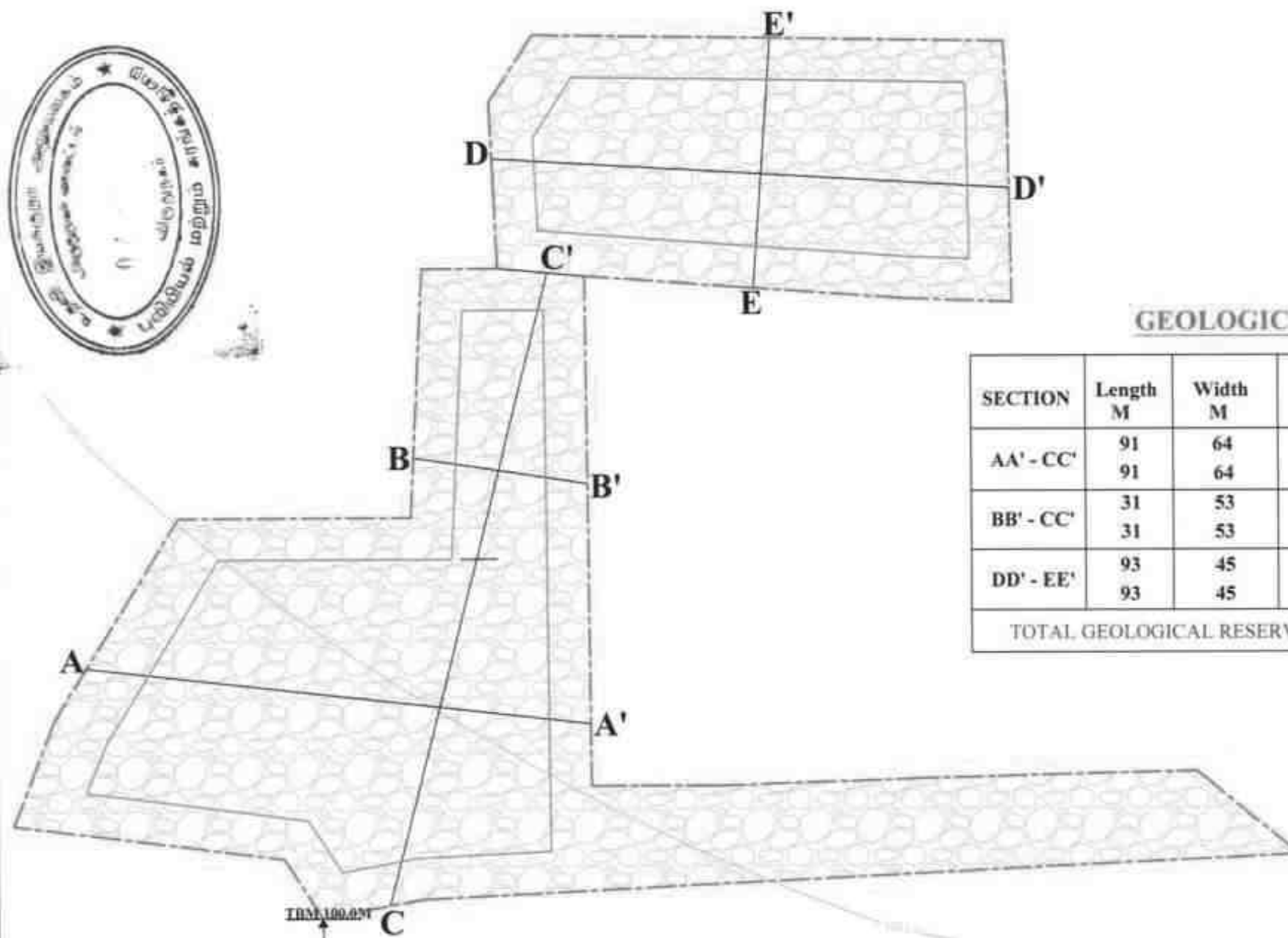
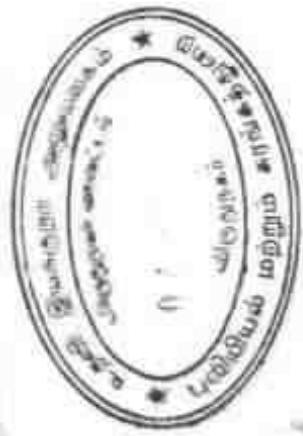
MINING LEASE PLAN:-

SCALE 1:1,000

PLANS & SECTIONS ARE PREPARED BASED ON THE LEASE
MAP AUTHENTICATED BY THE STATE GOVERNMENT :-

R. GURURAMACHANDRAN, M.Sc.,
Qualified Person
(RQP / MAS / 224 / 2010/A)

S. Krishnasamy



GEOLOGICAL RESERVES

SECTION	Length M	Width M	Depth M	Rough Stone Volume M ³	Gravel Volume M ³
AA' - CC'	91	64	5.0	-	29,120
	91	64	24.0	1,39,776	-
BB' - CC'	31	53	5.0	-	8,215
	31	53	24.0	39,432	-
DD' - EE'	93	45	5.0	-	20,925
	93	45	24.0	100,440	-
TOTAL GEOLOGICAL RESERVES				2,79,648	58,260

PLATE : IV

LESSEE DETAILS :

Thiru.S.Krishnasamy, S/o Singadurai
D.No.3/10, East St, Kalaperumalpatti Village,
Virudhunagar Taluk & District - 626 204.

INDEX:-

Lease Area	
Safety Line	
Gravel Deposit	
Rough Stone	
Bench Mark	

SURFACE CUM GEOLOGICAL PLAN AND SECTIONS:-

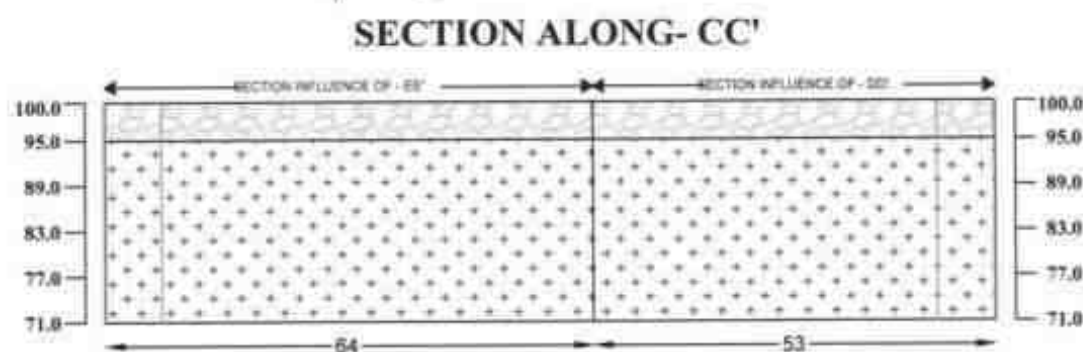
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Plan- 1:1,000 Section- 1:1000

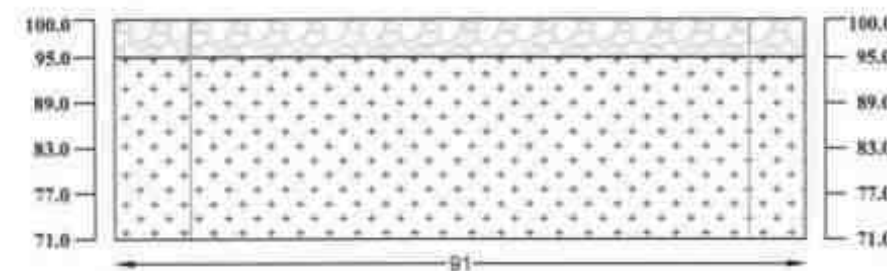
PLANS & SECTIONS ARE PREPARED BASED ON THE LEASE
MAP AUTHENTICATED BY THE STATE GOVERNMENT :-

R. GURURAMACHANDRAN, M.Sc.,
Qualified Person
(RQP / MAS / 224 / 2010 / A)

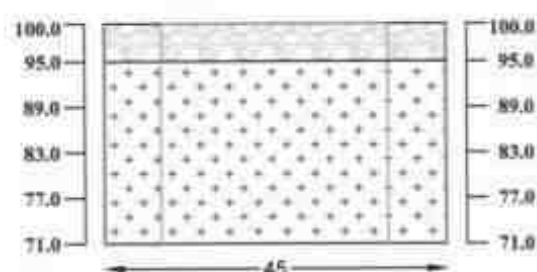
S. Krishnasamy



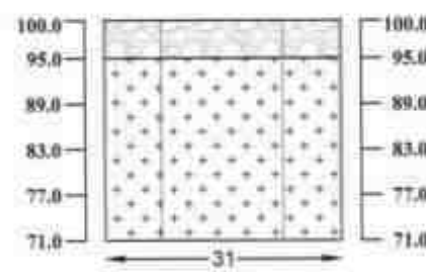
SECTION ALONG- AA'



