

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT`
AND
ENVIRONMENT MANAGEMENT PLAN**

**FOR OBTAINING
Environmental Clearance under EIA Notification – 2006**

Schedule Sl. No. 1 (a) (i): Mining Project

“B1” CATEGORY – MINOR MINERAL – CLUSTER – NON-FOREST LAND

CLUSTER EXTENT = 11.58.17hectares

At

**Pachapalayam Village, Suler Taluk,
Coimbatore District, Tamil Nadu**

ToR Identification No. TO24B0108TN5989504N, dated 11.01.2025., File No.II549

NAME AND ADDRESS OF THE PROPOSED PROJECT PROPONENT

Name and Address	Extent & S.F.No.	Mineral Production
Thiru. V. Shanmugam S/o. M.Velusamy Gounder, 1/240, M.V.S.Thottam, Eachaneri, Coimbatore District - 641107	1.98.0Ha & S.F.No. 238/1	Rough Stone:235982m ³ Gravel: 24568m ³

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS



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Valid till: 31.12.2026



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Baseline study period- December 2024 through February 2025

MARCH-2025



GEO TECHNICAL MINING SOLUTIONS

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CHAPTER I

INTRODUCTION

1.0 PREAMBLE

Environmental Impact Assessment (EIA) study is a process used to identify the environmental, social and economic impacts of a project prior to decision-making. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are considered during the project designing. According to the Ministry of Environment and Forests, Govt. of India, EIA notification S.O. 1533 (E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14th August 2018, all the mining projects are broadly classified into two categories, i.e., category A and category B, based on the spatial extent of the projects. The category B projects are further divided in to B1 and B2 on the basis of the guidelines issued of the Ministry of Environment and Forests. All mining projects included in category B1 require an EIA report for obtaining environmental clearance from the State Environment Impact Assessment Authority (SEIAA). As the proposed project falls within the cluster of quarries of overall extent of greater than 5 ha and less than 50 ha in the case of non-coal mine lease, the proposed project falls under the category B1 and the project requires preparation and submission of an EIA report after public consultation to SEIAA for obtaining environmental clearance as per the order dated 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018.

In compliance with ToR obtained vide TO24B0108TN5989504N, dated 11.01.2025, File No.11549, this EIA report has been prepared for the project proponent, V.Shanmugam applied for rough stone and gravel quarry lease in the Patta land falling in S.F.No.238/1 over an extent of 1.98.0ha in Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu. This EIA report takes into account the rough stone and gravel quarries within the cluster of 500 m radius from the periphery of the proposed project site. The cluster contains five proposed projects known as P1, P2, P3, P4, P5 and one existing quarry known E1. All the projects mentioned above have been taken for cluster extent calculation as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016. The total extent of all the quarries is **11.58.17ha**, also known as the cluster extent. The quarries involved in the calculation of cluster extent are shown in Figure 1.1.

Table 1.1 Details of Quarries within the cluster area of 500 m radius

Proposed Quarries					
Code	Name of the Owner	S.F. No	Village	Extent (ha)	Status
P1	V.Shanmugam	238/1	Pachapalayam	1.98.0	Applied Area
P2	Tvl.Gomuki Blue Metals L.L.P.	238/2(P), 239/1B, 239/2B, 240/2B(P), 241/1(P), 241/2(P), 241/3(P), 241/4(P),	Pachapalayam	2.47.9	Pending with SEIAA
P3	M.Selvathal	279/2C1B	Pachapalayam	1.13.70	Pending with SEIAA
P4	R.S.Senthilkumar	285/3 & 286/2	Pachapalayam	3.15.0	Precise area communicated
P5	A.Vijayakumar	272/2A, 272/2B, 272/3A2	Pachapalayam	0.80.57	Land availability report awaited
Existing Quarries					
E1	S.G.Aakash Arumugam	273/2A & 281/2	Pachapalayam	2.03.0	27.06.2024 to 26.06.2029
Total Cluster Extent				11.58.17	---

Source:

AD Letter: Rc.No.973/Mines/2023, Dated:25.10.2024.

Note: Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016.

1.1 PURPOSE OF THE REPORT

The purpose of the report is to study baseline environmental conditions in and around the proposed project area for the period of **December 2024 through February 2025** according to the provisions of MoEF & CC Office Memorandum dated 29.08.2017 and MoEF & CC Notification, S.O. 996 (E) dated 10.04.2015, to analyse impacts and provide mitigation measures.

1.2 ENVIRONMENTAL CLEARANCE

The Environmental Clearance process for the project will comprise of four stages. These stages are screening, scoping, public consultation & appraisal.

Screening

Screening is the first stage of the EIA process. In this stage, the State level Expert Appraisal Committee (SEAC) examined the application of EC made by the proponent in Form 1 through online (Proposal No. SIA/TN/MIN/511756/2024, Dated.04.12.2024) and decided that the project requires detailed environmental studies for the preparation of EIA report. Therefore, the proponent submitted application for Terms of Reference (ToR) on 06.12.2024.

Scoping

The proposal was placed in the 523th meeting of SEAC on 27.12.2024. Based on the presentation and documents furnished by the project proponent, SEAC decided to recommend the proposal for the grant of Terms of Reference (ToR) and the recommendation for ToR is subjected to the outcome of the Honorable NGT, Principal Bench, New Delhi (O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No. 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No.384/2017).

Public Consultation

In this stage, an application along with the draft of EIA and EMP report will be made to the Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing ensuring public participation at the project site or in its close proximity in the district. During public hearing, an opportunity will be given to the people living nearby the project site to express their opinions about the impact of the proposed project on the environment. The details of the public hearing will be submitted during final EIA report.

Appraisal

In this stage, an application along with final EIA report including the outcome of the public consultations will be made to the SEIAA. The application thus made will be scrutinized by the SEAC. Then, the SEAC will make recommendations to grant EC or reject the application to the SEIAA.

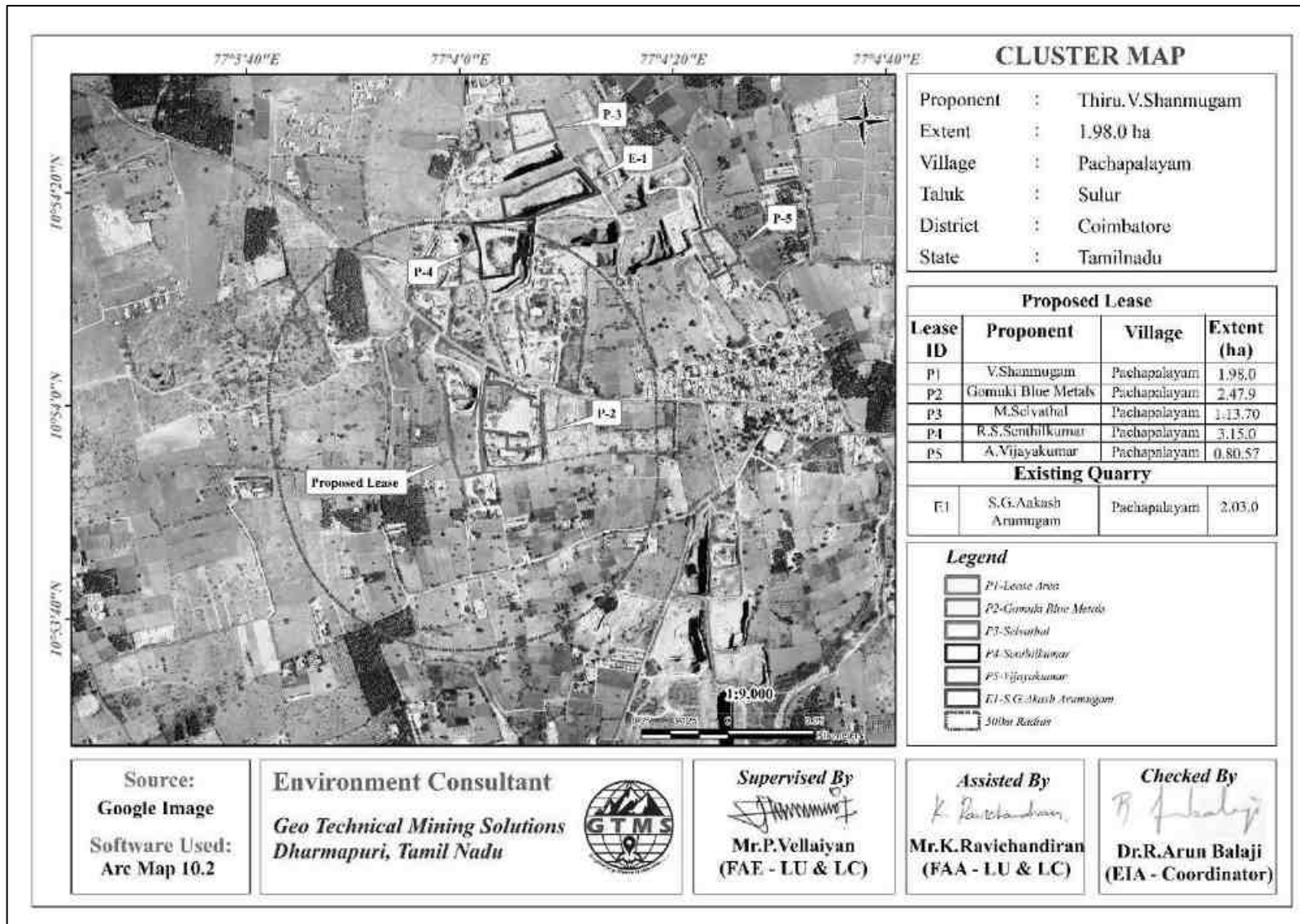


Figure 1.1 Location of Proposed and Existing Rough Stone and Gravel Quarry in the Cluster of 500 m Radius

1.3 TERMS OF REFERENCE (ToR)

The SEAC framed a comprehensive Terms of Reference (ToR) based on the information provided in the Form 1 and information collected from the proposed project site visit and issued ToR to the proponent vide TO24B0108TN5989504N dated:11.01.2025 for the preparation of an EIA report.

1.4 POST ENVIRONMENT CLEARANCE MONITORING

For category B projects, irrespective of its clearance by MoEF/SEIAA, the project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and the details of MoEF website where it is displayed. After obtaining EC, the project proponent will submit a half-yearly compliance report of stipulated environmental clearance terms and conditions to MoEF & CC Regional office & SEIAA on 1st June and 1st December of every year.

1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project or activity on application by the transferor or the transferee with a written “no objection” by the transferor, to, and by the regulatory authority concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period (EIA Guidance Manual for Mining of Minerals, 2010).

1.6 IDENTIFICATION OF THE PROJECT PROPONENT

The profile of the project proponent who has involved in this quarrying project has been given in Table 1.2.

Table 1.2 Details of Project Proponent

Name of the Project Proponent	V. Shanmugam
Address	S/o. M.Velusamy Gounder, 1/240, M.V.S.Thottam, Eachaneri, Coimbatore District - 641107
Status	Proprietor

1.7 BRIEF DESCRIPTION OF THE PROJECT

The proposed project deals with excavation of rough stone which is primarily used in construction projects. The method adopted for rough stone and gravel excavation is open cast semi mechanized method involving formation of benches with 5m height and 5m width. The proposed project site is located in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu. Some of the important features of the proposed project have been provided in Table 1.3.

Table 1.3 Salient Features of the Proposed Project

Name of the Quarry	Mr.V.Shanmugam, rough stone and gravel quarry		
Toposheet No	58-F/1		
Latitude	10°53'53.31"N to 10°54'0.96"N		
Longitude	77°3'58.55"E to 77°4'2.15"E		
Highest Elevation	422m AMSL		
Proposed Depth as per ToR	35m BGL		
Pit Dimension	Length (m)	Width (m)	Depth (m)
	177	74	35
Geological Resources	Rough Stone in m ³		Gravel in m ³
	555093		30794
Mineable Reserves	Rough Stone in m ³		Gravel in m ³
	235982		24568
Proposed reserves for five years	Rough Stone in m ³		Gravel in m ³
	235982		24568
Method of Mining	Open-Cast Semi Mechanized mining		
Topography	Flat Terrain		
Machinery proposed	Jack Hammer	3	
	Excavator	1	
	Compressor	2	
	Tipper	9	
Blasting Method	Quarrying Operation is proposed to done with conjunction with conventional method using jack hammer drilling and blasting for shattering effect and loosen the rough stone.		
Proposed Manpower Deployment	20 Nos		
Project Cost	Rs.1,31,08,000 /-		
CER Cost	Rs.5,00,000/-		
Proposed Water Requirement	3.5 KLD		

Source: Approved Mining Plan Book

1.8 SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact of the quarries in the cluster on the study area and formulate the effective mitigation measures for each individual lease. A detailed account of the emission sources, emissions control equipment, background air quality levels, meteorological measurements, dispersion model and all other aspects of pollution like effluent discharge, and dust generation has been provided in this report. The baseline monitoring study has been carried out during the period of December 2024 to February 2025 for various environmental components such as land, soil, air, water, noise, ecology, etc. to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project. The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of sample analysis, etc., are given in Table 3.1 in chapter III.

1.9 Legislation Applicable to Mining of Mineral Sector

A few important legislations are given below:

- ❖ The Mines Act, 1952.
- ❖ The Mines and Mineral (Development and Regulation) Act, 1957.
- ❖ Mines Rules, 1955.
- ❖ Mineral Concession Rules, 1960
- ❖ Mineral Conservation and Development Rules, 1988.
- ❖ State Minor Mineral Concession Rules, 1960.
- ❖ Granite Conservation and Development Rule, 1999.
- ❖ The Water (Prevention and Control of pollution) Act, 1974.
- ❖ The Air (Prevention and Control of pollution) Act, 1981.
- ❖ The Environment (Protection) Act, 1986.
- ❖ The Forest (Conservation) Act, 1988.
- ❖ The Wildlife (Protection) Act, 1972.

Note: As per the OM vide F.No.IA3-22/10/22-IA.III(E177258), the baseline monitoring data were collected during the period of October-December 2023 and utilized for preparation of this EIA report.

CHAPTER II

PROJECT DESCRIPTION

2.0 GENERAL INTRODUCTION

The open cast mining method, also known as open-pit mining has been proposed to extract the mineral deposit. It is the most commonly used surface mining method all over the world and is generally suitable for mining low-grade mineral deposits that are found close to the surface of the earth and distributed uniformly over a large area. Open pits are also termed quarries when the pits are used for the extraction of building materials and dimension stones.

Opencast mining starts with the development of benches, the widths of which will be determined in such a way to accommodate the use of heavy machinery. The walls of open pits will be dug at an angle that will be decided based on well-established industry standards to provide safety. In some cases where the walls are composed of weak material such as soil and highly weathered rocks, dewatering holes will be drilled horizontally to relieve the water pressure to avoid wall collapse inside the mine site.

The required mine-related infrastructures will be established close to the open pit. The mining infrastructures may include an administration building, a maintenance garage, and a warehouse. The materials mined from open pits will be brought to the surface using trucks. The waste rocks will be piled up in a suitable location, usually close to the open pit. The structure produced by the waste rock pile is known as a waste dump. The dimension of the waste dump will be determined based on industrial safety standards to prevent the rocks from falling into the surrounding area.

2.1 DESCRIPTION OF THE PROJECT

The proponent **V.Shanmugam** is involved in the undertaking of establishment, construction, development, and closure of opencast mines. He, through the exploration phase, identified the proposed project site as the one that has a great potential of producing an economically viable quantity of rough stone. Therefore, the proponent had applied for quarry lease on 11.09.2023 to extract rough stone and gravel. The precise area communication letter was issued by Department of Geology and Mining, Coimbatore vide Rc.No.973/Mines/2023, dated:03.10.2024. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Deputy Director Department of Geology and Mining, Coimbatore Rc.No.973/Mines/2023, dated:25.10.2024. The overall view of the project site is shown in Figure 2.1.



Figure 2.1 Overall View of Proposed Project Site

2.2 LOCATION AND ACCESSIBILITY

The proposed quarry project is located in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu as shown in Figure 2.2 & 2.3. The area lies between Latitudes from $10^{\circ}53'53.31''\text{N}$ to $10^{\circ}54'0.96''\text{N}$ and Longitudes from $77^{\circ}3'58.55''\text{E}$ to $77^{\circ}4'2.15''\text{E}$. The maximum altitude of the project area is 422 m AMSL. Accessibility details to the proposed project site have been given in Table 2.1.

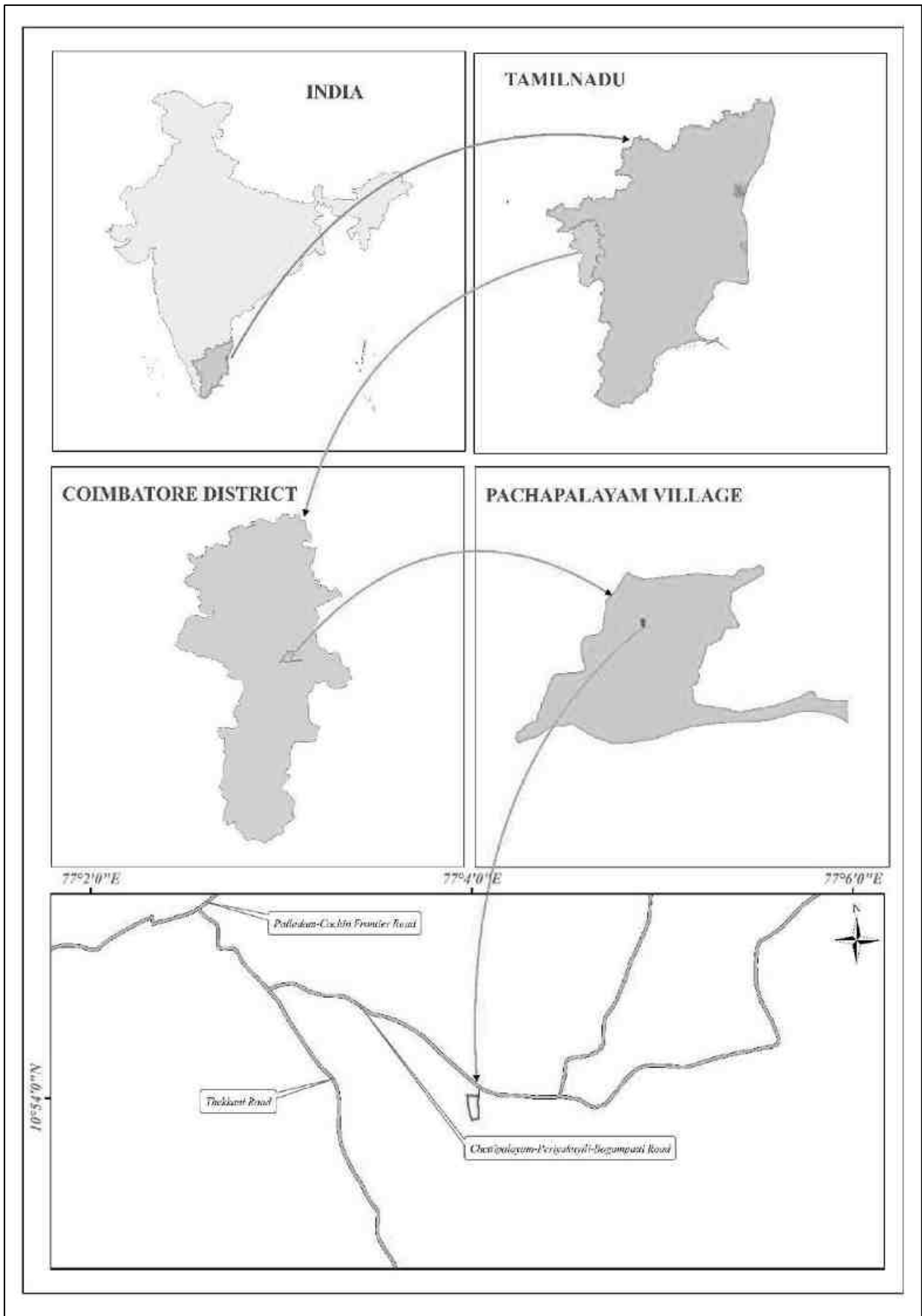


Figure 2.2 Key Map Showing Location of Project Site

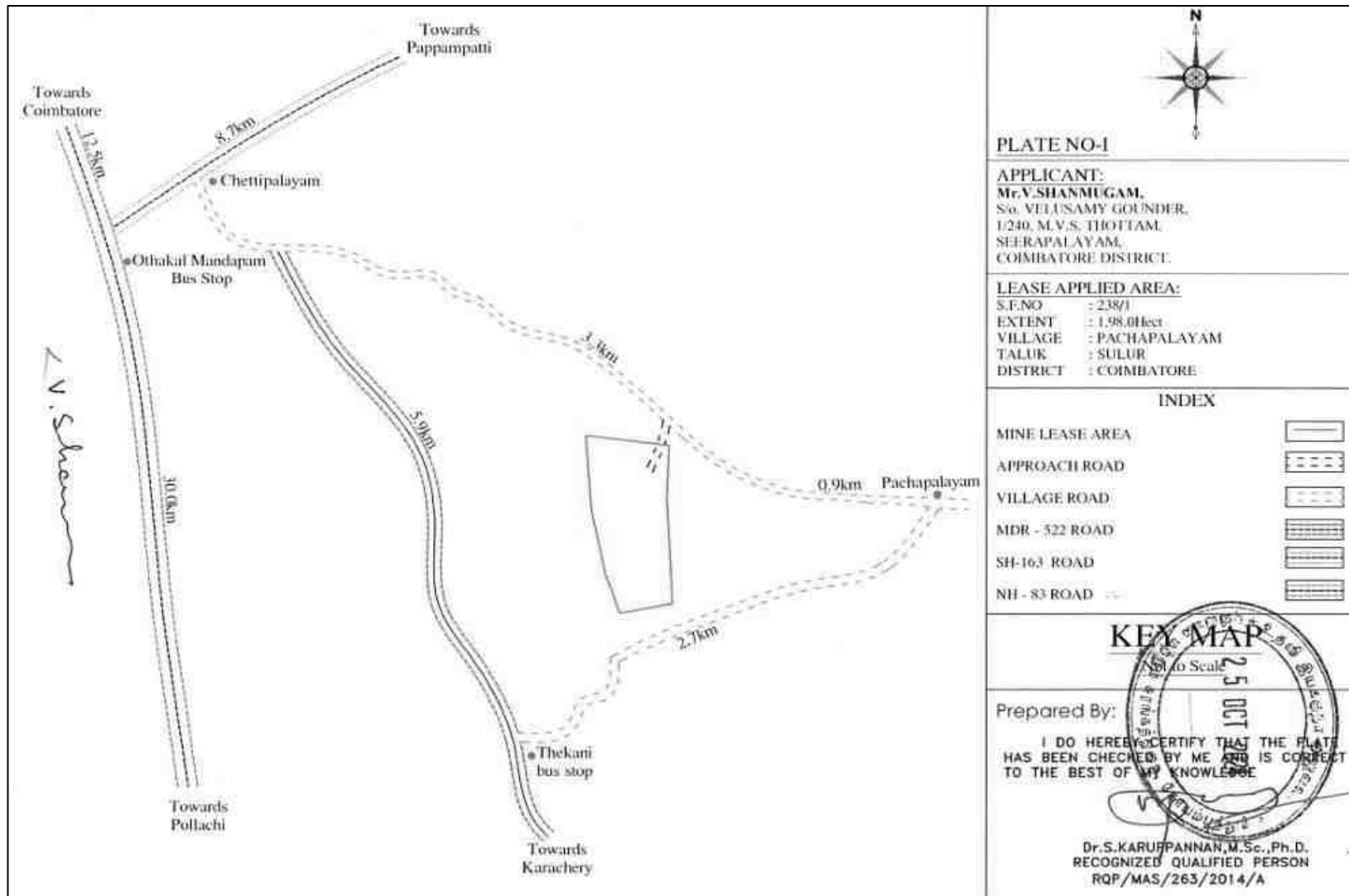


Figure 2.3 Site Connectivity to the Lease Area

Table 2.1 Site Connectivity to the Project Area

Nearest Roadways	Chettipalayam – Perumaikoil road	0.14km NE
	MDR522 Thenkani road	1.22km W
	SH.163 Palladam-Cochin	3.46 km NW
Nearest Town	Chettipalayam	5.29 km NW
Nearest Railway Station	Chettipalayam	4.0 km NW
Nearest Airport	Coimbatore	14.8 km N
Nearest Seaport	Cochin	133 km SW
Nearest Villages	Pachapalayam	0.5 km E
	Thekani	1.5 km S
	Chettipalayam	2.4 km W
	Chinnakuyili	3.5 km N

2.3 LEASEHOLD AREA

- ❖ The extent of the proposed project site is 1.98.0ha.
- ❖ The proposed project is site specific.
- ❖ There is no mineral beneficiation or processing proposed inside the project area.
- ❖ There is no forest land involved in the proposed area and is devoid of major vegetation and trees.

2.3.1 Corner Coordinates

The boundary corner geographic coordinates are given in Table 2.2 and the proposed project site with boundary coordinates has been shown in Figure 2.4

Table 2.2 Corner Coordinates of Proposed Project

Pillar ID	Latitude	Longitude
1	10°54'0.53"N	77°4'1.97"E
2	10°53'58.18"N	77°4'1.93"E
3	10°53'56.97"N	77°4'1.99"E
4	10°53'53.71"N	77°4'2.15"E
5	10°53'53.31"N	77°3'59.98"E
6	10°53'55.00"N	77°3'59.39"E
7	10°53'57.68"N	77°3'58.86"E
8	10°54'0.96"N	77°3'58.55"E

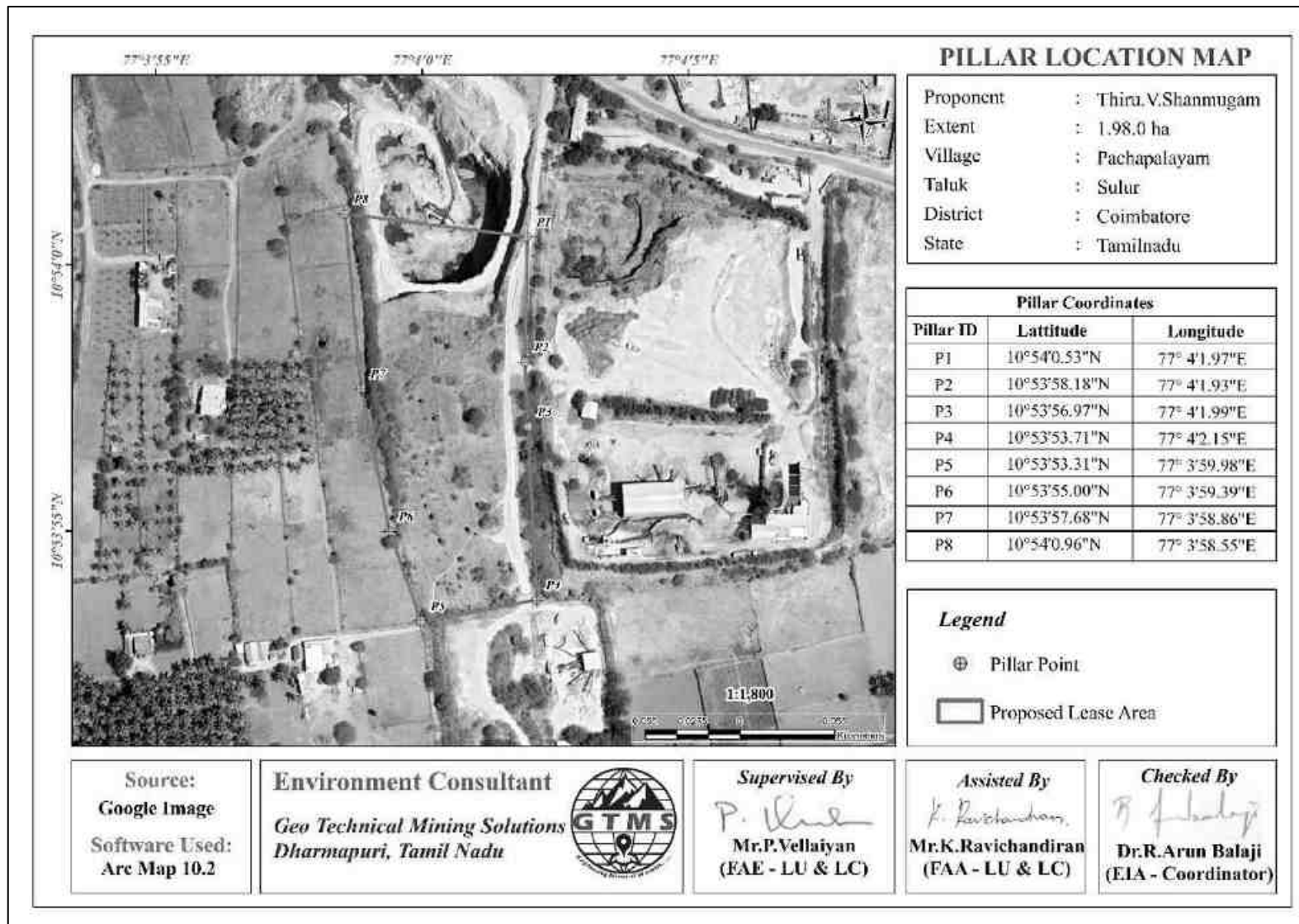


Figure 2.4 Google Earth Image Showing Lease Area with Pillars

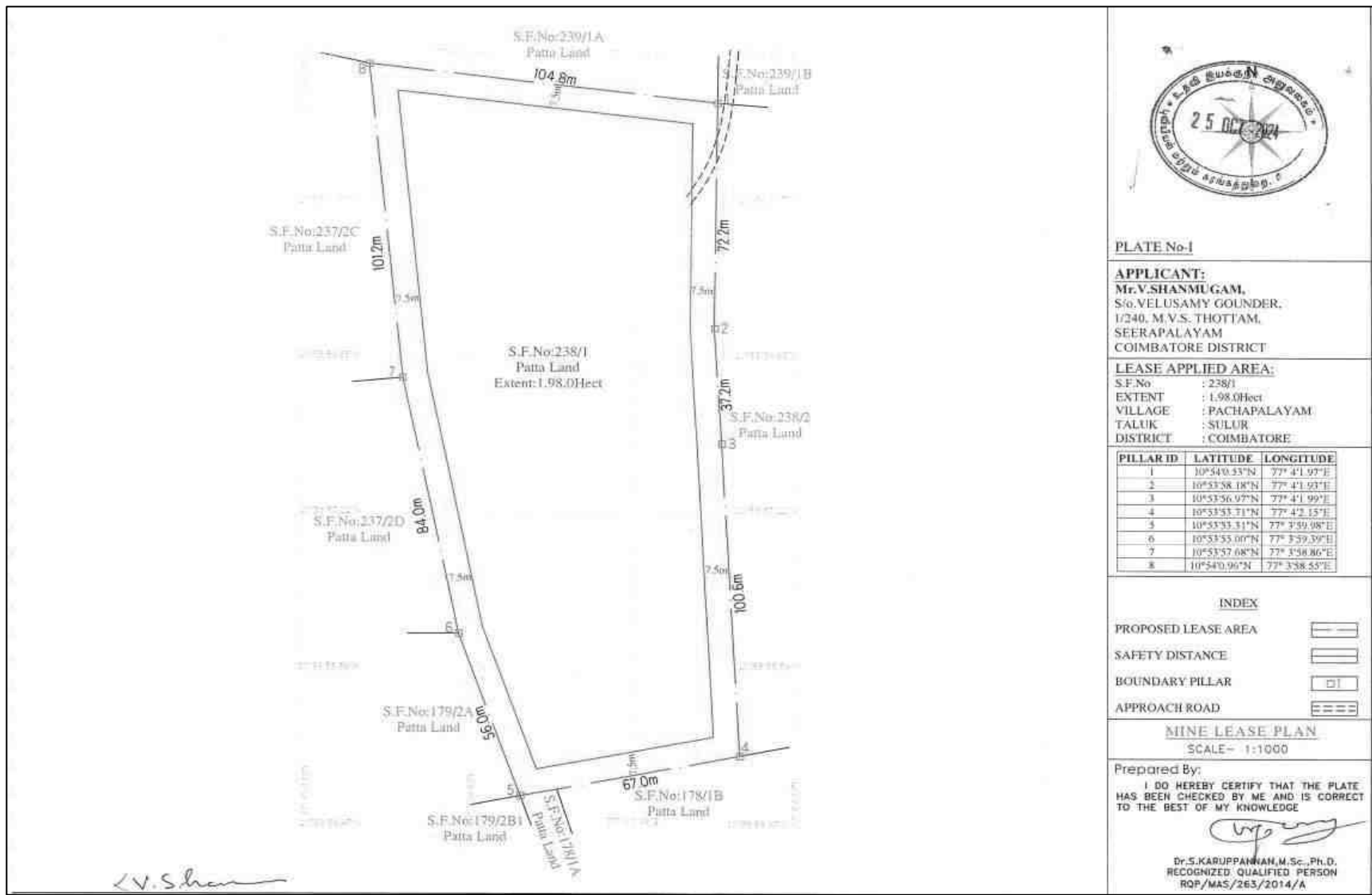


Figure 2.5 Mine Lease Plan

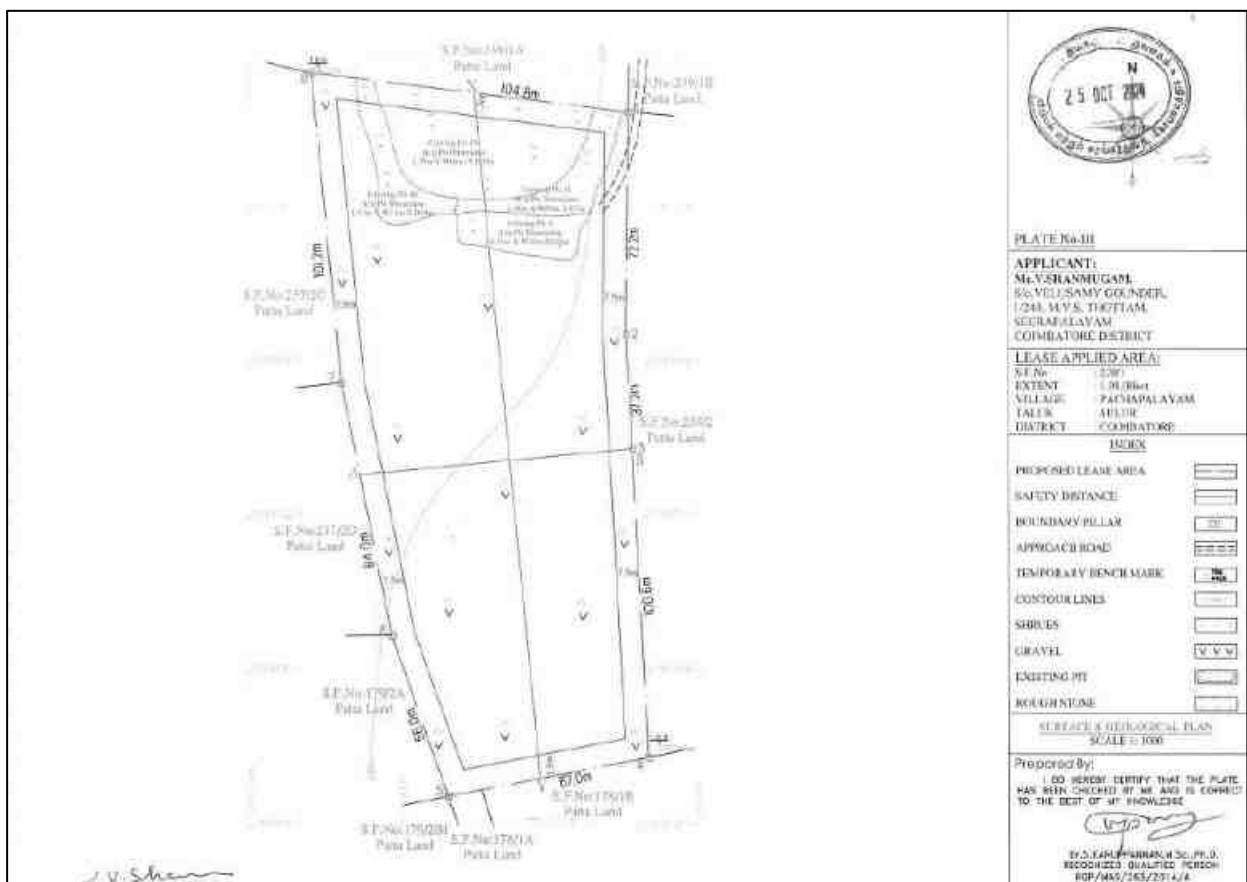
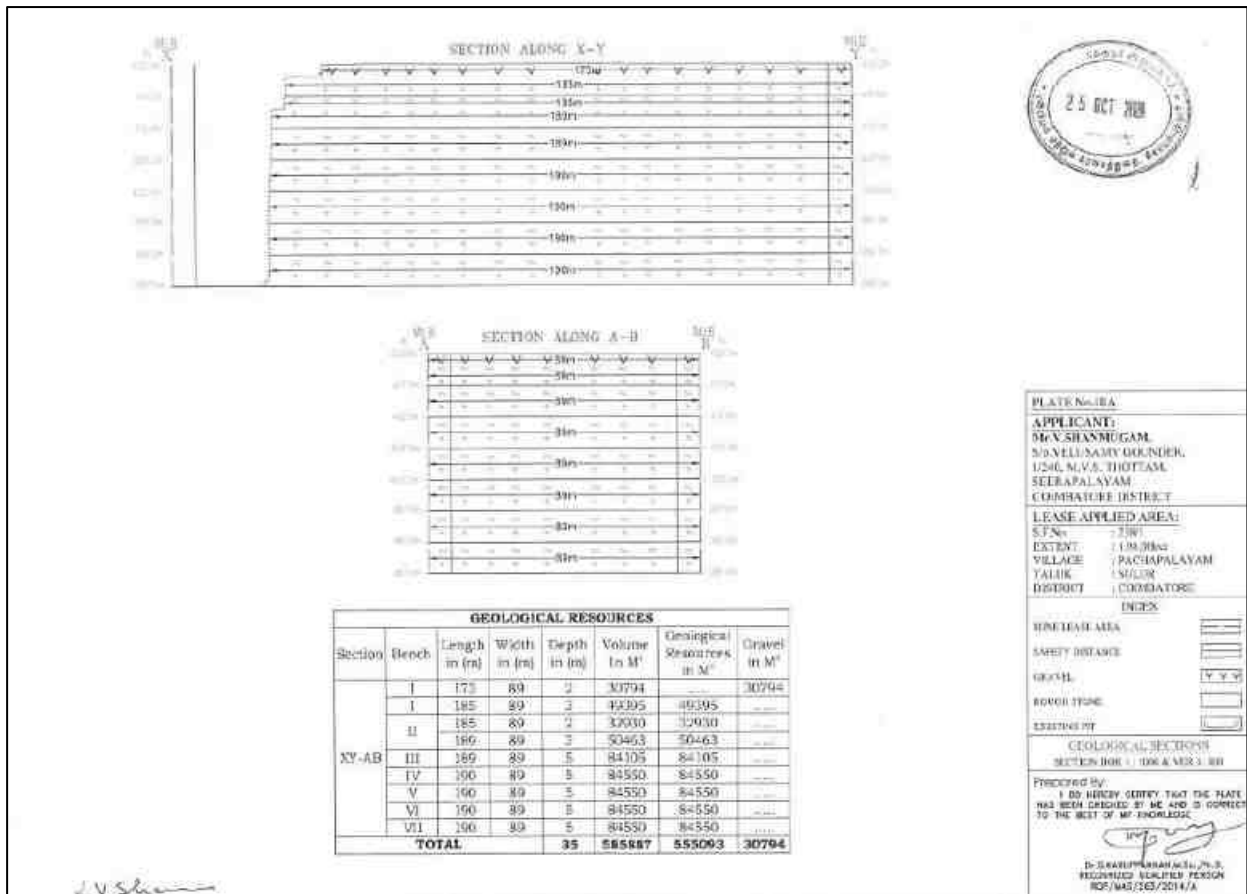


Figure 2.6 Surface and Geological plan and Sections

2.4 GEOLOGY AND GEOMORPHOLOGY

The lease area geologically occurs on Hornblende-Biotite Gneiss which is commercially called as rough stone. In addition, the lease area geomorphologically occurs over Pediment Pediplain Complex.

2.5 QUANTITY OF RESERVES

The resources and reserves of rough stone were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. Based on the availability of geological resources, the mineable reserves are calculated by considering excavation system of bench formation and leaving essential safety distance of 7.5 m and 10 m safety distance as per precise area communication letter and deducting the locked-up reserves during bench formation (also called as Bench Loss). The mineable reserves are calculated up to the depth of 35 m BGL considering there is no waste / overburden / side burden (100% Recovery anticipated) for the proposed project. The plate used for reserve estimation has been shown in Figure 2.6 results of geological resources and reserves have been shown in Table 2.3.

Table 2.3 Estimated Resources and Reserves of the Project

Resource Type	Rough Stone in m³	Gravel in m³
Geological Resource in m ³	555093	30794
Mineable Reserves in m ³	235982	24568
Proposed production for 5 years m ³	235982	24568

Based on the year wise development and production plan and sections, the year wise production results have been given in Table 2.4. & Figure 2.7.