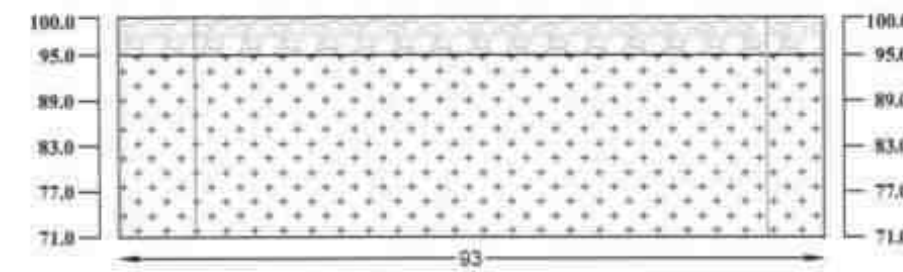
SECTION ALONG- EE'



SECTION ALONG- BB'

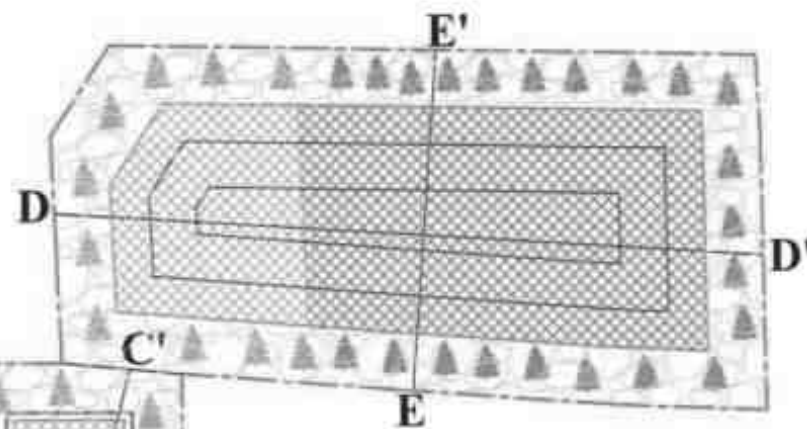


SECTION ALONG- DD'





YEAR	No. OF TREES	TYPE OF TREES
I-YEAR	130	NEEM/PUNGAI
II-YEAR	130	USIL/TAMARIND
III-YEAR	130	NAVAL/PUVARASI
IV-YEAR	130	PANAI/SAVUKKU
V-YEAR	130	MANTHARA/OAK



ULTIMATE PIT SIZE

SECTION	Length M	Width M	Depth M
AA' - CC'	74	57	29
BB' - CC'	16	46	5
DD' - EE'	76	30	11

PRODUCTION SCHEDULE FOR 5 YEARS:

SECTION	YEAR	BENCH	Length M	Width M	Depth M	Rough Stone Volume M ³	Gravel Volume M ³
AA' - CC'	I YEAR	I	32	56	5.0	-	8,960
		II	21	50	6.0	6,300	-
I - YEAR EXCAVATION						6,300	8,960
AA' - CC'	II YEAR	I	20	56	5.0	-	5,600
		II	20	50	6.0	6,000	-
		III	15	38	6.0	3,420	-
II - YEAR EXCAVATION						9,420	5,600
AA' - CC'	III YEAR	I	20	56	5.0	-	5,600
		II	20	50	6.0	6,000	-
		III	15	38	6.0	3,420	-
III - YEAR EXCAVATION						9,420	5,600
AA' - CC'	IV YEAR	III	19	38	6.0	4,332	-
IV		24	26	6.0	3,744	-	
BB' - CC'		I	15	45	5.0	-	3,375
DD' - EE'		I	25	28	5.0	-	3,500
	II	14	17	6.0	1,428	-	
IV - YEAR EXCAVATION						9,504	6,875
AA' - CC'	V YEAR	IV	13	26	6.0	2,028	-
V		25	14	6.0	2,100	-	
DD' - EE'		I	49	28	5.0	-	6,860
		II	49	17	6.0	4,998	-
V - YEAR EXCAVATION						9,126	6,860
TOTAL PRODUCTION FIVE YEARS						43,770	33,895

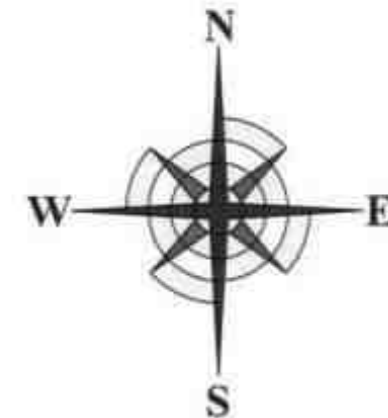


PLATE : V

LESSEE DETAILS :

Thiru.S.Krishnasamy, S/o Singadurai
D.No.3/10, East St, Kalaperumalpatti Village,
Virudhunagar Taluk & District - 626 204.

INDEX:-

Lease Area	—————
Safety Line	—————
Earth Bund	—————
Rough Stone	
Gravel Deposit	—————
I-YEAR PRODUCTION	—————
II-YEAR PRODUCTION	—————
III-YEAR PRODUCTION	—————
IV-YEAR PRODUCTION	—————
V-YEAR PRODUCTION	—————
Trees	▲ ▲ ▲ ▲
Site Services	1 2 3 4
Bench Mark	TBM 100.45M

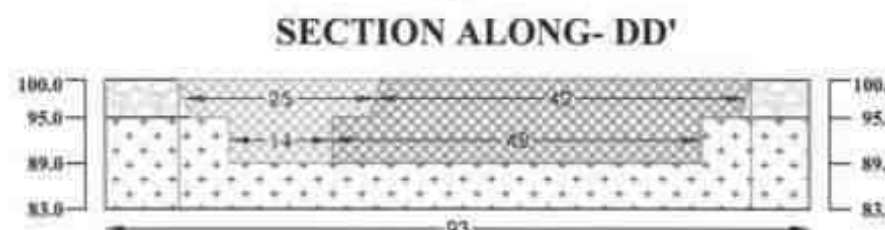
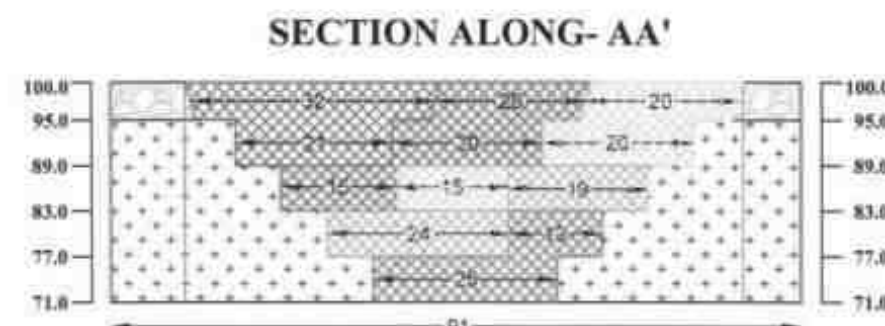
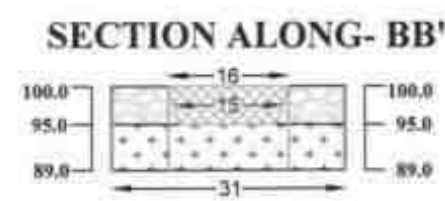
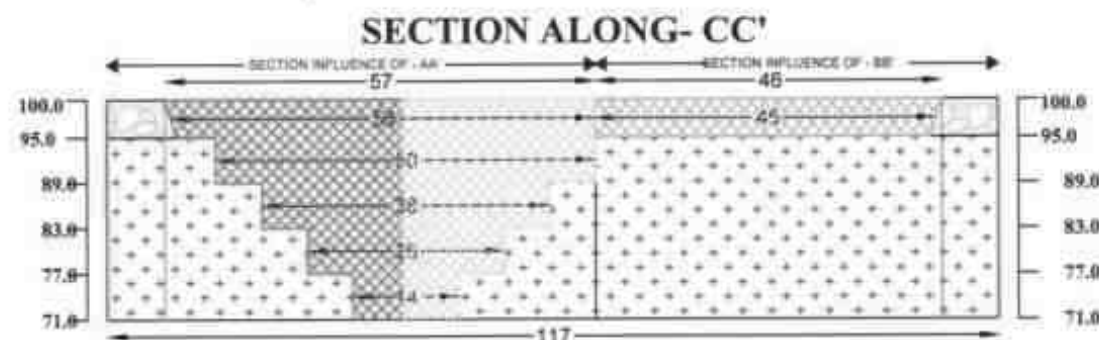
LAND USE CUM PRODUCTION PLAN
AND SECTIONS:-
SCALE

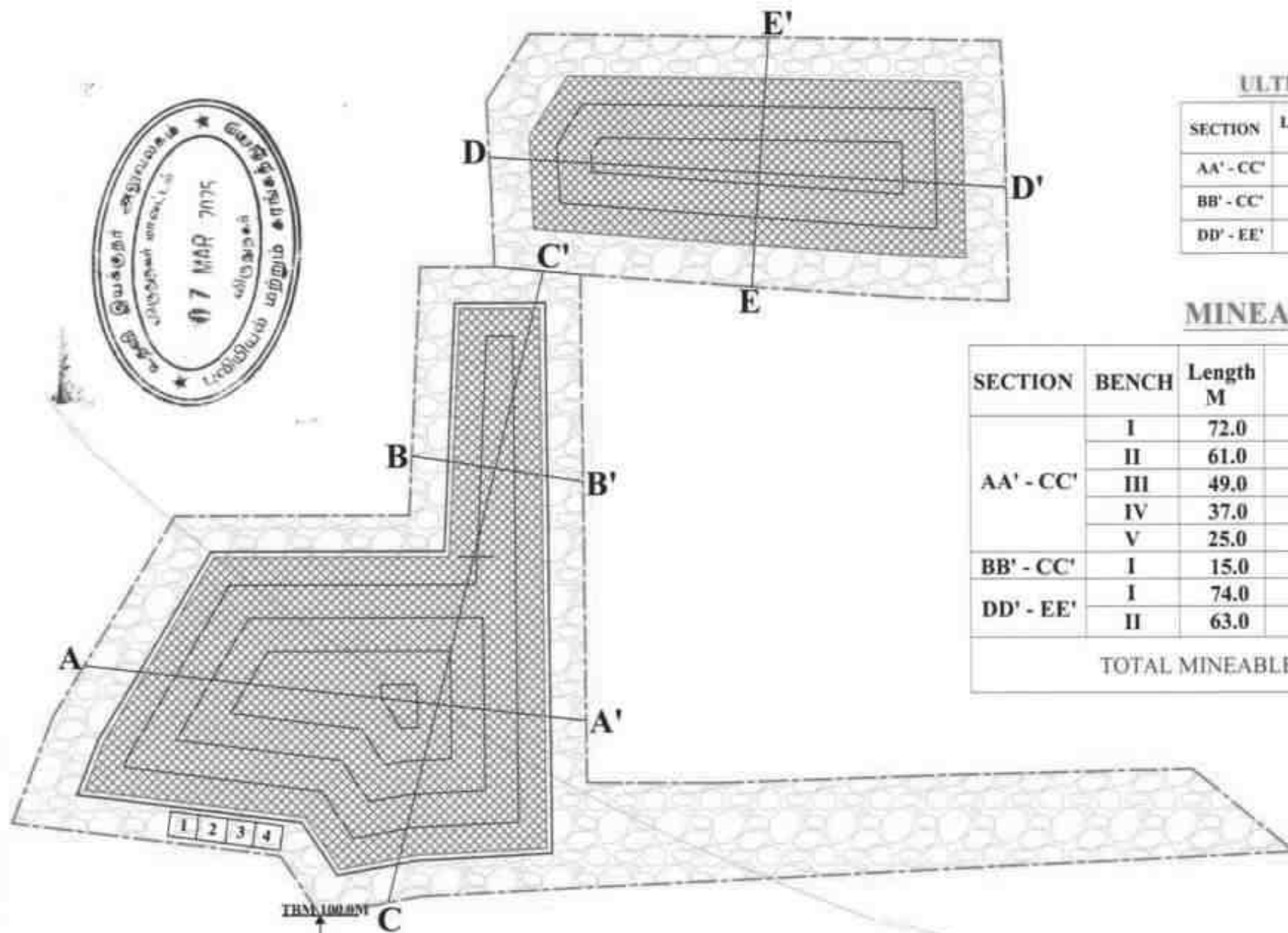
Plan- 1:1,000 Section- 1:1000

PLANS & SECTIONS ARE PREPARED BASED ON THE LEASE
MAP AUTHENTICATED BY THE STATE GOVERNMENT :-

R. Gururamachandran
R. GURURAMACHANDRAN, M.Sc.,
Qualified Person
(RQP / MAS / 224 / 2010/A)

S. Krishnasamy





ULTIMATE PIT SIZE

SECTION	Length M	Width M	Depth M
AA' - CC'	74	57	29
BB' - CC'	16	46	5
DD' - EE'	76	30	11

MINEABLE RESERVES

SECTION	BENCH	Length M	Width M	Depth M	Rough Stone Volume M ³	Gravel Volume M ³
AA' - CC'	I	72.0	56.0	5.0		20,160
	II	61.0	50.0	6.0	18,300	-
	III	49.0	38.0	6.0	11,172	-
	IV	37.0	26.0	6.0	5,772	-
	V	25.0	14.0	6.0	2,100	-
BB' - CC'	I	15.0	45.0	5.0	-	3,375
DD' - EE'	I	74.0	28.0	5.0	-	10,360
	II	63.0	17.0	6.0	6,426	-
TOTAL MINEABLE RESERVES					43,770	33,895

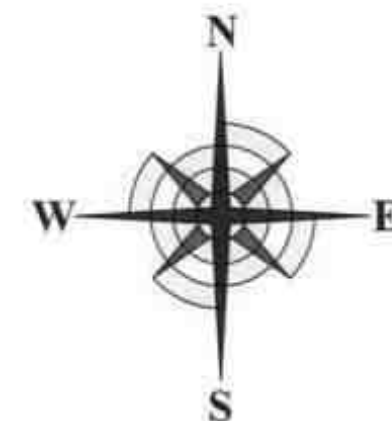


PLATE : VI

LESSEE DETAILS :

Thiru.S.Krishnasamy, S/o Singadurai
D.No.3/10, East St, Kalaperumalpatti Village,
Virudhunagar Taluk & District - 626 204.

INDEX:-

Lease Area	
Safety Line	
Earth Bund	
Gravel Deposit	
Rough Stone	
Mine Working Area	
Site Services	
Bench Mark	

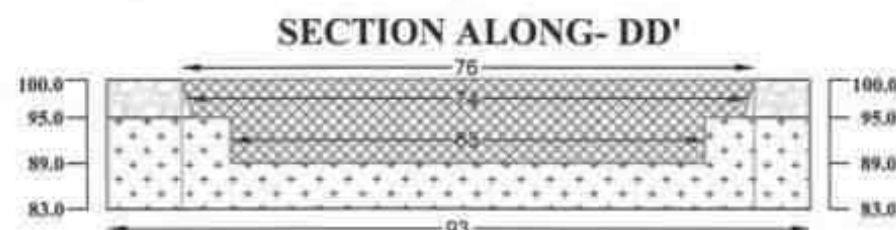
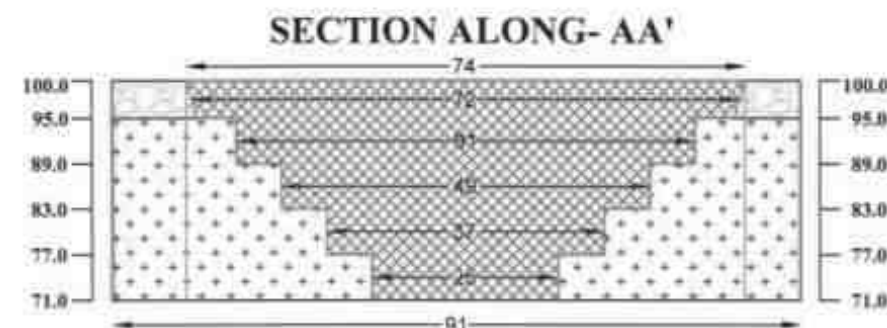
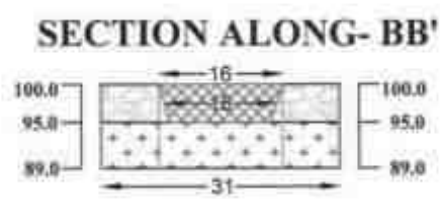
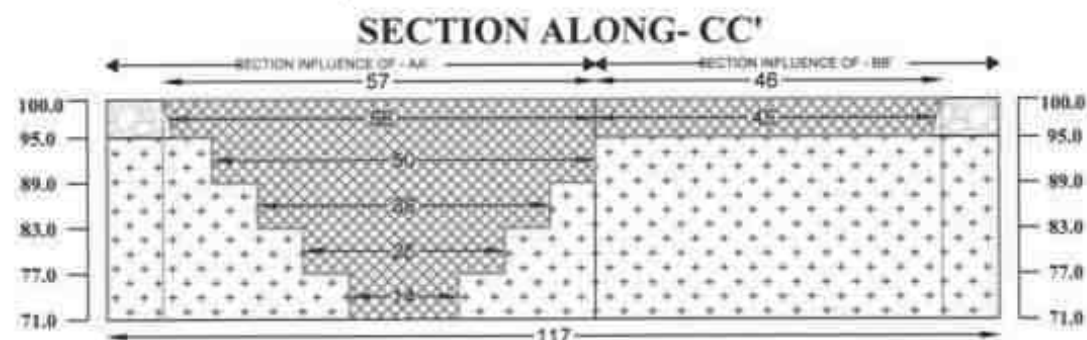
**CONCEPTUAL
PLAN AND SECTIONS:-
SCALE**

Plan- 1:1,000 Section- 1:1000

PLANS & SECTIONS ARE PREPARED BASED ON THE LEASE
MAP AUTHENTICATED BY THE STATE GOVERNMENT :-

R. GURURAMACHANDRAN, M.Sc.
Qualified Person
(RQP / MAS / 224 / 2010/A)

S. Krishnasamy





LESSEE DETAILS :

Thiru.S.Krishnasamy, S/o Singadurai
D.No.3/10, East St, Kalaperumalpatti Village,
Virudhunagar Taluk & District - 626 204.