Table 2.4 Year-Wise Production Details

Year	Rough Stone in (m³) / 5 Years	Gravel in (m³) / 3 years
I	51730	8140
II	45472	8288
III	44660	8140
IV	48640	---
V	45480	---
Total	235982	24568

Source: Approved Mining Plan & ToR

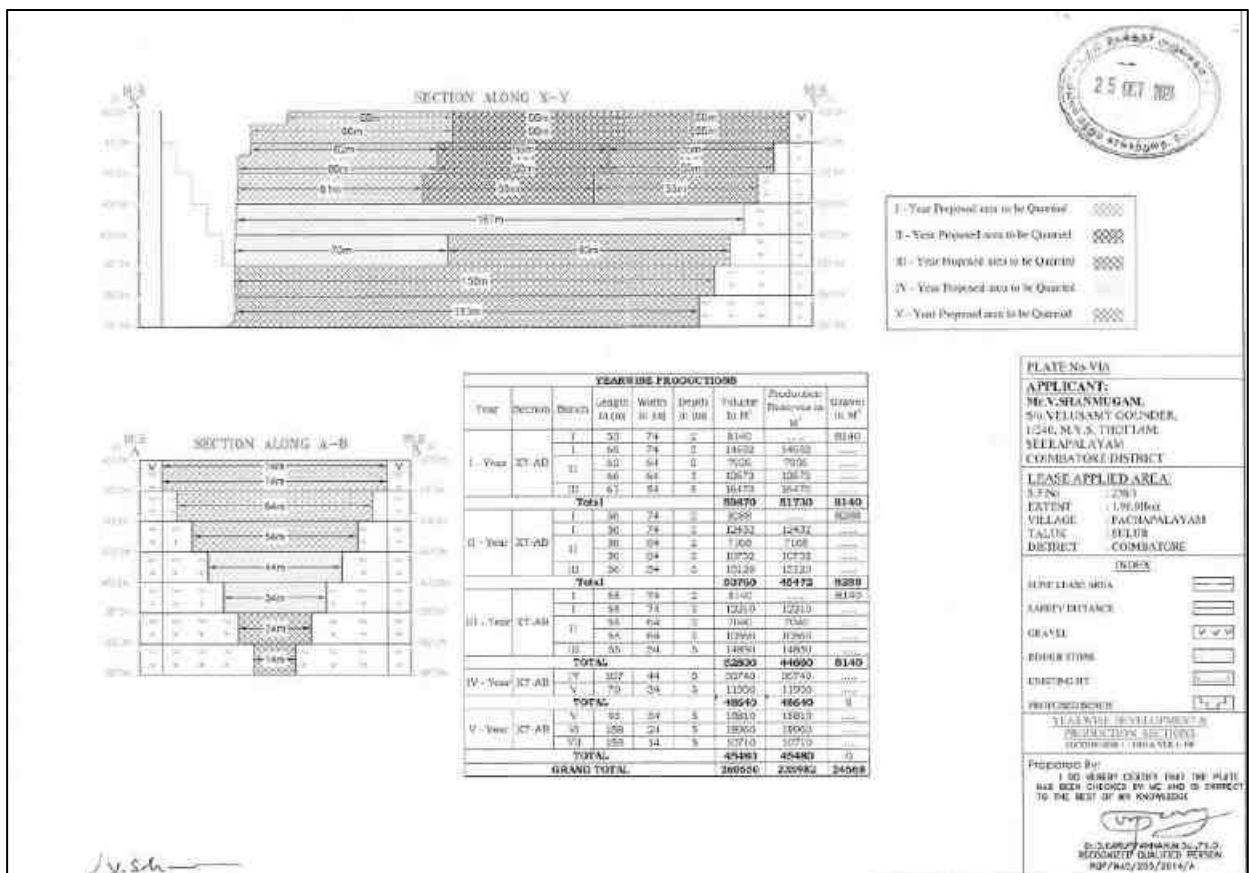
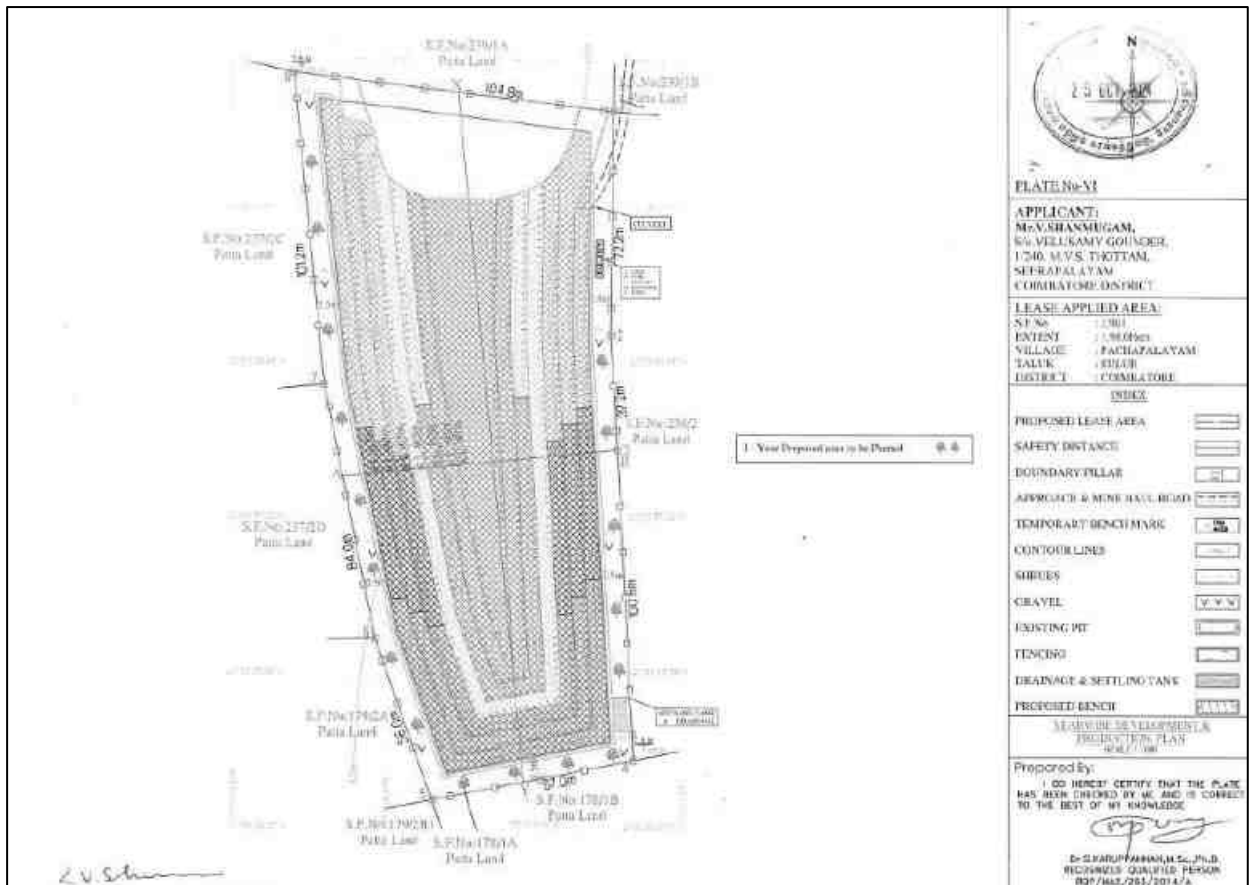


Figure 2.7 Year wise Development and Production Plan and Sections

2.6 MINING METHOD

The Quarrying operation is proposed to be carried out by Open Cast Semi-Mechanized mining method with the bench height and width of 5 m each. The open cast semi-mechanized method involving drilling and blasting is proposed to extract rough stone and gravel. The extracted rough stone will be loaded manually to the trucks for dispatch to the customers. In this project, NONEL blasting will be adopted to extract rough stone.

2.6.1 Conceptual Blasting Design

In this project, NONEL blasting will be employed to win rough stone. This method will involve closed spaced perimeter holes to reduce the overbreak/backbreak on a blast. The objective of the blasting design is to prevent fly rocks from damaging the nearby structures.

Rules of Thumb for Blast Design

Based on practical experience and technical information, a set of rules for blasting have been provided as below ([Chapter8 \(nps.gov\)](#)). These rules will be applied to blast rocks in the proposed project.

Rule 1: The detonation velocity (VOD) of the explosive should be close to the same value of the sonic velocity (VSO) of the rock to be blasted.

The sonic velocity of a rock is considered to be a reliable indicator of its structural integrity and resistance to fragmentation. As the VOD of the explosive approaches close to the VSO of the rock, the blasting would result in relatively smaller size of fragmentation with uniformity. There is no value in using an explosive that has a VOD greatly in excess of the VSO of the rock, since there is little or no improvement in fragmentation above the VSO. When selecting an explosive to match up the VSO of a rock mass, variance of <10% in the velocities is acceptable.

Rule 2: Generally, select the densest explosive possible.

When the density of explosives is higher, the potential energy of the explosives can be greater and the more of it can be placed within a borehole of a given size.

Rule 3: Select explosives according to the characteristics of the rock formation to be blasted.

When planes of separation in the rock are smaller than the degree of fragmentation required, the rock can often be blasted by using lower density and lower detonation velocity explosives.

Rule 4: When using slurry or water gel explosives, always determine the critical temperature below which the explosive will fail to reliably detonate.

Almost all slurry explosives have a critical temperature below which they may not detonate, or may not sustain detonation in elongated columns. The explosives should not be used when the temperature of the explosive at time of loading is below that critical temperature.

Rule 5: The distance between holes (spacing) should not be greater than one-half the depth of the borehole.

When the distance between holes in a row is greater than one-half the depth of the hole, the angles of breakage intersect above the bottom of the holes. This causes both a great deal of vertical throw and a very uneven bottom.

Rule 6: Stemming should be equal to the burden.

Stemming is useful to confine and maximize efficient use of the explosive's energy. It also reduces noise as much as possible. If the stemming is greater than the burden, the rock at the top of the borehole will have less cracking from reflection and refraction of compressive and tensile waves. Therefore, stemming should be equal to burden. Drill fines can be used for loading the borehole.

Rule 7: Subdrill (if necessary) should be between 0.3 and 0.5 of spacing/burden.

Subdrill should be equal to 0.3 of burden. It will work when there is row-for-row delay. In blasts where the delay system is both row-for-row and hole-for-hole, the subdrill should be determined by the largest dimension, which can be the spacing or the burden. An average subdrill of 0.4 of spacing is best to use for planning purposes. Based on the above-mentioned rules, blasting design has been conceptualized and has been provided in Table 2.5.

Table 2.5 Conceptual Blasting Design

Blasthole Diameter (D) in mm	32
Burden (B) in m	1.5
Spacing (S) in m	1.30
Subdrill in m	0.45
Charge length (C) in m	0.64
Stemming	1.5
Hole Length (L) in m	2.6
Bench Height (BH) in m	2.1
Mass of explosive/hole in g	400

Stemming material size in mm	3.2
Burden stiffness ratio	1.43
Blast volume/hole in m ³	4.16
Production of rough stone/day in m ³	175
Number of blastholes/day	42
Blasthole pattern	Staggered
Mass of explosive /day in kg	16.82
Powder factor in kg/m ³	0.10
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL
Fly rock distance in m	19

2.6.2 Magnitude of Operation

Based on the results of estimated production for the 5 years, details about the size of operation have been provided in Table 2.6.

Table 2.6 Operational Details for Proposed Project

	Rough Stone / 5 years	Gravel / 3 years
Proposed production for 5 years	235982	24568
Number of Working Days /Annum	270	270
Production of /Day (m ³)	175	18
No. of Lorry Loads	29	3

2.6.3 Extent of Mechanization

List of machineries proposed for the quarrying operation is given in Table 2.7.

Table 2.7 Machinery Details

S. No.	Type	No of Unit	Size /Capacity	Make/Dia of Hole (mm)	Motive Power
1	Jack Hammers	3	Hand held	32 mm	Diesel Drive
2	Compressor	2	Air	-	Diesel Drive
3	Excavator	1	-	-	Diesel Drive

Haulage & Transport Equipment					
4	Tipper	9	-	-	Diesel Drive

2.6.4 Progressive Quarry Closure Plan

The progressive quarry closure plan of the proposed project shows past, present, and future land use statistics. According to the land use results, as shown in Table 2.8 the present area of the mine, about 1.58.03ha is unutilized area, about 0.36.97ha of land is area under quarry. Whereas, at the end of the mine life, about 1.40.0ha of land will have been quarried; about 0.03.0 ha of land will be used for infrastructure, about 0.05.0 ha of land will be used for roads, about 0.25.1 ha of land will be used for green belt, about 0.05.2 ha of land will be used for drainage & settling tank.

Table 2.8 Land use data at present, during scheme of mining, and at the End of mine life

Description	Present Area (ha)	Area at the end of life of quarry (ha)
Area under quarry	0.36.97	1.40.0
Infrastructure	Nil	0.03.0
Roads	0.03.0	0.05.0
Green Belt & Earth Bund	Nil	0.25.1
Drainage & Settling Tank	Nil	0.05.2
Unutilized area	1.58.03	0.19.7
Total	1.98.0	1.98.0

2.6.5 Progressive Quarry Closure Budget

As the proposed project has the enormous potential for continuous operations even after the expiry of lease period, mine closure plan is not proposed for now. Based on the progressive mine closure plan for the scheme period, the mine closure cost is given in Table 2.9.

Table 2.9 Mine Closure Budget

Activity	Capital Cost
396 plants inside the lease area	79200
594 plants outside the lease area	178200
Wire Fencing	396000
Renovation of Garland Drain	19800
Total	6,73,200

Source: Environment Management Plan

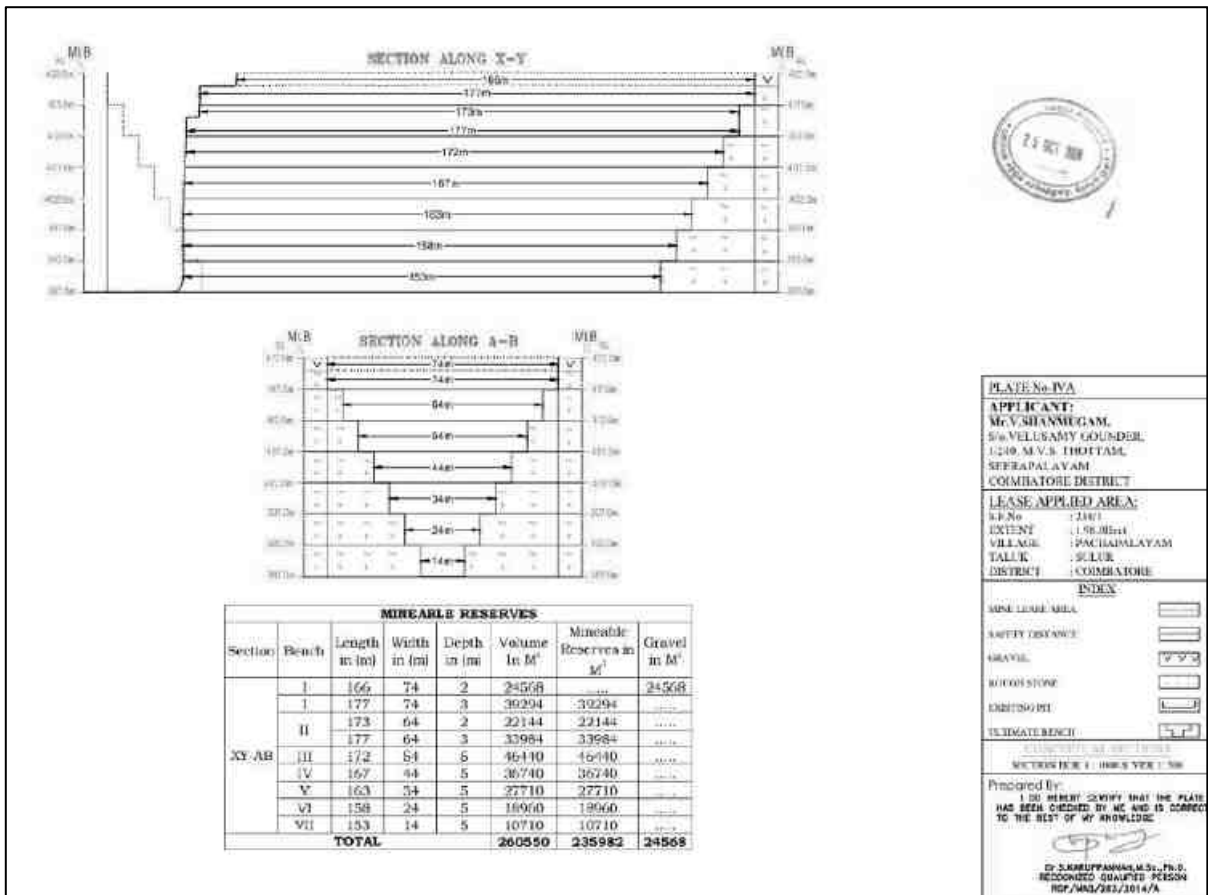
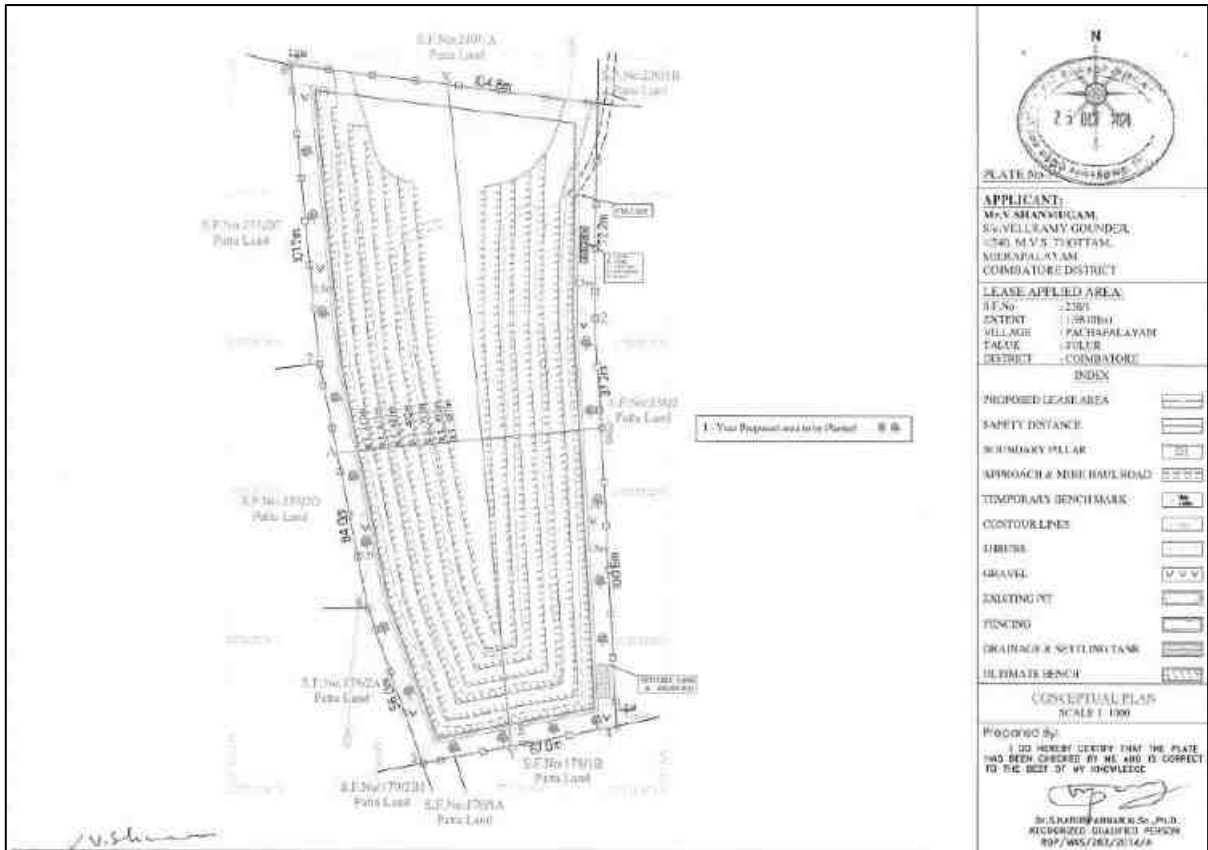


Figure 2.8 Conceptual Plan and Sections

2.6.6 Conceptual Mining Plan

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc. Details of ultimate pit dimensions have been derived from given in Table 2.10.

Table 2.10 Ultimate Pit Dimension

Pit	Length (m)	Width (m) (Max)	Depth (m)
I	177	74	35

Source: Approved Mining Plan & ToR

2.6.7 Infrastructures

Infrastructures like mines office, temporary rest shelters for workers, latrine and urinal facilities have been proposed as per the mine rule and will be established after the grant of quarry lease. There is no proposal for the mineral processing or ore beneficiation plants in this project.

2.6.7.1 Other Infrastructure Requirement

No workshops are proposed inside the project area. Hence, there will not be any process effluent generation from the proposed lease area. Domestic effluent from the mine office will be discharged to septic tank and soak pit. As there is no toxic effluent expected to generate in the form of solid, liquid or gaseous form, there is no requirement of waste treatment Plant.

2.6.8 Water Requirement

Detail of water requirement in 3.5 KLD is given in Table 2.11.

Table 2.11 Water Requirement for the Project

Purpose	Quantity	Source
Dust Suppression	1.0 KLD	Existing bore wells nearby the lease area
Green Belt development	1.5 KLD	Existing bore wells nearby the lease area
Drinking & Domestic	1.0 KLD	Existing bore wells and approved water vendors
Total	3.5 KLD	

Source: Prefeasibility Report

2.6.9 Energy Requirement

High speed Diesel (HSD) will be used for quarrying machineries. As per the data shown in Table 2.12, Around **10,84,061** litres of HSD will be used for rough stone and gravel extraction during this 5 years plan period. The diesel will be brought to the site from nearby diesel pumps.

Table 2.12 Fuel Requirement Details

Fuel Requirement for Excavator			
Details	Rough Stone (235982m³)	Gravel (24568m³)	Total Diesel (litre)
Average Rate of Fuel Consumption (l/hr)	16	10	---
Working Capacity (m ³ /hr)	20	60	---
Time Required (hours)	11799	409	---
Total Diesel Consumption for 5 years (litre)	188786	4095	1,92,881
Fuel Requirement for Compressor			
Average Rate of Fuel Consumption/hole (litre)	0.4	---	---
Number of Drillholes/day	42	---	---
Total Diesel Consumption for 5 years (litre)	22680	---	22,680
Fuel Requirement for Tipper			
Average Rate of Fuel Consumption/Trip (litre)	20	20	---
Carrying Capacity in m ³	6	6	---
Number of Trips / days	29	5	---
Number of Trips / 5 years	39330	4095	---
Total Diesel Consumption for 5 years (litre)	786607	81893	8,68,500
Total Diesel Consumption by Excavator, Compressor and Tipper			10,84,061

2.6.10 Capital Requirement

The project proponent will invest **Rs.1,31,08,000/-** to the project. The breakup summary of the investment has been given in Table 2.13.

Table 2.13 Capital Requirement Details

S. No.	Description	Cost (Rs.)
1	Fixed Asset Cost	Rs.73,50,000
2	Machinery cost	Rs.25,00,000
3	EMP Cost	Rs.32,58,900
Total Project Cost		Rs.1,31,08,000

Source: Approved Mining Plan

2.7 MANPOWER REQUIREMENT

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community. Number of employees required for this project have been provided in Table 2.14.

Table 2.14 Employment Potential for the proposed project

S. No.	Category	Role	Nos.
1.	Highly Skilled	Mines Manager	1
		Mine Geologist	1
		Mine Engineer	1
		Blaster	1
2	Unskilled	Musdoor / Labours	16
Total			20

Source: Prefeasibility Report

2.8 PROJECT IMPLEMENTATION SCHEDULE

The commercial operation will commence after the grant of Environmental Clearance. CTO and CTE will be obtained from the Tamil Nadu State Pollution Control Board. The conditions imposed during the environmental clearance will be compiled before the start of mining operation. Expected time schedule for the quarrying operation is given Table 2.15.

Table 2.15 Expected Time Schedule

S. No.	Particulars	Time Schedule (in Months)					Remarks if any
		1 st	2 nd	3 rd	4 th	5 th	
1	Environmental Clearance						
2	Consent to Establish						Project Establishment Period
3	Consent to operate						Production starting period.
Time line may vary; subjected to rules and regulations /& other unforeseen circumstances							

Source: Anticipated based on Timelines framed in EIA Notification & CPCB Guidelines

CHAPTER III DESCRIPTION OF THE ENVIRONMENT

3.0 GENERAL

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions. The baseline environment quality represents the background environmental scenario of various environmental components such as land, water, air, noise, biological and socio-economic status of the study area. The environmental consultant for both the clusters are the same. The monitoring of ambient air quality, noise levels, water quality and soil analysis for the nearby cluster were done in post monsoon season from October to December 2023 through the third party NABL accredited laboratory. The baseline monitoring done for 5km radius (TERMS OF REFERENCE [ToR] FOR EIA REPORT FOR ACTIVITIES / PROJECTS REQUIRING ENVIRONMENTAL CLEARANCE Prepared by Administrative Staff College of India, Bellavista, Khairatabad, AUGUST 2009, Page No.86) not varied as much. Therefore, we utilize the baseline data for this cluster which is collected for the adjacent cluster in the year 2023 between October to December as per the Office Memorandum F. No. IA3-22/10/2022-IA.III [E 177258] issued by Government of India Ministry of Environment, Forest and Climate Change (IA Division) dated 8th June 2022. We also collected the baseline data in one location i.e, in the core for the present cluster in the post monsoon season December 2024 to February 2025 for cross verification. Field monitoring studies to evaluate the base line status of the project site were carried out covering **December 2024 to February 2025** with CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified **Greenlink Analytical and Research Laboratory (India) Private Ltd** for the environmental attributes including soil, water, air, and noise and by FAEs for ecology and biodiversity, traffic, and socio-economy.

Study Area

The study area has been divided into two zones: core zone and buffer zone. Core zone is considered as lease area and buffer zone as 5 km radius from the periphery of the cluster, except for ecological study, which considers 10 km as buffer zone. Both core and buffer zones are taken as the study area. The data was collected from the study area to understand the existing environment conditions of the above-mentioned environmental components. Sampling

methodologies for the various environmental parameters, including frequency of sampling, method of sample analysis, etc., are briefly given in Table 3.1

Table 3.1 Monitoring Attributes and Frequency of Monitoring

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land Use/ Land Cover	Land-use Pattern within 5 km radius of the study area	Once during the study period	Study Area	Satellite Imagery & Primary Survey
*Soil	Physico- Chemical characteristics	Once during the study period	8 (1 in core & 7 in buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	8 (1 surface water & 7 ground water)	IS 10500& CPCB Standards
Meteorology	Wind speed Wind direction Temperature Cloud cover Dry bulb temperature Rainfall	1 hourly continuous mechanical/automatic weather station	1	Site specific primary data & secondary data from IMD Station
*Ambient Air Quality	PM ₁₀ , PM _{2.5} , SO ₂ NO _x	24 hours, twice a week	8 (1 core & 7 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB

*Noise Levels	Ambient noise	Hourly observation for 24 hours per location	8 (1 core & 7 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing flora and fauna	Through field visit during the study period	Study area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio-economic characteristics, Population statistics and existing infrastructure in the study area	Site visit & Census Handbook, 2011	Study area	Primary Survey, census handbook & need based assessments.

**All monitoring and testing have been carried out as per the Guidelines of CPCB and MoEF & CC.*

3.1 LAND ENVIRONMENT

3.1.1 Geology and Geomorphology

Study area is mainly composed of Hornblende biotite gneiss and Acid intermediate Charnockite, as shown in Figure 3.1. The lease area occurs in Grey Hornblende biotite gneiss terrain. Among the geomorphic units, pediplain and pediment dominate the study area, as shown in Figure 3.2. The lease area occurs in shallow weathered/buried pediplain terrain.

3.1.2 Land Use/ Land Cover

Land Use and Land Cover (LULC) map, as shown in Figure 3.3 was prepared using Sentinel II image for the study area of 5 km radius. Totally, 7 LULC were mapped. The areal extent of each LULC is provided in Table 3.2. Of the total area, total mining area covers only 692.4 ha accounting for 8.13%, of which proposed lease area of 1.98.0 ha contributes only about 0.0232%. This small percentage of mining activities shall not have any significant impact on the land environment.

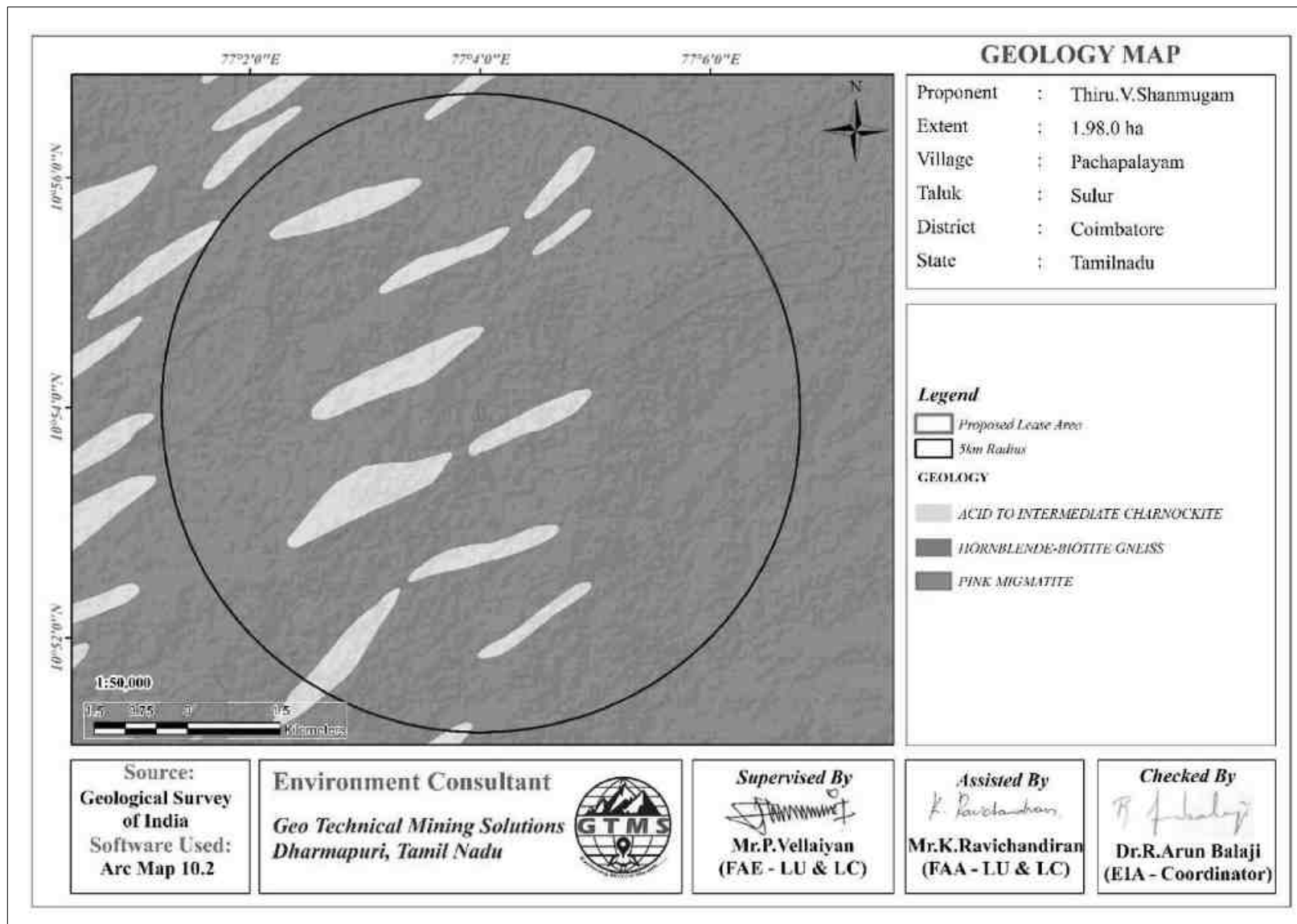


Figure 3.1 Geology Map of 5 km Radius from Proposed Project Site

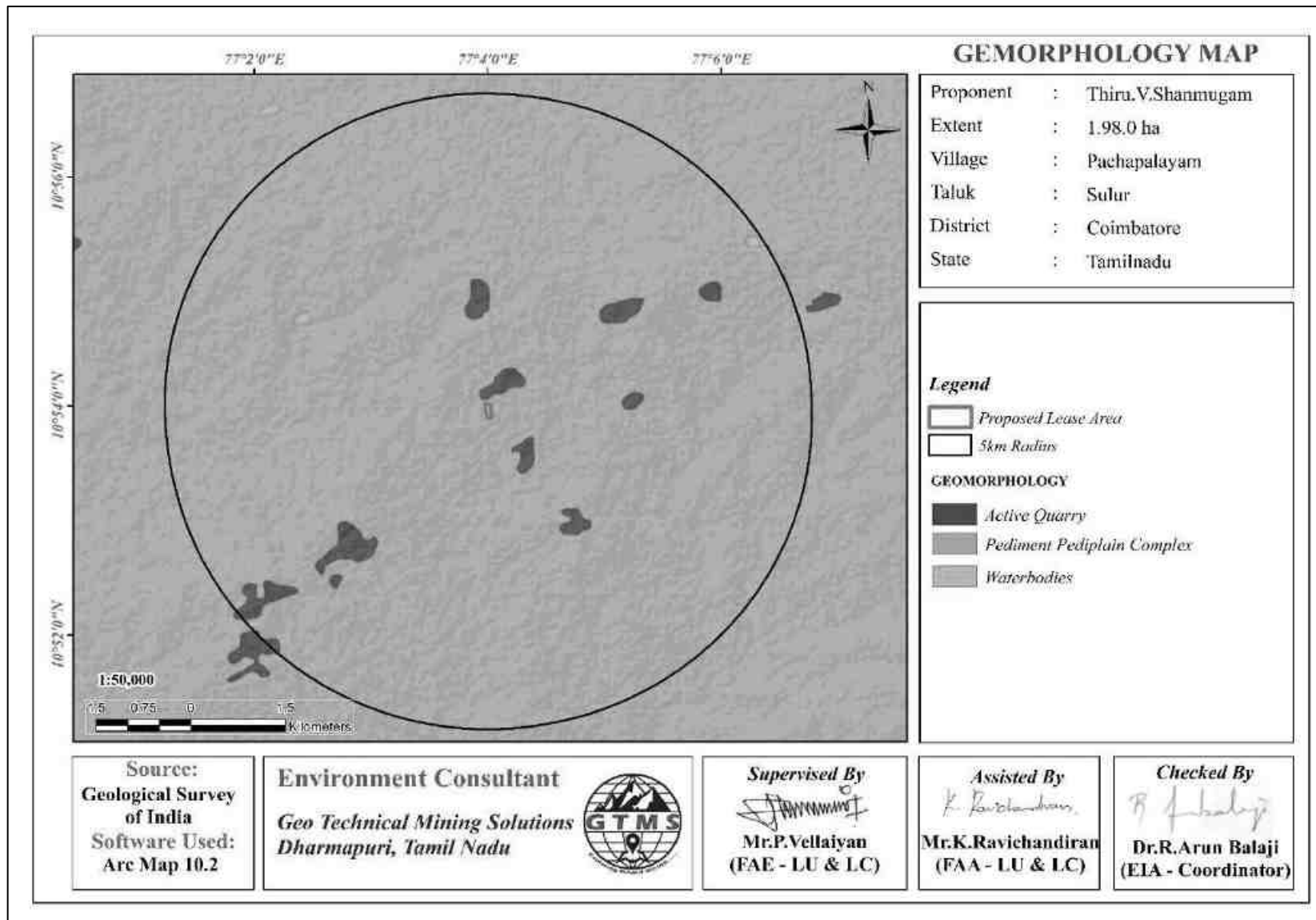


Figure 3.2 Geomorphology Map of 5 km Radius from Proposed Project Site

Table 3.2 LULC Statistics of the Study Area

S. No.	Classification	Area(ha)	Area (%)
1	Bare Ground	16.97	0.20
2	Built Area	1912.09	22.44
3	Crops	5318.18	62.42
4	Mining Industrial area	692.4	8.13
5	Rangeland	363.03	4.26
6	Trees	205.42	2.41
7	Water	12.28	0.14
Total		8520.37	100.0

Source: Sentinel II Satellite Imagery

3.1.3 Topography

The proposed lease area is located in flat topography which is an average altitude of about 422 m AMSL. The slope is towards southern side.

3.1.4 Drainage Pattern

Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin over time that reveals characteristics of the kind of rocks and geological structures in a landscape. The proposed area shows dendritic drainage pattern indicating uniform lithology beneath the surface, as shown in Figure 3.4.

3.1.5 Seismic Sensitivity

The proposed lease area is situated in a Seismic Zone III, as defined by National Centre for Seismology ([Official Website of National Centre of Seismology](#)). The Zone III is defined as the region where only minor damage is expected from seismic events. In this respect, the proposed lease area is located in a low earthquake hazard area.

3.1.6 Soil Environment

Soil is one of the important components of the land environment. Composite soil samples were collected from the study area and analyzed for different parameters to determine the baseline soil characteristics of the study area

3.1.6.1 Methodology

Eight locations were selected for soil sampling based on soil Types, vegetative cover, and industrial & residential activities including infrastructure facilities. Soil samples were collected up to 90 cm depth, filled in polythene bags, coded and sent to laboratory for analysis. The locations of the sampling sites are shown in Table 3.3 and Figure 3.5. The samples thus collected were analyzed for physical and chemical characteristics as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”. The physical and chemical characteristic results of soil samples are provided in Table 3.4

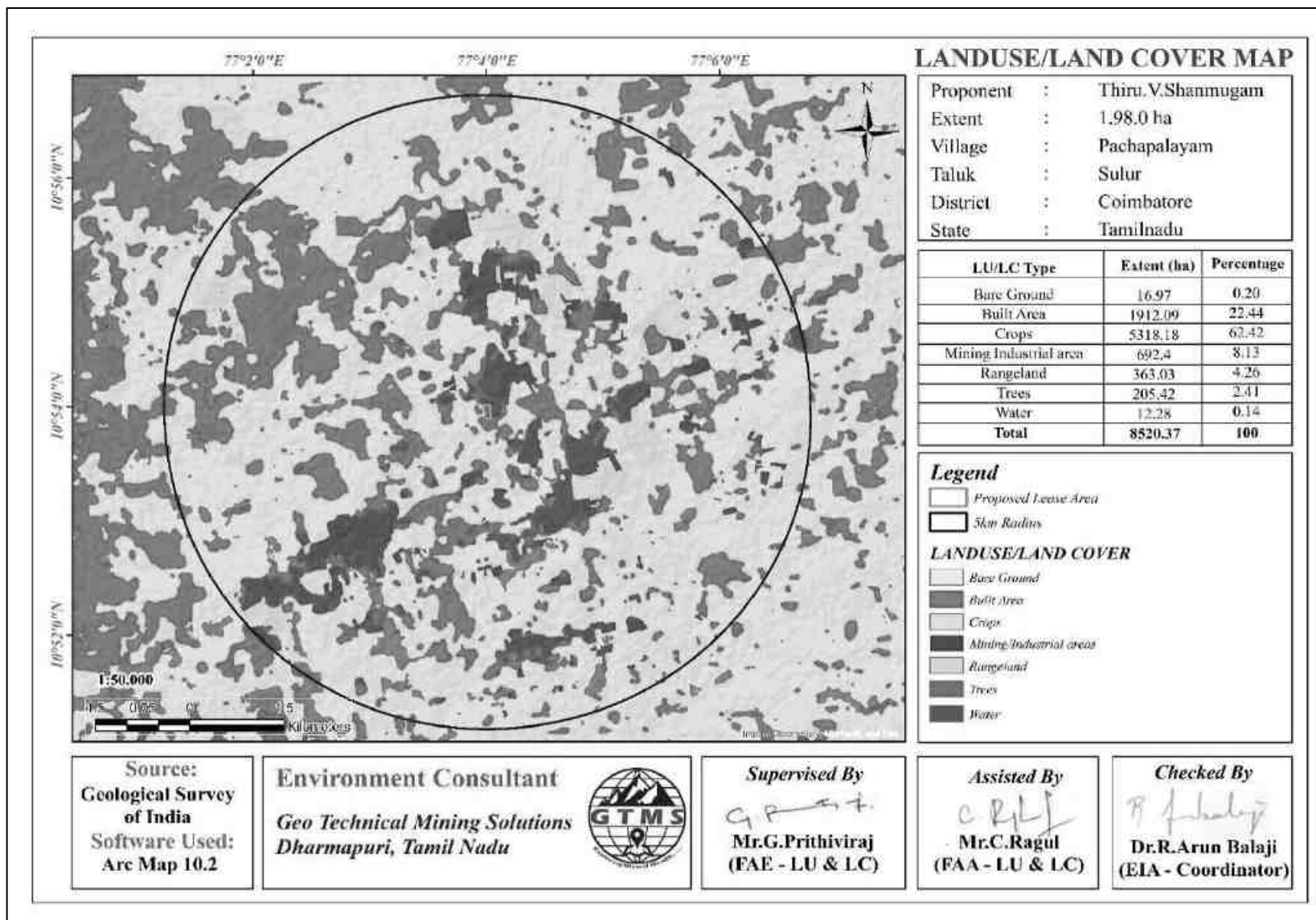


Figure 3.3 LULC Map of 5 km Radius from Proposed Project Site

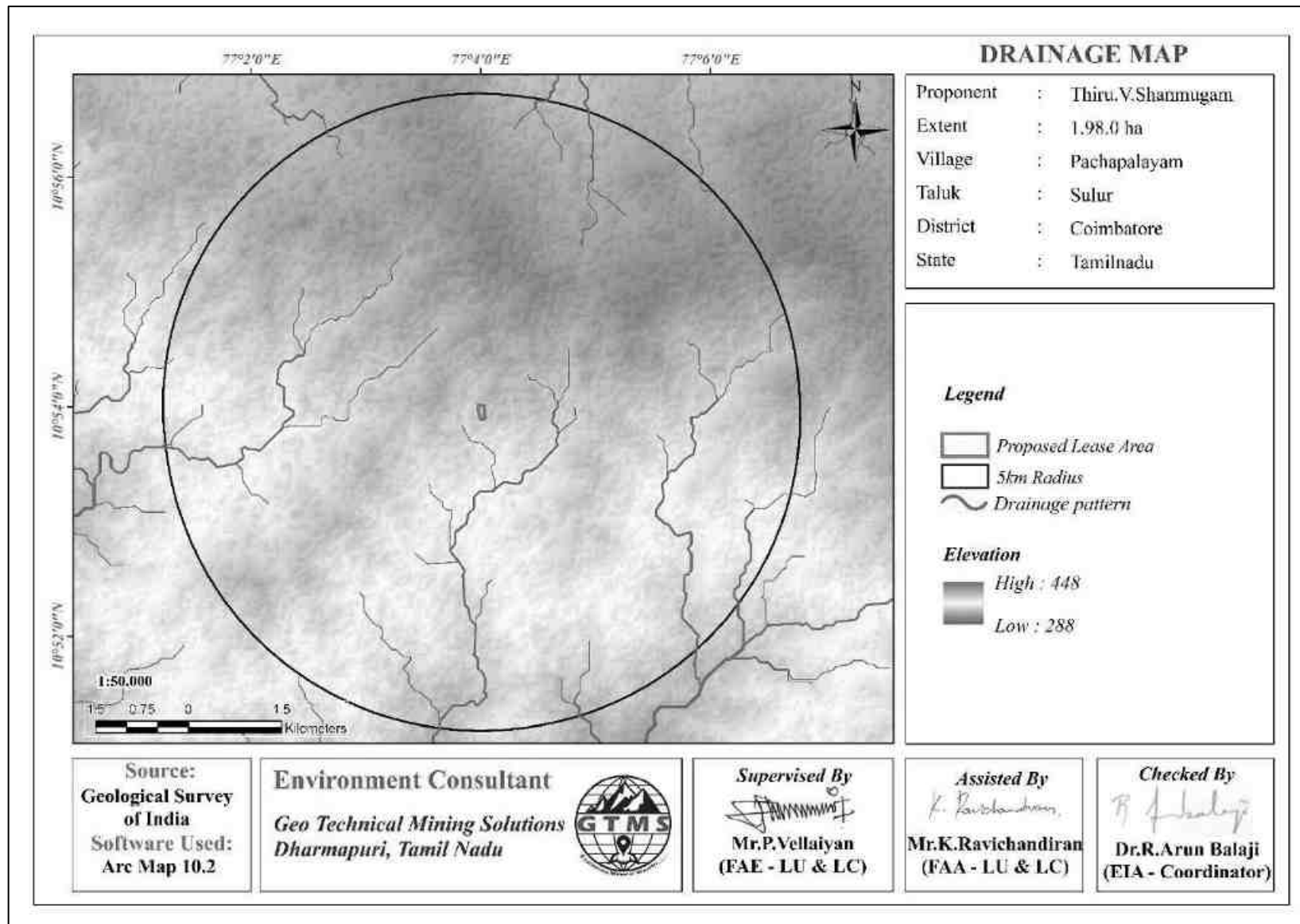


Figure 3.4 Drainage Map of 5 km Radius from Proposed Project Site

Table 3.3 Soil Sampling Locations

Sampling ID	Location	Distance (km)	Direction	Coordinates
S01	Thangavel Core	1.58	SE	10°53'29.18"N 77° 4'48.08"E
S02	Pannapatti	1.15	SE	10°52'33.56"N 77° 6'16.63"E
S03	Karachery	4.37	S	10°52'24.16"N 77° 3'54.04"E
S04	Chettipalayam	1.54	W	10°54'33.73"N 77° 3'19.90"E
S05	Chinnakuyili	3.05	NW	10°55'34.51"N 77° 5'3.85"E
S06	Bogampatti	5.12	E	10°54'8.29"N 77° 6'48.57"E
S07	Pachapalayam	2.19	NW	10°54'7.88"N 77° 4'30.77"E
S08	Shanmugam Core	---	---	10°53'56.25"N 77° 4'0.60"E

Source: Sampling Results by Excellence Laboratory (P) Limited and Greenlink Analytical and Research Laboratory (India) Private Ltd in association with GTMS.