LOCATION OF THE SITE :

EXTENT : 1.31.00 Hect.
S.F Nos : 11/2B1,2B2 & 14/2.
VILLAGE : KOTTAIYUR
TALUK : VIRUDHUNAGAR
DISTRICT : VIRUDHUNAGAR

INDEX:-

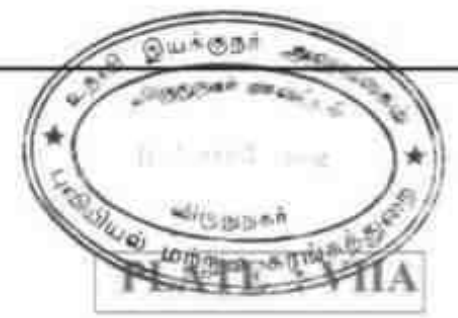
Lease Area	
Safety Line	
300M Radius	
500M Radius	
1000M Radius	
Wind Direction	
Approach Road	

SATELLITE IMAGERY WITH ENVIRONMENTAL FEATURES:-

SCALE 1:10,000

PLANS & SECTIONS ARE PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT :-

R. GURURAMACHANDRAN, M.Sc.
Qualified Person
(ROP / MAS / 224 / 2010/A)



LESSEE DETAILS :

Thiru.S.Krishnasamy, S/o Singadurai

D.No.3/10, East St, Kalaperumalpatti Village,
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TALUK : VIRUDHUNAGAR

DISTRICT : VIRUDHUNAGAR

INDEX:-

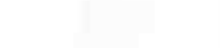
Lease Area



Safety Line



300M Radius



500M Radius



1000M Radius



Water Bodies



Wind Direction



Village Boundary



Approach Road

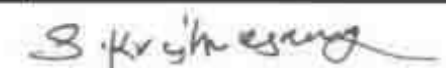


VILLAGE MAP SHOWING ENVIRONMENTAL FEATURES

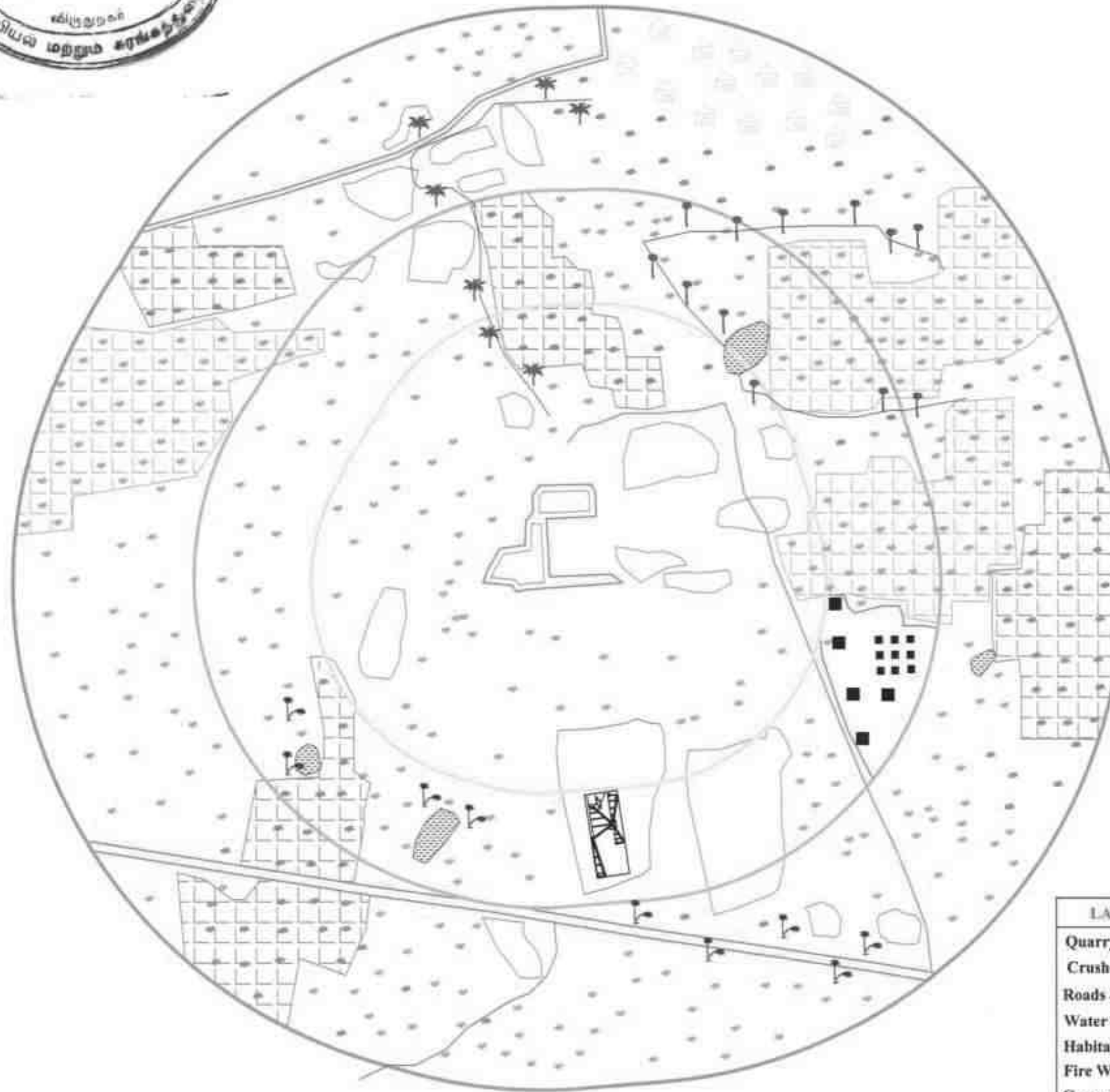
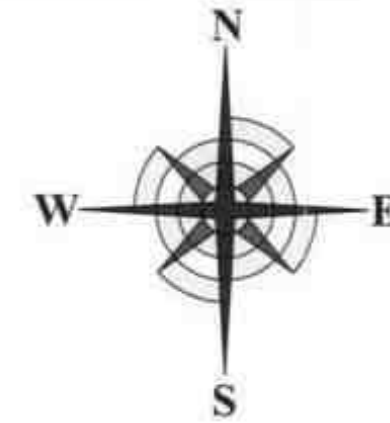
SCALE 1:5,000

PLANS & SECTIONS ARE PREPARED BASED ON THE LEASE
MAP AUTHENTICATED BY THE STATE GOVERNMENT :-


R. GURURAMACHANDRAN, M.Sc.
Qualified Person
(RQP / MAS / 224 / 2010/15)







LAND USE PATTERN in Area Percentage(%)	
Quarry Area(Old & Present)	18.0%
Crusher Area	3.0%
Roads & Cart Track	6.0%
Water Bodies (Odai/Uran/Kanmol)	2.5%
Habitation	3.0%
Fire Works	2.5%
Green Belt	1.0%
Seasonal Dry Crops	27.0%
Open Scrub & Barren Land	37.0%
TOTAL	100%

PLATE : VIIB

LESSEE DETAILS :

Thiru.S.Krishnasamy, S/o Singadurai
D.No.3/10, East St, Kalaperumalpatti Village,
Virudhunagar Taluk & District - 626 204.