3.1.6.2 Results and Discussion.

Physical Characteristics & Chemical Characteristics

The soil samples in the study area show loamy textures varying between sandy loam, silty loam and Sandy Clay. pH of the soil varies from 7.9 to 8.2 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 272 to 340 μ s/cm. Bulk density ranges between 1.1 and 1.4 g/cm³. Figure 3.5 shows the soil composition as calculated based on the laboratory report. Manganese ranges between 236 and 411 mg/kg Chlorides ranges between 353 and 573 mg/kg. Potassium ranges between 0.084 and 0.162%. Calcium ranges between 156 and 192 mg/kg. Organic matter content ranges between 1 and 2.3 %. The Soil Sampling results details mention in Table 3.4 & 3. 5.

Soil Erosion

There is no soil erosion in the mining lease area. The northern east part of the lease area has less moderate soil erosion as shown in the soil erosion map in Figure 3.6

Soil Quality Assessment

Soil quality is the foundation of sustainable crop production. Soil quality assessment helps to understand soil conditions and adopt suitable production practices. It can be done using physical, chemical, and biological properties of soil. For this assessment, four soil quality parameters including PH, EC, OM, and BD were taken into account. The soil quality score for each sample has been provided in Table 3.5

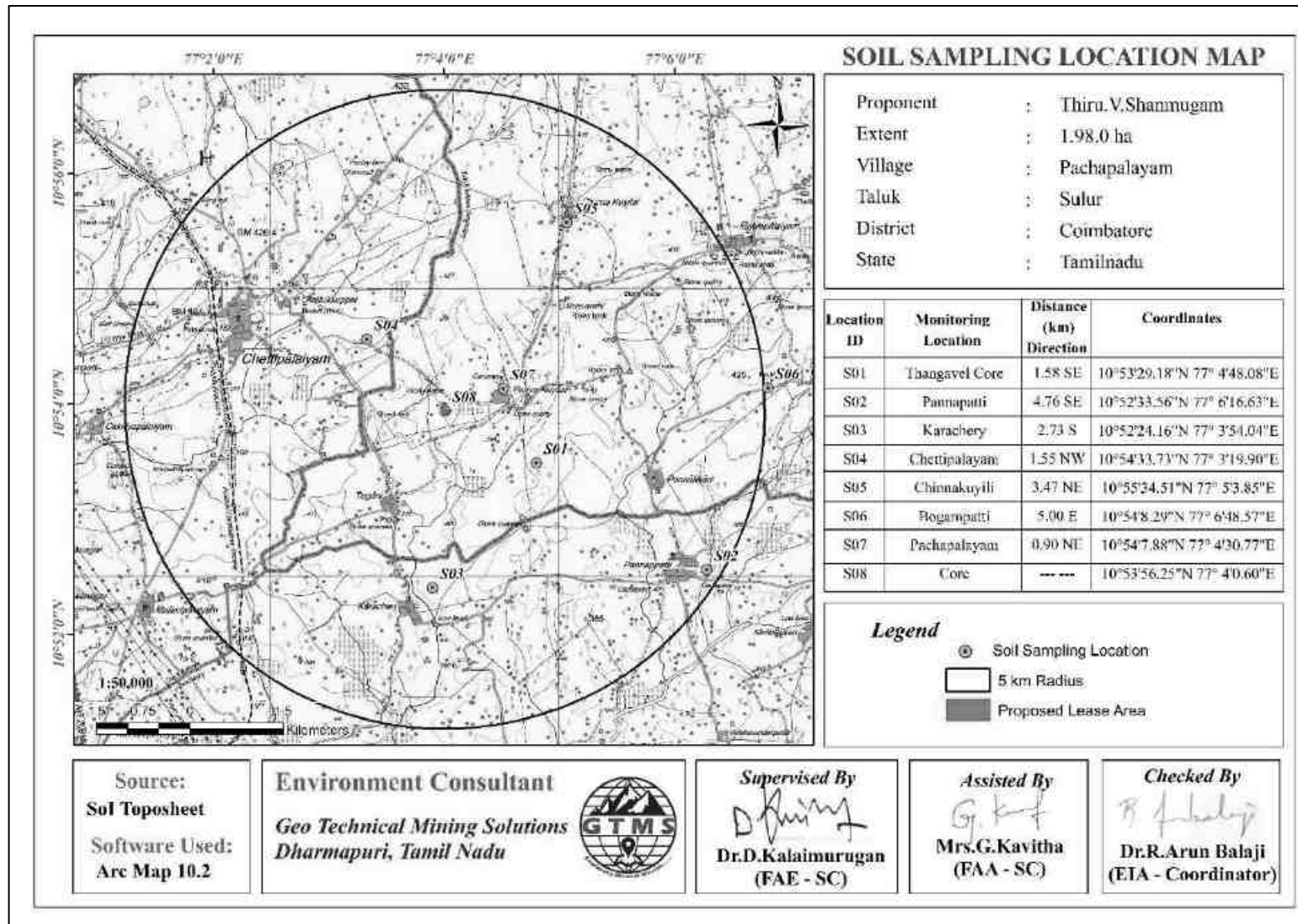


Figure 3.5 Toposheet Showing Soil Sampling Locations within 5 km Radius around the Proposed Project Site

Table 3.4 Soil Quality of the Study Area

S. No	Parameters	Unit	Thangavel Core	Pannapatti	Karachery	Chettipalayam	Chinnakuyili	Bogampatti	Pachapalayam
1	Bulk Density	g/cm ³	1.1	1.2	1.4	1.3	1.4	1.3	1.2
2	Cadmium (Cd)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3	CEC	meq%	27	32	53	23	51	38	83
4	Chromium (Cr)	mg/kg	81	129	259	82	83	85	421
5	Copper (Cu)	mg/kg	20	18	36	20	16	17	29
6	Iron (Fe)	mg/kg	48411	46732	46386	51162	46021	45631	50170
7	Lead (Pb)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8	Manganese (Mn)	mg/kg	229	236	372	276	319	297	411
9	Nitrogen (N)	%	1	1.3	1.1	1.4	1.3	1.2	1.5
10	Organic Matter @ 155°C	%	0.81	2.2	1	1.6	2.3	1.4	1
11	pH value @ 25°C	--	8	7.9	8	8.1	8	8.2	7.9
12	Phosphate (P)	%	0.75	1.5	0.76	1.2	0.74	1.1	0.76
13	Potassium (K)	%	0.066	0.126	0.151	0.162	0.093	0.123	0.084
14	EC @ 25°C	µS/Cm	426	335	340	283	272	303	303
15	Total Carbon	%	1.9	1.8	4.1	4.3	2.8	3.9	4.2
16	Sulphates (SO ₄)	%	0.31	0.31	0.45	0.41	0.2	0.27	0.68
17	Zinc (Zn)	mg/kg	56	64	79	63	61	75	64
18	Boron (B)	mg/kg	<0.1	<0.1	<1.0	<1.0	<1.0	<1.0	<1.0
19	Calcium (Ca)	mg/kg	155	<0.1	<1.0	156	<1.0	192	<1.0
20	Chlorides (Cl)	mg/kg	492	353	377	381	488	573	569
21	Texture	-	Silt Loam	Sandy loam	Sandy loam	Sandy loam	Sandy loam	Sandy loam	Sandy loam
22	Sand	%	19.2	53.2	51.2	63.2	19.1	53	49.2
23	Clay	%	22.5	6.2	43.2	15.3	33.2	3.2	43.2
24	Silt	%	58.3	40.6	5.6	21.5	47.7	43.8	7.6

Source: Sampling Results by **Excellence Laboratory (P) Limited**, in association with GTMS.

Table 3.5 Soil Quality of the Core zone

S. No	Test Parameters	Unit	Shanmugam Lease Area
1	Bulk Density	kg/cm ³	1180.0
2	Sand	%	28.96
3	Clay	%	34.78
4	Slit	%	24.12
5	Porosity	%	32.8
6	Copper as Cu	ppm	28.9
7	Nickel as Ni	ppm	1.124
8	Zinc as Zn	ppm	18.96
9	Iron as Fe	ppm	6910.0
10	Lead as Pb	ppm	7.21
11	pH	--	7.18
12	Electrical Conductivity	μS/cm	196.0
13	Total Organic Carbon	%	0.81
14	Available Nitrogen	Kg/ha	168.0
15	Available Potassium	Kg/ha	152.0
16	Available Phosphorous	mg/kg	48.9
17	Available Calcium	mg/kg	1020.0
18	Available Magnesium	mg/kg	610.0
19	Moisture	%	19.8
20	Organic Matter	%	1.92
21	Chlorides	mg/100g	88.7

Source: Sampling Results by **Greenlink Analytical and Research Laboratory (India) Private Ltd** in association with GTMS.

3.2 WATER ENVIRONMENT

The water resources, both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the baseline quality of surface and ground water.

Table 3.6 Water Sampling Locations

Sampling ID	Location	Distance (km)	Direction	Coordinates
SW 1	Panappatti Odai	3.20	SE	10°53'0.11"N 77° 5'32.51"E
BW 1	Ponakani	3.54	SE	10°53'22.37"N 77° 5'54.14"E
BW 2	Panapatti	4.32	SE	10°52'35.35"N 77° 6'0.20"E
BW 3	Karachery	3.21	SW	10°52'11.33"N 77° 3'37.14"E
BW 4	Thekani	1.64	SW	10°53'5.90"N 77° 3'35.33"E
BW 5	Pachapalayam	0.82	E	10°53'58.86"N 77° 4'28.75"E
BW 6	Edayapalayam	4.83	NE	10°55'22.75"N 77° 6'17.42"E
OW1	Near Core	0.14	W	10°53'56.35"N 77° 3'54.31"E

Source: Sampling Results by **Excellence Laboratory (P) Limited and Greenlink Analytical and Research Laboratory (India) Private Ltd** in association with GTMS.

3.2.1 Surface Water Resources and Quality

Panappatti Odai was the prominent surface water resources present in the study area. This lake is ephemeral in nature, which convey water only after rainfall events. The proposed project area is located 3.20 km SE Panappatti Odai, as shown in Table 3.6 and Figure 3.8. Surface water sample, known as SW1 are collected from the Panappatti Odai to assess the baseline water quality. Table 3.7 summarizes surface water quality data of the sample. Results for surface water samples in the Table 3.7 indicate that the physical and chemical parameters, and heavy metals are within permissible limits. Of the two biological parameters, *Coliform* and *E-coli* bacteria is present in the water sample.

3.2.2 Ground Water Resources and Quality

Groundwater in the study area occurs in the crystalline rocks of Archaean age and Recent alluvium. The movement of the groundwater is controlled by the intensity of weathering and fracturing of crystalline rocks. Open well and bore wells are the most common ground water abstraction structures in the area. However, in dry season, people in the study area heavily rely on bore wells for their domestic and agriculture purpose. Seven groundwater samples, known as BW1, BW2, BW3, BW4, BW5, BW6 and OW1 were collected from bore wells and Open well and analyzed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. Ground water sampling locations and their distance and direction from the lease area are provided in Table 3.6 and the spatial occurrence of water sampling locations is shown in Figure 3.7. Table 3.7 & Table 3.7a summarizes ground water quality data of the Seven samples. Results for ground water samples in the Table 3.7 & Table 3.7a indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

3.2.3 Hydrogeological Studies

The area within 2 km radius consists of numerous open wells and deep wells. Groundwater level data were collected both from open wells and bore wells for two monsoon seasons as discussed in the following section.

3.2.3.1 Rainfall

Rainfall data for the study area were collected for the period of 1981-2022. Long term monthly average rainfall was estimated from the data of 1981-2022 and compared with the monthly rainfall for the year 2022, shown in Figure 3.6. The Figure 3.6 shows that rainfall is generally high in the months of June, July and October in every year. Particularly, rainfall in July, August and October of 2022 is higher than the previous years.

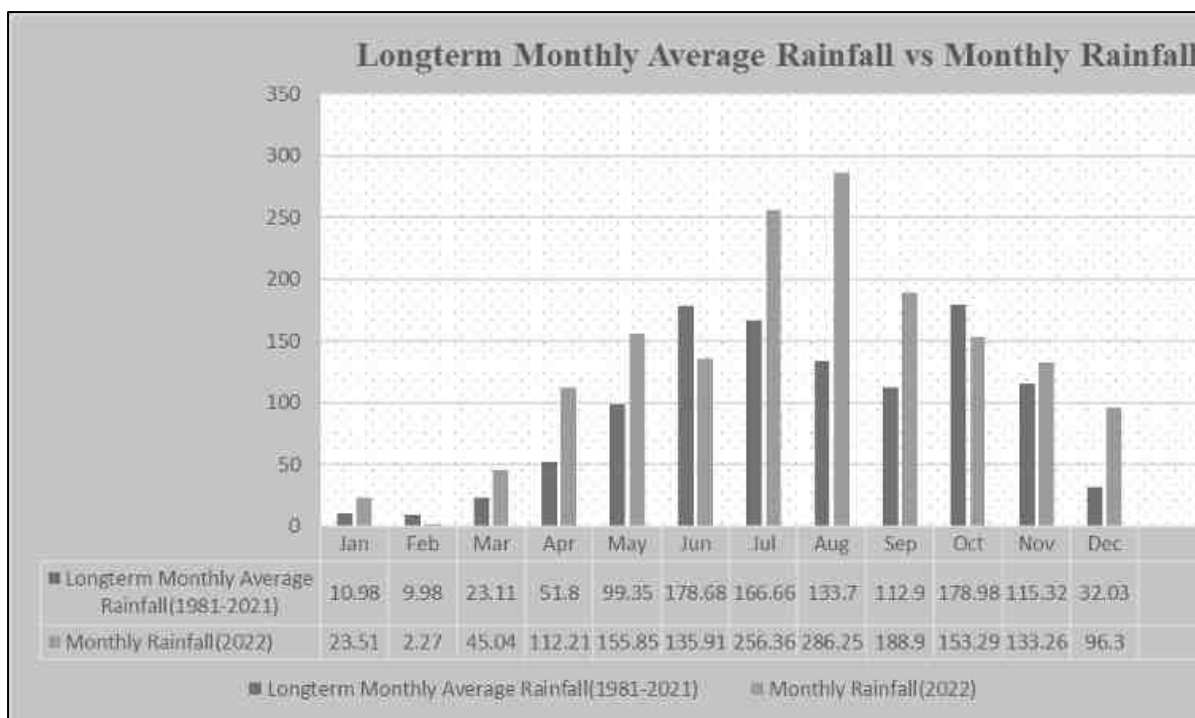


Figure 3.6 Long-Term Monthly Average Rainfall vs Monthly Rainfall

3.2.3.2 Groundwater Levels and Flow Direction

As the groundwater moves from the points of highest static groundwater elevation to the points of lowest static groundwater elevation under the influence of gravity, data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, data regarding groundwater elevations were collected from 9 open wells and 9 bore wells at various locations within 2 km radius around the proposed project sites for the period from October through December, 2023 (Post Monsoon Season) and from March through May, 2023 (Pre- Monsoon Season). The open well water level data thus collected onsite are provided in Tables 3.8 and 3.9. According to the data, average depths to the static water table in open wells range from 18.40 to 19.60 m BGL in post monsoon and from 20.47 to 22.67 m BGL in pre monsoon. The bore well data thus collected onsite are provided in Tables 3.10 and 3.11. The average depths to static potentiometric surface in bore wells for the period of October through December 2023 (Post- Monsoon Season) vary from 69.17 to 72.73 m and from 70.80 to 75.50 m for the period of March through May, 2023 (Pre-Monsoon Season).

Data on the depths to static water table and potentiometric surface were used to calculate static groundwater table and potentiometric surface elevations for open wells and borewells, respectively to draw contour lines connecting groundwater elevation (also known as

equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines. The maps thus produced are shown in Figures 3.9-3.10. From the maps of groundwater flow direction, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 1 located in Southwest direction. The maps thus produced in bore wells are shown in Figures 3.11-3.12. From the groundwater flow map in fact that two monsoon seasons groundwater flows towards the bore well number 2 located in Southwest direction of the proposed project site. On the basis of the groundwater flow information, both open wells and bore wells mentioned above can be chosen for water quality monitoring purpose as the wells may get easily affected by the contaminants resulting from the mining activities of the sites in future.

Table 3.7 Ground Water Quality Result

S. No.	Parameters	Units	Results	Acceptable Limits as Per IS 10500:2012
			OW1	
1	pH value @ 25°C	-	7.50	6.5 – 8.5
2	TDS	mg /l	450.0	500.0
3	EC @ 25°C	µS/cm	730.0	---
4	Turbidity	NTU	0.22	1.0
5	Colour	Hazen	1.0	5.0
6	Calcium (Ca)	mg/l	40.08	75
7	Magnesium (Mg)	mg/l	19.45	30.0
8	Chlorides (Cl)	mg/l	144.0	250.0
9	Sulphates (SO ₄)	mg/l	52.0	250.0
10	Silica (SiO ₂)	mg/l	16.8	---
11	Total Residual chloride	mg/l	BDL (DL-0.1)	0.2
12	Sodium (Na)	mg/l	28.8	---
13	Total Hardness (CaCO ₃)	mg/l	180.0	200
14	Total Alkalinity (CaCO ₃)	mg/l	196.0	200
15	Odour	-	Agreeable	Agreeable
16	Taste	-	Disagreeable	Agreeable
17	Total solids	mg/l	496.0	---
18	Dissolved Oxygen (DO)	mg/l	5.2	---
19	Phosphorous (P)	mg/l	0.9	---
20	Potassium (K)	mg/l	4.9	---
21	Nitrate (NO ₂)	mg/l	BDL (DL-0.1)	---
22	Phenolphthalein Alkalinity (CaCO ₃)	mg/l	18.0	200.0

Source: Sampling Results **Greenlink Analytical and Research Laboratory (India) Private Ltd**, in association with GTMS.

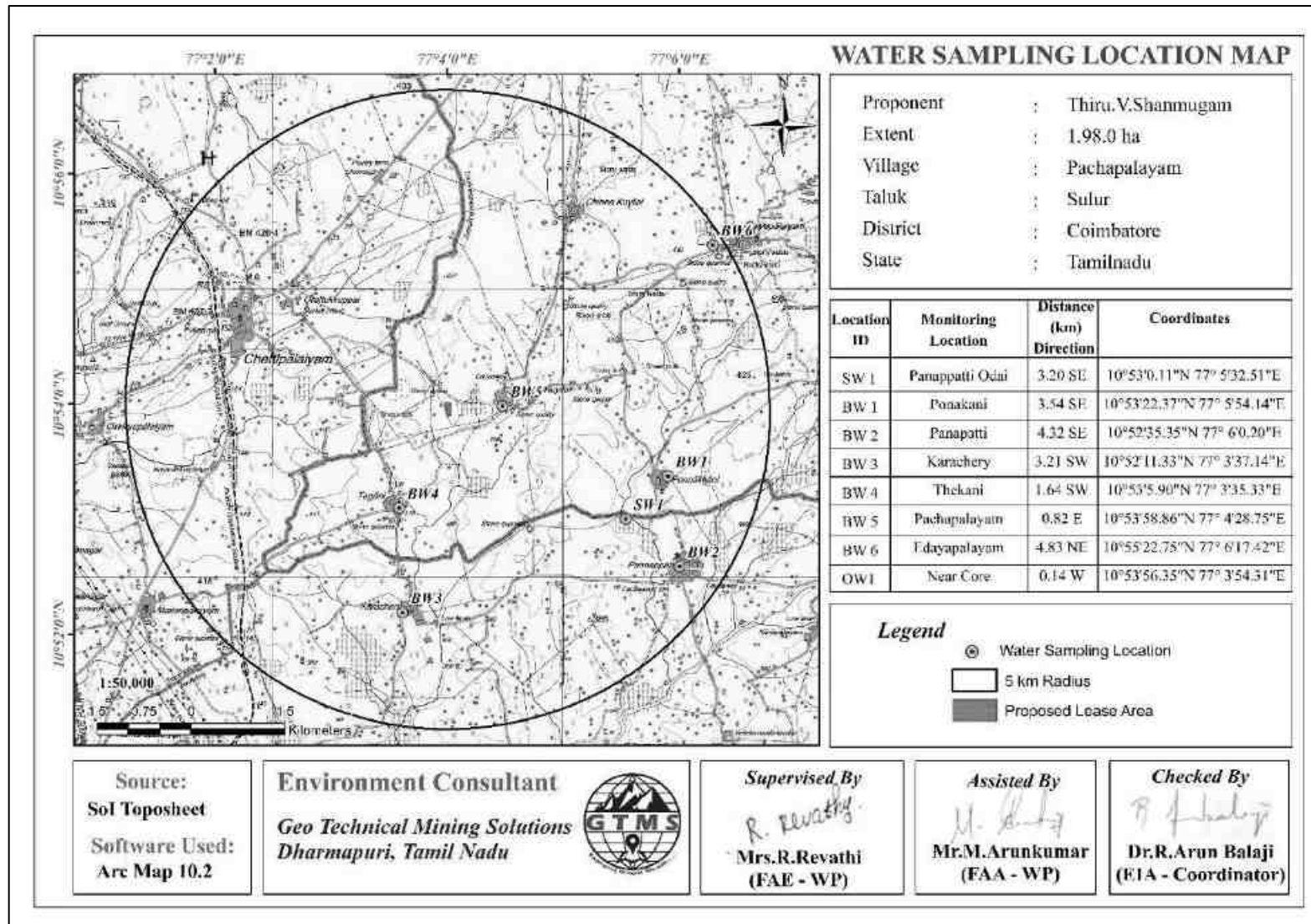


Figure 3.7 Map Showing Water Sampling Locations within 5 km Radius around Proposed Project Site

Table 3.7a Ground & Surface Water Quality Result

S. No.	Parameters	Units	Result							10500:2012 (Permissible)	
			BW1- Ponakani	BW2- Panappatti	BW3- Karachery	BW4 - Thekani	BW5- Pachapalayam	BW6- Edayapalayam	SW7- Panappatti		
1	<i>Coliforms Bacteria</i>	MPN	Present	Present	Present	Present	Present	Present	Present	Present	Shall not be detectable in any 100 ml sample
2	<i>E. Coli</i>	MPN	Present	Present	Present	Present	Present	Present	Present	Present	Shall not be detectable in any 100 ml sample
3	Aluminium (Al)	mg /l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.2
4	Ammonia (NH ₃)	mg /l	<0.1	<0.01	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	No relaxation
5	Anionic Detergents	mg /l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.0
6	Barium (Ba)	mg /l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	No relaxation
7	Boron (B)	mg /l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.0
8	Cadmium (Cd)	mg /l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	No relaxation
9	Calcium (Ca)	mg /l	108	105	172	147	139	572	191	200	200
10	Chloride (Cl)	mg /l	357	106	365	730	639	455	548	1000	1000
11	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	15
12	Copper (Cu)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1.5
13	Cyanide (CN)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	No relaxation
14	Fluoride (F)	mg/l	1.4	1.2	1.7	1.1	1.2	1.3	<0.1	<0.1	1.5
15	Free Residual Chlorine (RFC)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.0

16	Iron (Fe)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No relaxation
17	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	No relaxation
18	Magnesium (Mg)	mg/l	27	31	17	29	37	35	18	100
19	Manganese (Mn)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.3
20	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	No relaxation
21	Molybdenum	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No relaxation
22	Nitrate (NO ₃)	mg/l	35	13	29	20	16	11	45	No relaxation
23	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
24	pH value @ 25°C	--	8.5	7.7	7.4	7.2	7.8	7.3	7.8	No relaxation
25	Phenolic Compounds	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
26	Selenium (Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	No relaxation
27	EC @ 25°C	µS/Cm	1039	1125	2411	2694	3960	1960	1220	-
28	Sulphates (SO ₄)	mg/l	129	97	210	187	37	174	230	400
29	Sulphide (H ₂ S)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No relaxation
30	Total Alkalinity	mg/l	144	262	361	319	474	262	449	600
31	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	0.05
32	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No relaxation
33	TDS	mg/l	1176	675	875	1375	1580	1063	732	2000
34	TH (CaCO ₃)	mg/l	390	190	203	225	253	535	320	200
35	TSS @ 105°C	mg/l	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-
36	Turbidity	NTU	<0.1	<0.1	<0.1	<5.0	<0.1	<0.1	<0.1	1
37	Zinc (Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	5

Source: Sampling Results by **Excellence Laboratory (P) Limited**, in association with GTMS.

Table 3.8 Pre-Monsoon Water Level of Open Wells within 2 Km Radius

Station ID	Depth to Static Water Table BGL(m)				Latitude	Longitude
	Mar-2023	Apr-2023	May- 2023	Average		
OW01	20.1	20.5	20.8	20.47	10°53'50.90"N	77° 3'51.81"E
OW02	22.3	22.8	22.9	22.67	10°54'29.49"N	77° 4'11.65"E
OW03	20.8	21.2	22.1	21.37	10°53'34.92"N	77° 3'39.02"E
OW04	19.5	20.4	21.5	20.47	10°53'5.17"N	77° 4'2.13"E
OW05	20.1	21.3	22.4	21.27	10°53'52.83"N	77° 4'48.23"E
OW06	20.8	21.5	22.2	21.50	10°54'23.70"N	77° 3'8.03"E
OW07	21.5	22.4	22.6	22.17	10°54'21.32"N	77° 4'44.21"E
OW08	20.5	21.3	21.9	21.23	10°53'49.13"N	77° 3'3.74"E
OW09	21.7	22.3	22.8	22.27	10°53'58.58"N	77° 4'14.38"E

Table 3.9 Post-Monsoon Water Level of Open Wells within 2 km Radius

Station ID	Depth to Static Water Table BGL(m)				Latitude	Longitude
	Oct-2023	Nov-2023	Dec-2023	Average		
OW01	19.5	19.1	18.5	19.03	10°53'50.90"N	77° 3'51.81"E
OW02	20.1	19.8	18.4	19.43	10°54'29.49"N	77° 4'11.65"E
OW03	19.8	19.5	18.8	19.37	10°53'34.92"N	77° 3'39.02"E
OW04	18.6	18.4	18.2	18.40	10°53'5.17"N	77° 4'2.13"E
OW05	19.5	19.2	19.1	19.27	10°53'52.83"N	77° 4'48.23"E
OW06	19.6	19.1	18.6	19.10	10°54'23.70"N	77° 3'8.03"E
OW07	19.4	18.9	18.5	18.93	10°54'21.32"N	77° 4'44.21"E
OW08	20.2	19.1	18.7	19.33	10°53'49.13"N	77° 3'3.74"E
OW09	20.1	19.4	19.3	19.60	10°53'58.58"N	77° 4'14.38"E

Table 3.10 Pre-Monsoon Water Level of Bore Wells within 2 km Radius

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Mar-2023	Apr-2023	May- 2023	Average		
BW01	71.8	72.2	72.9	72.30	10°53'49.44"N	77° 4'11.49"E
BW02	71.5	71.8	72.4	71.90	10°53'43.66"N	77° 3'51.44"E
BW03	72.6	73.1	73.8	73.17	10°53'58.88"N	77° 4'28.81"E
BW04	75.1	75.5	75.9	75.50	10°54'32.18"N	77° 4'24.63"E
BW05	73.8	74.1	74.8	74.23	10°54'18.01"N	77° 3'30.37"E
BW06	72.3	72.6	72.9	72.60	10°53'55.19"N	77° 3'17.65"E
BW07	70.8	71.3	72.1	71.40	10°53'27.80"N	77° 3'30.52"E
BW08	70.2	70.6	71.6	70.80	10°53'5.86"N	77° 3'35.24"E
BW09	71.2	71.8	72.4	71.80	10°53'17.81"N	77° 4'22.36"E

Table 3.11 Post-Monsoon Water Level of Bore Wells within 2 km Radius

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Oct-2023	Nov-2023	Dec-2023	Average		
BW01	70.6	70.2	70.1	70.30	10°53'49.44"N	77° 4'11.49"E
BW02	70.4	69.8	68.5	69.57	10°53'43.66"N	77° 3'51.44"E
BW03	71.5	70.4	70.1	70.67	10°53'58.88"N	77° 4'28.81"E
BW04	73.9	72.5	71.8	72.73	10°54'32.18"N	77° 4'24.63"E
BW05	72.6	72.1	71.6	72.10	10°54'18.01"N	77° 3'30.37"E
BW06	71.5	70.6	70.2	70.77	10°53'55.19"N	77° 3'17.65"E
BW07	70.2	69.6	68.5	69.43	10°53'27.80"N	77° 3'30.52"E
BW08	69.7	69.2	68.6	69.17	10°53'5.86"N	77° 3'35.24"E
BW09	70.1	69.8	69.4	69.77	10°53'17.81"N	77° 4'22.36"E

Source: Onsite monitoring data

3.2.3.3 Electrical Resistivity Investigation

Electrical resistivity investigation is especially useful in the areas where there are no adequate exploratory well data about the aquifer conditions. The present study makes use of vertical electric sounding (VES) to delineate earth's subsurface layers. The electrical resistivity investigation uses four electrodes set up where current is sent through outer electrodes into the ground and the inner electrodes measure the potential difference.

Result

The Geophysical VES data obtained from the project site have been shown in Table 3.12. The field data obtained from a detailed geophysical investigation were plotted using excel spreadsheet for interpretation. The plot for the purpose of interpretation has been shown in Figure 3.8.

Table 3.12 Vertical Electrical Sounding Data

Location Coordinates - 10°53'56.83"N 77° 4'0.81"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ω m
1	2	2	11.78	13.248	156.06
2	4	2	49.46	6.127	303.04
3	6	5	112.26	3.937	441.97
4	8	5	200.18	2.798	560.1
5	10	5	75.36	8.997	678.01
6	15	10	173.49	5.188	900.07
7	20	10	310.86	3.558	1106.04

8	25	10	487.49	2.603	1268.94
9	30	10	274.75	5.001	1374.02
10	35	10	376.8	3.883	1463.11
11	40	10	494.55	3.160	1562.78
12	45	10	628	2.683	1684.92
13	50	10	777.15	2.202	1710.95
14	65	20	453.6	4.348	1972.2
15	70	20	989.1	1.217	1203.82
16	80	20	1256	2.196	2758.18
17	90	20	1554.3	1.846	2869.24
18	100	20	1653.6	2.213	3659.42

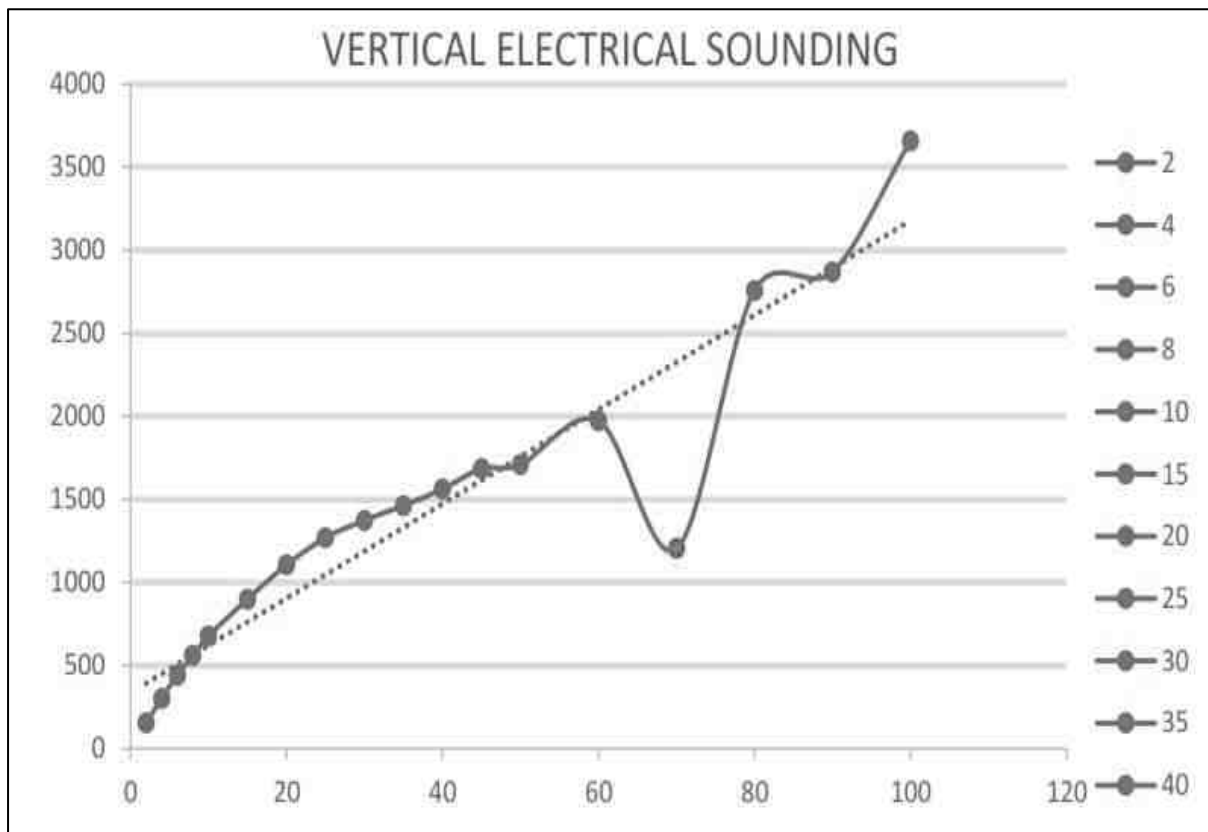


Figure 3.8 Graph Showing Occurrence of Water Bearing Fracture Zones at the Depth of 70m Below Ground Level in Proposed Project

The rock formation of low resistivity values indicates occurrence of water at the depth of about 70 m below ground level. The maximum depth proposed for the proposed project is 35m ground level. Therefore, the mining operation will not affect the aquifer throughout the entire mine life period.