LOCATION OF THE SITE :

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DISTRICT : VIRUDHUNAGAR

INDEX:-

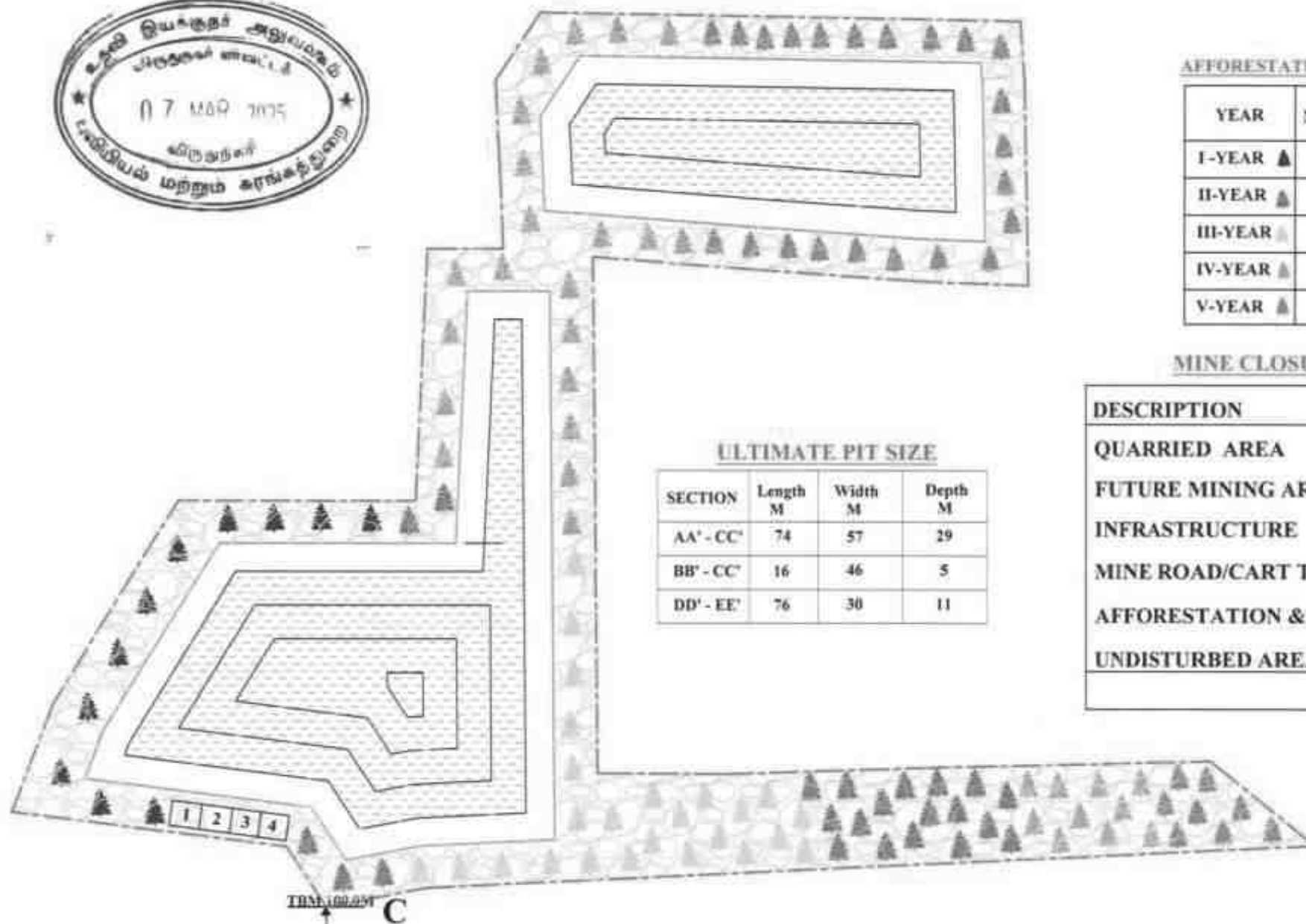
Applied Area	
Safety Line	
300M Radius	
500M Radius	
1000M Radius	
Habitation	
Fire Works	
Seasonal Dry Corps	
Open Scrubs/Dry Land	
Green Belt	
Water Bodies	
Approach Road	
Crusher Unit	
Old Quarry Pits	

**ENVIRONMENTAL AND
LAND USE PLAN**

SCALE 1:10,000

PLANS & SECTIONS ARE PREPARED BASED ON THE LEASE
MAP AUTHENTICATED BY THE STATE GOVERNMENT :-

R. GURURAMACHANDRAN, M.Sc.
Qualified Person
(RQP / MAS / 224 / 2010/A)



ULTIMATE PIT SIZE

SECTION	Length M	Width M	Depth M
AA' - CC'	74	57	29
BB' - CC'	16	46	5
DD' - EE'	76	30	11

AFFORESTATION PROGRAM FOR FIVE YEARS

YEAR	No.OF.TREES	TYPE OF TREES
I-YEAR	130	NEEM/PUNGAI
II-YEAR	130	USIL/TAMARIND
III-YEAR	130	NAVAL/PUVARASU
IV-YEAR	130	PANAI/SAVUKKU
V-YEAR	130	MANTHARA/OAK

MINE CLOSURE PLAN WITH LAND USE :

DESCRIPTION	at End of 5 Years
QUARRIED AREA	0.00.00 Ha
FUTURE MINING AREA	0.67.70 Ha
INFRASTRUCTURE	0.01.00 Ha
MINE ROAD/CART TRACK	0.02.00 Ha
AFFORESTATION & SAFETY	0.60.30 Ha
UNDISTURBED AREA	0.00.00 Ha
TOTAL	1.31.00 Ha

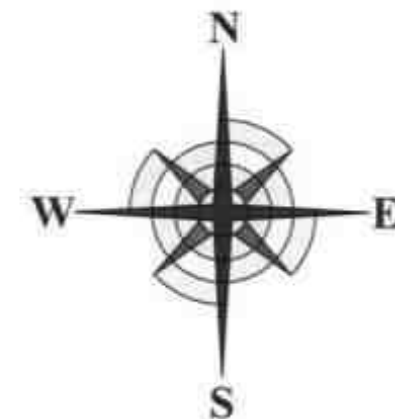


PLATE : VIII

LESSEE DETAILS :

Thiru.S.Krishnasamy, S/o Singadurai
D.No.3/10, East St, Kalaperumalpatti Village,
Virudhunagar Taluk & District - 626 204.

INDEX:-

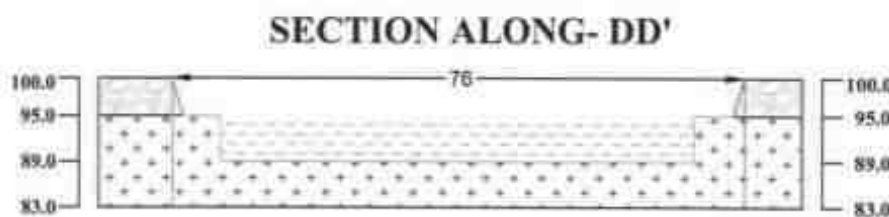
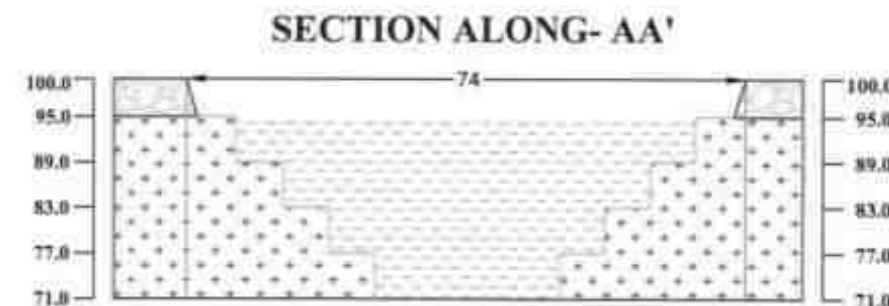
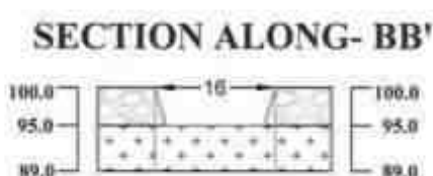
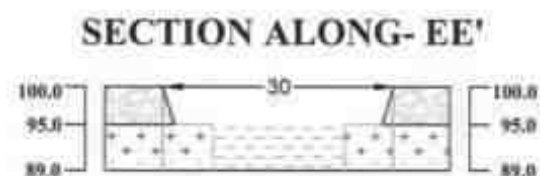
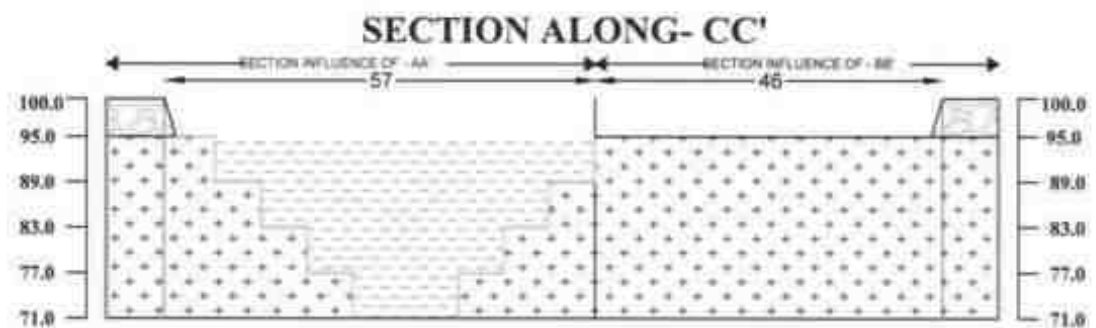
Lease Area	
Safety Line	
Earth Bund	
Gravel Deposit	
Rough Stone	
Water Reservoir	
Trees	
Site Services	
Bench Mark	