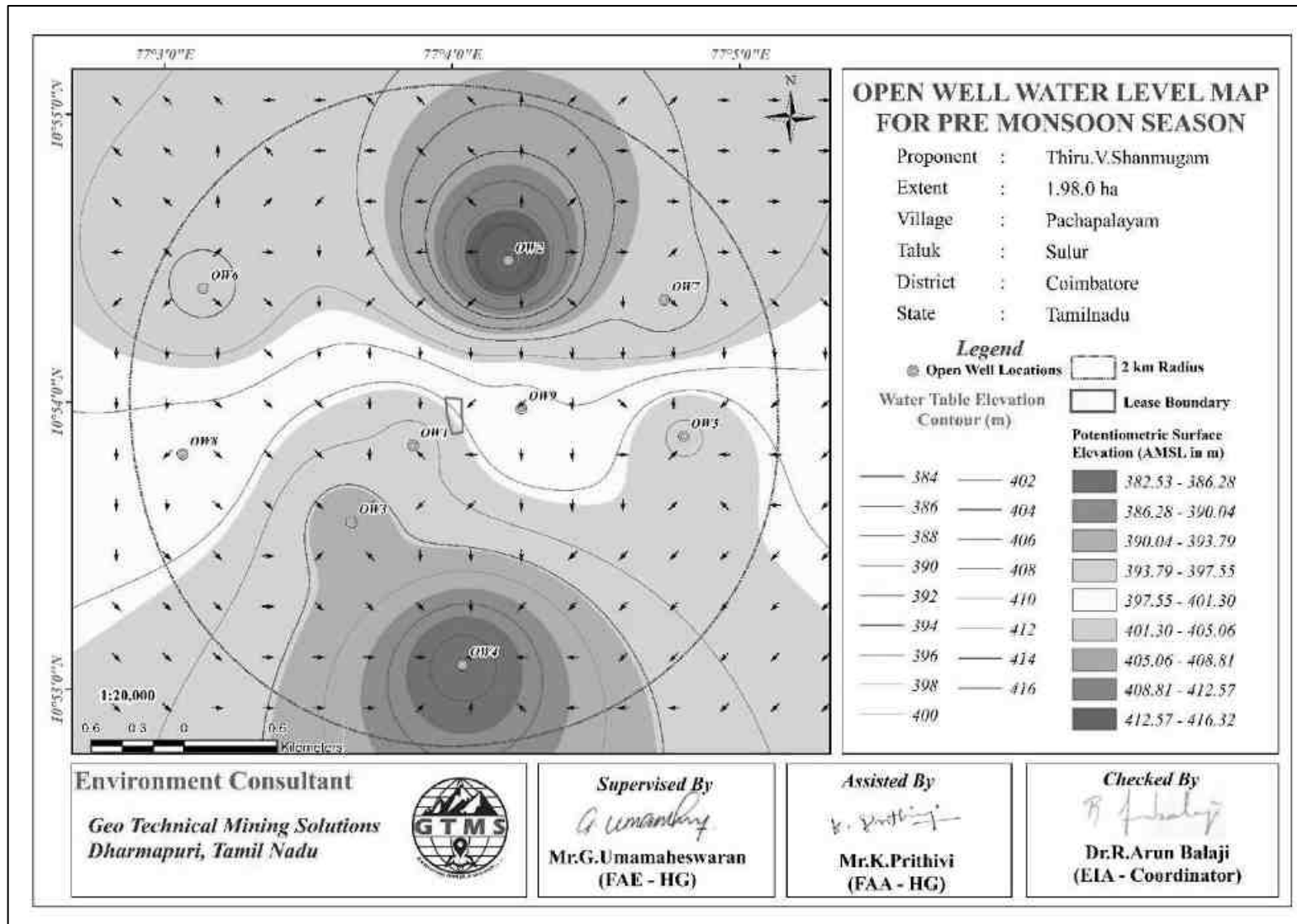


Figure 3.9 Open Well Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Pre-Monsoon Season

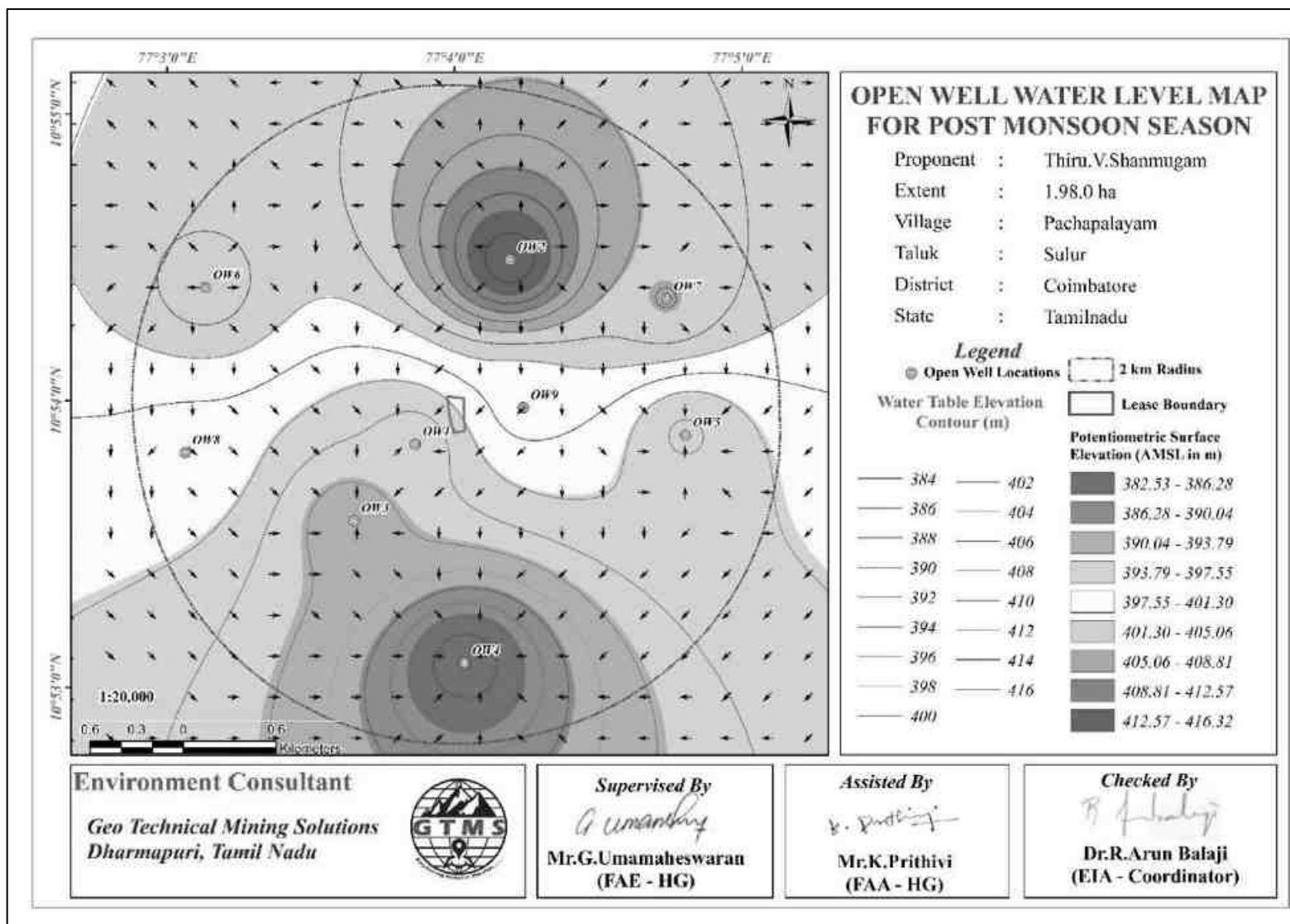


Figure 3.10 Open Well Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Post-Monsoon Season

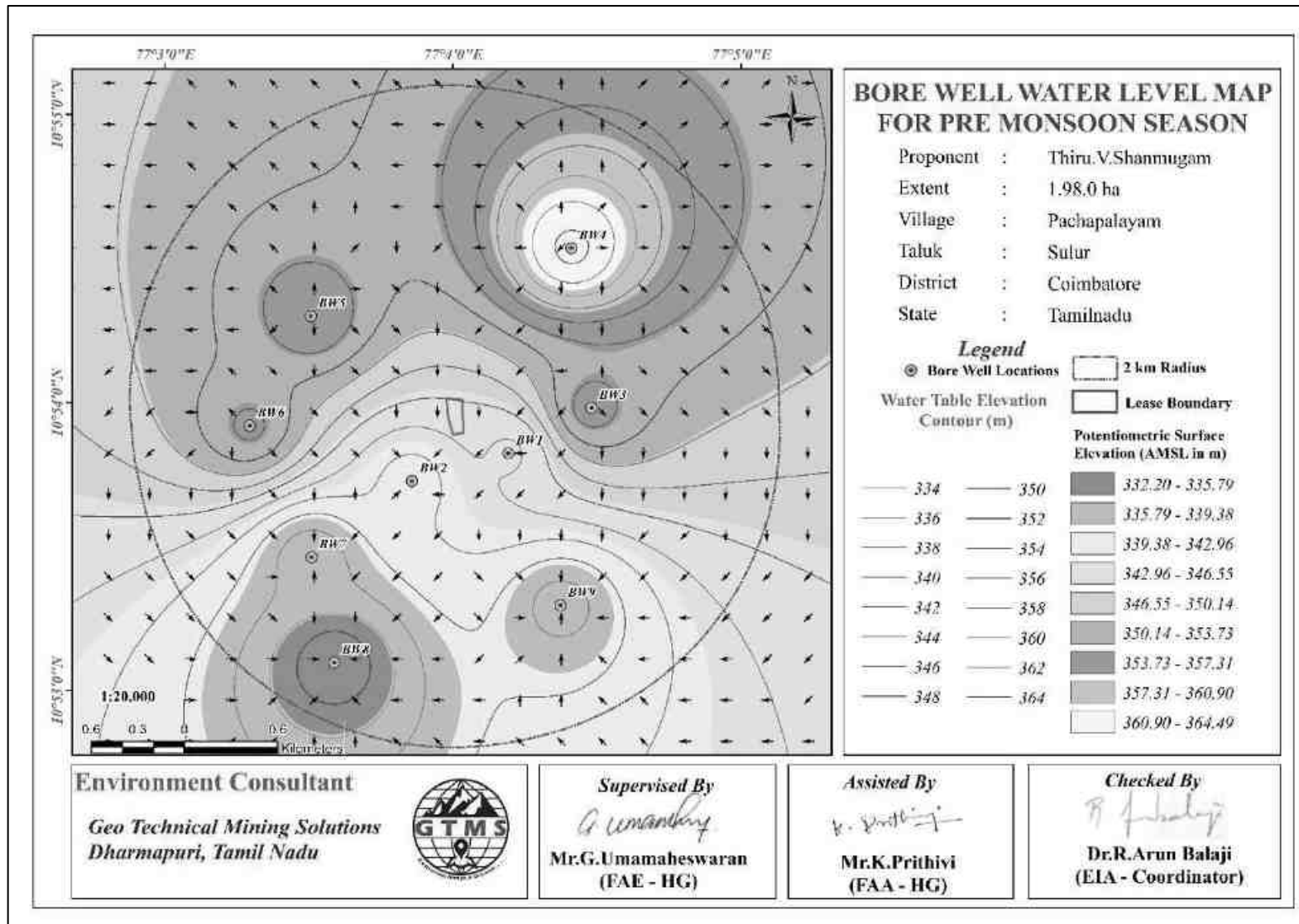


Figure 3.11 Borewell Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Pre-Monsoon Season

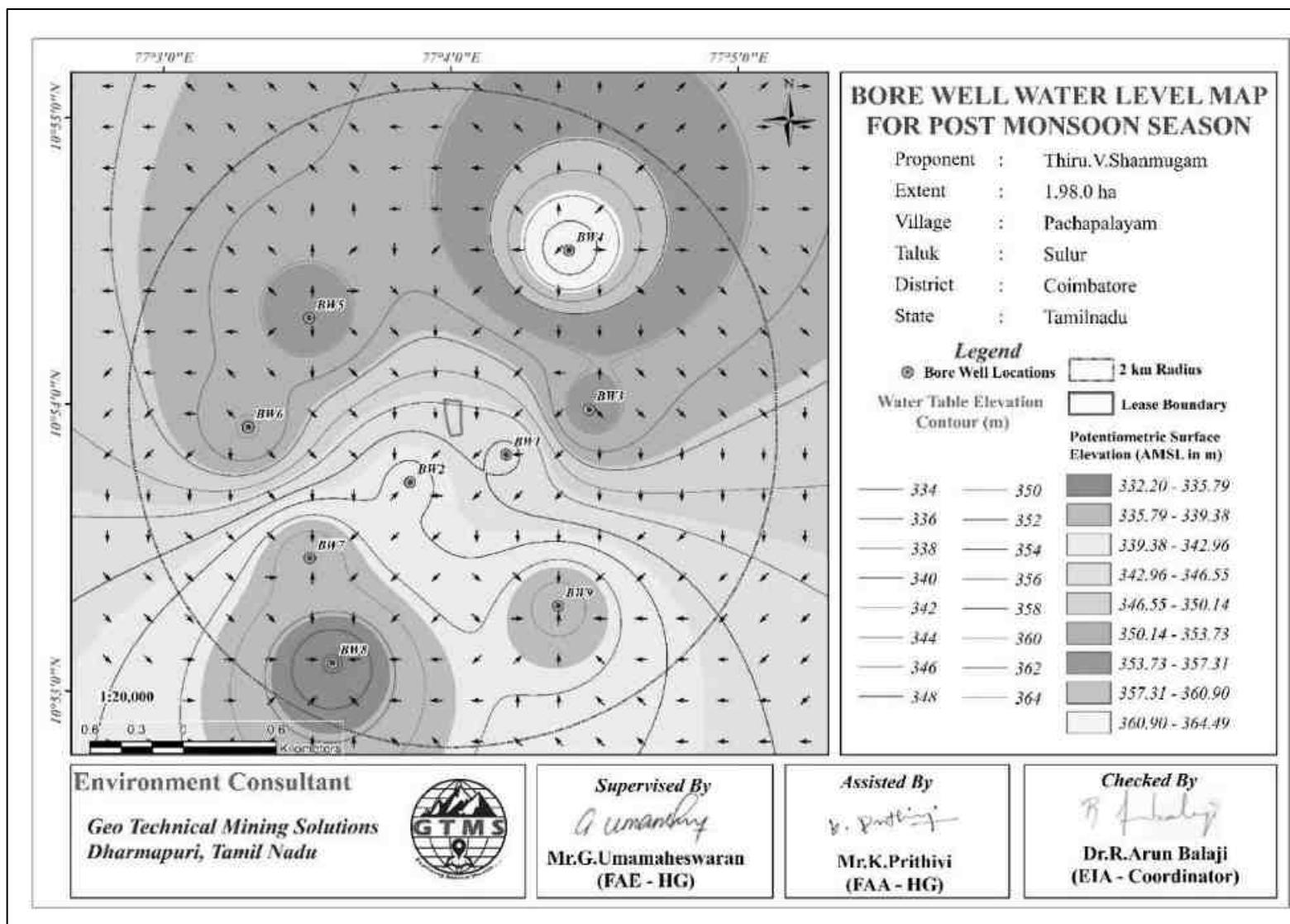


Figure 3.12 Borewell Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Post-Monsoon Season

3.3 AIR ENVIRONMENT

The baseline studies on air environment include identification of specific air pollutants and their existing levels in ambient air. The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities.

3.3.1 Meteorology

3.3.1.1 Climatic Variables

A temporary meteorological station was installed at the project sites by covering cluster quarries. The station was installed at a height of 3 m above the ground level as there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature. Meteorological data obtained from the onsite monitoring station are provided in Table 3.13.

Table 3.13 Onsite Meteorological Data

S. No.	Parameters		OCT,2023	NOV,2023	DEC,2023
1	Temperature (°C)	Min	18.94	17.51	15.57
		Max	33.36	29.55	28.96
		Avg	24.76	23.75	22.50
2	Relative Humidity (%)	Min	34.50	60.12	42.94
		Max	100.00	100.00	100.00
		Avg	80.28	86.84	85.31
3	Wind Speed (m/s)	Min	0.09	0.13	0.15
		Max	7.81	6.72	7.11
		Avg	2.06	2.19	2.73
4	Wind Direction (degree)	Min	0.00	0.00	4.12
		Max	359.17	359.79	357.18
		Avg	174.94	96.44	103.68
5	Surface Pressure(kPa)	Min	94.64	94.72	94.28
		Max	95.43	95.49	95.76
		Avg	95.09	95.11	95.09

Source: On-site monitoring/sampling by **Excellence Laboratory** in association with GTMS

3.3.1.2 Wind Pattern

Wind pattern will largely influence the dispersion pattern of air pollutants and noise from the proposed project site. Analysis of wind pattern requires hourly site-specific data of wind speed and direction. Two types of wind rose were generated: historical seasonal wind rose for the period of October through December of the years 2019-2022 and the seasonal wind rose for the study period of October through December of the years 2023 and December 2024 to February 2025. The wind rose diagrams thus produced are shown in Figures 3.13-3.14 Figure 3.14 reveals that:

- ❖ The measured average wind velocity during the study period is 3.23m/s and 1.32 m/s.
- ❖ Predominant wind was dominant in the directions ranging from Northeast to Southwest.

3.3.2 Ambient Air Quality Study

The baseline ambient air quality is studied through a scientifically designed ambient air quality monitoring network considering the followings:

- ❖ Meteorological condition on synoptic scale
- ❖ Topography of the study area
- ❖ Representatives of regional background air quality for obtaining baseline status
- ❖ Location of residential areas representing different activities
- ❖ Accessibility and power availability

Table 3.14 Methodology and Instrument Used for AAQ Analysis

Parameter	Method	Instrument
PM _{2.5}	Gravimetric method Beta attenuation method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM ₁₀	Gravimetric method Beta attenuation method	Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108
SO ₂	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NO _x	IS-5182 Part II (Jacob & Hochheiser modified method)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology based on Excellence Laboratory & CPCB Notification

Table 3.15 National Ambient Air Quality Standards

S. No	Pollutant	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	SO ₂ (µg/m ³)	Annual Avg.*	50.0	20.0
		24 hours**	80.0	80.0
2	NO _x (µg/m ³)	Annual Avg.	40.0	30.0
		24 hours	80.0	80.0
3	PM ₁₀ (µg/m ³)	Annual Avg.	60.0	60.0
		24 hours	100.0	100.0
4	PM _{2.5} (µg/m ³)	Annual Avg.	40.0	40.0
		24 hours	60.0	60.0

Source: NAAQS CPCB Notification No. B-29016/20/90/PCI-I Dated: 18th Nov 2009

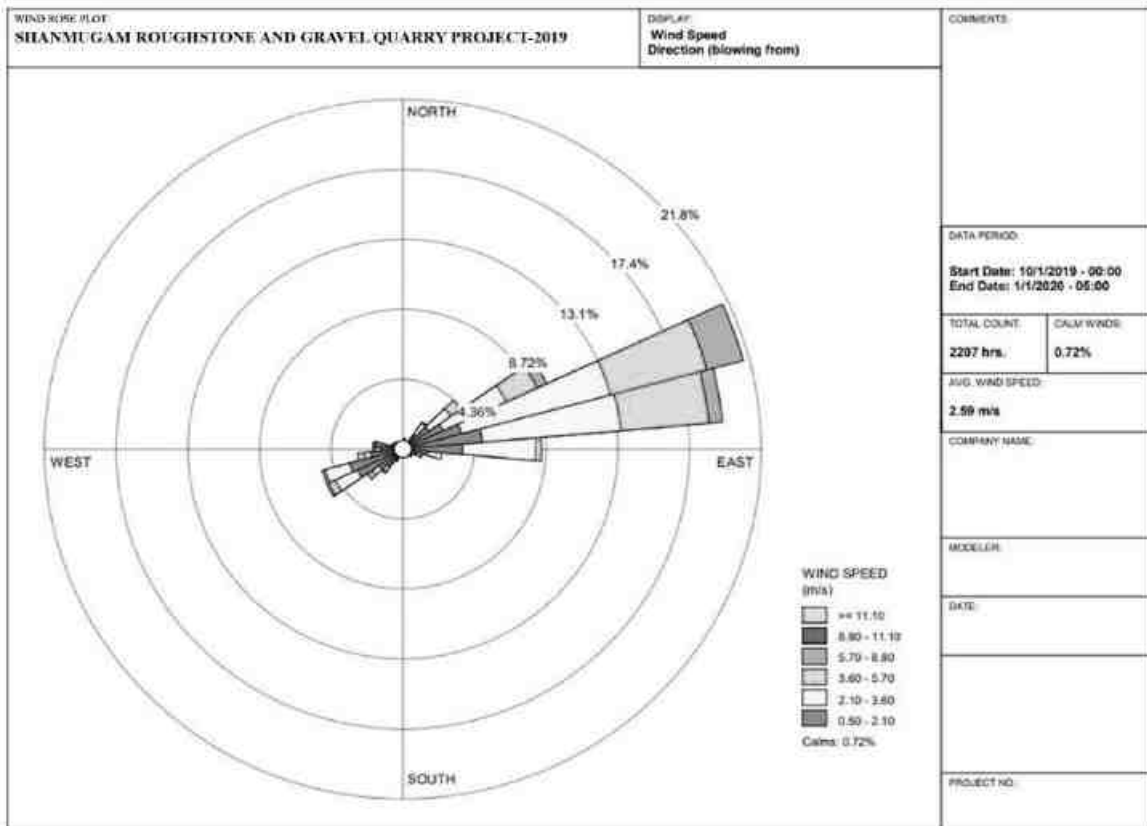
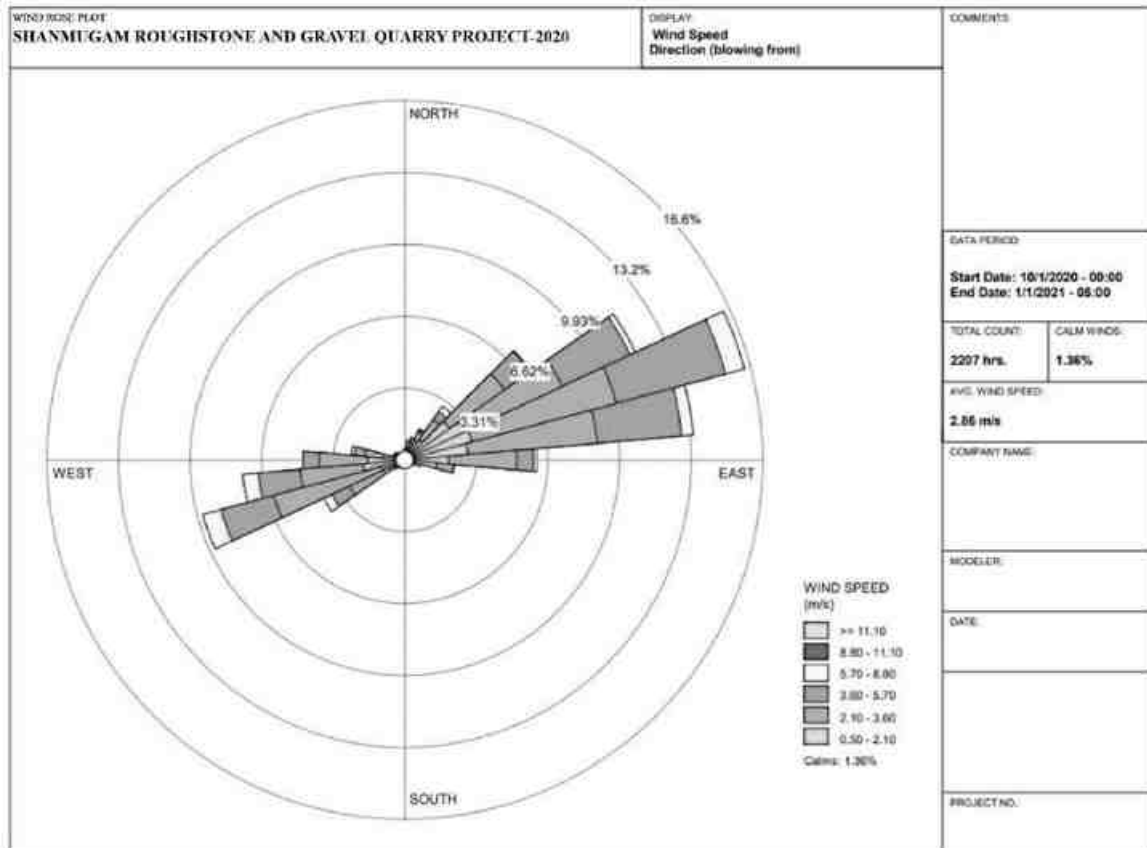


Figure 3.13 Windrose Diagram for October to December -2019-2020

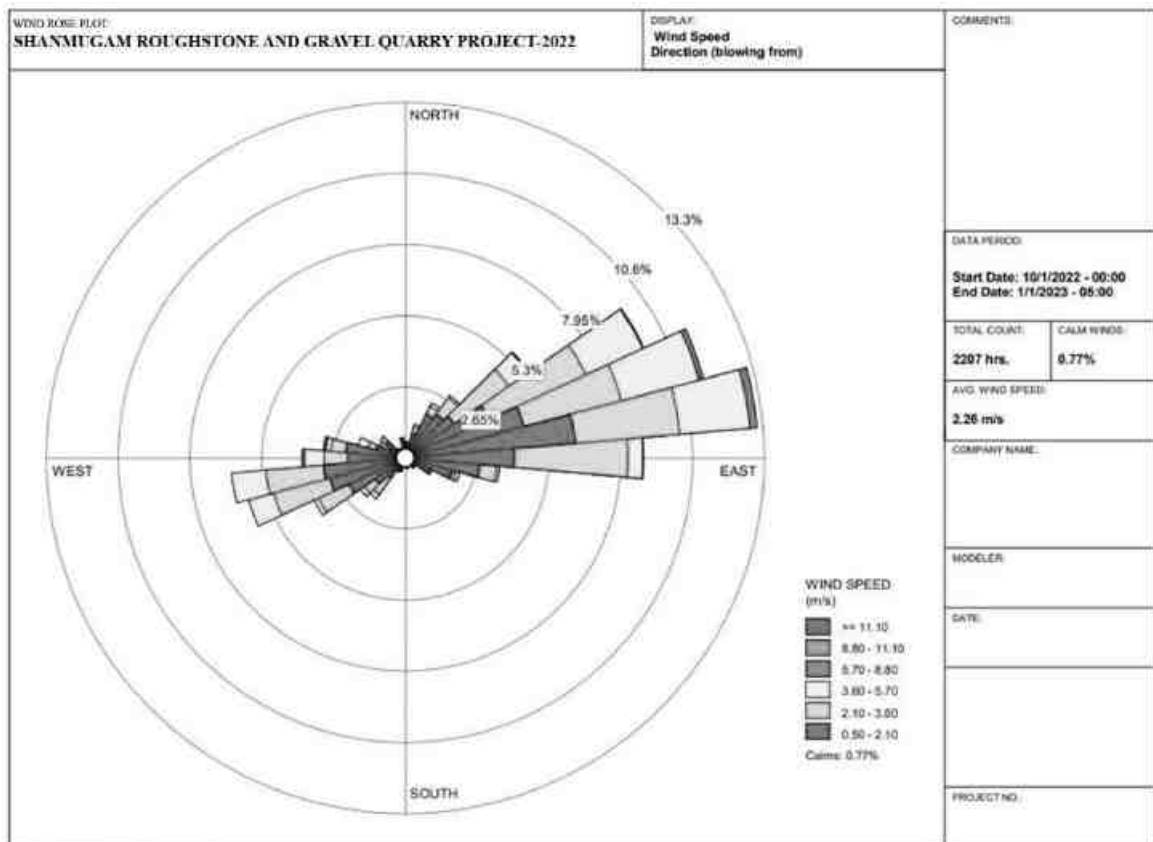
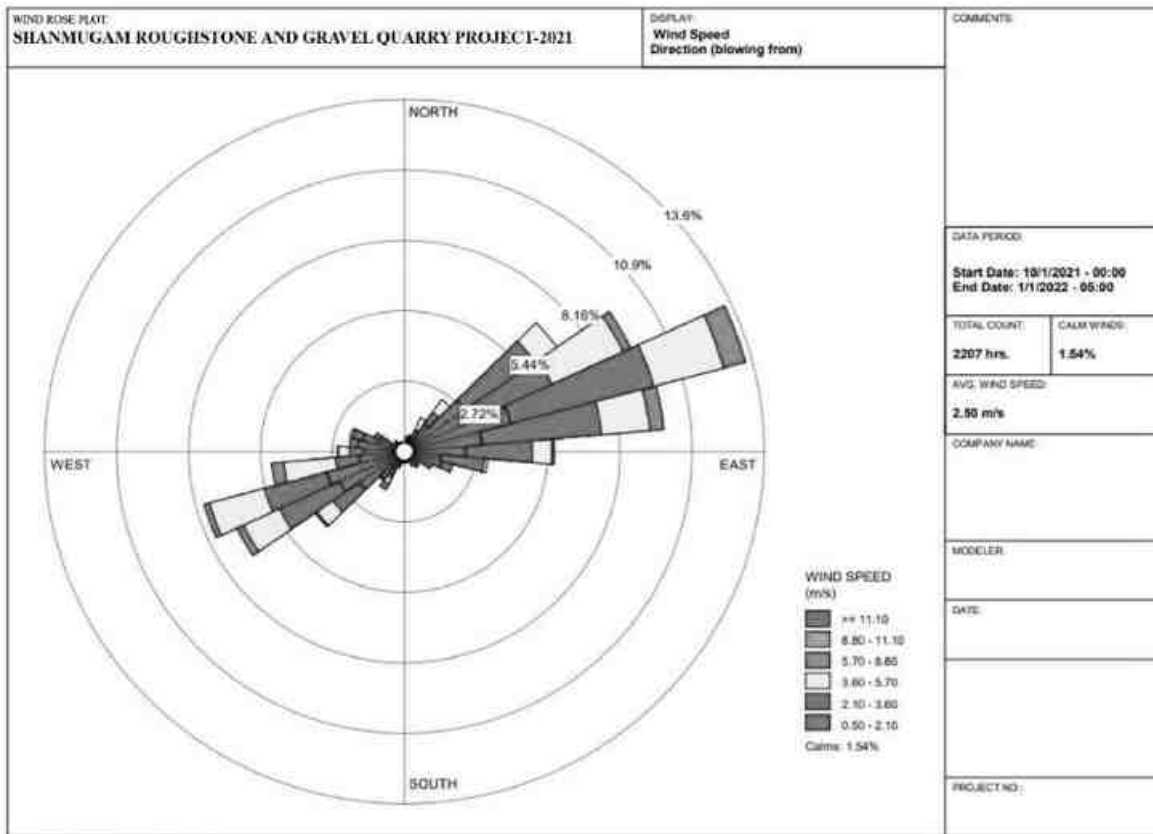


Figure 3.13a Windrose Diagram for October to December 2021-2022

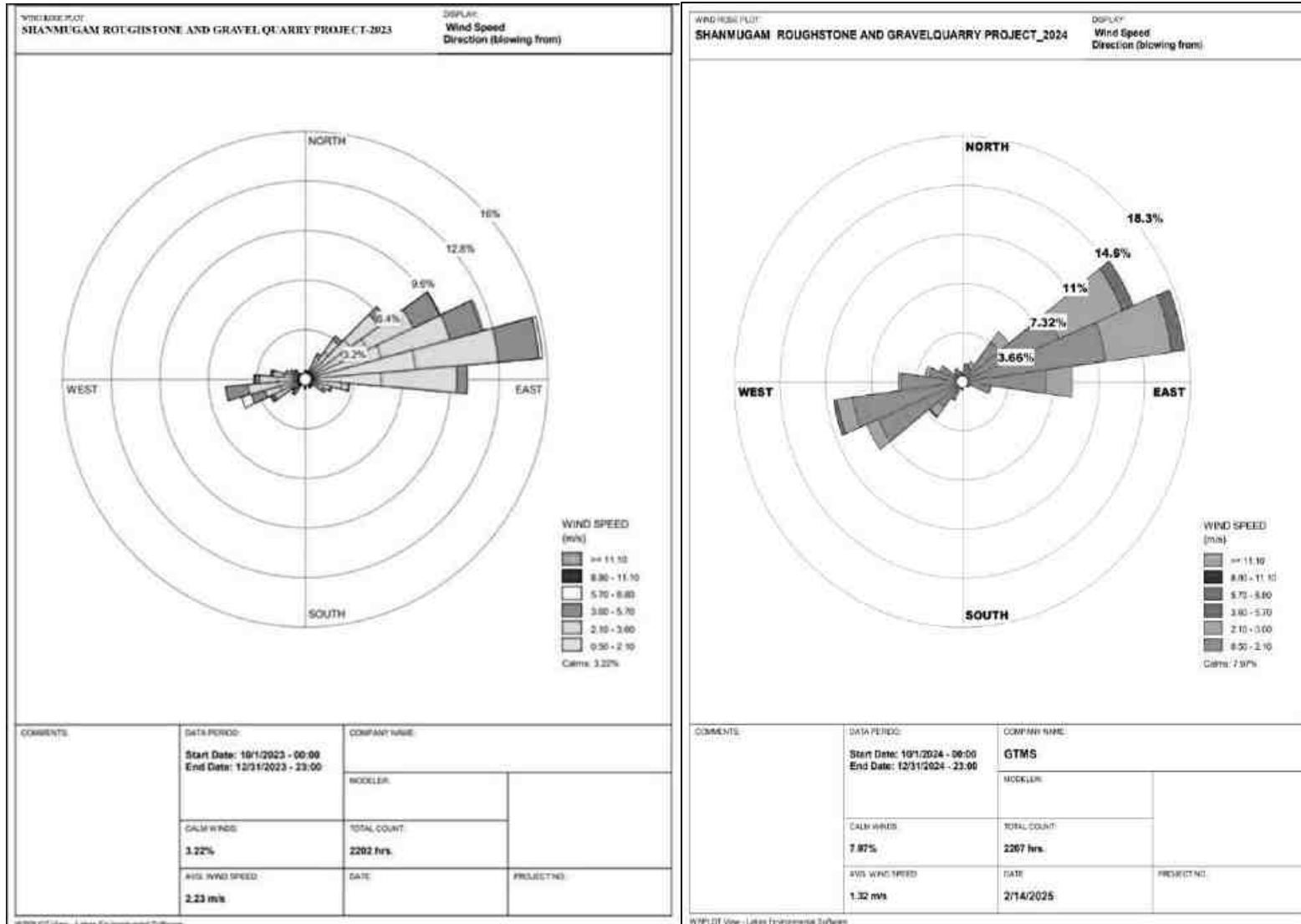


Figure 3.14 Onsite Wind Rose Diagram 2023 and 2024

Methodology

Ambient air quality monitoring was carried out with a frequency of two samples per week at eight (08) locations, adopting a continuous 24 hourly (3 shift of 8-hour) as per the CPCB, MoEF guidelines and notifications. It was ensured that the equipment was placed preferably at a height of at least $3 \pm 0.5\text{m}$ above the ground level at each monitoring station for negating the effects of wind-blown ground dust. The equipment was placed at space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results. The baseline data of ambient air were generated for PM_{10} , $\text{PM}_{2.5}$, Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_x). The sampling locations are shown in Figure 3.15 and average concentrations of air pollutants are summarized in Tables 3.16.

Table 3.16 Ambient Air Quality (AAQ) Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates
1	AAQ1	Thangavel core	1.43	SE	10°53'30.72"N,77°4'43.41"E
2	AAQ2	Pachapalayam	0.95	E	10°53'58.71"N,77°4'33.14"E
3	AAQ3	Panappatti	4.26	SE	10°52'35.48"N,77°5'58.17"E
4	AAQ4	Thekani	1.60	SW	10°53'8.45"N, 77° 3'33.57"E
5	AAQ5	Karachery	3.17	S	10°52'11.61"N,77°3'43.06"E
6	AAQ6	Edayampalayam	5.27	NE	10°55'25.14"N,77°6'32.89"E
7	AAQ7	Orattukuppai	2.79	NW	10°54'54.25"N,77°2'44.25"E
8	AAQ8	Shanmugam core	---	---	10°53'57.01"N,77°4'2.96"E

Source: Sampling Results by Excellence Laboratory (P) Limited and Greenlink Analytical and Research Laboratory (India) Private Ltd in association with GTMS.

Results

As per the monitoring data, $\text{PM}_{2.5}$ ranges from $18.3 \mu\text{g}/\text{m}^3$ to $20.3 \mu\text{g}/\text{m}^3$; PM_{10} from $41.9 \mu\text{g}/\text{m}^3$ to $46.3 \mu\text{g}/\text{m}^3$; SO_2 $3.4 \mu\text{g}/\text{m}^3$ to $5.1 \mu\text{g}/\text{m}^3$; NO_x from $11.7 \mu\text{g}/\text{m}^3$ to $17.2 \mu\text{g}/\text{m}^3$. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air Quality Index (AQI)

The AQI shows that the air quality of the study area falls within good category 44.5 causing minimal impact to human health.

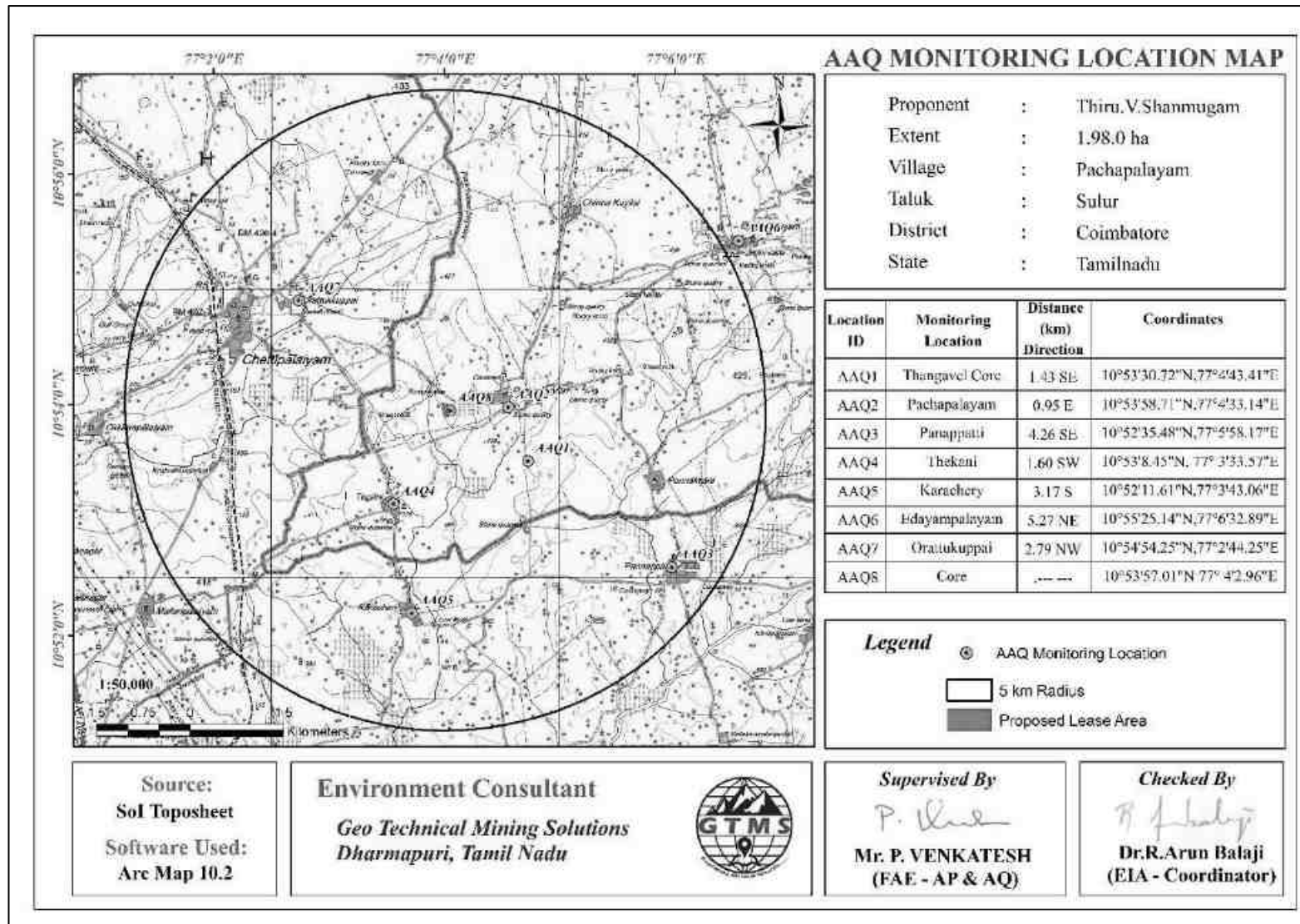


Figure 3.15 Toposheet Showing Ambient Air Quality Monitoring Station Locations around 5 Km Radius from the Proposed Project Site

Table 3.17 Summary of AAQ Result

Station ID	PM _{2.5}				PM ₁₀			
	Max	Min	Mean	98 th Percentile	Max	Min	Mean	98 th Percentile
AAQ1	22.8	20.0	21.1	22.6	50.7	44.4	47.0	50.6
AAQ2	19.8	18.3	19.2	19.8	43.8	40.4	42.4	43.6
AAQ3	17.6	15.5	16.7	17.3	44.0	38.8	41.8	44.0
AAQ4	16.2	15.1	15.6	16.2	40.6	37.8	39.1	40.6
AAQ5	15.1	13.5	14.3	15.0	37.8	33.8	35.7	37.6
AAQ6	26.6	25.3	25.9	26.6	59.1	56.3	57.6	59.1
AAQ7	18.6	16.4	17.2	18.6	46.5	40.9	43.1	46.0
AAQ8	25.6	22.5	24.0	25.6	47.9	43.1	45.2	47.9
SO ₂				NO _x				
AAQ1	4.8	3.9	4.3	4.8	18.2	14.8	16.5	18.1
AAQ2	4.8	3.2	4.1	4.8	18.7	12.5	15.8	18.7
AAQ3	5.1	3.8	4.4	5.1	15.8	11.8	13.6	15.5
AAQ4	4.8	2.9	3.7	4.8	14.9	9.0	11.6	14.8
AAQ5	4.0	2.1	2.6	3.5	12.4	6.5	8.2	12.3
AAQ6	6.2	4.4	5.2	6.2	21.7	15.4	18.2	21.7
AAQ7	5.5	4.1	4.7	5.5	17.1	12.7	14.5	16.5
AAQ8	5.4	3.0	4.1	5.3	18.9	10.5	14.2	18.6

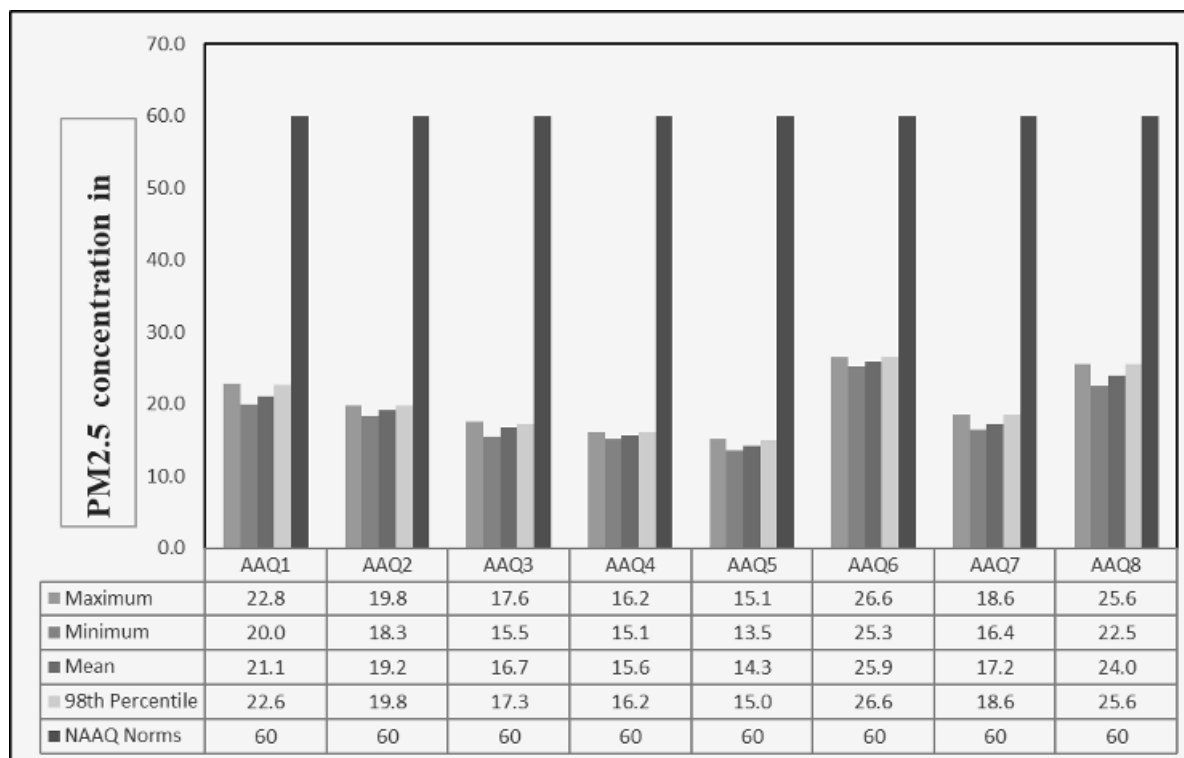


Figure 3.16 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM_{2.5} Measured from 8 Air Quality Monitoring Stations within 5 km Radius

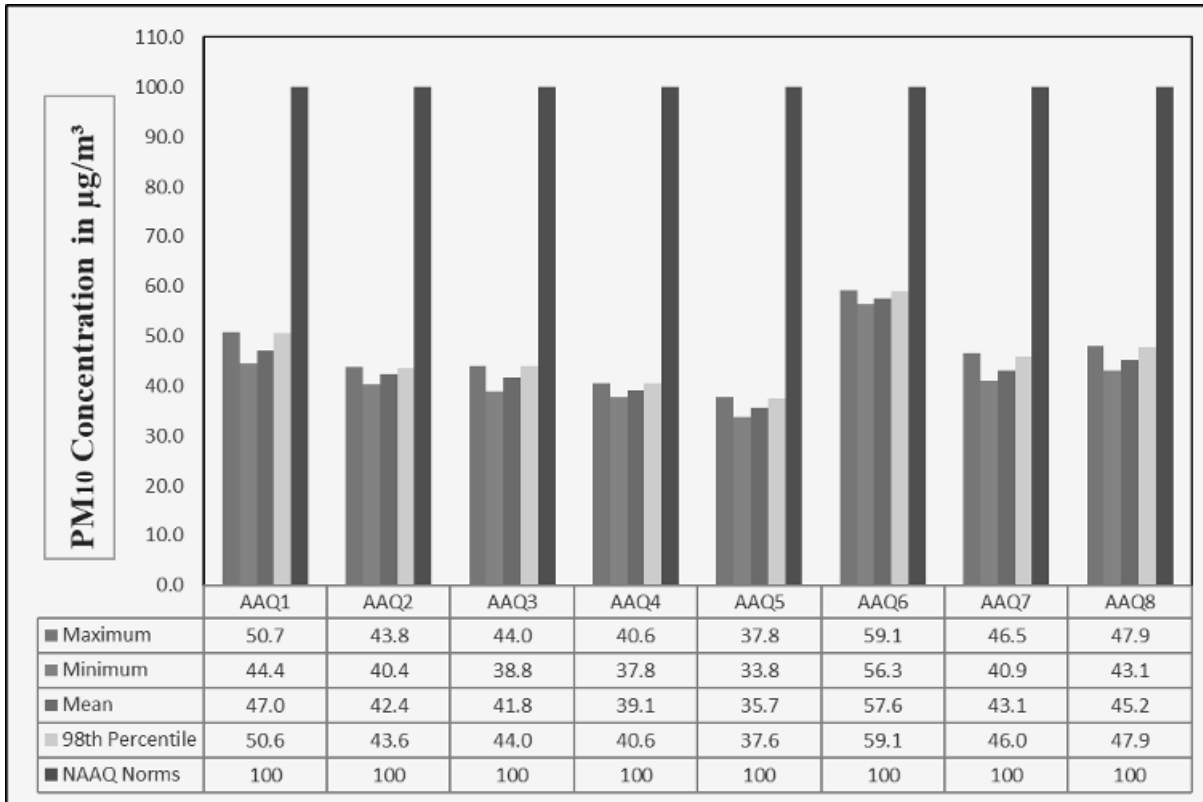


Figure 3.17 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM₁₀ Measured from 8 Air Quality Monitoring Stations within 5 km Radius

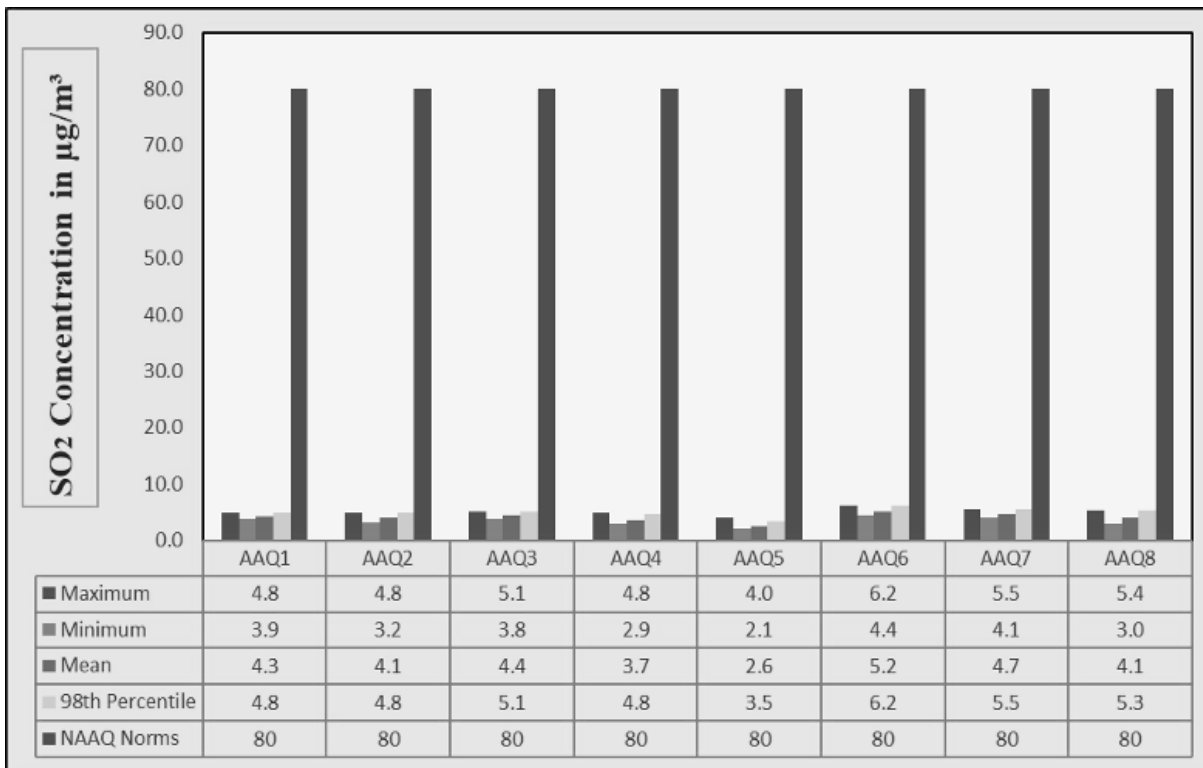


Figure 3.18 Bar Chart Showing Maximum, Minimum, and Average Concentrations of SO₂ Measured from 8 Air Quality Monitoring Stations within 5 km Radius

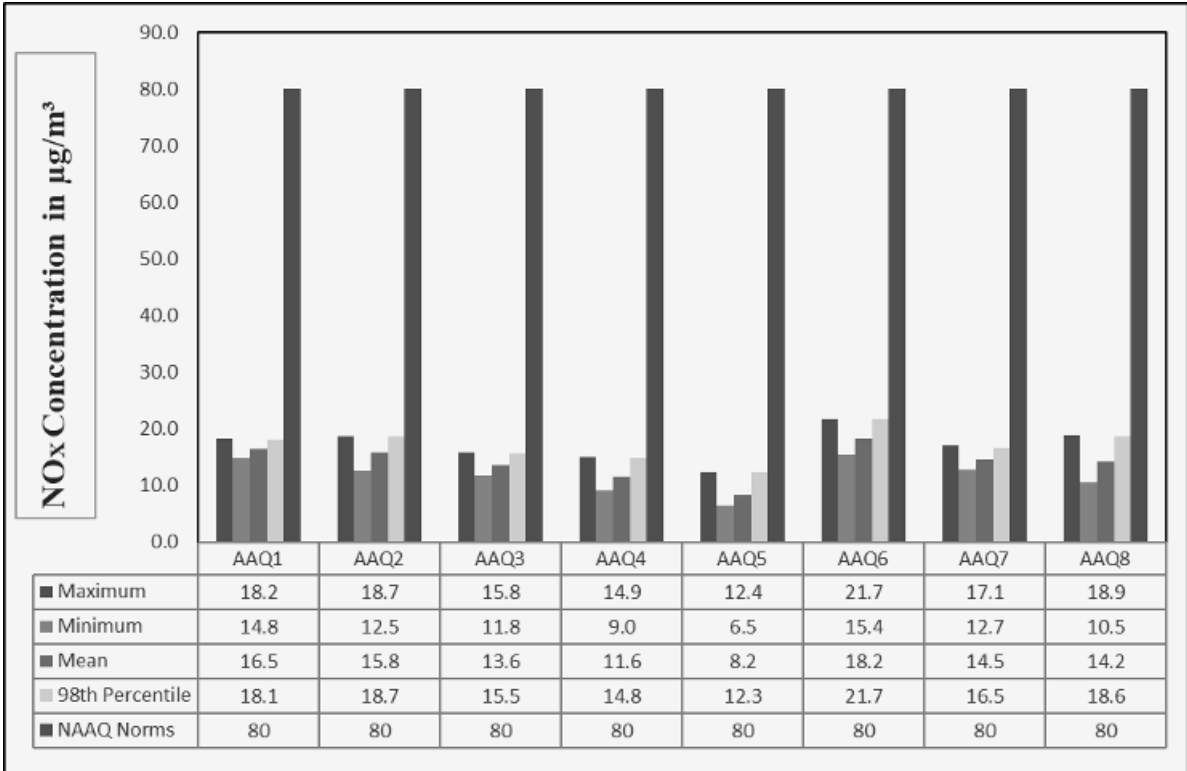


Figure 3.19 Bar Chart Showing Maximum, Minimum, and Average Concentrations of NO_x Measured from 8 Air Quality Monitoring Stations within 5 km Radius

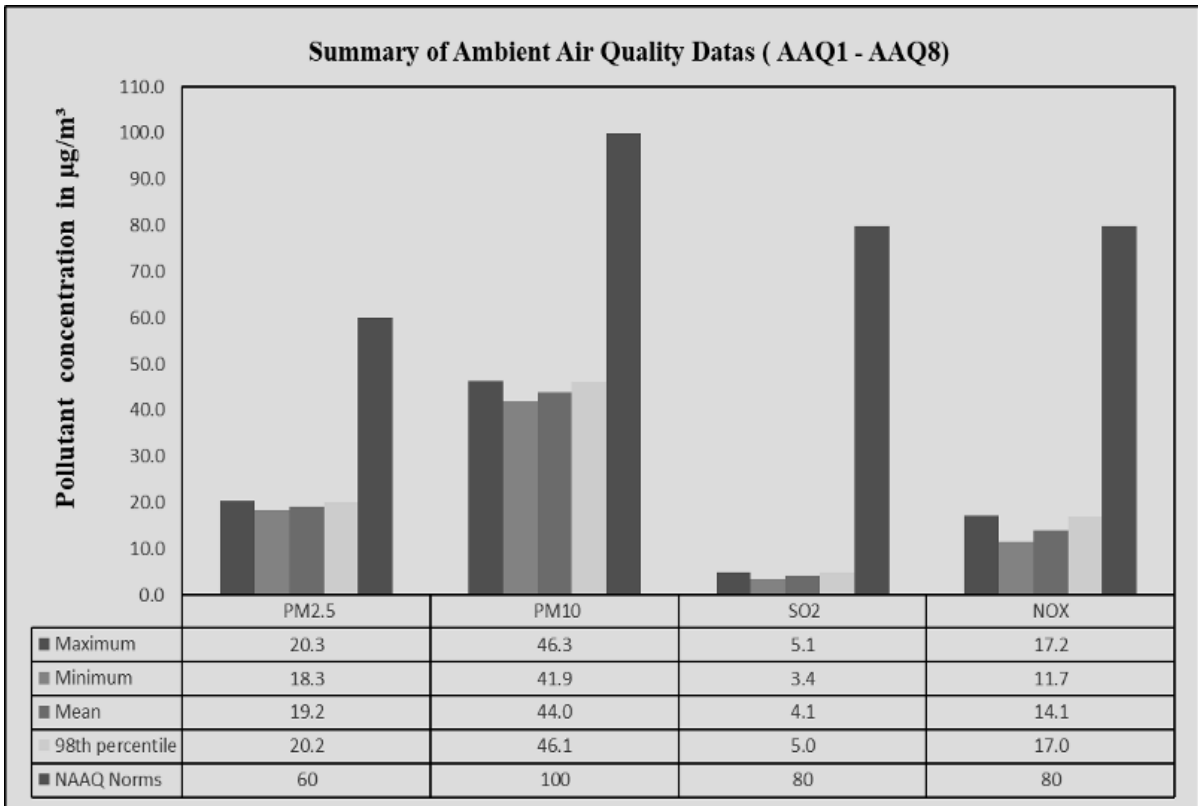


Figure 3.20 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of Pollutants in the Atmosphere Within 5 km Radius

3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in the study area. The main objective of noise monitoring in the study area is to establish the baseline noise level, which will in turn be used to assess the impact of the total noise expected to be generated during the project operations around the project site. In order to assess the ambient noise levels within the study area, noise monitoring was carried out at eight (08) locations covering commercial, residential, rural areas within the radius of 5 km. Details of noise monitoring locations are provided in Table 3.18 and spatial occurrence of the locations are shown in Figure 3.23

Table 3.18 Noise Monitoring Locations

Location Code	Monitoring Locations	Distance in km	Direction	Coordinates
N1	Thangavel Core	1.48	SE	10°53'27.68"N, 77° 4'42.96"E
N2	Pachapalayam	1.15	E	10°53'54.88"N, 77° 4'39.84"E
N3	Panappatti	4.37	SE	10°52'33.42"N, 77° 6'0.84"E
N4	Thekani	1.54	SW	10°53'10.28"N, 77° 3'34.48"E
N5	Karachery	3.05	S	10°52'14.97"N, 77° 3'46.07"E
N6	Edayampalayam	5.12	NE	10°55'20.95"N, 77° 6'29.51"E
N7	Orattukuppai	2.19	NW	10°54'54.87"N, 77° 2'39.57"E
N8	Shanmugam Core	---	---	10°53'57.57"N, 77° 4'0.75"E

Source: Sampling Results by Excellence Laboratory (P) Limited and Greenlink Analytical and Research Laboratory (India) Private Ltd in association with GTMS.

Table 3.19 Ambient Noise Quality Result

Station ID	Location	Environmental setting	Average day noise level (dB(A))	Average night noise level (dB(A))	Day time (6.00 AM – 10.00 PM)	Night time (10.00 PM – 6.00 AM)
					Standard (Leq in dB(A))	
N1	Thangavel Core	Industrial area	51.2	44.2	75	70
N2	Pachapalayam	Residential area	49.3	40.3	55	45
N3	Panappatti		45.7	41.4		
N4	Thekani		43.5	40.3		
N5	Karachery		52.8	43.9		
N6	Edayampalayam		49.2	39.7		
N7	Orattukuppai		45.8	35.3		
N8	Shanmugam Core	Industrial area	38.3	35.7	75	70

The Table 3.19 shows that noise level in core zone was 38.3 dB (A) Leq during day time and 35.7dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 43.5 to 51.2dB (A) Leq and during night time from 35.3 to 44.2dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB. The results are also depicted below in Figures 3.21 and 3.22.

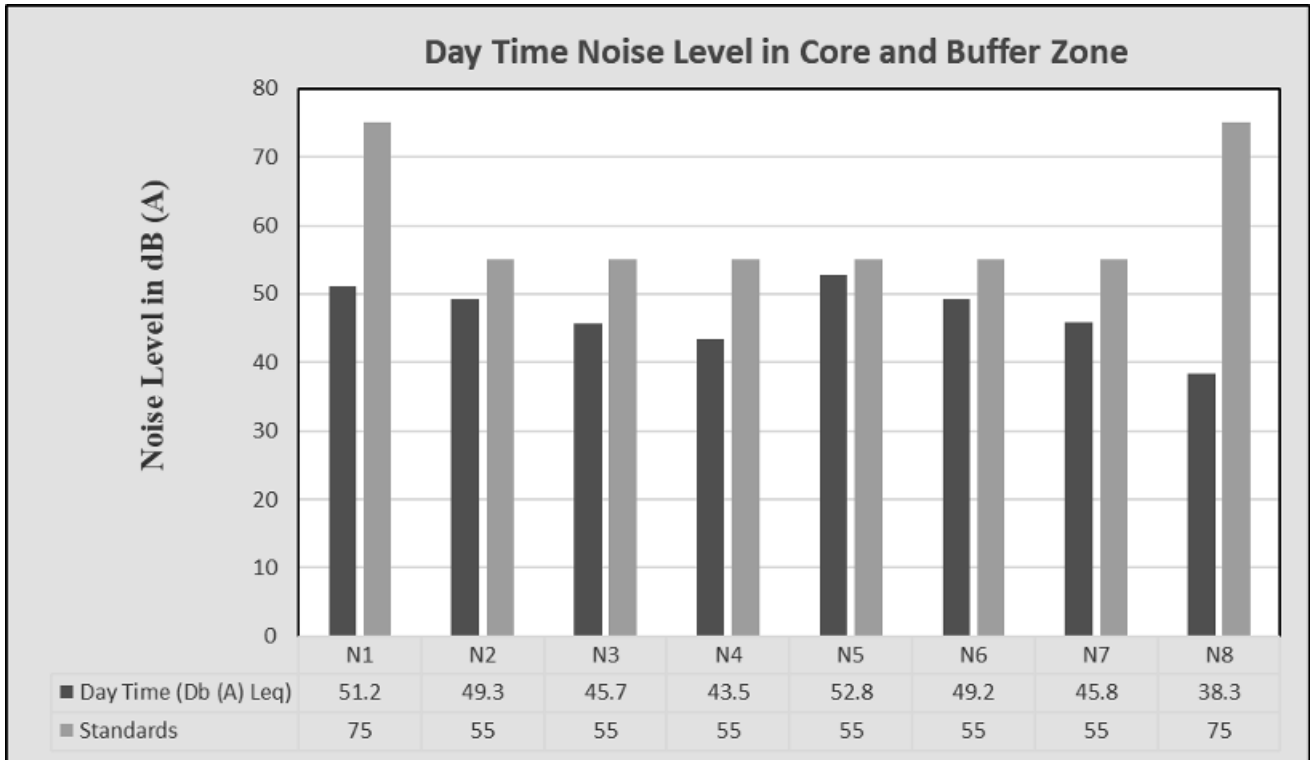


Figure 3.21 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones

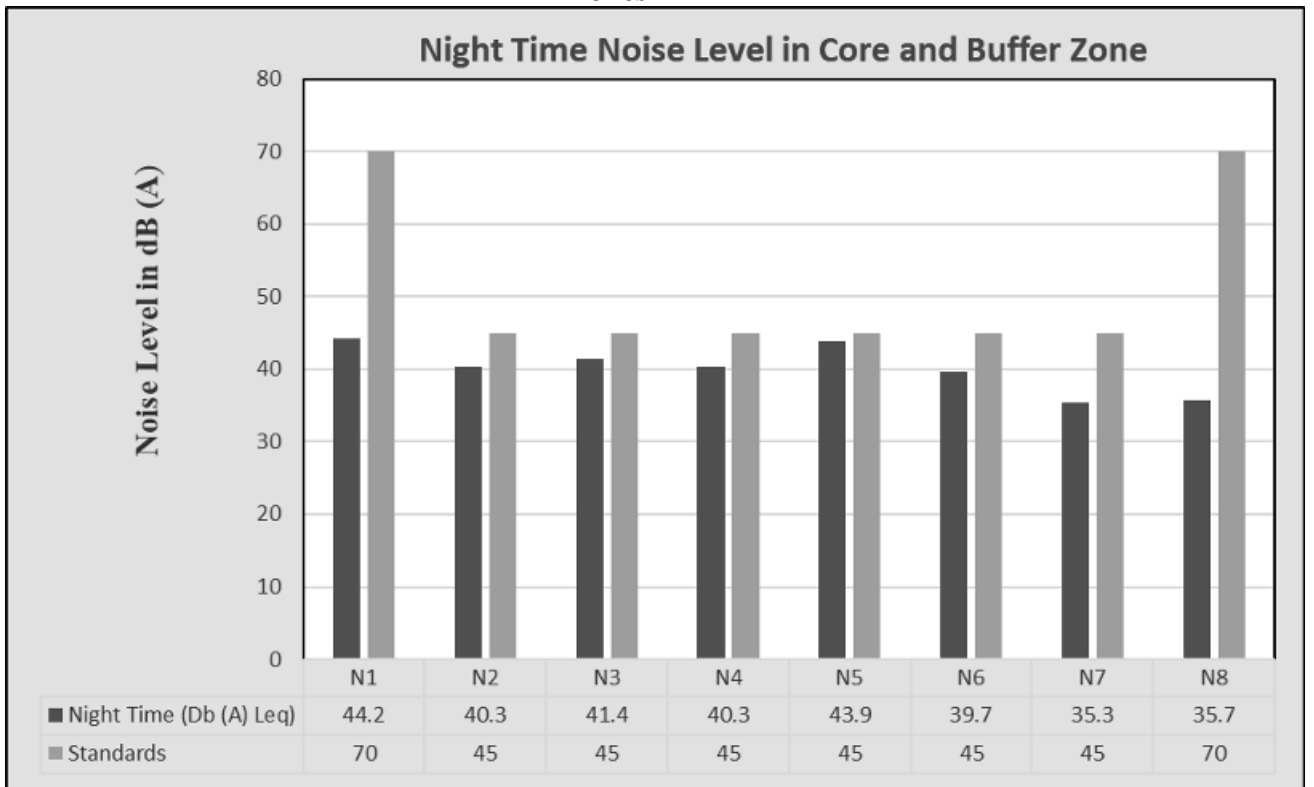


Figure 3.22 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones

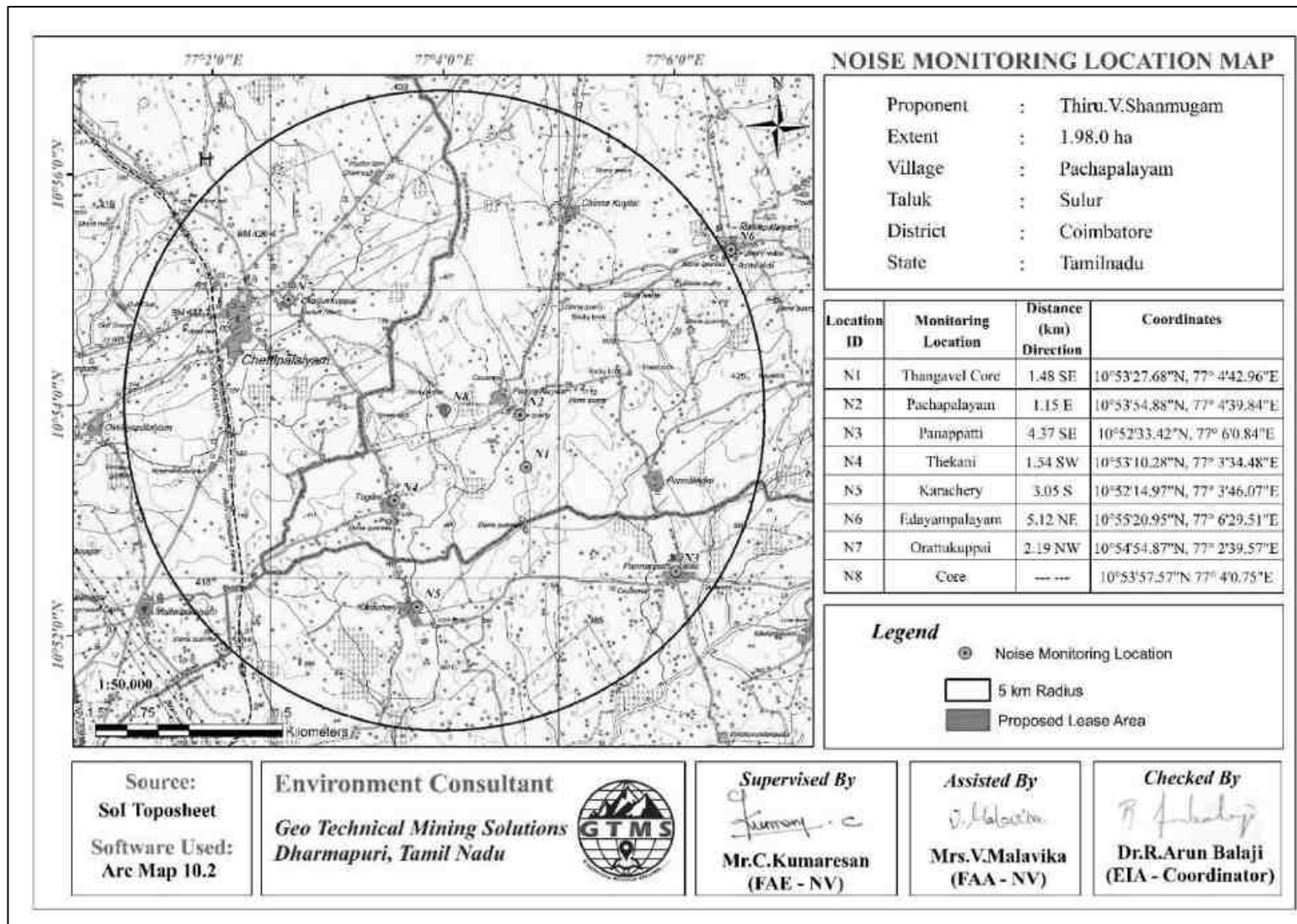


Figure 3.23 Toposheet Showing Noise Level Monitoring Station Locations Around 5 km Radius from the Proposed Project Site

3.5 BIOLOGICAL ENVIRONMENT

An ecological survey was conducted to collect the baseline data regarding flora and fauna in the study area of 10 km radius. Data were also collected from different sources, i.e., government departments such as District Forest Office, Government of Tamil Nadu. On the basis of onsite observations as well as forest department records the checklist of flora and fauna was prepared.

Methodology

Sampling locations were selected with reference to topography, land use, vegetation pattern, etc. In this study, quadrats of 10m × 10m were laid down to assess trees, quadrats of 5m × 5m were laid down for shrubs and quadrats of 1m × 1m were laid down for shrubs.



Figure 3.24 Quadrates Sampling Methods of Flora

Phyto-Sociological Studies

Phyto sociological parameters, such as *Density, Frequency, Abundance and Importance Value Index* of individual species were determined in randomly placed quadrat of different sizes in the study area, as shown in Table 3.20. Relative frequency, and relative density were calculated and the sum of these three represented Importance Value Index (IVI) for various species. For shrubs, herbs and grasses, *Density, Frequency, Relative Density & Relative Frequency were found*. Sample plots were selected in such a way to get maximum

representation of different types of vegetation and plots were laid out in different part of the study area of 10 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 3.20 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
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
Important Value Index	Relative Density + Relative Frequency

Shannon – Wiener Index, Evenness and Richness

Biodiversity index is a quantitative measure that reflects how many different types 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 is equally abundant. The corresponding formulas are given in Table 3.21.

Table 3.21 Calculation of Species Diversity by Shannon – Wiener Index, Evenness and Richness

Description	Formula
Species Diversity – Shannon- Wien Index	$H = \sum [(pi) * \ln(pi)]$ Where pi: Proportion of total sample represented by species i: number of individuals of species i/ total number sample

Evenness	H/H max Hmax = ln(s)= maximum diversity possible S=No. of species
Species Richness by Margalef	RI = S-1/ln N Where S = Total Number of species in the community N = Total Number of individuals of all species in the Community

3.5.1 Flora

Flora study was conducted using the above said methodology to inventory the existing terrestrial plants in both core and buffer zones. Details of plants have been described in the succeeding sections.

Flora in core zone

There are no trees in the quarry lease area, only shrubs, herbs and grasses. Taxonomically total of 28 species belonging to 16 families were recorded. Among them are herbs (23) and shrubs (5). Majority of the species belongs to the family of Fabaceae and Poaceae. The plant details are given in Table 3.22 There are no endangered or threatened plant species in the quarry lease area.

Table 3.22 Flora in Core zone

S. No	Local Name	Scientific name	Family name
SHRUBS			
1	Avaram chedi	<i>Senna auriculata</i>	Fabaceae
2	Earuku	<i>Calotropis gigantea</i>	Apocynaceae
3	Communist pacha	<i>Chromolaena odorata</i>	Asteraceae
4	Sundaikkai chedi	<i>Solanum torvum</i>	Solanaceae
5	Kattamanakku	<i>Jatropha gossypifolia</i>	Euphorbiaceae
HERBS & CLIMBERS			
1	Perandai	<i>Cissus quadrangularis</i>	Vitaceae
2	Thathapondu	<i>Tridax procumbens</i>	Asteraceae
3	Kolunji chedi	<i>Tephrosia purpurea</i>	Fabaceae
4	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae
5	Nearunji mull	<i>Tribulus zeyheri</i>	Zygophyllaceae
6	Pulapoo	<i>Aerva lanata</i>	Amaranthaceae
7	American mint	<i>Hyptis suaveolens</i>	Lamiaceae
8	Mukkirattai	<i>Boerhaavia diffusa</i>	Nyctaginaceae
9	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae

10	Kovaikodi	<i>Coccinia grandis</i>	Cucurbitaceae
11	Arivalmanaiyandu	<i>Sida acuta</i>	Malvaceae
12	Nilatutti	<i>Sida cordifolia</i>	Malvaceae
13	Korai grass	<i>Cyperus sesquiflorus</i>	Poaceae
14	Seppu nerinji	<i>Indigofera linnaei</i>	Fabaceae
15	Amman pacharisi	<i>Euphorbia hirta</i>	Euphorbiaceae
16	Karaikai	<i>Canthium coromandelicum</i>	Rubiaceae
17	Keelanelli	<i>Phyllanthus amarus</i>	Phyllanthaceae
18	Chevvarakupul	<i>Chloris barbata</i>	Poaceae
19	Mullukkeerai	<i>Amaranthus spinosus</i>	Amaranthaceae
20	Vishnukarandi	<i>Evolvulus alsinoides</i>	Convolvulaceae
21	Thulasi	<i>Ocimum sanctum</i>	Lamiaceae
22	Natthai choori	<i>Spermacoce hispida L</i>	Rubiaceae
23	Thuthi	<i>Abutilon indicum</i>	Malvaceae

Flora in 300 m radius buffer zone

It is an arid landscape. A variety of plant species are found within a radius of 300 meters. It is an arid landscape. There is no agricultural land nearby. It contains a total of 37 species belonging to 19 families have been recorded from the buffer zone. 11 Trees (27%), 7 Shrubs (19%) and 19 Herbs and Climbers, Creeper, Grass & Cactus (52%) were identified. Details of flora with the scientific name details and of diversity species Richness index were mentioned in Table 3.23-25 and figure 3.25. There is no threat to the Flora species in 300-meter radius.

Flora in 10 km radius buffer zone

Similar type of environment also in buffer area but with more flora diversity compare than core zone area because nearby agriculture land was found to dominate mostly in Southwest directions. Majority of the flat landscape around project unit is occupied by agriculture fields. It contains a total of 94 species belonging to 43 families have been recorded from the buffer zone. The floral (94) varieties among them Thirty-eight Trees 38 (41%) twenty-one Herbs 21 (22%) and Eighteen Shrubs 18 (19%) and twelve Climbers 12 (13%), two Creepers 2 (2%), two Grass 2 (2%) and one Cactus 1 (1%) were identified. The result of buffer zone of flora studies shows that Fabaceae and Euphorbiaceae, Solanaceae are the main dominating species in the study area it mentioned in Table No.3.26.

Table 3.23 Flora in 300m Radius

S.No	Local Name	Scientific Name	Family Name	Total No. of Species	Total No. of Quadrants with Species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
Trees													
1	Karuvelan	<i>Prosopis juliflora</i>	Fabaceae	5	4	5	1.0	80.0	1.3	14.7	16.0	30.7	Not Listed
2	Palm tree	<i>Borassus flabellifer</i>	Fabaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
3	Vembu	<i>Azadirachta indica</i>	Meliaceae	4	3	5	0.8	60.0	1.3	11.8	12.0	23.8	Not Listed
4	Unjai maram	<i>Albizia amara</i>	Fabaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
5	Vetpalai	<i>Wrightia tinctoria</i>	Apocynaceae	5	4	5	1.0	80.0	1.3	14.7	16.0	30.7	Not Listed
7	Teak maram	<i>Tectona grandis</i>	Lamiaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
8	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	4	3	5	0.8	60.0	1.3	11.8	12.0	23.8	Not Listed
9	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
10	Puliyamaram	<i>Tamarindus indica</i>	Legumes	4	3	5	0.8	60.0	1.3	11.8	12.0	23.8	Not Listed
11	Nuna	<i>Morinda citrifolia</i>	Rubiaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
Shrubs													
1	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	8	7	10	0.8	70.0	1.1	15.7	15.9	31.6	Not Listed
2	Uumaththai	<i>Datura metel</i>	Solanaceae	6	5	10	0.6	50.0	1.2	11.8	11.4	23.1	Not Listed
3	Thuthi	<i>Abutilon indicum</i>	Malvaceae	7	6	10	0.7	60.0	1.2	13.7	13.6	27.4	Not Listed
4	Avarai	<i>Senna auriculata</i>	Fabaceae	9	8	10	0.9	80.0	1.1	17.6	18.2	35.8	Not Listed
5	Unichadi	<i>Lantana camara</i>	Verbenaceae	6	5	10	0.6	50.0	1.2	11.8	11.4	23.1	Not Listed
6	Suraimullu	<i>Zizyphus Oenoplia</i>	Rhamnaceae	7	6	10	0.7	60.0	1.2	13.7	13.6	27.4	Not Listed

7	Acacia	<i>Acacia holosecicea</i>	Fabaceae	8	7	10	0.8	70.0	1.1	15.7	15.9	31.6	Not Listed
Herbs													
1	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
2	Nearunji mull	<i>Tribulus zeyheri</i>	Zygophyllaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed
3	Pill	<i>Cenchrus ciliaris</i>	Poaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
4	Pulapoo	<i>Aerva lanata</i>	Amaranthaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed
5	kapok bush	<i>Aerva javani</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
6	Rail poondu	<i>Croton bonplandianus</i>	Euphorbiaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
7	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	15	0.6	53.3	1.1	6.5	6.7	13.1	Not Listed
8	Thumbai chadi	<i>Leucas aspera</i>	Lamiaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed
9	Umathai	<i>Datura metel</i>	Solanaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
10	Sethamutti	<i>Sida cordata</i>	Malvaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
11	Kolunji	<i>Tephrosia purpurea</i>	Fabaceae	9	8	15	0.6	53.3	1.1	6.5	6.7	13.1	Not Listed
12	Vealiparuthi	<i>Pergularia daemia</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed
13	Seppu nerinji	<i>Indigofera linnaei Ali</i>	Fabaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
14	Sapathikalli	<i>Opuntia ficus-indica</i>	Cactaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed
15	Pal kodi	<i>Cynanchum viminale</i>	Apocynaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
16	Ilia perandai	<i>Cissus rotundifolia</i>	Vitaceae	9	8	15	0.6	53.3	1.1	6.5	6.7	13.1	Not Listed
17	Katralai	<i>Aloe vera</i>	Asphodelaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
18	Seammulli	<i>Barleria prionitis</i>	Acanthaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
19	Kandakathri	<i>Solanum virginianum</i>	Solanaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed

Table 3.24 Calculation of Species Diversity in 300m radius

S. No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
Tress						
1	Karuvealan	<i>Prosopis juliflora</i>	5	0.13	-2.05	-0.26
2	Palm tree	<i>Borassus flabellifer</i>	3	0.08	-2.56	-0.20
3	Vembu	<i>Azadirachta indica</i>	4	0.10	-2.28	-0.23
4	Unjai maram	<i>Albizia amara</i>	3	0.08	-2.56	-0.20
5	Vetpalai	<i>Wrightia tinctoria</i>	5	0.13	-2.05	-0.26
6	Teak maram	<i>Tectona grandis</i>	3	0.08	-2.56	-0.20
7	Pongam	<i>Pongamia pinnata</i>	4	0.10	-2.28	-0.23
8	Thennai maram	<i>Cocos nucifera</i>	3	0.08	-2.56	-0.20
9	Puliyamaram	<i>Tamarindus indica</i>	4	0.10	-2.28	-0.23
10	Karuvealan	<i>Prosopis juliflora</i>	5	0.13	-2.05	-0.26
11	Nuna maram	<i>Morinda citrifolia</i>	3	3	0.08	-2.56
H (Shannon Diversity Index) =2.28						
Shrubs						
1	Erukku	<i>Calotropis gigantea</i>	8	0.16	-1.85	-0.29
2	Uumaththai	<i>Datura metel</i>	6	0.12	-2.14	-0.25
3	Thuthi	<i>Abutilon indicum</i>	7	0.14	-1.99	-0.27
4	Avarai	<i>Senna auriculata</i>	9	0.18	-1.73	-0.31
5	Unichadi	<i>Lantana camara</i>	6	0.12	-2.14	-0.25
6	Suraimullu	<i>Zizyphus Oenoplia</i>	7	0.14	-1.99	-0.27
7	Acacia	<i>Acacia holosecicea</i>	8	0.16	-1.85	-0.29
H (Shannon Diversity Index) =1.94						
Herbs						
1	Nayuruv	<i>Achyranthes aspera</i>	6	0.04	-3.14	-0.14
2	Nearunji mull	<i>Tribulus zeyheri</i>	7	0.05	-2.99	-0.15
3	Pill	<i>Cenchrus ciliaris</i>	8	0.06	-2.86	-0.16
4	Pulapoo	<i>Aerva lanata</i>	7	0.05	-2.99	-0.15
5	Kapok bush	<i>Aerva javani</i>	6	0.04	-3.14	-0.14
6	Rail poondu	<i>Croton bonplandianus</i>	8	0.06	-2.86	-0.16
7	Perandai	<i>Cissus quadrangularis</i>	9	0.06	-2.74	-0.18

8	Thumbai chadi	<i>Leucas aspera</i>	7	0.05	-2.99	-0.15
9	Umathai	<i>Datura metel</i>	8	0.06	-2.86	-0.16
10	Sethamutti	<i>Sida cordata</i>	6	0.04	-3.14	-0.14
11	Kolunji	<i>Tephrosia purpurea</i>	9	0.06	-2.74	-0.18
12	Vealiparuthi	<i>Pergularia daemia</i>	7	0.05	-2.99	-0.15
13	Seppu neringi	<i>Indigofera linnaei Ali</i>	8	0.06	-2.86	-0.16
14	Sapathikalli	<i>Opuntia ficus-indica</i>	7	0.05	-2.99	-0.15
15	Pal kodi	<i>Cynanchum viminale</i>	6	0.04	-3.14	-0.14
16	Ilia perandai	<i>Cissus rotundifolia</i>	9	0.06	-2.74	-0.18
17	Katralai	<i>Aloe vera</i>	8	0.06	-2.86	-0.16
18	Seammulli	<i>Barleria prionitis</i>	6	0.04	-3.14	-0.14
19	Kandakathri	<i>Solanum virginianum</i>	7	0.05	-2.99	-0.15
H (Shannon Diversity Index) =2.93						

Table 3.25 Species Richness (Index) in 300-meter radius

Details	H	H max	Evenness	Species Richness
Trees	2.28	2.30	0.99	2.46
Shrubs	1.94	1.95	0.99	1.53
Herbs	2.93	2.94	1.00	3.65

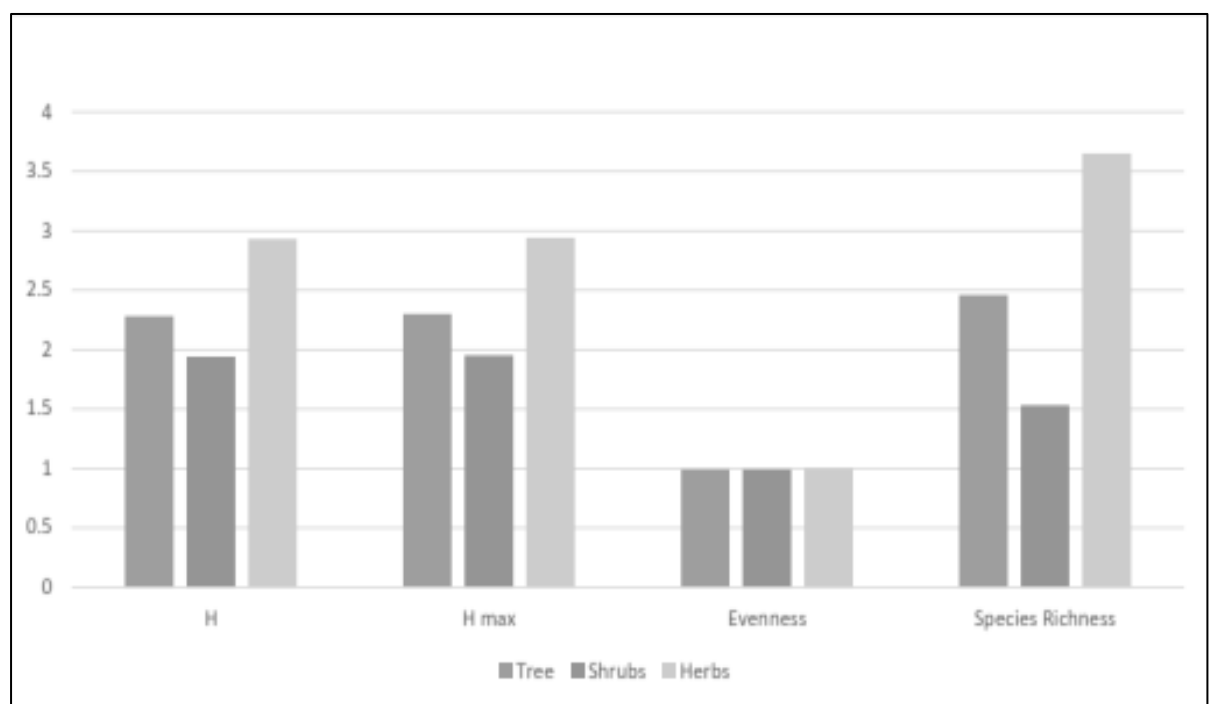


Figure 3.25 Floral diversity species Richness (Index) in 300m radius

Table 3.26 Flora in Buffer Zone

S. No.	Local & English Name	Scientific Name	Family Name
Trees			
1	Millettia pinnata	<i>Pongamia pinnata</i>	Fabaceae
2	Tamarind	<i>Tamarindus indica</i>	Legumes
3	Coconut	<i>Cocos nucifera</i>	Arecaceae
4	Noni	<i>Morinda citrifolia</i>	Rubiaceae
5	Lemon	<i>Citrus lemon</i>	Rutaceae
6	Madras Thorn	<i>Pithecellobium dulce</i>	Mimosaceae
7	Mango	<i>Mangifera indica</i>	Anacardiaceae
8	Sesban	<i>Sesbania sesban</i>	Fabaceae
9	Neem or Indian lilac	<i>Azadirachta indica</i>	Meliaceae
10	Creamy Peacock Flower	<i>Delonix elata</i>	Fabaceae
11	Beauty leaf	<i>Calophyllu inophyllum</i>	Calophyllaceae
12	Castor oil plant	<i>Ricinus communis</i>	Euphorbiaceae
13	Gum arabic tree	<i>Acacia nilotica</i>	Mimosaceae
14	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae
15	Bitter Albizia	<i>Albizia amara</i>	Fabaceae
16	Chebolic myrobalan	<i>Terminalia chebula</i>	Combretaceae
17	Asian Palmyra palm	<i>Borassus flabellifer</i>	Arecaceae
18	Banana tree	<i>Musa</i>	Musaceae
19	Giant thorny bamboo	<i>Bambusa bambos</i>	Poaceae
20	Black plum	<i>Sygygium cumini</i>	Myrtaceae
21	Indian fig tree	<i>Ficus recemosa</i>	Moraceae
22	Custard apple	<i>Annona reticulata</i>	Annonaceae
23	Gooseberry	<i>Phyllanthus acidus</i>	Euphorbiaceae
24	Teak	<i>Tectona grandis</i>	Verbenaceae
25	Indian gooseberry	<i>Emblica officinalis</i>	Phyllanthaceae
26	Jack fruit	<i>Artocarpus heterophyllus</i>	Moraceae
27	Henna	<i>Lawsonia inermis</i>	Lythraceae
28	Five leaf chastera	<i>Vitex negundo</i>	Lamiaceae
29	Papaya	<i>Carica papaya L</i>	Caricaceae
30	Acacia Nilotica	<i>Vachellia nilotica</i>	Fabaceae
31	Indian bael	<i>Aegle marmelos</i>	Rutaceae
32	Banyan tree	<i>Ficus benghalensis</i>	Moraceae
33	Chinese chaste tree	<i>Vitex negundo</i>	Verbenaceae
34	Peepal	<i>Ficus religiosa</i>	Moraceae
35	Indian fir tree	<i>Polylathia longifolia</i>	Annonaceae
36	Guava	<i>Psidium guajava</i>	Myrtaceae
37	Curry tree	<i>Murraya koenigii</i>	Asclepiadaceae
38	Bamboo	<i>Bambusa bambo</i>	Poaceae
Shrubs			
39	Avaram	<i>Senna auriculata</i>	Fabaceae
40	Indian Oleander	<i>Nerium indicum</i>	Apocynaceae
41	Ceylon Date Palm	<i>Phoenix pusilla</i>	Arecaceae
42	Rosy Periwinkle	<i>Cathranthus roseus</i>	Apocynaceae