PROGRESSIVE MINE CLOSURE PLAN:-
SCALE

Plan- 1:1,000 Section- 1:1000

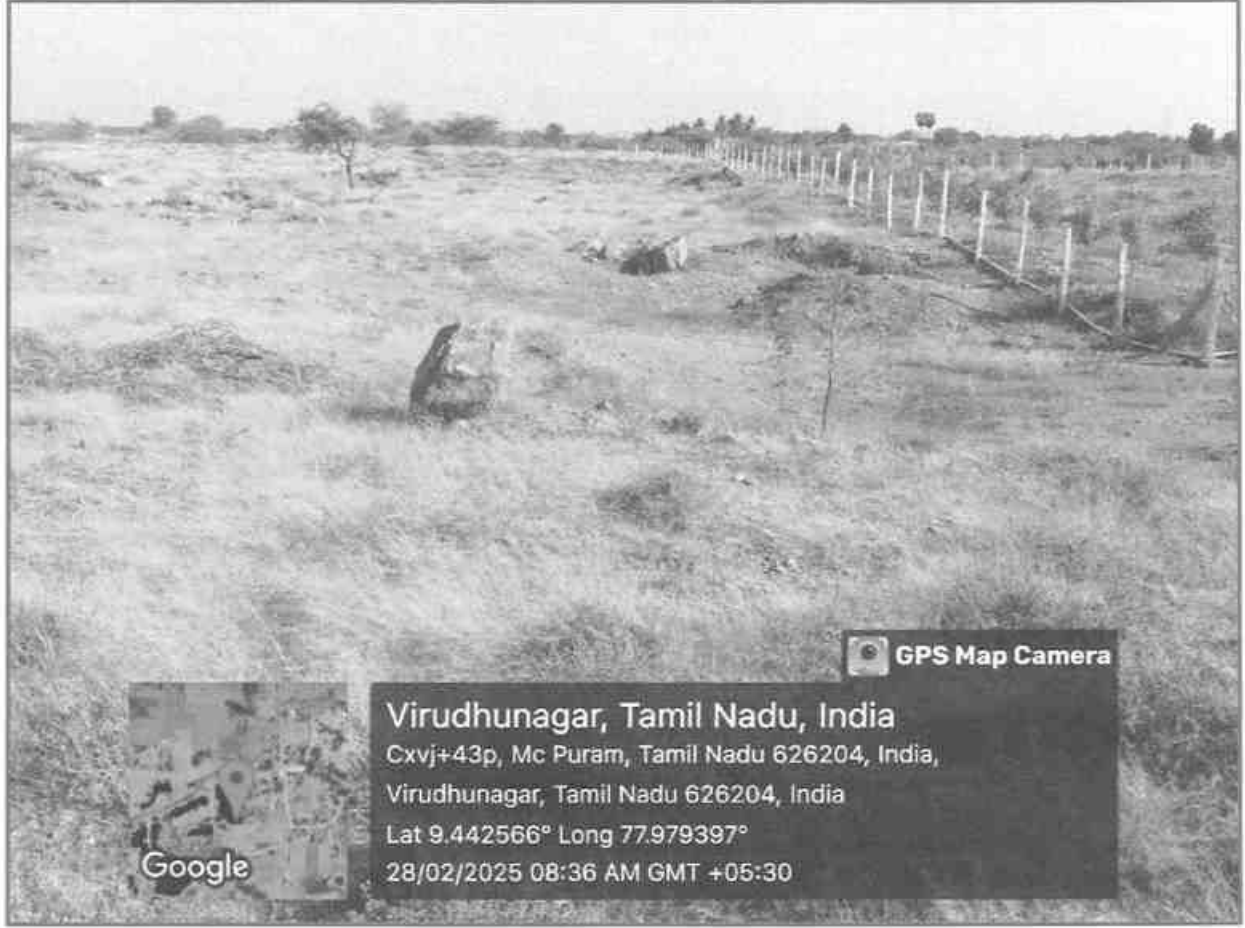
PLANS & SECTIONS ARE PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT :-

R. GURURAMACHANDRAN, M.E.
Qualified Person
(RQP / MAS / 224 / 2010/61)



ANNEXURE – VII
VAO LETTER

TOPOGRAPHICAL VIEW OF THE PROPOSED ROUGH STONE & GRAVEL QUARRY SITE
of Thiru.S.Krishnasamy, Kottaiyur Village, Virudhunagar Taluk & District.

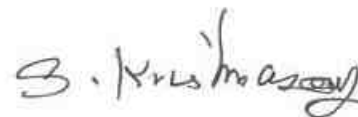


Name of the Applicant : Thiru.S.Krishnasamy, S/o.Singadurai,
Address of applicant : D.No.3/10, East Street,
Kalaperumalpatti Village & Post-626204,
Virudhunagar District.

LOCATION DETAILS :

Extent : 1.31.00 Hectares
Survey Nos. : 11/2B1, 11/2B2 & 14/2
Village : Kottaiyur
Taluk : Virudhunagar
District : Virudhunagar
State : Tamil Nadu.


Signature with seal
Village Administrative Officer.
கிராம நிர்வாக அலுவலர்
கோட்டையூர்
விருதுநகர் வட்டம்


Signature of the Applicant

சின்னம்.

விருதுநகரப்பட்டம் விருதுநகர் வட்டம் உச்சநீரகப்
பிரதமன் கோட்டையார் கிராமத்தின் அண்டைப்பட்டம்
சென் 1926, ஸ்ரீரம் பட்டம் சென் 747 ல் 2ம்
480000ன் 11/2B1 அளவீடு 0.49.53,
480000ன் 11/2B2 அளவீடு 0.40.47
480000ன் 14/2 அளவீடு 0.41.0 சதுர
நிலங்கம் கிழக்கேயுள்ள பண்ணை கிழக்கேயுள்ள
சென் பார் பெயரில் கிராமம் கிணத்தின் தாக்கீதாதி
2ம் பார். மேற்படி இடங்களைச் சிறுநிலம்
சிறுநிலம் 300 மீட்டர் சிறுநிலம் கிராமத்தின்
ஸ்ரீரம் கோட்டைக்குள் பார்நிலம் ஸ்ரீரம் புத்தாண்டி
கிணத்தின் கிராமம் கிணம் சென் கிராமம்
கிராமம் சென் கிணம் சென் பண்ணை கிராமம்
சென் கிராமம்.

சின்னம்
18/12/2015
கிராம நிர்வாக அலுவலர்
கோட்டையார்
விருதுநகர் வட்டம்

Srinivasan

ANNEXURE – VIII
BLASTING AGREEMENT



தமிழ்நாடு தமில்நாடு TAMILNADU

18/03/2025 SRIMANGALA SUNDARI EXPLOSIN
SIVANDIPPATTI

AW 513508

M. Jeyasankari, MCA.,
SRO STAMP VENDOR
KOVILPATTI, L.No: 11/2021

AGREEMENT

Sri Mangala sundari Explsoives, 105/2.Mudukkalan kulam Road, Sivanthipatti Village, Mudukkalan kulam post, Sivanthipatti – 628720, Kovilpatti Taluk, Thoothukudi District having Explosive License No. E/SC/ TN/ 22/33/ E10121 and E/ HQ /TN22/ 175/E43562 and explosive magazine situated at Sivanthipatti village here after referred as dealer of explosives.

And

Thiru.S.Krishna samy S/o Thiru.Singadurai, D.No.3/10 East Street, Kala perumal patti village, Virudhunagar Taluk, Virudhunagar district, Tamilnadu (here after called the owner of quarry)

Whereas the owner of the quarry having Rc No.KV1/567/ 2023 - Mineral - 14/03/2025, quarry survey No.11/2B1 (0.49.53), 11/2B2 (0.40.47), 14/2 (0.41.00) total 1.31.00 Hec, the survey numbers are within Kottaiyur Village, Virudhunagar Taluk & District.

And whereas the dealer of explosives have agree to carry out the blasting operation with skillful short firer with in valid date.