43	Wild Caper Bush.	<i>Capparis sepiaria</i>	Capparaceae
44	Rosary pea	<i>Abrus precatorius</i>	Fabaceae
45	Ceylon Date Palm	<i>Phoenix pusilla</i>	Arecaceae
46	Flame of the Woods	<i>Xoracoc cinea</i>	Rubiaceae
47	Puriging nut	<i>Jatropha curcas</i>	Euphorbiaceae
48	Columnar Cactus	<i>Cereus pterogonus</i>	Cactaceae
49	Thorn apple	<i>Datura stramonium</i>	Solanaceae
50	Night shade plan	<i>Solanum torvum</i>	Solanaceae
51	Indian mallow	<i>Abutilon indicum</i>	Meliaceae
52	Triangular spruge	<i>Euphorbia antiqorum</i>	Euphorbiaceae
53	Shoe flower	<i>Hibiscu rosa-sinensis</i>	Malvaceae
54	Datura metel	<i>Datura metel</i>	Solanaceae
55	Milk Weed	<i>Calotropis gigantea</i>	Apocynaceae
56	Touch-me-not	<i>Mimosa pudica</i>	Mimosaceae
Herbs			
57	Prickly chaff flower	<i>Achyranthes aspera</i>	Amaranthaceae
58	Tridax daisy	<i>Tridax procumbens</i>	Asteraceae
59	Hibiscus hispidissimus	<i>Hibiscus hispidissimus</i>	Malvaceae
60	Indian Copperleaf	<i>Acalypha indica</i>	Euphorbiaceae
61	Cleome viscosa	<i>Celome viscosa</i>	Capparidaceae
62	False daisy	<i>Eclipta prostrata</i>	Asteraceae
63	Punarnava	<i>Boerhaavia diffusa</i>	Nyctaginaceae
64	Node Flower	<i>Allmania nodiflora</i>	Amaranthaceae
65	Poor land flatsedg	<i>Cyperus compressus</i>	Cyperaceae
66	Gale of the wind	<i>Phyllanthus niruri</i>	Phyllanthaceae
67	Benghal dayflower	<i>Commelina benghalensis</i>	Commelinaceae
68	Common leucas	<i>Leucas aspera</i>	Lamiaceae
69	Carrot grass	<i>Parthenium hysterophorus</i>	Asteraceae
70	Turneric's	<i>Curcuma longa</i>	Zingiberaceae
71	Creeping wood sorrel	<i>Oxalis corniculata</i>	Oxalidaceae
72	Black Mustard Seed	<i>Brassica juncea</i>	Brassicaceae
73	Red Hogweed	<i>Boerhavia diffusa</i>	Nyctaginaceae
74	Holy basil	<i>Ocimum tenuiflorum</i>	Lamiaceae
75	Digeria muricata	<i>Digeria muricata</i>	Amarantheaceae
76	Indian doab	<i>Cynodon dactylon</i>	Poaceae
77	European black nightshade	<i>Solanumnigrum</i>	Solanaceae
Climber			
78	Ivy gourd	<i>Coccinia grandis</i>	Cucurbitaceae
79	Stemmed vine	<i>Cissus quadrangularis</i>	Vitaceae
80	Balloon vine	<i>Cardiospermum helicacabum</i>	Sapindaceae
81	Betel	<i>Piper betle</i>	Piperaceae
82	Butterfly pea	<i>Clitoria ternatea</i>	Fabaceae
83	Wild bitter	<i>Momordica charantia</i>	Cucurbitaceae
84	Purple peaeggplant	<i>Solanum trilobatum</i>	Solanaceae
85	Indian sarsparilla	<i>Hemidesmus indicus</i>	Asclepiadaceae

86	Pointed gourd	<i>Trichosanthes dioica</i>	Cucurbitaceae
87	Butterfly-pea	<i>Clitoria ternata</i>	Fabaceae
88	Wild jasmine	<i>Jasminum augustifolium</i>	Oleaceae
89	Bottle Guard	<i>Lagenaria siceraria</i>	Cucurbitaceae
Creeper			
90	Ground Spurge	<i>Euphorbia prostrata</i>	Euphorbiaceae
91	Creeping-oxeye	<i>Wedelia trilobata</i>	Asteraceae
Grass			
92	Jungle rice	<i>Echinochloa colona</i>	Poaceae
93	Windmill grass	<i>Chloris barbata</i>	Amaranthaceae
Cactus			
94	Prickly pear	<i>Opuntia dillenii</i>	Cactaceae

3.5.2 Fauna

The faunal survey was carried out for Mammals, Birds, Reptiles, Amphibians and Butterflies. There are no rare, endangered, threatened (RET) and endemic species present in core area.

Table 3.27 Methodology applied during survey of fauna

S. No.	Taxa	Method of Sampling	References
1	Insects	Random walk, Opportunistic observations	Pollard (1977); Kunte (2000)
2	Reptiles	Visual encounter survey (Direct Search)	Daniel J.C (2002)
3	Amphibians	Visual encounter survey (Direct Search)	
4	Mammals	Tracks and Signs	Menon V (2014)
5	Avian	Random walk, Opportunistic observations	Grimmett R (2011); Ali S (1941)

Fauna in Core Zone

A total of 18 varieties of species belonging to 14 families were observed in the core zone. Among them are 6 Insects, 3 Reptiles, 1 Mammal and 8 Avian. Number of species decreases towards the mining area due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and 6 species are under schedule IV according to Indian wild life Act 1972. There are no critically endangered, endangered, vulnerable and endemic species there. Details of fauna in core zone and their scientific name were mentioned in Table. 3.28.

Fauna in Buffer Zone

A total of 48 species belonging to 33 families were recorded in the buffer zone. Based on habitat classification the majority of species were 19 Birds (41%), followed by 15 Insects (31%), 7 Reptiles (15%), 4 Mammals (8%) and 3 Amphibians (6%). There are 4 schedule II species and 27 schedule IV species according to Indian wild life Act 1972. There are no

critically endangered, vulnerable and endemic species observed. List of fauna in the buffer zone is provided in Table 3.29.

Table 3.28 Fauna in Core Zone

S. No	Common name/English Name	Family Name	Scientific Name	Schedule list wildlife Protection act 1972	IUCN Red List data
INSECTS					
1	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	NL	NL
2	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
3	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
4	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
5	Stick insect	Lonchodidae	<i>carausius morosus</i>	NL	LC
6	Mottled emigrant	Peridae	<i>Catopsilia pyranthe</i>	NL	LC
REPTILES					
7	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
8	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
9	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
MAMMALS					
10	Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	NL
AVES					
11	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
12	Koel	Cuculidae	<i>Eudynamys</i>	Schedule IV	LC
13	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
14	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
15	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
16	Crow Pheasant	Cuculidae	<i>Centropus sinensis</i>	Schedule IV	LC
17	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
18	Grey drongo	Dicruridae	<i>Dicrurus leucophaeus</i>	Schedule IV	LC

*NE-Not evaluated; LC- Least Concern, NT- Near Threatened, T-Threatened

Table 3.29 Fauna in Buffer Zone

S.No.	Common Name/English Name	Family Name	Scientific Name	Schedule List Wildlife Protection Act 1972	IUCN Red List Data
INSECTS					
1	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC

2	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
3	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
4	Indian honey bee	Apidae	<i>Apis cerana</i>	Schedule IV	LC
5	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
6	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
7	Lime butterfly	Papilionidae	<i>Papilio demoleus</i>	Schedule IV	LC
8	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
9	Dragonfly	Gomphidae	<i>Ceratogomphus pictus</i>	Schedule IV	LC
10	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
11	Common Indian crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
12	Praying mantis	Mantidae	<i>Mantis religiosa</i>	NL	NL
13	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
14	Lesser grass blue	Lycaenidae	<i>Zizina Otis indica</i>	Schedule IV	LC
15	Jewel beetle	Buprestidae	<i>Eurythyrea austriaca</i>	Schedule IV	NA
REPTILES					
16	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
17	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
18	Indian chameleon	Chamaeleonidae	<i>Chamaeleo zeylanicus</i>	Sch II (Part I)	LC
19	Olive keelback water snake	Natricidae	<i>Atretium schistosum</i>	Sch II (Part II)	LC
20	Brahminy skink	Scincidae	<i>Eutropis carinata</i>	NL	LC
21	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
22	Common skink	Scincidae	<i>Mabuya carinatus</i>	NL	LC
MAMMALS					
23	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
24	Indian hare	Leporidae	<i>Lepus nigricollis</i>	Schedule IV	LC
25	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
26	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule (Part II)	LC
AVES					
27	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
28	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
29	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
30	Red-breasted parakeet	Psittaculidae	<i>Psittacula alexandri</i>	NL	LC
31	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
32	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
33	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
34	Koel	Cucalidae	<i>Eudynamys</i>	Schedule IV	LC
35	Common Quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC

36	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotuscafer</i>	Schedule IV	LC
37	Brahminy starling	Sturnidae	<i>Sturnia pagodarum</i>	Schedule IV	LC
38	Indian golden oriole	Oriolidae	<i>Oriolus kundoo</i>	Schedule IV	LC
39	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameria</i>	NL	LC
40	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
41	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
42	White-breasted waterhen	Rallidae	<i>Amaurornis phoenicurus</i>	NL	LC
43	Two-tailed Sparrow	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
44	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV	LC
45	House crow	Corvidae	<i>Corvussplendens</i>	NL	LC
AMPHIBIANS					
46	Indian Burrowing frog	Dicroglossidae	<i>Sphaerotheca breviceps</i>	Schedule IV	LC
47	Green Pond Frog	Ranidae	<i>Rana hexadactyla</i>	Schedule IV	LC
48	Tiger Frog	Chordata	<i>Hoplobatrachus tigerinus(Rana tigerina)</i>	Schedule IV	LC

*NL-Not listed, LC-Least concern, NT-Near threatened.

3.5.3 Aquatic Vegetation

There are no water bodies, tanks, Pond and canals in 1km radius around the mine lease area. so, no aquatic flora and fauna in around the mine lease area.

Forest Vegetation

There are no Reserve Forest or Biosphere Reserves or Wildlife Sanctuaries or National Parks or Important Bird Areas (IBAs), or migratory routes of fauna in 10km Radius.

Endangered and endemic species as per the IUCN Red List

There are no rare, endangered and endemic species found in the study area.

3.5.4 Agriculture & Horticulture in 1km radius:

The Coimbatore district has a total Geographical area of 367097 Ha with net cultivated area of about 165260Ha. Coconut is the major plantation crop cultivated in an area of about 85831Ha. The other Agricultural crops cultivated are Millets, Pulses, Oilseeds, Cotton and Sugarcane. Coimbatore's horticulture landscape covers an average of 1,25,000 hectares. The district excels in cultivating various crops, with significant acreage dedicated to coconut, tea, areca nut, banana, mango, tomato, small onion, curry leaves, gourds, brinjal, and lady's fingers.

Major Agricultural Crops

Major horticulture crops cultivated in this district are vegetables crops like tomato, brinjal, chillies, onion and turmeric. Details of major field crops and horticulture in 1km radius is given in Table. 3.30.

Table 3.30 Major Agricultural Crops in 1km radius

S. No	Major crops	Scientific name	Families
1	Sorghum	<i>Sorghum bicolor</i>	Poaceae
2	Gingelly	<i>Sesamum indicum</i>	Pedaliaceae
3	Sugarcane	<i>Saccharum officinarum</i>	Poaceae
4	Millets	<i>Panicum miliaceum L</i>	Poaceae
5	Sesame	<i>Sesamum indicum</i>	Pedaliaceae
6	Cotton	<i>Gossypium herbaceum</i>	Malvaceae
7	Horse gram	<i>Macrotyloma uniflorum</i>	Fabaceae

Horticulture

Horticulture includes cultivation of fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, algae, flowers, seaweeds and non-food crops such as grass and ornamental trees and plants. It also includes plant conservation, landscape restoration, landscape and garden design.

Major Horticulture Crops in 1km Radius

Major horticulture crops cultivated in Coimbatore district are fruit crops like Coconut, vegetables like tomato, brinjal, lady's fingers, chilies, onion and tapioca. Details of major field crops and horticulture cultivation in 1km radius is given in Table 3.31.

Table 3.31 Major Field Crops & Horticulture cultivation in 1km radius.

S. No	Common Name	Scientific Name	Family
Major Horticultural Crops			
1	Coconut	<i>Cocos nucifera</i>	Arecaceae
Vegetables			
1	Onion	<i>Allium cepa</i>	Amaryllidaceae
2	Tapioca	<i>Manihot esculenta</i>	Spurges
3	Brinjal	<i>Solanum melongena</i>	Nightshade
4	Tomato	<i>Solanum lycopersicum</i>	Nightshade
5	Bottle Gourd	<i>Lagenaria siceraria</i>	Cucurbits
6	Lady's Fingers	<i>Abelmoschus esculentus</i>	Mallows

Results

Biological assessment of the site was done to identify ecologically sensitive areas and whether there are any rare, endangered, endemic or threatened (REET) species of flora & fauna in the core area as well its buffer zone to be impacted. The study has also been designed to suggest suitable mitigation measures, if necessary, for protection of wildlife habitats and conservation of REET species if any. The study found that there is no endemic, endangered migratory fauna found in the area. This area is not also a migratory path of any faunal species. Hence, this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

3.6 SOCIO ECONOMIC ENVIRONMENT

The major developmental activities in mining/Industrial sector are required for economic development as well as creation of employment opportunities (direct and indirect) and to meet the basic/modern needs of the society, which ultimately results in overall improvement of the quality of life through upliftment of social, economic, health, education and nutritional status in the project region, state as well as the country. In this manner all developmental projects have direct as well as indirect relationships with socioeconomic aspects, which also include public acceptability for new developmental projects. Thus, the study of socioeconomic component incorporating various facets related to prevailing social and cultural conditions and economic status of the rough stone and granite quarry project region is an important part of EIA study. The study of these parameters helps in identification, prediction and evaluation of the likely impacts on the socio economics and parameters of human interest due to the project.

3.6.1 Objectives of the Study

The objectives of the socio-economic impact assessment are as follows:

- a) To study the socio-economic status of the people living in the study area of the project.
- b) To identify the basic needs of the nearby villages within the study area.
- c) To assess the impact on socio-economic environment due to the project.
- d) To provide the employment and improved living standards.
- e) To analysis of impact of socio economic and Environmental Infrastructure facilities and road accessibility.

Baseline Information:

The baseline information is collected in order to define the socio-economic profile of the study area. The process related database thus generated includes:

- Demographic structure
- Infrastructure base in the area
- Economic structure
- Health status
- Cultural attributes
- Public awareness and their concern about the project

3.6.2 Scope of Work

- To study the Socio-economic Environment of area from the secondary sources
- Primary and secondary Data Collection and Analysis

- Identification of impacts due to the mining projects
- Mitigation Measures

3.6.3 Methodology

The methodology adopted for the socio-economic impact assessment is as follows:

- a) Data such as number of houses, population, literacy, employment opportunities etc. will be collected directly from local people and analysed.
- b) The details of the activities and population structure have been obtained from Census 2011 and analysed.
- c) Based on the above data, impacts due to plant operation on the community have been assessed and recommendations for further improvement have been made.

3.6.4 Sources of Information and Data Base

To achieve the above objectives, the information has been collected from both primary and secondary sources. Both primary data and secondary data have been analysed by means of suitable statistical techniques for the purpose of verifying the above selected hypotheses concerned with the surrounding area.

3.6.5 Primary Survey

The primary data collection includes the collection of data through a structured interview schedule by direct observation method. The questionnaire survey includes both open and closed methods. The sample size is limited respondents, who were selected on the basis of simple random sampling from Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State, in the field survey has been divided into two major segments namely Primary Zone (0 -2 km) and Secondary Zone (2 - 5 km). The questionnaires were designed to suit the subjects considering their rural background enabling to furnish correct information and data as par as possible. Data were collected at village level and household level by questionnaires and focused group discussions.

3.6.6 Collection of Data from Secondary Sources

Data from secondary sources were collected on following aspects:

- Demographic profile of the area
- Economic profile of the area

Table 3.32 Type of Information and Sources

Information	Source
Demography	District Census Handbook, Govt. of India
Economic profile of the area	Census of India, Tamil Nadu State

3.6.7 Coimbatore District

In 2011, Coimbatore had population of 3,458,045 of which male and female were 1,729,297 and 1,728,748 respectively. In 2001 census, Coimbatore had a population of 2,916,620 of which males were 1,482,228 and remaining 1,434,392 were females. Average literacy rate of Coimbatore in 2011 were 83.98 compared to 83.98 of 2001. If things are looked out at gender wise, male and female literacy were 89.06 and 78.92 respectively. For 2001 census, same figures stood at 85.71 and 71.06 in Coimbatore District. Total literate in Coimbatore District were 2,635,907 of which male and female were 1,394,790 and 1,241,117 respectively. In 2001, Coimbatore District had 2,056,377 in its district.

In census enumeration, data regarding child under 0-6 age were also collected for all districts including Coimbatore. There was total 319,332 children under age of 0-6 against 297,139 of 2001 census. Of total 319,332 male and female were 163,230 and 156,102 respectively. Child Sex Ratio as per census 2011 was 956 compared to 963 of census 2001. In 2011, Children under 0-6 formed 9.23 percent of Coimbatore District compared to 10.19 percent of 2001. There was net change of -0.96 percent in this compared to previous census of India. With regards to Sex Ratio in Coimbatore, it stood at 1000 per 1000 male compared to 2001 census figure of 968. The average national sex ratio in India is 940 as per latest reports of Census 2011 Directorate. In 2011 census, child sex ratio is 956 girls per 1000 boys compared to figure of 963 girls per 1000 boys of 2001 census data.

<https://www.census2011.co.in/census/district/32-coimbatore.html>

3.6.8 Study area- Pachapalayam Village, Sulur Taluk

Pachapalayam is a large village located in Sulur Taluka of Coimbatore district, Tamil Nadu with total 842 families residing. The Pachapalayam village has population of 2933 of which 1488 are males while 1445 are females as per Population Census **2011**. In Pachapalayam village population of children with age 0-6 is 271 which makes up 9.24 % of total population of village. Average Sex Ratio of Pachapalayam village is 971 which is lower than Tamil Nadu state average of 996. Child Sex Ratio for the Pachapalayam as per census is 922, lower than Tamil Nadu average of 943. Pachapalayam village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of Pachapalayam village was 65.89 % compared to 80.09 % of Tamil Nadu. In Pachapalayam Male literacy stands at 74.46 % while female literacy rate was 57.11 %.

Table. 3.33 Pachapalayam Village Population Facts

Particulars	Total	Male	Female
Total No. of Houses	842	-	-
Population	2933	1488	1445
Child (0-6)	271	141	130
Schedule Caste	556	278	278
Schedule Tribe	0	0	0
Literacy	65.89	74.46	57.11
Total Workers	1627	981	646
Main Worker	1466	-	-
Marginal Worker	161	60	101

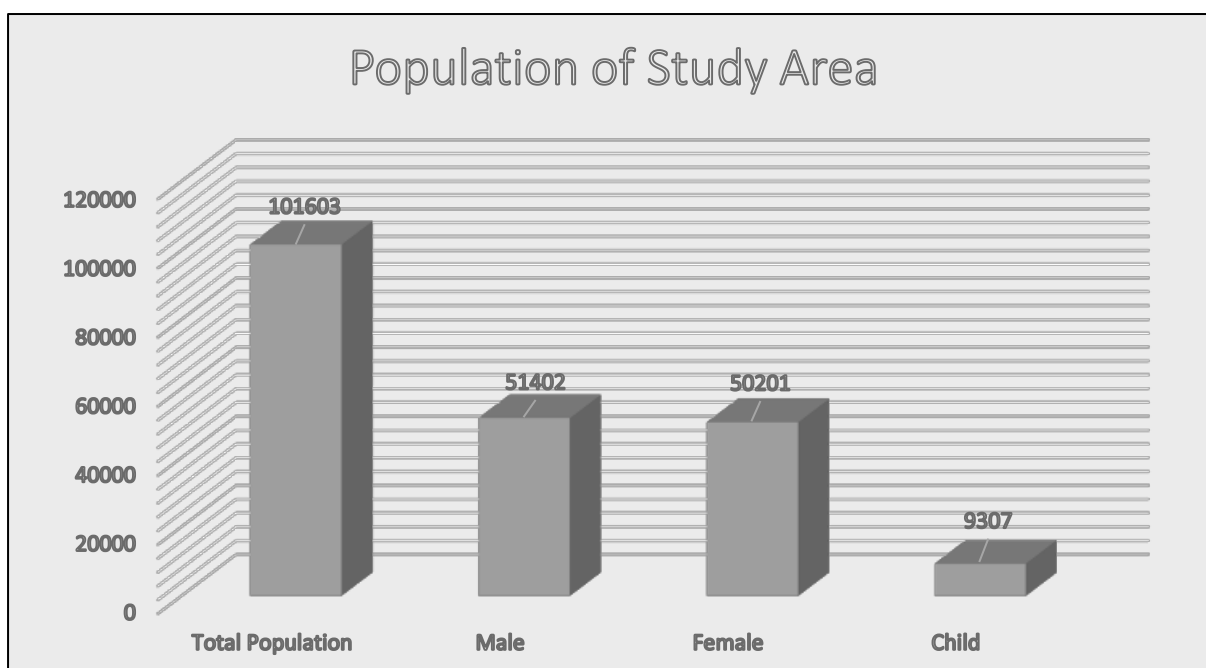
Source: <https://www.census2011.co.in/data/village/644389-pachapalayam-tamil-nadu.html>

3.6.9 Working Population- Pachapalayam Village, Sulur Taluk

In Pachapalayam village out of total population, 1627 were engaged in work activities. 90.10 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 9.90 % were involved in Marginal activity providing livelihood for less than 6 months. Of 1627 workers engaged in Main Work, 491 were cultivators (owner or co-owner) while 177 were Agricultural labourer.

Benefits:

The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. The number of villages and settlements within a radius of 5 km from the project site along with population, their education level etc. are given in the table 3.34.



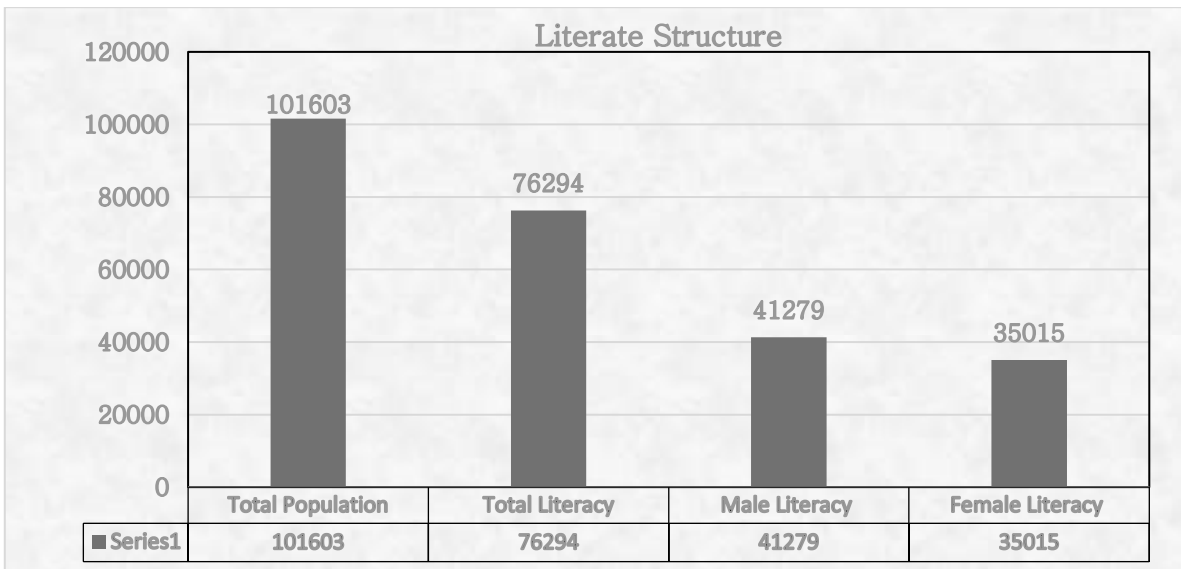
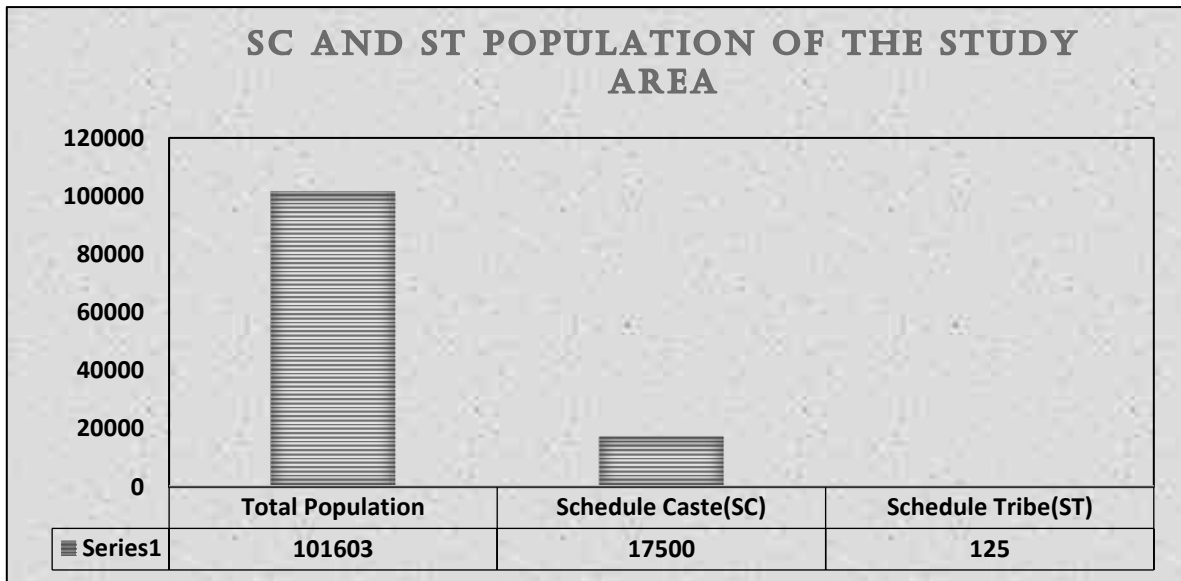


Figure 3.26 Chart Diagram about Population, SC, ST and Literacy in Surrounding Villages

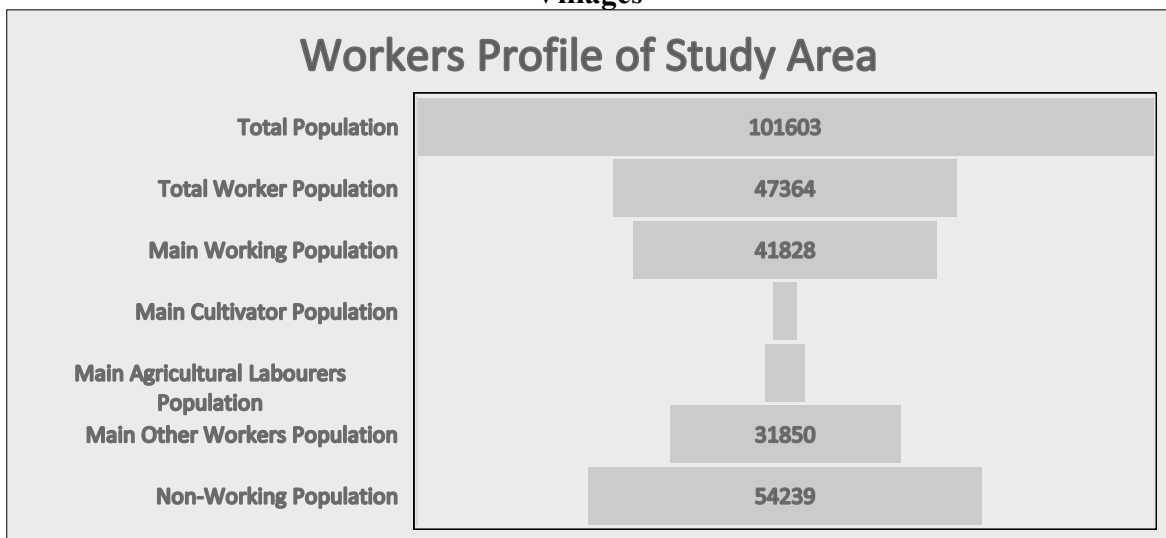


Figure 3.27 Chart Diagram about Workers Profile in Surrounding Villages

Table 3.34 Population and Literacy Data of Study Area

Village Name	No. of Houses	Total Population		Child (0-6)		Schedule Caste		Schedule Tribe		Literacy %		Total Workers	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Arasampalayam	1090	1894	1924	160	138	471	476	0	0	79.82	60.97	1269	772
Bogampatti	686	1254	1161	85	70	87	83	0	0	77.42	55.91	813	352
Chettipalayam	5004	8891	8918	892	878	1472	1496	1	3	79.1	69.5	5623	2483
Edayapalayam	667	1130	1121	98	95	128	141	3	1	90.12	71.05	748	402
Kallapalayam	860	1581	1485	130	123	346	340	3	1	89.11	77.61	979	568
Malumichampatti	3594	6568	6368	687	607	1294	1267	2	2	68.25	57.32	4055	1462
Pachapalayam	683	1191	1168	104	104	360	343	0	0	74.46	57.11	808	447
Panappatti	763	1383	1252	113	86	219	231	0	0	80.79	61.23	974	605
Pappampatti	1172	2052	2091	196	219	455	506	0	0	82.11	71.63	1341	636
Pattanam	2604	4681	4515	446	418	629	605	0	0	78.29	68.94	2940	1462
Peedampalli	1134	1955	1941	185	154	356	327	13	11	70.72	62.79	1241	628
Othakalmandapam	3394	6028	6179	551	536	707	772	40	29	80.1	69.6	3784	1615
Vellalur	6837	12794	12078	1129	1103	2206	2183	8	8	83.5	73.6	8171	3186
Total	28488	51402	50201	4776	4531	8730	8770	70	55	79.46	66.0	32746	14618

Source: <https://www.census2011.co.in/census/district/32-coimbatore4.html>

Table 3.35 Workers Profile of Study Area

Village	Total Worker Population Person	Total Worker Population Male	Total Worker Population Female	Main Working Population Person	Main Cultivator Population Person	Main Agricultural Labourers Population Person	Main Other Workers Population Person	Non-Working Population Person
Arasampalayam	2041	1269	772	1863	360	746	734	1777
Bogampatti	1165	813	352	985	470	278	223	1250
Chettipalayam	8106	5623	2483	7063	52	1384	5480	9703
Edayapalayam	1150	748	402	977	200	178	556	1101
Kallapalayam	1547	979	568	1522	362	454	662	1519
Malumichampatti	5517	4055	1462	5222	188	104	4829	7419
Pachapalayam	1255	808	447	1186	194	363	595	1104
Panappatti	1579	974	605	1566	631	604	320	1056
Pappampatti	1977	1341	636	1761	143	383	1160	2166
Pattanam D	4402	2940	1462	3596	121	65	3328	4794
Peedampalli	1869	1241	628	1465	178	183	974	2027
Othakalmandapam	5399	3784	1615	4571	105	165	4223	6808
Vellalur	11357	8171	3186	10051	294	539	8766	13515

Source: <https://www.census2011.co.in/census/district/32-coimbatore4.html>

As per SEAC recommendation the project proponent should spend minimum of 5 lakhs to the nearby school from the proposed project site as part of CER cost. Also, the village panchayat will get direct benefit from the government through District mineral Resource fund (DMF) for infrastructure development activities.

Awareness and opinion of the people about the project for the assessment of awareness about the project activities and opinion about it, following salient observations were recorded, During survey it was observed that only nearby villagers are aware and other villagers are not aware about the proposed project.

People in the region expect job opportunities and improvement in educational, transportation and sanitation facility from project authority.

3.6.10 Recommendation and Suggestions

The village development plans are made in consultation with the community through Gram Sabha; these appear to address the needs of the community. However, it may be noted that at the implementation stage these plans often are fraught with problem of inadequate funds, lack of proper planning, corruption, vested interests and political agendas. Hence while ascertaining the scope for convergence with the government activities, care must be taken to ascertain realistic possibilities for implementation.

- Women empowerment– Home based income generation activities, vocational training programs and common education centre for increasing the literacy rate.
- Education – Free uniform, construction of common rooms and library, computer education and physical education, additional schools for girls, furniture and equipment in schools, up-gradation of existing school infrastructure.
- Agriculture/livestock – Infrastructure such as agricultural practices, electricity connections, assistance with buying improved tools and equipment, capacity building, supply and/or knowledge of better variety of seeds, pasture land development and trainings on animal husbandry& facility of veterinary doctor.
- Health – Improvements in sanitary conditions of villages, assistance with construction of latrines, improvement in drainage system, health camps and awareness campaigns for diseases like common cold, malaria, typhoid, tuberculosis, yellow fever and pneumonia. Repairing of PHCs and Anganwadi centers.

- People with disability – Establishment of center for special education, sensitization of the community towards disabled and awareness on Government schemes.
- While Developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.
- Connectivity –Transport connectivity to easiness accessibility to the region.

3.6.11 Conclusion

The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. To evaluate the impacts of proposed quarry project on the surrounding area, it is vital to assess the baseline status of the environmental quality in the locality of the site. Hence, it can be concluded that the present environment status of the study area will not be affected by the Pachapalayam rough stone and gravel cluster Quarries project. Hence, we adopt adequate control measures to protect the surrounding environment and will contribute in development of the study areas. The proposed project will provide preferential of employment to the local people there by the livelihood standards will be improved.

3.7 TRAFFIC DENSITY

The traffic survey conducted based on the transportation route of material, the rough stone is proposed to be transported mainly through Chittipalayam – Periyakuyili Road, Thekkani Road and Palladam – Cohin Road as shown in Table 3.36-3.39 and in Figure 3.28. Traffic density measurements were made 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 either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken. Direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

Table 3.36 Traffic Survey Locations

Station Code	Road Name	Distance and Direction
TS1	Chittipalayam - periyakuyili	115m North
TS2	Thekkani	1.23 km- West
TS3	Palladam – Cohin	3.15km NW

Source: On-site monitoring by GTMS FAE & TM

Table 3.37 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	26	78	31	31	73	37	146
TS2	48	144	54	54	102	51	249
TS3	120	360	242	242	285	142	744

Source: On-site monitoring by GTMS FAE & TM

* PCU conversion factor: HMV (Trucks and Bus) = 3, LMV (Car, Jeep and Auto) = 1 and 2/3 Wheelers = 0.5

Table 3.38 Rough Stone Transportation Requirement

Transportation of Rough and Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	32	96

Source: Approved Mining plan

Table 3.39 Summary of Traffic Volume

Route	Existing traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960 guidelines
TS1	146	12	158	1200
TS2	249	12	261	1500
TS3	744	12	756	1500

Source: On-site monitoring analysis summary by GTMS FAE & TM

○ Due to these projects the existing traffic volume will not exceed the traffic limit. As per the IRC 1960 this existing village road can handle 1,200 PCU in hour and Major district road can handle 1500 PCU in hour. Hence there will not be any conjunction due to this proposed transportation.

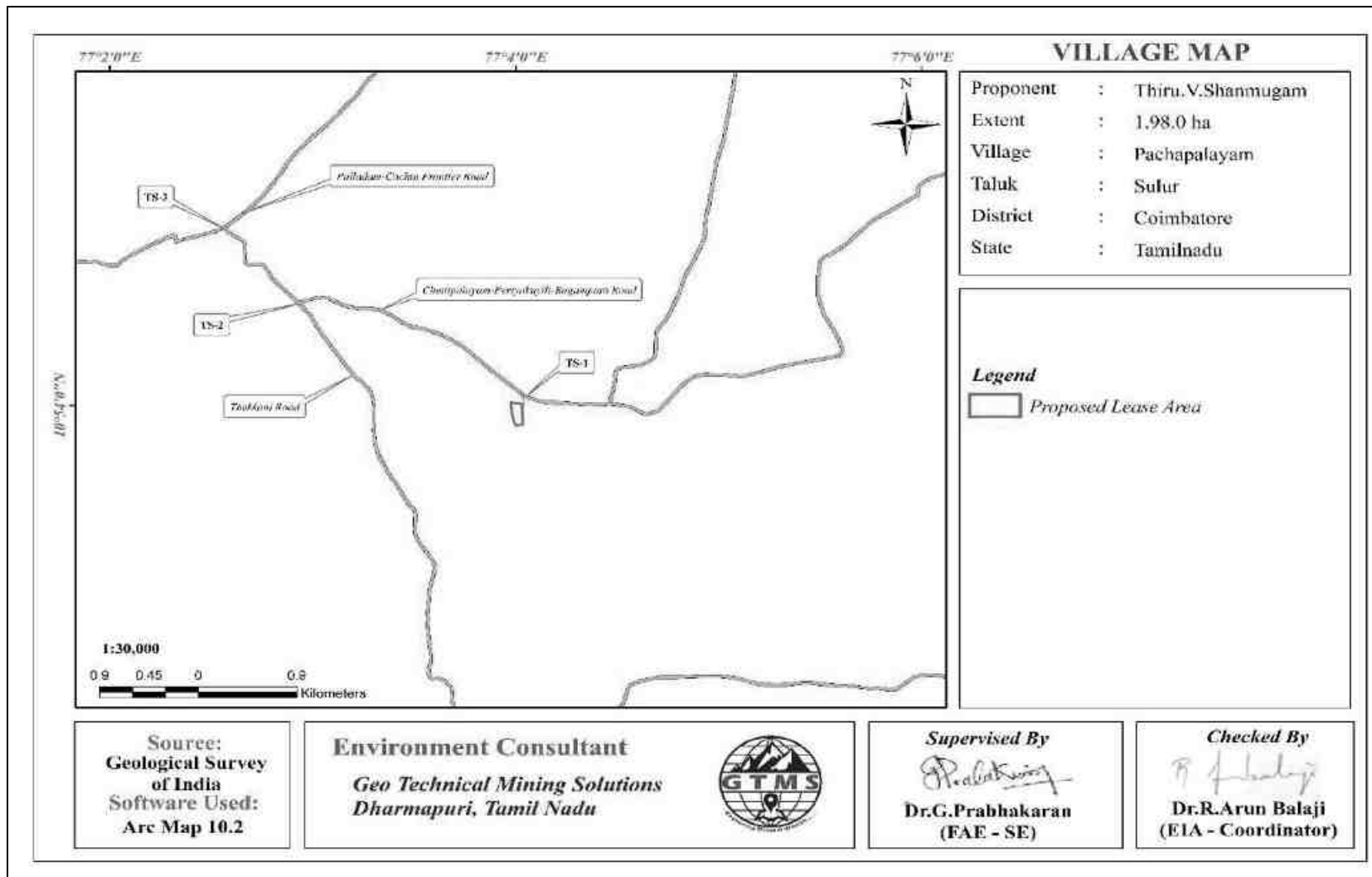


Figure 3.28 Traffic Density Map

3.8 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries, Reserve Forest, National Park within the project area. There is no Protected area is found within 10 km radius from the proposed project area. Therefore, there will be no need of acquisition/diversion of forest land. The details related to the environment sensitivity around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Table 3.40.

Table 3.40 Details of Environmentally Sensitive Ecological Features in the Study Area

SI. No	Sensitive Ecological Features	Name	Areal Distance in km from cluster
1	National Park / Wild life Sanctuaries	None	Nil within 10km radius
		None	Nil within 10km radius
2	Reserve Forest	Bolampatti -I R. F	12.86km- NW
3	Lakes / Reservoirs/ Dams/Streams/Rivers	Noyyal River	9.98km-NW
		River	5.49km - SE
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10km radius
5	Critically Polluted Areas	None	Nil within 10km radius
6	Mangroves	None	Nil within 10km radius
7	Mountains/Hills	None	Nil within 10km radius
8	Notified Archaeological Sites	None	Nil within 10km radius
9	Industries/ Thermal Power Plants	None	Nil within 10km radius
10	Defense Installation	None	Nil within 10km radius

Source: Survey of India Toposheet

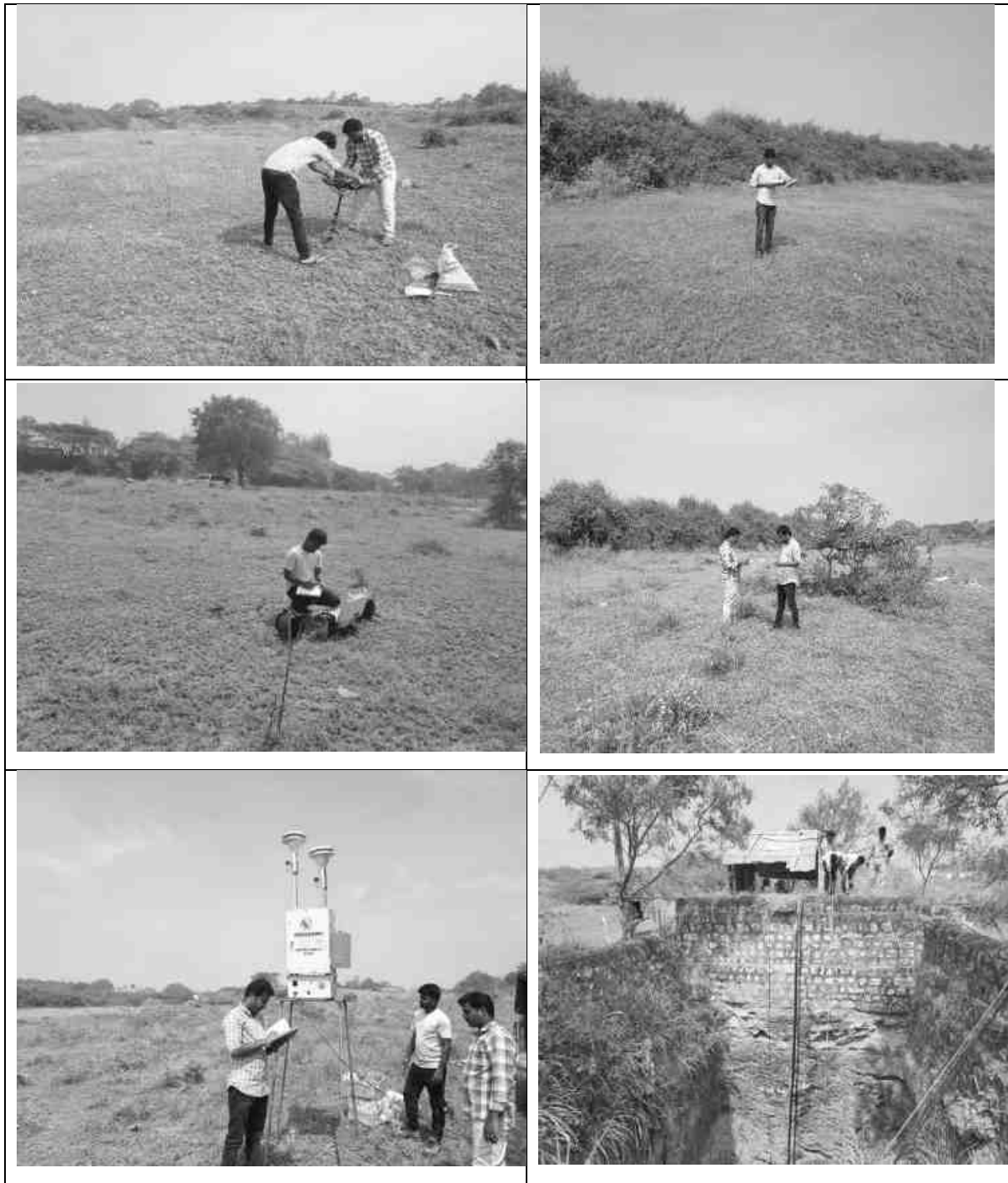


Figure 3.29 Field Study & Socio-Economic Study Photographs

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

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 sustainable resource extraction. This chapter discusses the anticipated impacts on soil, land, water, air, noise, biological, and socioeconomic environments.

4.1 LAND ENVIRONMENT

4.1.1 Anticipated Impact

The proposed project would result in:

- ❖ Permanent change on land use and land cover.
- ❖ Change in topography of the mine lease area.
- ❖ Problems to agricultural land and human habitations due to dust, and noise caused by movement of heavy vehicles
- ❖ Degradation of the aesthetic environment of the core zone due to quarrying
- ❖ Soil erosion and sediment deposition in the nearby agricultural fields during the rainy season
- ❖ Increase in agricultural productivity of land when mine water is discharged to the surrounding lands for irrigation

4.1.2 Common Mitigation Measures from Proposed Project

- ❖ Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area.
- ❖ Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt
- ❖ At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir.
- ❖ In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 10m safety barrier and other safety provided) so as to help minimize dust emissions.
- ❖ Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle.

4.2 SOIL ENVIRONMENT

4.2.1 Anticipated Impact on Soil Environment

- ❖ Deterioration of soil quality in the surrounding area due to runoff from the project area
- ❖ Decrease in the agricultural productivity of the surrounding land due to soil quality degradation

4.2.2 Mitigation Measures for Soil Conservation

- ❖ Construction of garland drains, settling pits, and check dams to prevent runoff and siltation
- ❖ Run-off diversion – Garland drains will be constructed around the project boundary to prevent surface flows from entering the quarry works areas and will be discharged into the settling tanks to reduce suspended sediment loads before runoff is discharged from the quarry site.
- ❖ Retain existing or re-plant the vegetation will be retained at the site wherever possible.
- ❖ Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

4.3 WATER ENVIRONMENT

4.3.1 Anticipated Impact

- ❖ Surface and ground water resources may be contaminated due to pit water discharge, domestic sewage, discharge of oil and grease bearing waste water from washing of vehicles and machineries, and washouts from surface exposure or working areas
- ❖ As the proposed project acquires 3.5 KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

4.3.2 Common Mitigation Measures for the Proposed Project

- ❖ Rain water from mine pit will be treated in settling tanks before being used for dust suppression and tree plantation purposes
- ❖ Domestic sewage from site office will be discharged in septic tank and then directed to soak pits
- ❖ Water from the tipper wash-down facility and machinery maintenance yard will be passed through interceptor traps/oil separators prior to its reuse
- ❖ The garland drainage will be connected to settling tank and sediments will be trapped in the settling tanks and only clear water will be discharged to the natural drainage
- ❖ Periodic (every 6 month once) analysis of ground water quality of quarry pit water and ground water of nearby villages will be conducted

- ❖ Artificial recharge structures will be established in suitable locations as part of the rainwater harvesting management program

4.4 AIR ENVIRONMENT

4.4.1 Anticipated Impact from Proposed Project

- ❖ During mining at various stages of activities such as excavation, drilling, blasting and transportation of materials, particular matter (PM), gases such as sulphur dioxide, oxides of nitrogen from vehicular exhaust are the main air pollutants
- ❖ Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air
- ❖ The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust
- ❖ Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

4.4.2 Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formulae developed by Chauhya et al.,2001. The equations used for SPM emission estimation have been given in Table 4.1.

Table 4.1 Empirical Formula for Emission Rate from Overall Mine

	Pollutant	Source Type	Empirical Equation	Parameters
Overall Mine	SPM	Area	$E = [u^{0.4}a^{0.2}\{9.7 + 0.01p + b/(4 + 0.3b)\}]$	u=Wind speed(m/s); p= Mineral production (Mt/yr); b=Overburden handling (Mm ³ /yr); a= Lease area (km ²); E= Emission rate (g/s).

The emission rate thus calculated using the empirical formula is used as one of the inputs in the AERMOD modelling. It is important to note that PM₁₀ emission rate is derived from the SPM estimation in the background that PM₁₀ constitutes 52% of SPM emission. The PM_{2.5} and PM₁₀ emission results have been given in Table 4.2.

Table 4.2 Estimated Emission Rate

Activity	Pollutant	Calculated Value (g/s)	Lease Area in m²	Calculated Value (g/s/m²)
Overall Mine	PM _{2.5}	0.429023894	19800	2.16679E-05
Overall Mine	PM ₁₀	0.858047788	19800	4.33357E-05

4.4.2.1 Modelling of Incremental Concentration

Anticipated incremental concentration and net increase in emissions due to quarrying activities within 500m around the project area is predicted by open pit source modelling using AERMOD Software and the incremental values of the air pollutants were added to the base line data monitored at the proposed site to predict total GLC of the pollutants, as shown in Tables 4.3-4.4

4.4.2.2 Model Results

The post project resultant concentrations of PM₁₀ & PM_{2.5}, is given in Tables 4.3-4.4.

Table 4.3 Incremental & Resultant GLC of PM_{2.5}

Station ID	Distance to core area (km)	Direction	PM _{2.5} concentrations(µg/m ³)			Comparison against air quality standard (60 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	1.43	SE	21.1	1	22.1	Below standard	4.7	Not significant
AAQ2	0.95	E	19.2	5	24.2		26.0	
AAQ3	4.26	SE	16.7	0	16.7		0.0	
AAQ4	1.60	SW	15.6	0.7	16.3		4.5	
AAQ5	3.17	S	14.3	0.2	14.5		1.4	
AAQ6	5.27	NE	25.9	0.2	26.1		0.8	
AAQ7	2.79	NE	17.2	0	17.2		0.0	
AAQ8	--	--	24.0	9.7	33.7		40.4	

Table 4.4 Incremental & Resultant GLC of PM₁₀

Station ID	Distance to core area(km)	Direction	PM ₁₀ concentrations(µg/m ³)			Comparison against air quality standard (100 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	1.43	SE	44.4	5	49.4	Below standard	11.3	Not significant
AAQ2	0.95	E	40.4	10	50.4		24.8	
AAQ3	4.26	SE	38.8	0	38.8		0.0	
AAQ4	1.6	SW	37.8	3	40.8		7.9	
AAQ5	3.17	S	33.8	0.5	34.3		1.5	
AAQ6	5.27	NE	56.3	0.5	56.8		0.9	
AAQ7	2.79	NE	40.9	0	40.9		0.0	
AAQ8	--	--	43.1	19.6	62.7		45.5	

The values of cumulative concentration i.e., background + incremental concentration of pollutant in all the receptor locations are still within the prescribed NAAQ limits without effective mitigation measures. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be controlled further.

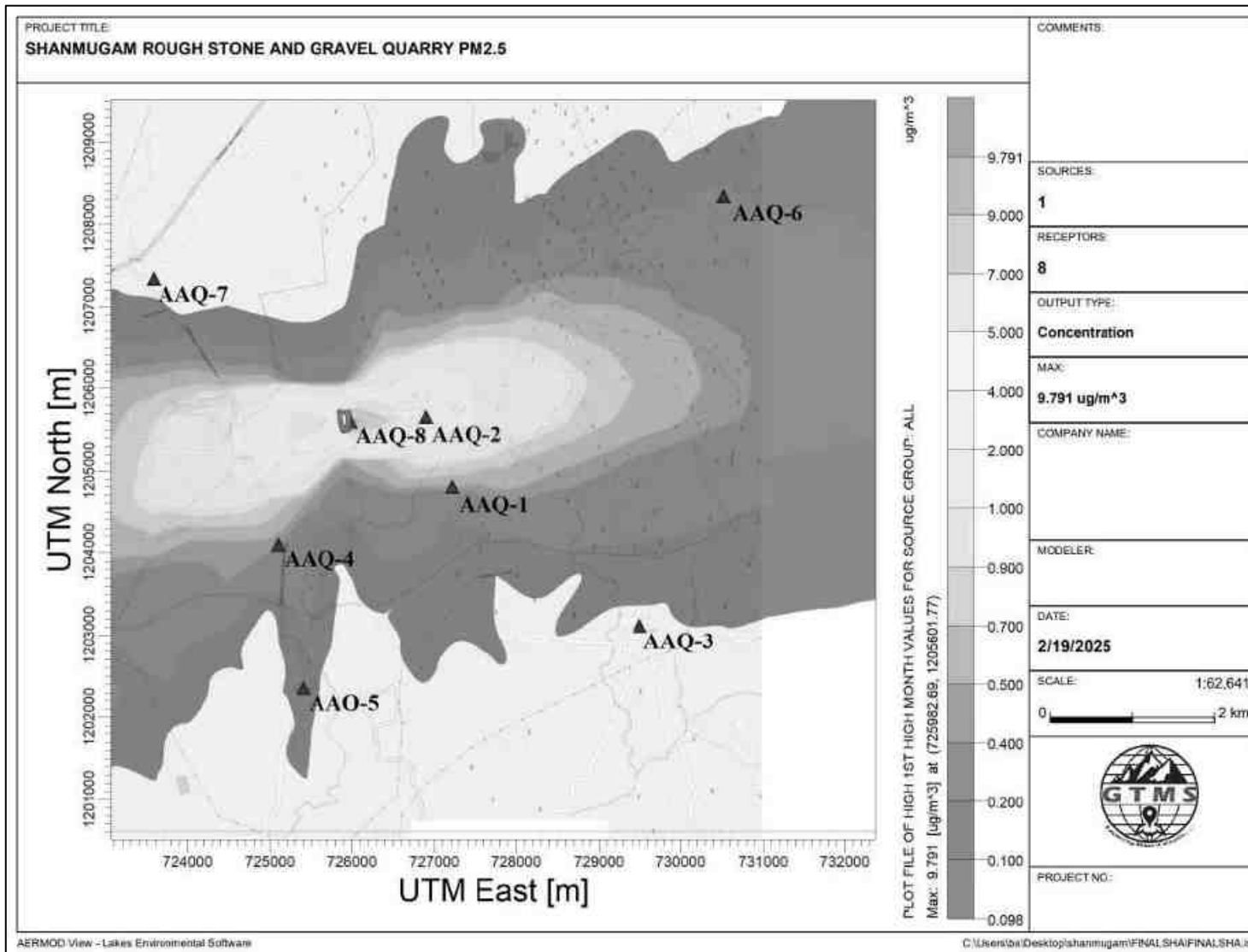


Figure 4.1 Predicted Incremental Concentration of PM_{2.5}

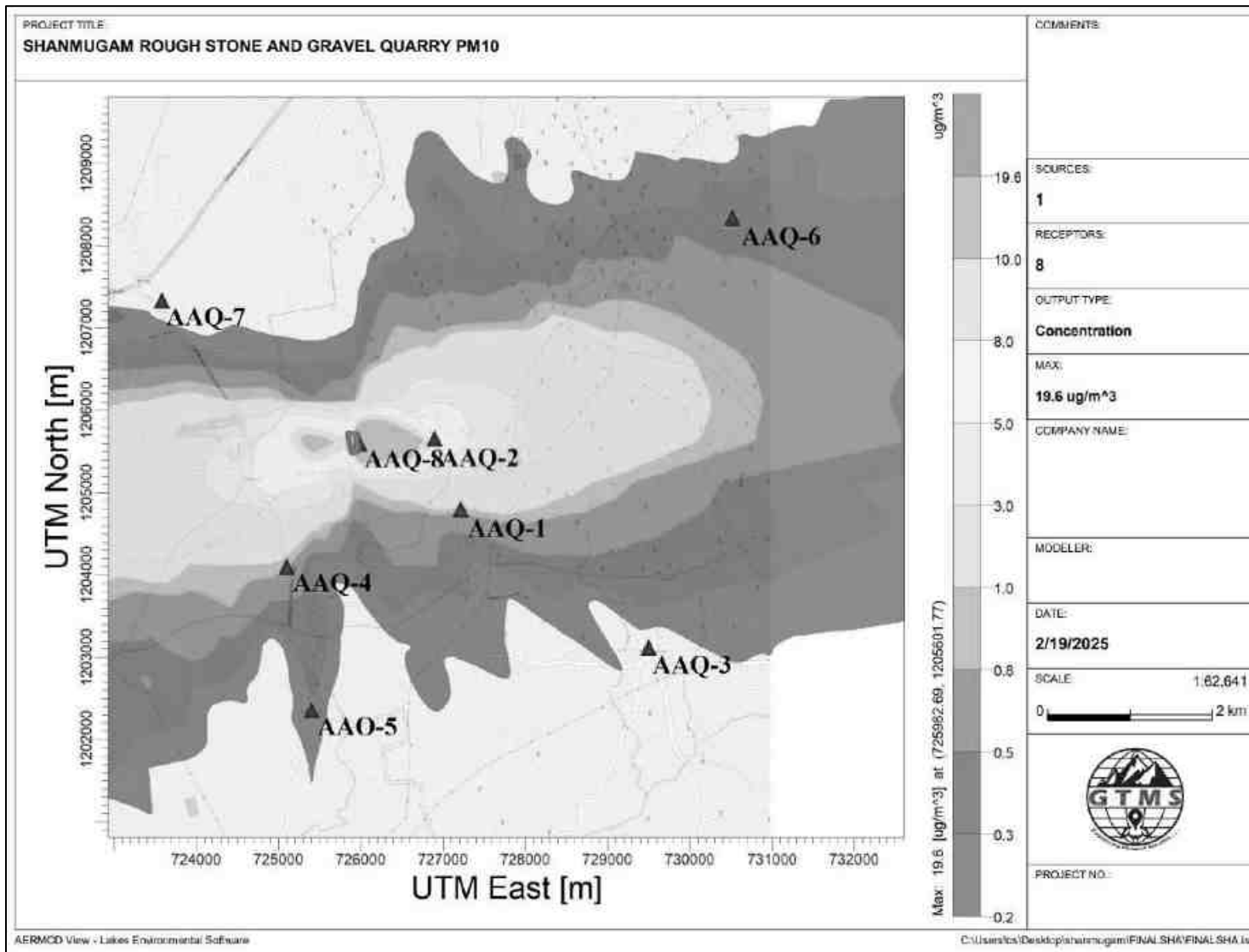


Figure 4.2 Predicted Incremental Concentration of PM₁₀

4.2.3 Mitigation Measures

Drilling

To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.

Haul Road and Transportation

- ❖ Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- ❖ Transportation of material will be carried out during day time and material will be covered with tarpaulin
- ❖ The speed of tippers plying on the haul road will be limited to < 20 km/hr to avoid generation of dust
- ❖ Water sprinkling on haul roads and loading points will be carried out twice a day
- ❖ Main source of gaseous pollution will be from vehicle used for transportation of mineral. Therefore, weekly maintenance of machines improves combustion process and reduces pollution.
- ❖ The un-metalled haul roads will be compacted weekly before being put into use.
- ❖ Overloading of tippers will be avoided to prevent spillage.
- ❖ It will be ensured that all transportation vehicles carry a valid PUC certificate.
- ❖ Haul roads and service roads will be graded to clear accumulation of loose materials

Green Belt

- ❖ Planting of trees all along mine haul roads outside the lease and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of tractors/tippers.
- ❖ Green belt of adequate width will be developed around the project site.

Occupational Health

- ❖ Dust mask will be provided to the workers and their use will be strictly monitored
- ❖ Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers and tipper drivers.
- ❖ Ambient air quality monitoring will be conducted every six months to assess effectiveness of mitigation measures proposed

4.5 NOISE ENVIRONMENT

Noise modelling has been carried out to assess the impact on surrounding ambient noise levels. Basic phenomenon of the model is the geometric attenuation of sound. Noise at a point generates spherical waves which are propagated outwards from the source through the air at a speed of 1, 100 ft/sec with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A). For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using a mathematical model based on first principle.

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) - Ae_{1,2}$$

Where, Lp_1 & Lp_2 are sound levels at points located at distances r_1 and r_2 from the source; $Ae_{1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$Lp_{total} = 10 \log \{10^{(Lp_1/10)} + 10^{(Lp_2/10)} + 10^{(Lp_3/10)} + \dots\}$$

4.5.1 Anticipated Impact

The attenuation due to several factors including ground reflection, atmosphere, wind speed, temperature, trees, and buildings as 35.5 dB (A), the barrier effect. Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are: source data, receptor data, and attenuation factor. Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4.5.

Table 4.5 Activity and Noise Level Produced by Machinery

S. No.	Machinery / activity	Impact on environment?	Noise produced in dB(A) at 50 ft from source*
1	Blasting	Yes	94
2	Jack hammer	Yes	88
3	Compressor	No	81
4	Excavator	No	85
5	Tipper	No	84
Total			95.8

The total noise to be produced by mining activity is calculated to be 95.8 dB (A). We have considered the total noise to be produced by mining activity to be 95.8 dB (A) for noise prediction modelling.

Table 4.6 Predicted Noise Incremental Values

Noise Monitoring Location	Distance From Project Site(m)	Baseline Noise Level (dBA)m During Day Time	Predicted Noise Level (dBA)	Total (dBA)
Thangavel Core	1480	51.2	20.6	51.2
Pachapalayam	1150	49.3	22.7	49.3
Panappatti	4370	45.7	11.2	45.7
Thekani	1540	43.5	20.2	43.5
Karachery	3050	52.8	14.3	52.8
Edayampalayam	5120	49.2	9.8	49.2
Orattukuppai	2190	45.8	17.15	45.8
Shanmugam Core	100	38.3	43.9	45.0
NAAQ Standards	Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A) Residential Day Time -55 dB (A) & Night Time- 45 dB (A)			

From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000. Therefore, no impact is anticipated on the noise environment due to the project.

4.5.2 Common Mitigation Measures

The following noise mitigation measures are proposed for control of noise:

- ❖ Usage of sharp drill bits while drilling which will help in reducing noise
- ❖ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders
- ❖ Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained
- ❖ The blasting will be carried out during favorable atmospheric condition and less human activity timings by using nonelectrical initiation system
- ❖ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise
- ❖ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise
- ❖ Silencers / mufflers will be installed in all machineries
- ❖ Greenbelt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise

- ❖ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness
- ❖ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects

4.5.3 Ground Vibrations

The major source of ground vibration from the quarry is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kutchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements. Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to the structures. The ground vibrations due to the blasting in the quarry are calculated using the empirical equation. The empirical equation for assessment of peak particle velocity (PPV) is given below:

$$V = K [R/Q^{0.5}]^{-B}$$

Where, V = peak particle velocity (mm/s), K = site and rock factor constant (500) Q = maximum instantaneous charge (kg) B = constant related to the rock and site (usually 1.6), R = distance from charge (m)

Table 4.7 Predicted PPV Values due to Blasting

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s	Fly rock distance in m	Air Blast	
					Pressure (kPa)	Sound Level (dB)
P1	16.82	487	0.240	19	0.06	129

Table 4.8 Predicted PPV Values due to Blasting at 100-500m radius

Location ID	Maximum Charge in kgs	Radial Distance in m	PPV in mm/s	Fly rock distance in m	Air Blast	
					Pressure (kPa)	Sound Level (dB)
P1	16.82	100	3.017	19	0.39	146
		200	0.995		0.17	139
		300	0.520		0.10	134
		400	0.328		0.07	131
		500	0.230		0.06	129

The PPV results shows that the ground vibration is well below the permissible limits set by DGMS through circular 7,1997 for domestic houses near by the lease area at the dominant frequency of <8 Hz.

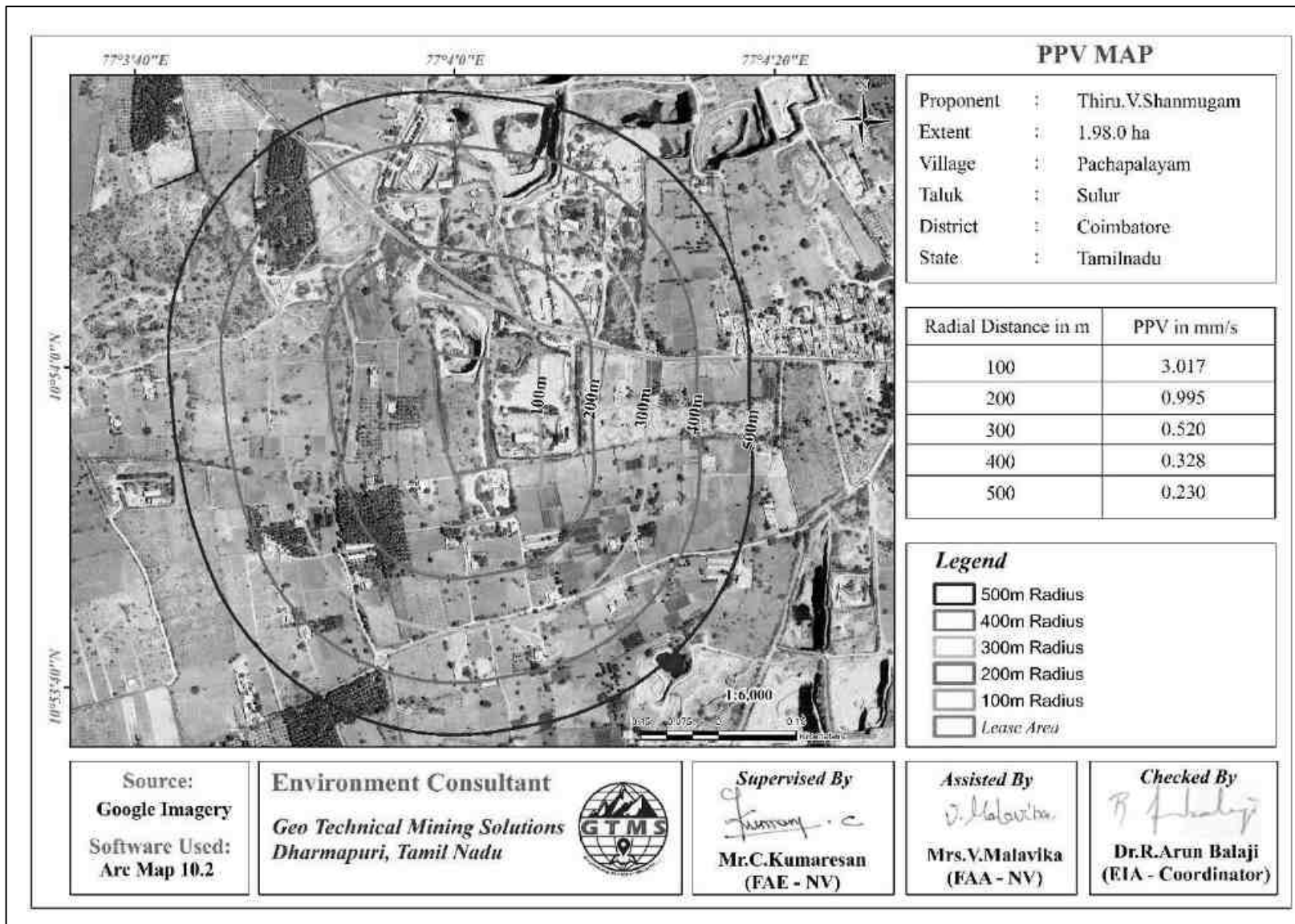


Figure 4.2 100-500m Radius PPV Map

4.5.3.1 Common Mitigation Measures

- ❖ The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators which reduce the ground vibrations
- ❖ Proper quantity of explosives, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting
- ❖ Adequate safe distance from blasting will be maintained as per DGMS guidelines
- ❖ Blasting shelter will be provided as per DGMS guidelines
- ❖ Blasting operations will be carried out only during day time
- ❖ The charge per delay will be minimized and preferably a greater number of delays will be used per blasts
- ❖ During blasting, other activities in the immediate vicinity will be temporarily stopped
- ❖ Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast
- ❖ A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed
- ❖ A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public
- ❖ Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire
- ❖ The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used
- ❖ The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects
- ❖ Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

4.6 ECOLOGY AND BIODIVERSITY

4.6.1 Impact on Ecology and Biodiversity

- ❖ During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly
- ❖ Carbon released from quarrying machineries and tippers during quarrying would be 2152g per day, 581056kg per year and 2905282kg over five years, as provided in Table 4.9.

Table 4.9 Carbon Released During Five Years of Rough Stone and Gravel Production

	Per day	Per year	Per five years
Fuel consumption of excavator	143	38576	192880

Fuel consumption of compressor	16.8	4536	22680
Fuel consumption of tipper	643	173700	868500
Total fuel consumption in liters	803	216812	1084060
CO ₂ emission in kg	2152	581056	2905282

4.6.2 Mitigation Measures on Flora

- ❖ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.
- ❖ Existing roads will be used; new roads will not be constructed to reduce impact on flora.
- ❖ To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 23736kg of carbon per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.
- ❖ As per the greenbelt development plan as recommended by SEAC (Table 4.11), about 990 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 23222kg of the total carbon, as provided in Table 4.10.

Table 4.10 CO₂ Sequestration

CO ₂ sequestration in kg	88	23736	118681
Remaining CO ₂ not sequestered in kg	2064	557320	2786600
Trees required for environmental compensation	23222		
Area required for environmental compensation in hectares	46		

Table 4.11 Recommended Species for Greenbelt Development Plan

S. No	Botanical Name of the Plant	Family Name	Common Name	Category	Dust Capturing Efficiency Features
1	<i>Azadirachta indica</i>	Meliaceae	Vembu	Tree	Well distinct thick at both the layer Well distinct in Palisade & Spongy parenchyma. Spongy parenchyma is
2	<i>Tectona grandis</i>	Lamiaceae	Teak	Tree	
3	<i>Polyalthia longifolia</i>	Annonaceae	Nettilling	Tree	
4	<i>Albizia lebbek</i>	Fabaceae	Vagai	Tree	

5	<i>Delonix regia</i>	Fabaceae	Cemmayir-konrai	Tree	present at lower epidermis Many vascular bundles arranged almost parallel series
6	<i>Bauhinia racemose</i>	Fabaceae	Aathi	Tree	
7	<i>Cassia fistula</i>	Fabaceae	Sarakondrai	Tree	
8	<i>Aegle marmelos</i>	Rutaceae	Vilvam	Tree	
9	<i>Pongamia pinnata</i>	Fabaceae	Pungam	Tree	
10	<i>Thespesia populnea</i>	Malvaceae	Puvarasu	Tree	

Table 4.12 Greenbelt Development Plan

	No. of trees proposed for plantation	No. of trees expected to survive @ 80%	Area to be covered(m ²)
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	396	317	3564
	Number of plants outside the mine lease area		
	594	475	5346
Total	990	792	8910

4.6.3. Anticipated Impact on Fauna

- ❖ Direct impact is anticipated on fauna of core zone
- ❖ Insignificant impact is anticipated on fauna in the buffer area due to air emissions, noise, vibration, transportation, waste water discharges, and changes in land use

Mitigation Measures on Fauna

- ❖ Fencing will be constructed around the proposed mine lease area to restrict the entry of stray animals
- ❖ The workers shall be trained not to harm any wildlife near the project site.
- ❖ There no reserve forest in 10km radius in surrounding mine lease area.

4.6.4 Impact on agriculture and horticulture crops in 1km Radius

- ❖ Problems to agricultural and horticulture land due to dust caused by movement of heavy vehicles.
- ❖ Soil erosion and sediment deposition in the nearby water bodies due to earthworks during the rainy season.
- ❖ The fugitive dust released from the mining operations may cause effect on the agricultural and horticulture land who are directly exposed to the fugitive dust.
- ❖ Dust from the quarries is likely to affect reproductive systems in nearby agricultural and horticulture lands.

- ❖ Dust from quarries can affect plant growth and reduce vegetable.

4.6.5 Impact on agriculture and horticulture crops in 1km Radius

- ❖ The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly inside and outside of the lease area in different phases.
- ❖ It is a rough stone quarry, explosives are used, there is no possibility of vibration and dust, thus there is no possibility of damage to the adjacent agricultural land.
- ❖ Quarry approach roads are sprayed with water 3 times a day to control dust. Thus, the damage to the nearby farmlands is controlled.
- ❖ A green belt will be created in 7.5 safety zone around the quarry to contain the dust from the quarry and prevent the dust from spreading to the adjacent agricultural land.
- ❖ Transportation of material will be carried out during day time and material will be covered with tarpaulin
- ❖ The speed of tippers plying on the haul road will be limited to < 20 km/hr to avoid generation of dust.

4.7 SOCIO ECONOMIC ENVIRONMENT

4.7.1 Anticipated Impact from Proposed and Existing Projects

- ❖ Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- ❖ Approach roads can be damaged by the movement of tippers
- ❖ Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region.

4.7.2 Common Mitigation Measures for Proposed Project

- ❖ Good maintenance practices will be adopted for all machinery and equipment, which will help to avert potential noise problems.
- ❖ Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- ❖ Air pollution control measure will be taken to minimize the environmental impact within the core zone.
- ❖ For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules.
- ❖ Benefit to the State and the Central governments through financial revenues by way

of royalty, tax, duties, etc.,

- ❖ from this project directly and indirectly. From above details, the quarry operations will have highly beneficial positive impact in the area

4.8 OCCUPATIONAL HEALTH AND SAFETY

Occupational health and safety hazards occur during the operational phase of mining and primarily include the following:

- ❖ Respiratory hazards
- ❖ Noise
- ❖ Physical hazards
- ❖ Explosive storage and handling

4.8.1 Respiratory Hazards

Long-term exposure to silica dust may cause silicosis the following measures are proposed:

- ❖ Cabins of excavators and tippers will be enclosed with AC and sound proof
- ❖ Use of personal dust masks will be made compulsory

4.8.2 Noise

Workers are likely to get exposed to excessive noise levels during mining activities. The following measures are proposed for implementation

- ❖ No employee will be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection
- ❖ The use of hearing protection will be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110 dB(A)
- ❖ Ear muffs provided will be capable of reducing sound levels at the ear to at least 85 dB(A)
- ❖ Periodic medical hearing checks will be performed on workers exposed to high noise levels.

4.8.3 Physical Hazards

The following measures are proposed for control of physical hazards Specific personnel training on work-site safety management will be taken up;

- ❖ Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- ❖ Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up.

4.8.4 Occupational Health Survey

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests: general physical tests, audiometric tests, full chest, X-ray, Lung function tests, spirometry tests, periodic medical examination – yearly, lung function test – yearly, those who are exposed to dust, and eye test. Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment. First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

4.9 MINE WASTE MANAGEMENT

No waste is anticipated from any of the proposed quarries.

4.10 MINE CLOSURE

Mine closure plan is the most important environmental requirement in mining project. The mine closure plan should cover technical, environmental, social, legal and financial aspects dealing with progressive and post closure activities. The closure operation is a continuous series of activities starting from the decommissioning of the project. Therefore, progressive mine closure plan should be specifically dealt with in the mining plan and is to be reviewed along with mining plan. As progressive mine closure is a continuous series of activities, it is obvious that the proposals of scientific mining have included most of the activities to be included in the closure plan. While formulating the closure objectives for the site, it is important to consider the existing or the pre- mining land use of the site; and how the operation will affect this activity.

The primary aim is to ensure that the following broad objectives along with the abandonment of the mine can be successfully achieved:

- ❖ To create a productive and sustainable after-use for the site, acceptable to mine owners, regulatory agencies, and the public
- ❖ To protect public health and safety of the surrounding habitation
- ❖ To minimize environmental damage
- ❖ To conserve valuable attributes and aesthetics
- ❖ To overcome adverse socio-economic impacts.

4.10.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.10.1.1 Physical Stability

All anthropogenic structures, which include mine workings, buildings, rest shelters etc., remaining after mine decommissioning should be physically stable. They should present no

hazard to public health and safety as a result of failure or physical deterioration and they should continue to perform the functions for which they were designed. The design periods and factors of safety proposed should take full account of extreme events such as floods, hurricane, winds or earthquakes, etc. and other natural perpetual forces like erosion, etc.,

4.10.1.2 Chemical Stability

The solid wastes on the mine site should be chemically stable. This means that the consequences of chemical changes or conditions leading to leaching of metals, salts or organic compounds should not endanger public health and safety nor result in the deterioration of environmental attributes. If the pollutant discharges likely to cause adverse impacts is predicted in advance, appropriate mitigation measures like settling of suspended solids or passive treatment to improve water quality as well as quantity, etc., could be planned. Monitoring should demonstrate that there is no adverse effect of pollutant concentrations exceeding the statutory limits for the water, soil and air qualities in the area around the closed mine.

4.10.1.3 Biological Stability

The stability of the surrounding environment is primarily dependent upon the physical and chemical characteristics of the site, whereas the biological stability of the mine site itself is closely related to rehabilitation and final land use. Nevertheless, biological stability can significantly influence physical or chemical stability by stabilizing soil cover, prevention of erosion/wash off, leaching, etc., A vegetation cover over the disturbed site is usually one of the main objectives of the rehabilitation programme, as vegetation cover is the best long-term method of stabilizing the site. When the major earthwork components of the rehabilitation programme have been completed, the process of establishing a stable vegetation community begins. For re-vegetation, management of soil nutrient levels is an important consideration. Additions of nutrients are useful under three situations

- ❖ Where the nutrient level of spread topsoil is lower than material in-situ e.g., for development of social forestry
- ❖ Where it is intended to grow plants with a higher nutrient requirement than those occurring naturally.
- ❖ Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor. For example, development of green barriers.
- ❖ The Mine closure plan should be as per the approved mining plan. The mine closure is a part of approved mine plan and activities of closure shall be carried out as per the process described in mine closure plan.

CHAPTER V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 INTRODUCTION

Consideration of alternatives to a proposed project is a requirement of EIA process. During the scoping process, alternatives to a proposed project can be considered or refined, either directly or by reference to the key issues identified. A comparison of alternatives helps to determine the best method of achieving the project objectives with minimum environmental impacts or indicates the most environmentally friendly and cost-effective options.

5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

The proposed project is site specific and has the following advantages:

- ❖ The mineral deposit occurs in a non-forest area.
- ❖ There is no habitation within the project area; hence no R & R issues exist.
- ❖ There is no river, stream, nallah and water bodies in the applied mine lease area.
- ❖ Availability of skilled, semi-skilled and unskilled workers in this region.
- ❖ All the basic amenities such as medical, firefighting, education, transportation, communication and infrastructural facilities are well connected and accessible.
- ❖ The mining operations will not intersect the ground water level. Hence, no impact on ground water environment.
- ❖ As the proposed project area falls in seismic zone III, there is no major history of landslides, earthquake, subsidence etc., recorded in the past history.

5.2 ANALYSIS OF ALTERNATIVE SITE

No alternatives are suggested as the mine site is mineral specific.

5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

Manual open cast mining method with secondary blasting will be applied to extract rough stone and gravel in the area. The proposed mining lease areas have following advantages:

- ❖ As the mineral deposition is homogeneous and batholith formation, opencast method of working is preferred over underground method.
- ❖ The material will be loaded with the help of excavators into tractors/tippers and transported to the need by customers.
- ❖ Semi-skilled labours fit for quarrying operations are easily available around the nearby villages.

5.4 ANALYSIS OF ALTERNATIVE TECHNOLOGY

Open cast mechanized method has been selected for this project. This technology is having least gestation period, economically viable, safest and less labour intensive. The method has inbuilt flexibility for increasing or decreasing the production as per market condition.

CHAPTER VI

ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

The monitoring and evaluation of environmental parameters indicates potential changes occurring in the environment, which paves way for implementation of rectifying measures wherever required to maintain the status of the natural environment. Evaluation is also a very effective tool to judge the effectiveness or deficiency of the measures adopted and provides insight for future corrections. The main objective of environmental monitoring is to ensure that the obtained results in respect of environmental attributes and prevailing conditions during operation stage are in conformity with the prediction during the planning stage. In case of substantial deviation from the earlier prediction of results, this forms as base data to identify the cause and suggest remedial measures. Environmental monitoring is mandatory to meet compliance of statutory provisions under the Environment (Protection) Act, 1986, relevant conditions regarding monitoring covered under EC orders issued by the SEIAA-TN as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTE/CTO.

6.1 METHODOLOGY OF MONITORING MECHANISM

Implementation of EMP and periodic monitoring will be carried out by respective project proponents. A comprehensive monitoring mechanism has been devised for monitoring of impacts due to proposed project; Environmental protection measures like dust suppression, control of noise and blast vibrations, maintenance of machinery and vehicles, housekeeping in the mine premises, plantation, implementation of Environmental Management Plan and environmental clearance conditions will be monitored by the respective mine management. On the other hand, implementation of area level protection measures like green belt development, environmental quality monitoring etc., are taken up by a senior executive who reports to their Mine Management.

An Environment monitoring cell (EMC) will be constituted to monitor the implementation of EMP and other environmental protection measures in the proposed quarry.

The responsibilities of this cell will be:

- ❖ Implementation of pollution control measures
- ❖ Monitoring programme implementation
- ❖ Post-plantation care
- ❖ To check the efficiency of pollution control measures taken
- ❖ Any other activity as may be related to environment

- ❖ Seeking expert’s advice when needed.

The environmental monitoring cell will co-ordinate all monitoring programs at site and data thus generated will be regularly furnished to the State regulatory agencies as compliance status reports.

The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of half-yearly and yearly by the proposed project proponent. The half-yearly reports are submitted to Ministry of Environment and Forest, Regional Office and SEIAA-TN as well.

The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB)/Ministry of Environment, Forest and Climate Change (MoEF & CC). The Environmental Monitoring Cell will be formed for the proposed project. The structure of the cell will be as shown in Figure 6.1.