For Sri Mangala Sundari Explosives

K. Balaji

Partner

S. Krishna samy

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

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

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

SIGNED BY BOTH PARTIES

PARTY 1 :

For Sri Mangala Sundari Explosives,

For Sri Mangala Sundari Explosives

K. Baskar

Partner

PARTY 2 :

For Thiru.S.Krishna samy avl,

S. Krishna samy

SIGNATURE

WITNESS:

1. K-Baskar

2. K.B. S/o K. Baskar,
New road, Kovilpatti
9994097288

अनुज्ञप्ति प्रारूप एल. ई.-3 | LICENCE FORM LE-3

(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।)

(See article 3(a) to (d) of Part I of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1,2,3,4,5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने के लिए अनुज्ञप्ति

Licence to possess : (c) for use, explosives of class 1, 2,3,4,5,6 or 7 in a magazine

अनुज्ञप्ति सं. (Licence No.) : E/SC/TN/22/33(E10121)

वार्षिक फीस रूप (Annual Fee Rs): 6600/-

1. Licence is hereby granted to

M/s.MANGALA SUNDARI EXPLOSIVES (अधिभोगी / Occupier : K.B.Murali Krishnan), 105/2,Mudukalankulam road, Sivanthipatti village ,Vijayapuri post, Town/Village - Sivanthipatti, District-THOOTHUKKUDI, State-Tamil Nadu, Pincode - 628501



को अनुज्ञप्ति अनुदत्त की जाती है।

2. अनुज्ञप्तिधारी की प्रारिथिति | Status of licensee : **Partnership Firm**

3. अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमान्य है।

possess for use of **Nitrate Mixture, Detonators, Safety Fuse, Detonating Fuse, -** के उपयोग के लिए

Licence is valid only for the following purpose:

4. अनुज्ञप्ति 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	1500 Kg.
2.	Detonators	6.3	0	30000 Nos.
3.	Safety Fuse	6.1	0	10000 Mtrs
4.	Detonating Fuse	6.2	0	30000 Mtrs

(ख) किसी एक कैलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञप्ति के लिए]

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

15 times as above.

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

रेखाचित्र क्र. (Drawing No.) E/SC/TN/22/33(E10121)

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

दिनांक (Dated) 17/11/1999

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

Survey No(s). 122/5, ग्राम (Town/Village) : **Sivanthipatti, Kovilpatti taluk**

जिला (District)

THOOTHUKKUDI

दूरभाष (Phone)

राज्य (State)

Tamil Nadu

ई. मेल (E-Mail)

पिनकोड (Pincode)

फैक्स (Fax)

7. अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्भूत हैं।

The licensed premises consist of following facilities:

Magazine for High Explosives, Detonators & lobby

8. अनुज्ञप्ति 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.

1. 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.

2. अनुज्ञप्ति प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञप्ति की शर्तें और अतिरिक्त शर्तें।

Conditions and Additional Conditions of this licence signed by the licensing authority.

3. दूरी प्रारूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञप्ति तारीख **31 मार्च 2001** तक विधिमान्य रहेगी। This licence shall remain valid till **31st day of March 2001**.

यह अनुज्ञप्ति, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपवर्णित इस अनुज्ञप्ति की शर्तों का अधिकमण करने या यदि अनुज्ञप्त परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिबंधित 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 - 17/11/1999

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

Amendments :

Change in Authorized Signatory/Occupier/Partners/Directors dated : 05/03/2024

नवीनीकरण के पृष्ठांकन के लिए स्थान

Space for Endorsement of Renewal

नवीकरण की तारीख
Date of Renewal

समाप्ति की तारीख
Date of Expiry

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

05/03/2024

31/03/2029

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.

S. Krishnasamy

Digitally signed by Dr T L THANULINGAM

Reason: Licence No. : E/SC/TN/22/33

Location: Chennai [E10121]

Date: 05.03.2024 17:10:55 IST

अनुज्ञप्ति प्रारूप एल.ई.-3 | LICENCE FORM LE-3

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

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

अनुज्ञप्ति सं. (Licence No.): E/HQ/TN/22/175(E43562)

वार्षिक फीस रुपये (Annual Fee Rs): 8700/-

1. Licence is hereby granted to

M/s. Sri Mangala Sundari Explosives (अधिभोगी / Occupier : K.B.Murali Krishnan), No. 85, New road, Town/Village - Kovilpatti, District-THOOTHUKKUDI, State-Tamil Nadu, Pincode - 628501



को अनुज्ञप्ति अनुदत्त की जाती है।

2. अनुज्ञप्तिधारी की प्राप्ति | Status of licensee : **Partnership Firm**

3. अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमन्य है।

Licence is valid only for the following purpose.

possess for use of **Nitrate Mixture, Safety Fuse, Detonating Fuse, Detonators**, - के उपयोग के लिए

4. अनुज्ञप्ति विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमन्य है।

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

क्र. Sr. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1.	Nitrate Mixture	2.0	0	2000 Kg.
2.	Safety Fuse	6.1	0	25000 Mtrs
3.	Detonating Fuse	6.2	0	100000 Mtrs
4.	Detonators	6.3	0	44000 Nos.

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

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

**15 times
as above.**

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

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

रेखाचित्र क्र. (Drawing No.) E/HQ/TN/22/175(E43562)

दिनांक (Dated) 08/07/2009

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

Survey No(s). 123/3-B, ग्राम (Town/Village) : Sivanthipatti Village

जिला (District)	THOOTHUKKUDI	पुलिस थाना (Police Station) : Kopampatti	राज्य (State)	Tamil Nadu	पिनकोड (Pincode)	628501
दूरभाष (Phone)		ई.मेल (E-Mail)			फैक्स (Fax)	

7. अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट हैं।

The licensed premises consist of following facilities:

: a main high explosives storage room, a lobby and a detonators storage room

8. अनुज्ञप्ति 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.

1. 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.

2. अनुज्ञप्ति प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञप्ति की शर्तों और अतिरिक्त शर्तों।

Conditions and Additional Conditions of this licence signed by the licensing authority.

3. दूरी प्रारूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञप्ति तारीख **31 मार्च 2014** तक विधिमन्य रहेगी। This licence shall remain valid till **31st day of March 2014**.

यह अनुज्ञप्ति, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपवर्णित इस अनुज्ञप्ति की शर्तों का अधिकमाण करने या यदि अनुज्ञप्त परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिबंधित 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 - 08/07/2009

Sd/-

मुख्य विस्फोटक नियंत्रक | Chief Controller of Explosives

Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 18/05/2016
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 14/08/2019
- Change in Authorized Signatory/Occupier/Partners/Directors dated : 05/03/2024
- Change in Postal Address dated : 05/03/2024

नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

नवीनीकरण की तारीख
Date of Renewal

समाप्ति की तारीख
Date of Expiry

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

05/03/2024

31/03/2029

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.

S. Krishnamoorthy

Digitally signed by Dr T L THANULINGAM
Reason: Licence No. : E/HQ/TN/22/175
Location: Chennai [E43562]
Pincode: 628501 Date: 17-03-2024

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

अनुज्ञापि : सडक वैन में विस्फोटकों के परिवहन के लिए
Licence to : transport explosives in a road van



अनुज्ञापि संख्या / Licence No. : E/SC/TN/25/445(E42996)
वार्षिक फीस ररूप / Annual Fee Rs : 2500/-

1. अनुज्ञापि एतदद्वारा जारी की जाती है
Licence is hereby granted to : **Shri K.Baskar Partner- m/s Sri Mangala Sundari Explosives (Occupier : Shri K.Baskar)**
Door No.85, Pudu Road, Kovilpatti Town & Post,
District-TIRUOTHUKKUDI, State-Tamil Nadu, Pincode-628501
2. अनुज्ञापिधारी की प्रास्थिति / Status of licensee : **Individual**
3. सडक वैन की विशिष्टियाँ / Particulars of the road van:

पंजीकरण संख्या / Registration No.	TN 69 T 5604
यान का मेक एवं मॉडल / Make and model of vehicle	MAHINDRA AND MAHINDRA Maxx MAXI TRUCK, 2007
लदान रहित वजन / Unladen weight	1670 Kg(s)
लदान सहित अधिकतम वजन / Maximum laden weight	2300 Kg(s)
परिवहन के लिए अनुज्ञेय विस्फोटकों की अधिकतम मात्रा Maximum quantity of explosives permitted for transport	630 Kg(s)
इंजिन संख्या / Engine No.	GA71G24075
चेसिस संख्या / Chassis No.	MAIRZ2GAA71G37389
अन्य फिटिंग्स का विवरण / Description of Other Fittings	Battery Cut-Off Switch, Spark-Arrestor, Fire-Extinguisher etc.
वाहन के लिए अनुमत्य विस्फोटकों की मात्रा / Quantity of Explosives permitted to carry	630 Kg(s)

4. अनुज्ञाप परिसर निम्नलिखित आरेखण (आरेखणों) के अनुरूप होना चाहिए / The licensed premises shall conform to the following drawing(s):
आरेखण संख्या / Drawing No : E/SC/TN/25/445(E42996) दिनांक / dated : 25/10/2007
5. समय समय पर यथा संशोधित विस्फोटक अधिनियम, 1884 और उसके अधीन बनाए गए विस्फोटक नियम, 2008 के उपबन्धों और शर्तों एवं निम्नलिखित अनुलग्नकों के अधीन अनुज्ञापि प्रदान की जाती है।
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed thereunder and the conditions and the following annexures.
(क) उपर्युक्त क्रम संख्या 4 में यथाकथित सडक वैन का आरेखण / (a) Drawings of the road van as stated in serial no.4 above.
(ख) अनुज्ञापन प्राधिकारी द्वारा हस्ताक्षरित शर्तें / (b) Conditions signed by the licensing authority.
6. यह अनुज्ञापि तारीख **31 मार्च 2009** तक विधिमान्य रहेगी / This licence shall remain valid till **31st day of March 2009**

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

दिनांक / Date: 25/10/2007

Sd/-
संयुक्त मुख्य विस्फोटक नियंत्रक / Joint Chief Controller of Explosives
दक्षिणार्चर, चेन्नै / South Circle, Chennai

अनुज्ञापि के नवीनीकरण हेतु एण्डर्समैंट / Endorsement for renewal of licence

नवीनीकरण की तिथि Date of Renewal	वैधता समाप्ति की तिथि Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर Signature of licensing authority
25/03/2024	31/03/2029	Jt. Chief Controller of Explosives, South Circle, Chennai

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

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

S. Krishnan

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

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



अनुज्ञप्ति संख्या / Licence No. : E/SC/TN/25326(E35705)
वार्षिक फीस रूपरेखा / Annual Fee Rs. 2500/-

1. अनुज्ञप्ति एतद्वारा जारी की जाती है
Licence is hereby granted to : **M/S SRI MANGALA SUNDARI EXPLOSIVES (Occupier : Sh. K. Baskar)**
No.85, New Road, Kovilpatti,
District-THOOTHUKKUDI, State-Tamil Nadu, Pincode-628501
2. अनुज्ञप्तिधारी की प्रास्थिति / Status of licensee : **Partnership Firm**
3. सड़क वैन की विशिष्टियाँ / Particulars of the road van:

पंजीकरण संख्या / Registration No.	TN 69 V 7014
यान का मेक एवं मॉडल / Make and model of vehicle	Mahindra and Mahindra
तदान रहित वजन / Unladen weight	1820 Kg(s)
तदान सहित अधिकतम वजन / Maximum laden weight	2750 Kg(s)
परिवहन के लिए अनुज्ञेय विस्फोटकों की अधिकतम मात्रा Maximum quantity of explosives permitted for transport	930 Kg(s)
इंजिन संख्या / Engine No.	GA51M70441
चैसिस संख्या / Chassis No.	MAIRR2GAA51M5688
अन्य फिटिंग्स का विवरण / Description of Other Fittings	As per enclosed plan
वाहन के लिए अनुमत्य विस्फोटकों की मात्रा / Quantity of Explosives permitted to carry	930 Kg(s)

4. अनुज्ञप्त परिसर निम्नलिखित आरेखण (आरेखणों) के अनुरूप होना चाहिए / The licensed premises shall conform to the following drawing(s):
आरेखण संख्या / Drawing No : E/SC/TN/25326(E35705) दिनांक / dated : 13/03/2006
5. समय समय पर यथा संशोधित विस्फोटक अधिनियम, 1884 और उसके अधीन बनाए गए विस्फोटक नियम, 2008 के उपबन्धों और शर्तों एवं निम्नलिखित अनुलग्नकों के अधीन अनुज्ञप्ति प्रदान की जाती है।
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed thereunder and the conditions and the following annexures...
- (क) उपर्युक्त क्रम संख्या 4 में यथाकथित सड़क वैन का आरेखण / (a) Drawings of the road van as stated in serial no.4 above.
(ख) अनुज्ञापन प्राधिकारी द्वारा हस्ताक्षरित शर्तें / (b) Conditions signed by the licensing authority.
6. यह अनुज्ञप्ति तारीख 31 मार्च 2007 तक विधिमान्य रहेगी / This licence shall remain valid till 31st day of March 2007

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

दिनांक / Date: 13/03/2006

Sd/-
संयुक्त मुख्य विस्फोटक नियंत्रक / Joint Chief Controller of Explosives
दक्षिणांचल, चेन्नै / South Circle, Chennai

अनुज्ञप्ति के नवीनीकरण हेतु पृष्ठान्कन / Endorsement for renewal of licence

नवीनीकरण की तिथि Date of Renewal	वैधता समाप्ति की तिथि Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर Signature of licensing authority
25/03/2024	31/03/2029	R. Chief Controller of Explosives, South Circle, Chennai

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

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

S. Prithvi

Digitally signed by Dr.T.L. THANULINGAM
Reason: Licence No. : E/SC/TN/25326
Location Chennai [E35705]
Date: 2024.03.20 13:50:45 (IST)

अनुज्ञप्ति प्ररूप एल.ई. -10 | Form LE-10

शॉर्ट फायर कर्ता प्रमाण-पत्र | Shot Firer's Certificate

(अनुसूची IV के भाग I का अनुच्छेद 10 देखें | See article 10 of Part I of Schedule IV)

(विस्फोटक नियम, 2008 का नियम 107(5) देखें | see rule 107(5) of Explosives Rules, 2008)

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



संख्या | No.: E/SC/TN/30/2350(E137022)

प्रमाणित किया जाता है कि श्री M. Daniel Raj S/o. P. Muthu Krishnan,

जिनका जन्म 18/05/2001 को हुआ था, जो 11/3, North Street, Karisalkulam, Sivanthipatti, THOOTHUKKUDI, Tamil Nadu - 628502 के निवासी हैं ने उप विस्फोटक नियंत्रक, चेन्नई द्वारा तारीख 19/01/2022 को आयोजित शॉर्ट फायर की परीक्षा तारीख को 19/01/2022 उत्तीर्ण कर ली है और वह विस्फोटक अधिनियम, 1884 और उसके अधीन विरचित नियमों के उपबंधों के अधीन रहते हुए खान अधिनियम, 1952 की परिधि के अधीन आनेवाले खानों से अन्यथा क्षेत्र में नीचे यथा उल्लिखित विस्फोटकों का उपयोग करते हुए विस्फोट प्रचालन करने के लिए प्राधिकृत है।

This is to certify that *Shri M. Daniel Raj S/o. P. Muthu Krishnan,*

born on 18/05/2001, resident of 11/3, North Street, Karisalkulam, Sivanthipatti, THOOTHUKKUDI, Tamil Nadu - 628502 passed the shotfirer's examination held on 19/01/2022 conducted by Dy. Controller of Explosives, Chennai and is authorised to conduct blasting operations as mentioned below using explosives in areas other than mines coming under the purview of the Mines Act 1952, subject to the provisions of the Explosives Act, 1884 and the rules framed thereunder.

विस्फोट करने के प्राधिकृत वर्ग, प्रवर्ग और प्रकार :

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

Authorised class, category and type of blasting :

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

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

यह प्रमाणपत्र 31/01/2027 (जारी करने की तारीख से पांच वर्ष) तक विधिमान्य होगा।

This certificate shall remain valid till 31/01/2027 (five years from the date of issue)

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

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

स्थान | Place: चेन्नई | Chennai

दिनांक | Date: 31/01/2022

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives

दक्षिणांचल, चेन्नई | South Circle, Chennai

पुनर्विधिमान्यकरण के लिए प्रमाणन | Endorsement for revalidation

पुनर्विधिमान्यकरण की तारीख
Date of Revalidationसमाप्ति की तिथि
Date of Expiryअनुज्ञप्ति प्राधिकारी के हस्ताक्षर
Signature of licensing authority

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
NABET CERTIFICATE

National Accreditation Board for Education and Training

Certificate of Accreditation

Eco Tech Labs Pvt. Ltd., Chennai

No.48, 2nd Main Road, Ram Nagar, South Extension, Pallikaranai, Chennai – 600100

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

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals including opencast mining only	1	1 (a) (i)	A
2.	Thermal power plants	4	1 (d)	A
3.	Metallurgical industries	8	3 (a)	B
4.	Synthetic organic chemicals industry	21	5 (f)	A
5.	Airports	29	7 (a)	A
6.	Industrial estates/ parks/ complexes/ Areas, export processing zones (EPZs), Special economic zones (SEZs), Biotech parks, Leather complexes	31	7 (c)	A
7.	Building and construction projects	38	8 (a)	B
8.	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated May 09, 2025 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/25/3622 dated May 19, 2025. The accreditation needs to be renewed before the expiry date by Eco Tech Labs Pvt. Ltd., Chennai following due process of assessment.

Valid up to
April 10, 2028

Issue Date
May 19, 2025



Certificate No.
NABET/EIA/25-28/RA 0400

Prof (Dr) Varinder S Kanwar
(CEO – NABET)

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