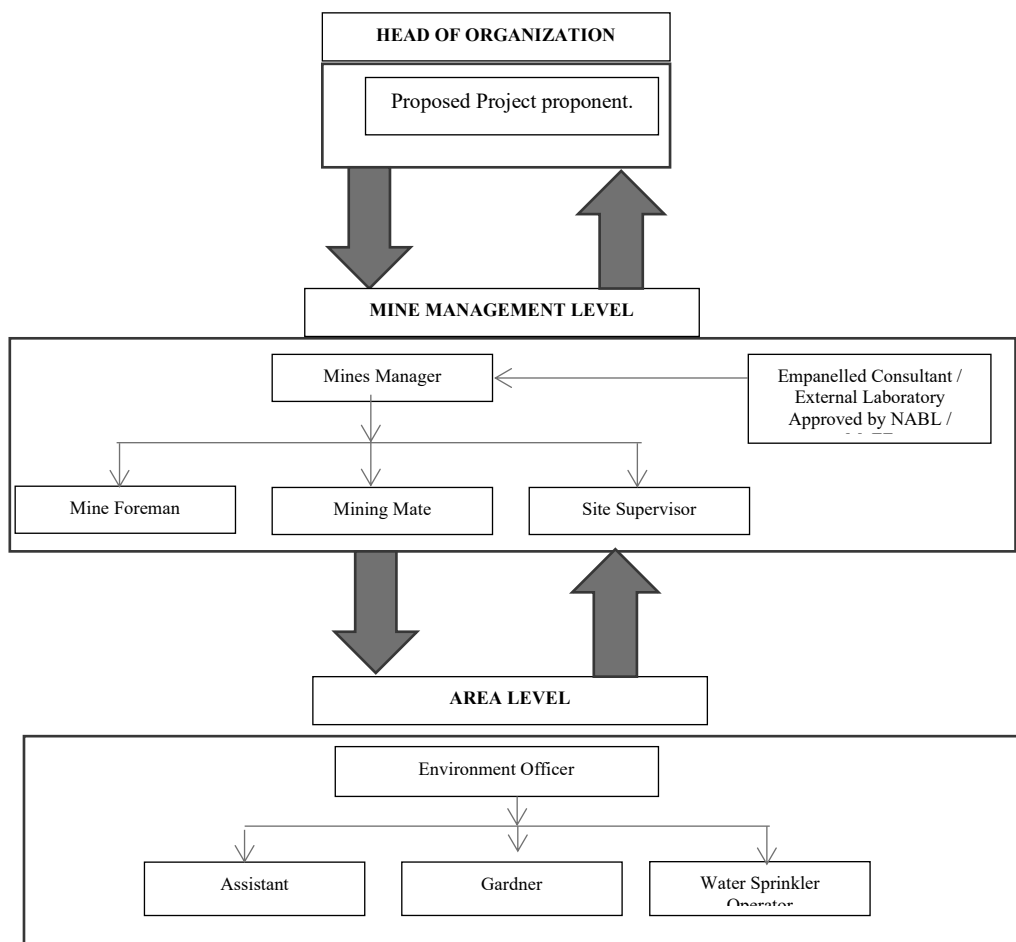


Figure 6.1 Proposed environmental monitoring chart

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

The mitigation measures proposed in Chapter IV will be implemented so as to reduce the impact on the environment due to the operations of the proposed project. Implementation schedule of mitigation measures is given in Table 6.1.

Table 6.1 Implementation Schedule for Proposed Project

S. No.	Recommendations	Time Period	Schedule
1	Land Environment Control Measures	Before commissioning of the project	Immediately after the commencement of project
2	Soil Quality Control Measures	Before commissioning of the project	Immediately after the commencement of project
3	Water Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
4	Air Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
5	Noise Pollution Control measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
6	Ecological Environment	Phase wise implementation every year along with mine operations	Immediately and as project progress

6.3 MONITORING SCHEDULE AND FREQUENCY

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges, emissions and wastes, for measurement against statutory standards. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

The environmental monitoring will be conducted in the mine operations as follows:

- ❖ Air quality
- ❖ Water and wastewater quality
- ❖ Noise levels
- ❖ Soil quality and
- ❖ Greenbelt development

The details of proposed monitoring schedule have been provided in Table 6.2.

Table 6.2 Proposed Monitoring Schedule Post EC for the Proposed Quarry

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, PM _{2.5} , PM ₁₀ , SO ₂ and NO _x .
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in m BGL
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night

6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting operation	Peak particle velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	–	Once in six months	Physical and chemical characteristics
8	Greenbelt	Within the project area	Daily	Monthly	Maintenance

Source: Guidance of manual for mining of minerals, February 2010

6.4 BUDGETARY PROVISION FOR ENVIRONMENT MONITORING PROGRAM

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF. The proposed recurring cost for Environmental Monitoring Programme is Rs 2,95,000 /- per annum for the proposed project site.

Table 6.3 Environment Monitoring Budget

S. No.	Parameter	Capital Cost	Recurring Cost per annum
1	Air Quality	-	Rs 60,000/-
2	Meteorology	-	Rs 15,000/-
3	Water Quality	-	Rs 20,000/-
4	Water Level Monitoring	-	Rs 10,000/-
5	Soil Quality	-	Rs 20,000/-
6	Noise Quality	-	Rs 10,000/-
7	Vibration Study	-	Rs 1,50,000/-
8	Greenbelt	-	Rs 10,000/-
Total		-	Rs 2,95,000 /-

Source: Field Data

6.5 REPORTING SCHEDULES OF MONITORED DATA

The monitored data on air quality, water quality, noise levels and other environmental attributes will be periodically examined by the Cluster Mine Management Coordinator and Respective Head of Organization for taking necessary corrective measures. The monitoring data will be submitted to Tamil Nadu State Pollution Control Board in the Compliance to CTO Conditions & environmental audit statements every year to MoEF & CC and Half-Yearly Compliance Monitoring Reports to MoEF & CC Regional Office and SEIAA.

Periodical reports to be submitted to:

- ❖ MoEF & CC – Half yearly status report
- ❖ TNPCB - Half yearly status report
- ❖ Department of Geology and Mining: quarterly, half yearly annual reports
- ❖ Besides the Mines Manager/Agent of respective project will submit the periodical reports to:
 - ❖ Director of mines safety
 - ❖ Labour enforcement officer
 - ❖ Controller of explosives as per the norms stipulated by the department.

CHAPTER VII

ADDITIONAL STUDIES

7.0 GENERAL

Additional studies deal with:

- ❖ Public Consultation for Proposed Project
- ❖ Risk Assessment
- ❖ Disaster Management Plan
- ❖ Cumulative Impact Study
- ❖ Plastic Waste Management

7.1 PUBLIC CONSULTATION FOR PROPOSED PROJECT

Application to the Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district was made and the public opinions on the proposed project will be updated in the final EIA/EMP report.

7.2 RISK ASSESSMENT FOR PROPOSED PROJECT

Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening. The methodology for the risk assessment is based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities. The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for proposed project.

Factors of risks involved due to human induced activities in connection with these proposed mining & allied activities with detailed analysis of causes and control measures for the mine is given in Table 7.1.

Table 7.1 Risk Assessment & Control Measures for Proposed Project

S. No.	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy mining machineries.	Improper handling and unsafe working practice	<ul style="list-style-type: none"> ✓ 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. ✓ Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited. ✓ Fire-fighting and first-aid provisions in the mine office complex and mining area. ✓ Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use. ✓ Working of quarry, as per approved plans and regularly updating the mine plans. ✓ Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut. ✓ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager. ✓ Maintenance and testing of all mining equipment as per manufacturer's guidelines.
2	Drilling	Improper and unsafe practices; Due to high	<ul style="list-style-type: none"> ✓ Safe operating procedure established for drilling (SOP) will be strictly followed. ✓ Only trained operators will be deployed.

		pressure of compressed air, hoses may burst; Drill Rod may break;	<ul style="list-style-type: none"> ✓ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, ✓ Drilling shall not be carried on simultaneously on the benches at places directly one above the other. ✓ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. ✓ All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition. ✓ Operator shall regularly use all the personal protective equipment.
3	Blasting	Fly rock, ground vibration, Noise and dust. Improper charging, stemming & Blasting/ fining of blast holes Vibration due to movement of vehicles	<ul style="list-style-type: none"> ✓ The maximum charge per delay and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blast can be conducted safely. ✓ SOP for Charging, Stemming & Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation ✓ Shots are fired during daytime only. ✓ All holes charged on any one day shall be fired on the same day. ✓ The danger zone is and will be distinctly demarcated (by means of red flags)
4	Transportation	Potential hazards and unsafe workings contributing to	<ul style="list-style-type: none"> ✓ Before commencing work, drivers personally check the truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes,

		accident and injuries Overloading of material While reversal & overtaking of vehicle Operator of truck leaving his cabin when it is loaded.	steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition. ✓ Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle. ✓ Concave mirrors should be kept at all corners ✓ All vehicles should be fitted with reverse horn with one spotter at every tipping point ✓ Loading according to the vehicle capacity ✓ Periodical maintenance of vehicles as per operator manual
5	Natural calamities	Unexpected happenings	✓ Escape Routes will be provided to prevent inundation of storm water ✓ Fire Extinguishers & Sand buckets
6	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	✓ Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m.

Source: Analysed and proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone III. The area is far away from the sea. Hence, the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- ❖ Rescue and medical treatment of casualties;
- ❖ Safeguard other people;
- ❖ Minimize damage to property and the environment;
- ❖ Initially contain and ultimately bring the incident under control;

- ❖ Secure the safe rehabilitation of affected area; and
- ❖ Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations. Structure of the team has been shown in Figure 7.1.

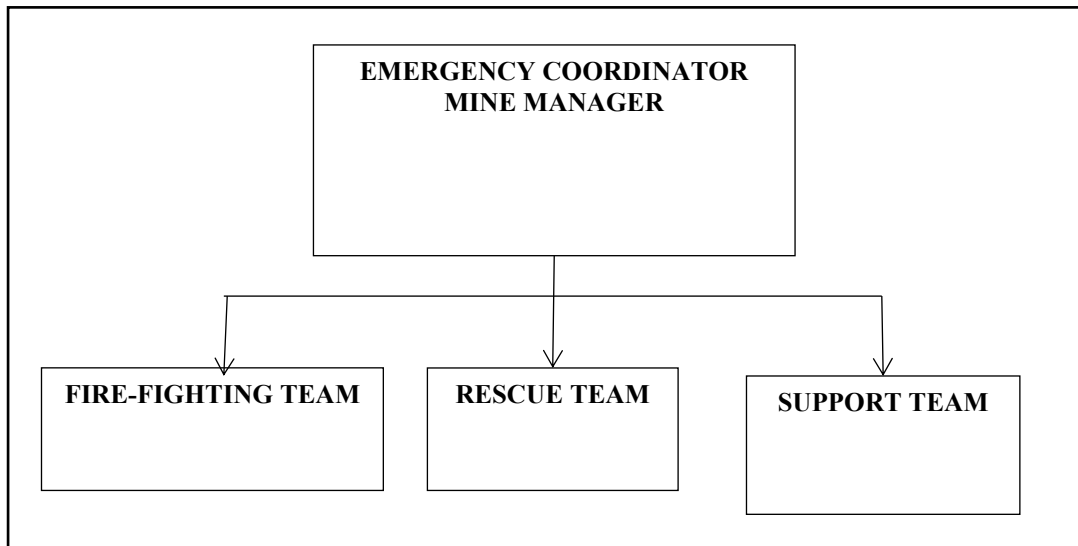


Figure 7.1 Disaster management team layout for proposed project

7.3.1 Emergency Control Procedure

The onset of emergency, will in all probability, commence with a major fire or explosion or collapse of wall along excavation and shall be detected by various safety devices and also by members of operational staff on duty. If located by a staff member on duty, he (as per site emergency procedure of which he is adequately briefed) will go to nearest alarm call point, break glass and trigger off the alarms. He will also try his best to inform about location and nature of accident to the emergency control room. In accordance with work emergency procedure the following key activities will immediately take place to interpret and take control of emergency.

- ❖ On site fire crew led by a fireman will arrive at the site of incident with fire foam tenders and necessary equipment.
- ❖ Emergency security controller will commence his role from main gate office
- ❖ Incident controller shall rush to the site of emergency and with the help of rescue team and will start handling the emergency.
- ❖ Site main controller will arrive at MEER with members of his advisory and communication team and will assume absolute control of the site.

- ❖ He will receive information continuously from incident controller and give decisions and directions to:
- ❖ Incident controller
- ❖ Mine control rooms
- ❖ Emergency security controller

7.4 CUMULATIVE IMPACT STUDY

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the quarries within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting. For this cumulative study 5 proposed projects, known as P1, P2, P3, P4, P5 are taken into consideration. The details of P1 have been given in Table 1.3 and the details of the Proposed Project P2, P3, P4 are given in the Table 7.2 and 7.3.

As per the 500m radius letter, *The Proposed “P5” quarry i.e., A.Vijayakumar S.F.No.272/2A, 272/2B, 272/3A2, Extent 0.80.57ha the land availability report is awaited and so the precise area letter is under processing.* Hence the P5” quarry details are not updated in this chapter.

7.4.1 Air Environment

As the production of rough stone and gravel plays a vital role in affecting the air environment. The data on the cumulative production resulting from 4 proposed project have been given in Tables 7.2 and 7.3.

Table 7.2 Cumulative Production Load of Rough Stone

Proposed Production Details				
Quarry	5 Years in m³	Per Year in m³	Per Day in m³	Number of Lorry Load Per Day
P1	235982	47196	175	29
P2	311184	62237	230	38
P3	108990	21798	81	13
P4	75830	15166	56	9
Total	7,31,986	1,46,397	542	89

Table 7.3 Cumulative Production Load of Gravel

Proposed Production Details				
Quarry	3 Years in m³	Per Year in m³	Per Day in m³	Number of Lorry Load Per Day
P1	24568	8189	30	5
P2	5576	1857	7	1
P3	16296	5432	20	3
P4	---	---	---	---
Total	46440	15478	57	9

The cumulative study shows that the overall production of rough stone from the quarry is 542m³ per day with a capacity of 89 trips/day of rough stone per day and that production of gravel from the proposed quarry is 57m³ per day accounting for 9 trips/day.

7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of four proposed projects on air environment of the cluster have been provided in Table 7.4. The cumulative values resulting from the 4 proposed project for each pollutant do not exceed the permissible limits set by CPCB.

Table 7.4 Cumulative Impact Results from 4 proposed projects

Pollutants	Baseline Data (µg/m ³)	Incremental Values (µg/m ³)				Cumulative Value (µg/m ³)
		P1	P2	P3	P4	
PM2.5	19	9.7	7.6	3.6	2.8	42.7
PM10	44.1	19.6	11.5	8.4	5.6	89.2

7.4.2 Noise Environment

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. Cumulative Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities. Predictions have been carried out to compute the noise level at various distances around the different quarries within the 500 m radius.

Table.7.5 Cumulative Impact of Noise from 4 Proposed Projects

Location ID	Distance (m)	Direction	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	1140	E	49.3	22.8	49.3	55
Habitation Near P2	950	E		24.4	49.3	
Habitation Near P3	1290	SE		21.7	49.3	
Habitation Near P4	1160	SE		22.7	49.3	
Cumulative Noise (dB (A))					54.0	

Source: Lab Monitoring Data

The cumulative analysis of noise due to 4 proposed projects shows that habitation will receive about 54.0dB (A) respectively. The cumulative results for all the villages in consideration do not exceed the limit set by CPCB for residential areas for day time.

Ground Vibrations

Cumulative results of ground vibrations due to mining activities in the quarry have been shown in Table 7.6.

Table 7.6 Cumulative effect of ground vibrations resulting from the 4 proposed projects

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	16.82	487	0.24
P2	22.18	280	0.72
P3	7.77	710	0.07
P4	5.40	460	0.10
Total			1.13

Results from the above tables 7.6 indicate that the cumulative PPV value of each habitation is well below the peak particle velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

7.4.3 Socio Economic Environment

Socio Economic benefits of the proposed project were calculated and the results have been shown in Table 7.7. The project together will contribute Rs. 25,00,000/-towards CER fund.

Table 7.7 Socio Economic Benefits of five proposed Quarries

Location ID	Project Cost	CER Cost
P1	Rs. 1,31,08,000	Rs. 5,00,000
P2	Rs. 63,09,792	Rs. 5,00,000
P3	Rs. 40,54,000	Rs. 5,00,000
P4	Rs. 99,88,000	Rs. 5,00,000
P5	----	Rs. 5,00,000
Grand Total	Rs. 3,34,59,792	Rs. 25,00,000

Table 7.8 Employment Benefits of four proposed Quarries

Location ID	Employment
P1	20
P2	33
P3	18
P4	19
Grand Total	90

A total of 90 people will get employment of four proposed quarries

7.4.4 Ecological Environment

Table 7.9 Greenbelt Development Benefits from four proposed Quarries

Code	Number of Trees proposed	Area to be covered (m ²)	No. of Trees expected to be grown @ 80% survival rate	Species recommended
P1	990	8910	792	<i>Azadirachta</i>
P2	1240	11156	992	<i>indica, Albizia</i>
P3	569	2047	3070	<i>lebbeck, Delonix</i>
P4	975	8775	780	<i>regia, Techtona</i>
Total	3774	30888	5634	<i>grandis, etc.,</i>

Cumulative studies show that the proposed project will plant about 3774 native tree species like *Azadirachta indica*, *Albizia lebbeck*, *Delonix regia*, *Tectona grandis*, etc inside and outside the lease area. It is expected that 80 % of trees, i.e., 5634 trees will survive in this green belt development program.

7.5 PLASTIC WASTE MANAGEMENT PLAN FOR PROPOSED PROJECT

All the Project Proponent shall comply with Tamil Nadu Government Order (Ms) No. 84 Environment and Forest (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.

7.5.1 Objective

- ❖ To investigate the actual supply chain network of plastic waste.
- ❖ To identify and propose a sustainable plastic waste management by installing bins for collection of recyclables with all the plastic waste
- ❖ Preparation of a system design layout, and necessary modalities for implementation and monitoring.

A detailed action plan to manage plastic waste has been provided in Table 7.10.

Table 7.10 Action Plan to Manage Plastic Waste

S. No.	Activity	Responsibility
1	Framing of Layout Design by incorporating provision of the Rules, user fee to be charged from waste generators for plastic waste management, penalties/fines for littering, burning plastic waste or committing any other acts of public nuisance.	Mines Manager
2	Enforcing waste generators to practice segregation of bio-degradable, recyclable and domestic hazardous waste.	Mines Manager
3	Collection of plastic waste.	Mines Foreman
4	Setting up of Material Recovery Facilities.	Mines Manager
5	Segregation of Recyclable and Non-Recyclable plastic waste at Material Recovery Facilities.	Mines Foreman
6	Channelization of Recyclable Plastic Waste to registered recyclers.	Mines Foreman
7	Channelization of Non-Recyclable Plastic Waste for use either in Cement kilns, in Road Construction.	Mines Foreman
8	Creating awareness among all the stakeholders about their responsibility.	Mines Manager
9	Surprise checking's of littering, open burning of plastic waste or committing any other acts of public nuisance.	Mine Owner

Source: Proposed by FAEs and EC

CHAPTER VIII

PROJECT BENEFITS

8.0 GENERAL

The proposed project at Pachapalayam Village aims to produce **235982m³** of rough stone and **24568m³** of gravel over a period of 5 years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits:

- ❖ Increase in Employment Potential
- ❖ Improvement in Socio-Economic Welfare
- ❖ Improvement in Physical Infrastructure
- ❖ Improvement in Social infrastructure

8.1 EMPLOYMENT POTENTIAL

It is proposed to provide employment to about 20 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be an opportunity for indirect employment to 13 persons in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

The impact of mining activity in the area will be more positive on the socio-economic environment in the immediate project impact area. The employment opportunities both direct and indirect will contribute to enhanced money incomes to job seekers with minimal skill sets especially among the local communities.

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The proposed quarry project is located in Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu is well established. The following physical infrastructure facilities will further improve due to proposed mine.

- ❖ Road transport facilities
- ❖ Communications
- ❖ Medical, Educational and social benefits will be made available to the nearby civilian population in addition to the workmen employed in the mine.

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

Employment is expected during civil construction period, in trade, garbage lifting, sanitation and other ancillary services, Employment in these sectors will be primarily temporary or contractual and involvement of unskilled labour will be more. A major part of the labour force will be mainly from local villagers who are expected to engage themselves both in agriculture and mining activities. This will enhance their income and lead to overall economic growth of the area.

8.5 OTHER TANGIBLE BENEFITS

The proposed mine is likely to have other tangible benefits as given below

- ❖ Indirect employment opportunities to local people in contractual works like construction of infrastructural facilities, transportation, sanitation for supply of goods and services to the mine and other community services
- ❖ Additional housing demand for rental accommodation will increase
- ❖ Cultural, recreation and aesthetic facilities will also improve
- ❖ Improvement in communication, transport, education, community development and medical facilities and overall change in employment and income opportunity
- ❖ The State Government will also benefit directly from the proposed mine, through increased revenue from royalties, cess, DMF, GST etc.,

8.6 CORPORATE SOCIAL RESPONSIBILITY

Individual project proponents will take responsibility to develop awareness among all levels of their staff about CSR activities and the integration of social processes with business processes. Those involved with the undertaking of CSR activities will be provided with adequate training and re-orientation.

Under this programme, the project proponents will take-up following programmes for social and economic development of villages within 5 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- ❖ Health Services
- ❖ Social Development
- ❖ Infrastructure Development
- ❖ Education & Sports
- ❖ Self-Employment
- ❖ CSR Cost Estimation

- ❖ CSR activities mainly contributing to education, health, training of women self-help groups and infrastructure etc.,

8.7 CORPORATE ENVIRONMENT RESPONSIBILITY

Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III dated 01.05.2018. As per para 6 (II) of the office memorandum, being a green field project & capital investment is ≤ 100 crores, the proposed project shall contribute of capital investment towards CER as per directions of EAC/SEAC. However, the SEAC has suggested to allocate CER fund with reference to extent of the project. Therefore, Rs.5,00,000 is allocated for CER. The proposed utilization of the budget of CER activities is given in Table 8.1.

Table 8.1 CER Action Plan

S. No.	Activity	Budget (Rs.in Lakh)
1	The applicant Indents to involve in corporate environment responsibilities (CER) activities such as renovation of existing toilet, plantation within the school premises, donating environment related books to the nearby school library, etc.	Rs.5,00,000
	Total	Rs.5,00,000

Source: Field survey conducted by FAE in consultation with project proponent

8.8 SUMMARY OF PROJECT BENEFITS

The project would pay about **Rs.2,76,37,026** to the state government through various ways, as provided in Table 8.2.

Table 8.2 Project Benefits to the State Government

Particulars	Budget for Rough Stone (Rs.)	Budget for Gravel (Rs.)
CER	5,00,000	
Seigniorage @ Rs.90/m ³ of rough stone/ Rs.56/m ³ of gravel	2,12,38,380	13,75,808
District Mineral Foundation Tax @ 10% of Seigniorage	21,23,838	1,37,581
Green Tax @ 10% of Seigniorage	21,23,838	1,37,581
Total	2,59,86,056	16,50,970

CHAPTER IX
ENVIRONMENTAL COST BENEFIT ANALYSIS

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

CHAPTER X

ENVIRONMENTAL MANAGEMENT PLAN

10.0 GENERAL

Environment Management Plan (EMP) aims at the preservation of ecological system by considering in-built pollution abatement facilities at the proposed site. Good practices of environmental management plan will ensure to keep all the environmental parameters of the project in respect of ambient air quality, water quality, socio economic improvement standards. Mitigation measures at the source level and an overall environment management plan at the study area are elicited so as to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

10.1 ENVIRONMENTAL POLICY

The project proponent is committed to conduct all its operations and activities in an environmentally responsible manner and to continually improve environmental performance.

The Proponent **Mr.V.Shanmugam** will:

- ❖ Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities.
- ❖ Implement a program to train employees in general environmental issues and individual workplace environmental responsibilities.
- ❖ Allocate necessary resources to ensure the implementation of the environmental policy.
- ❖ Ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts.
- ❖ Implement monitoring programs to provide early warning of any deficiency or unanticipated performance in environmental safeguards.
- ❖ Conduct periodic reviews to verify environmental performance and to continuously strive towards improvement.

10.1.1 Description of the Administration and Technical Setup

The environment monitoring cell discussed under chapter VI will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through mine management level of each proposed quarry. The said team will be responsible for:

- ❖ Monitoring of the water/waste water quality, air quality and solid waste generated.

- ❖ Analysis of the water and air samples collected through external laboratory.
- ❖ Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- ❖ Co-ordination of the environment related activities within the project as well as with outside agencies.
- ❖ Collection of health statistics of the workers and population of the surrounding villages.
- ❖ Green belt development.
- ❖ Monitoring the progress of implementation of the environmental monitoring program.
- ❖ Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10.2 Budgetary Provision for Environmental Management

Adequate budgetary provision has been made by the company for execution of Environmental Management Plan. The Table 10.1 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

Table 10.1 EMP Budget for Proposed Project

Attribute	Mitigation measures	Provision for Implementation	Capital Cost	Recurring Cost/annum
			(Rs.)	(Rs.)
Air Environment	Compaction, gradation and drainage on both sides	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare and yearly maintenance @ Rs. 10,000/- per hectare	19800	19800
	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
	Air quality will be regularly monitored as	Yearly compliance as per CPCB norms	0	50000

	per norms within ML area & ambient area			
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance	75000	7500
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin to avoid escape of fines to the atmosphere	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	45000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes	0	11250
	Regular sweeping and maintenance of roads for at least about 200 m from quarry entrance	Provision for 2 labours @ Rs.10,000/labour (Contractual) / hectare	0	39600
	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
Total Air Environment			989800	218150

Noise Environment	Source of noise will be transportation vehicles, and HEMM. For this, proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done.	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implementations that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Competent Person	0	0

	Provision for Portable blaster shed	Installation of portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 tons of blasted material	0	660750
Total Noise Environment			50000	662750
Water Environment	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum	19800	9900
Total Water Environment			19800	9900
Waste Management	Waste management (Spent Oil, Grease etc.)	Provision for domestic waste collection and disposal through authorized agency (capital cost, recurring cost for collection /disposal).	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
Total Waste Management			30000	22000
Implementation of EC, Mining Plan & DGMS	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	10000	1000
Total Implementation of EC, Mining Plan			10000	1000

Occupational Health and Safety	Workers will be provided with Personal Protective Equipment	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee)	80000	20000
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	20000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	7920
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	396000	19800
	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	99000	19800
	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 @	0	780000

		40,000/- for Manager & @ 25,000/- for Foreman / Mate		
Total Occupational Health and Safety			615000	874520
Development of Green Belt	Green belt development - 500 trees per 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))"	79200	11880
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	178200	17820
Total Development of Green Belt			257400	29700
Mine Closure	Closure includes 10% of the amount allotted for Greenbelt development, wire fencing, and garland drainage (Rule 27 in MCDR 2017 for Cat B mines will pay 2 lakhs per hectare or minimum amount of financial assurance of 5 lakhs)		67320	0
	G.O.(Ms)No.23, Dated: 28.09.2021	Section IVA of TNMMCR 1959 (@10% of Seigniorage Fee) (Seigniorage Fee for rough stone = Rs.90 and for Gravel= Rs.56)	2261419	0
TOTAL			4300739	1818020

Table 10.2 Estimation of Overall EMP Budget after Adjusting 5% Annual Inflation

Ist Year	IInd Year	IIIrd Year	IVth Year	Vth Year (including Mine Closure Cost)	Total Recurring Cost	Total EMP Cost
1818020	1908921	2004367	2104585	2209814	10045706	14346445

In order to implement the environmental protection measures, an amount of **Rs.4300739** as capital cost and recurring cost as **Rs.1818020** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be **Rs. 14346445** as shown in Table 10.2.

10.3 CONCLUSION

Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and fund has been allocated for the same. The EMP is dynamic, flexible and subjected to periodic review. For project where the major environmental impacts are associated, EMP will be under regular review. Senior Management responsible for the project will conduct a review of EMP and its implementation to ensure that the EMP remains effective and appropriate. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

CHAPTER XI

SUMMARY AND CONCLUSION

11.1 INTRODUCTION

As the proposed rough stone mining project P1, falls within the quarry cluster of 500 m radius with the total extent of **11.58.17ha**, it requires submission of EIA report for grant of Environmental Clearance (EC) after conducting public hearing. The proposed project falling in S.F.No.238/1 over the extent of 1.98.0ha is situated in the cluster falling in Pachapalayam Village, Sulur Taluk, Coimbatore District and Tamil Nadu. The quarries involved in the calculation of cluster extent are five proposed quarries and one existing quarry.

11.2 PROJECT DESCRIPTION

The proposed project area is located between Latitudes from 10°53'53.31"N to 10°54'0.96"N and Longitudes from 77°3'58.55"E to 77°4'2.15"E in Pachapalayam Village, Sulur Taluk, Coimbatore District and Tamil Nadu. According to the approved mining plan, about 235982m³ of rough stone and 24568m³ of gravel will be mined up to the ultimate depth of 35 m in the five years. The quarrying operation is proposed to be carried out by opencast semi mechanized mining method involving drilling, blasting, and formation of benches of the prescribed dimensions.

11.3 DESCRIPTION OF THE ENVIRONMENT

Baseline data were collected to evaluate the existing environmental condition in the core and buffer areas during **October to December, 2023** as per CPCB guidelines. The data were collected by both the FAEs and NABL accredited and MoEF notified **Excellence Laboratory** for the environmental attributes including soil, water, noise, air and by FAEs for ecology and biodiversity, traffic, and socio-economy. We also collected the baseline data in one location i.e, in the core for the present cluster in the post monsoon season **December 2024 to February 2025** for cross verification in **Greenlink Analytical and Research Laboratory (India) Private Ltd.**

11.3.1 Land Environment

Land use pattern of the area of 5 km radius was studied using Sentinel II imagery. LULC types and their extent are given in Table 11.1.

Table.11.1 LULC Statistics of the Study Area

S. No.	Classification	Area(ha)	Area (%)
1	Bare Ground	16.97	0.20
2	Built Area	1912.09	22.44
3	Crops	5318.18	62.42
4	Mining Industrial area	692.4	8.13
5	Rangeland	363.03	4.26

6	Trees	205.42	2.41
7	Water	12.28	0.14
Total		8520.37	100.0

Source: Sentinel II Satellite Imagery

11.3.2 Soil Environment

Physical Characteristics & Chemical Characteristics

The soil samples in the study area show loamy textures varying between sandy loam, silty loam and Sandy Clay. pH of the soil varies from 7.9 to 8.2 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 272 to 340 μ s/cm. Bulk density ranges between 1.1 and 1.4 g/cm³. Figure 3.5 shows the soil composition as calculated based on the laboratory report. Manganese ranges between 236 and 411 mg/kg Chlorides ranges between 353 and 573 mg/kg. Potassium ranges between 0.084 and 0.162%. Calcium ranges between 156 and 192 mg/kg. Organic matter content ranges between 1 and 2.3 %.

11.3.3 Water Environment

Panappatti Odai was the prominent surface water resources present in the study area. This lake is ephemeral in nature, which convey water only after rainfall events. The proposed project area is located 3.20 km SE Panappatti Odai, as shown in Table 3.6 and Figure 3.8. Surface water sample, known as SW1 are collected from the Panappatti Odai to assess the baseline water quality. Results for surface water samples in the Table 3.7 indicate that the physical and chemical parameters, and heavy metals are within permissible limits. Of the two biological parameters, *Coliform* and *E-coli* bacteria is present in the water sample.

Seven groundwater samples, known as BW1, BW2, BW3, BW4, BW5, BW6 and OW1 were collected from bore wells and Open well and analyzed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. Results for ground water samples in the Table 3.7 & Table 3.7a indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

Data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, data regarding groundwater elevations were collected from 9 open wells and 9 bore wells at various locations within 2 km radius around the proposed project sites for the period from October through December, 2023 (Post Monsoon Season) and from March through May, 2023 (Pre- Monsoon Season). The open well water level data thus collected onsite are provided in Tables 3.8 and 3.9. According to the data, average depths to the static water table in open wells range from 18.40 to 19.60 m BGL in post monsoon and

from 20.47 to 22.67 m BGL in pre monsoon. The bore well data thus collected onsite are provided in Tables 3.10 and 3.11. The average depths to static potentiometric surface in bore wells for the period of October through December 2023 (Post- Monsoon Season) vary from 69.17 to 72.73 m and from 70.80 to 75.50 m for the period of March through May, 2023 (Pre-Monsoon Season).

11.3.4 Air Environment

As per the monitoring data, PM_{2.5} ranges from 18.3 µg/m³ to 20.3µg/m³; PM₁₀ from 41.9µg/m³ to 46.3µg/m³; SO₂ 3.4 µg/m³ to 5.1 µg/m³; NO_x from 11.7 µg/m³ to 17.2µg/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air Quality Index (AQI)

The AQI shows that the air quality of the study area falls within good category 44 causing minimal impact to human health.

11.3.5 Noise Environment

Noise level in core zone was 38.3 dB (A) Leq during day time and 35.7dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 43.5 to 51.2dB (A) Leq and during night time from 35.3 to 44.2dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

11.3.6 Biological Environment

The study area found that there is no endemic, endangered migratory fauna found in the area. This area is not also a migratory path of any faunal species. Hence, this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

Flora in core zone

There are no trees in the quarry lease area, only shrubs, herbs and grasses. Taxonomically total of 28 species belonging to 16 families were recorded. Among them are herbs (23) and shrubs (5). Majority of the species belongs to the family of Fabaceae and Poaceae. The plant details are given in Table 3.22 There are no endangered or threatened plant species in the quarry lease area.

Flora in 300 m radius buffer zone

It is an arid landscape. A variety of plant species are found within a radius of 300 meters. It is an arid landscape. There is no agricultural land nearby. It contains a total of 37 species belonging to 19 families have been recorded from the buffer zone. 11 Trees (27%), 7 Shrubs (19%) and 19 Herbs and Climbers, Creeper, Grass & Cactus (52%) were identified. Details of

flora with the scientific name details and of diversity species Rich ness index were mentioned in Table 3.22-24 and figure 3.26. There is no threat to the Flora species in 300-meter radius.

Flora in 10 km radius buffer zone

Similar type of environment also in buffer area but with more flora diversity compare than core zone area because nearby agriculture land was found to dominate mostly in Southwest directions. Majority of the flat landscape around project unit is occupied by agriculture fields. It contains a total of 94 species belonging to 43 families have been recorded from the buffer zone. The floral (94) varieties among them Thirty-eight Trees 38 (41%) twenty- one Herbs 21 (22%) and Eighteen Shrubs 18 (19%) and twelve Climbers 12 (13%), two Creepers 2 (2%), two Grass 2 (2%) and one Cactus 1 (1%) were identified. The result of buffer zone of flora studies shows that Fabaceae and Euphorbiaceae, Solanaceae are the main dominating species in the study area it mentioned in Table No.3.25.

Fauna in Core Zone

A total of 18 varieties of species belonging to 14 families were observed in the core zone. Among them are 6 Insects, 3 Reptiles, 1 Mammal and 8 Avian. Number of species decreases towards the mining area due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and 6 species are under schedule IV according to Indian wild life Act 1972. There are no critically endangered, endangered, vulnerable and endemic species there.

Fauna in Buffer Zone

A total of 48 species belonging to 33 families were recorded in the buffer zone. Based on habitat classification the majority of species were 19 Birds (41%), followed by 15 Insects (31%), 7 Reptiles (15%), 4 Mammals (8%) and 3 Amphibians (6%). There are 4 schedule II species and 27 schedule IV species according to Indian wild life Act 1972. There are no critically endangered, vulnerable and endemic species observed.

11.3.7 Socio Economic Environment

The proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area, thus leading to the improvement of people's standard of living.

11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

11.4.1 Land Environment

Anticipated Impact

- ✦ Change in land use and land cover and topography of the mine lease area
- ✦ Problems to human habitations due to dust and noise caused by movement of heavy

vehicles

- ✦ Soil erosion and sediment deposition in the nearby water bodies during the rainy season
- ✦ Siltation of water course due to wash off from the exposed working area
- ✦ Deterioration of soil quality in the surrounding area due to runoff from the project area
- ✦ Decrease in the agricultural productivity of the surrounding land due to soil quality degradation.

Mitigation Measures

- ✦ Construction of garland drains, settling pits, and check dams to prevent runoff and siltation.
- ✦ Runoff water will be discharged into the settling tanks to reduce suspended sediment loads before runoff is discharged from the quarry site.
- ✦ The vegetation will be retained at the site wherever possible.
- ✦ Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

11.4.2 Water Environment

Anticipated Impact

- ✦ Surface and ground water resources may be contaminated due to pit water discharge, domestic sewage, discharge of oil and grease bearing waste water from washing of vehicles and machineries, and washouts from surface exposure or working areas
- ✦ As the proposed project acquires 3.5 KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

Mitigation Measures

- ✦ Rain water from mine pit will be treated in settling tanks before being used for dust suppression and tree plantation purposes.
- ✦ Domestic sewage from site office will be discharged in septic tank and then directed to soak pits.
- ✦ Water from the tipper wash-down facility and machinery maintenance yard will be passed through interceptor traps/oil separators prior to its reuse.
- ✦ The garland drainage will be connected to settling tank and sediments will be trapped in the settling tanks and only clear water will be discharged to the natural drainage.
- ✦ Periodic (every 6 month once) analysis of ground water quality of quarry pit water and ground water of nearby villages will be conducted.

- ✚ Artificial recharge structures will be established in suitable locations as part of the rainwater harvesting management program.

11.4.3 AIR ENVIRONMENT

Anticipated Impact

Anticipated increase of the air pollutants due to quarrying activities have been predicted using AERMOD software. The values of cumulative concentration i.e., background + incremental concentration of pollutant in all the receptor locations are still within the prescribed NAAQ limits without effective mitigation measures. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be controlled further.

Mitigation Measures

- ✚ To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.
- ✚ Controlled blasting will be carried out using suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone.
- ✚ Blasting will be restricted to a particular time of the day i.e., at the time of lunch hours.
- ✚ Before loading of material water will be sprayed on blasted material.
- ✚ Dust mask will be provided to the workers and their use will be strictly monitored.
- ✚ Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation.
- ✚ Transportation of material will be carried out during day time and material will be covered with tarpaulin.
- ✚ The speed of tippers plying on the haul road will be limited to < 20 km/hr to avoid generation of dust.
- ✚ The un-metalled haul roads will be compacted weekly before being put into use
- ✚ It will be ensured that all transportation vehicles carry a valid PUC certificate.
- ✚ Haul roads and service roads will be graded to clear accumulation of loose materials
- ✚ Planting of trees all along main mine haul roads and around the project site will be practiced to prevent the generation of dust.
- ✚ Dust mask will be provided to the workers and their use will be strictly monitored.

11.4.4 Noise Environment

Anticipated Impact

Total noise level in all the sampling areas is well below the CPCB standards for industrial and residential areas. The peak particle velocity produced by the charge of 16.82kg

is well below that of 0.3 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

Mitigation Measures

- ✚ Usage of sharp drill bits while drilling which will help in reducing noise
- ✚ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders
- ✚ Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained
- ✚ The blasting will be carried out during favorable atmospheric condition and less human activity timings by using nonelectrical initiation system
- ✚ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise
- ✚ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise
- ✚ Silencers / mufflers will be installed in all machineries
- ✚ Greenbelt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise
- ✚ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness
- ✚ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

11.4.5 Biological Environment

Anticipated Impact

- ✚ During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly.
- ✚ Carbon released from quarrying machineries and tippers during quarrying would be 2152g per day, 581056kg per year and 2905282kg over five years.

Mitigation Measures on Flora

- ✚ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.
- ✚ Existing roads will be used; new roads will not be constructed to reduce impact on flora.

- ✚ To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 23736 kg of carbon per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.
- ✚ As per the greenbelt development plan as recommended by SEAC, about 990 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 23222kg of the total carbon.

Anticipated Impact on Fauna

- ✚ Direct impact is anticipated on fauna of core zone
- ✚ Insignificant impact is anticipated on fauna in the buffer area due to air emissions, noise, vibration, transportation, waste water discharges, and changes in land use

Mitigation Measures on Fauna

- ✚ Fencing will be constructed around the proposed mine lease area to restrict the entry of stray animals
- ✚ The workers shall be trained not to harm any wildlife near the project site

11.4.6 Socio Economic Environment

An essential part of environmental study is socio-economic environment incorporating various facts related to socio-economic conditions in the area, which deals with the total environment. Socio economic study includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature of aesthetic significance such as temples, historical monuments etc. at the baseline level. This would help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project. Socio-economic study of an area provides a good opportunity to assess the socio -economic condition and possibly makes a change in living and social standards of the particular area benefitted due to the project.

11.4.7 Occupational Health

- ✚ All the persons will undergo pre-employment and periodic medical examination
- ✚ Employees will be monitored for occupational diseases by conducting medical tests: General physical tests, Audiometric tests, Full chest, X-ray, Lung function tests, Spirometric tests, Periodic medical examination – yearly, Lung function test – yearly, those who are exposed to dust and Eye test
- ✚ Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost.

- ✚ The first aid box will be made available at the mine for immediate treatment. First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

11.5 Environment Monitoring Program

Table 11.2 Environment Monitoring Program

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, PM _{2.5} , PM ₁₀ , SO ₂ and NO _x .
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in m BGL
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting operation	Peak particle velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	–	Once in six months	Physical and chemical characteristics
8	Greenbelt	Within the project area	Daily	Monthly	Maintenance

Source: Guidance of manual for mining of minerals, February 2010

11.6 ADDITIONAL STUDIES

11.6.1 Risk Assessment

The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for proposed project.

11.6.2 Disaster Management Plan

The objective of the disaster management plan is to make use of the combined resources of the mine and the outside services to:

- ✚ Rescue and treat casualties;

- ✦ Safeguard other people;
- ✦ Minimize damage to property and the environment;
- ✦ Initially contain and ultimately bring the incident under control;
- ✦ Secure the safe rehabilitation of affected area; and
- ✦ Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

11.6.3 Cumulative Impact Study

The results on the cumulative impact of the five proposed projects on air environment of the cluster do not exceed the permissible limits set by CPCB for air pollutants.

- ✦ The cumulative results of noise for the habitation in consideration do not exceed the limit set by CPCB for residential areas for day time
- ✦ PPV resulting from four proposed project is well below the permissible limit of Peak Particle Velocity of 5 mm/s
- ✦ The five proposed projects will allocate Rs.25,00,000/- towards CER as recommended by SEAC
- ✦ The four proposed projects will directly provide jobs to 90 local people, in addition to indirect jobs
- ✦ The five proposed projects will plant 3774 about trees in and around the lease area
- ✦ The four proposed projects will add 294 PCU per day to the nearby roads.

11.7 Project Benefits

Various benefits are envisaged due to the proposed project and benefits anticipated from the proposed project to the locality, neighbourhood, region and nation as a whole are:

- ✦ Direct employment to 20 local people
- ✦ Creation of community assets (infrastructure) like school buildings, village roads/ linked roads, dispensary & health Centre, community Centre, market place etc.,
- ✦ Strengthening of existing community facilities through the Community Development Program
- ✦ Skill development & capacity building like vocational training.
- ✦ Rs. 5,00,000 will be allocated for CER

11.8 ENVIRONMENT MANAGEMENT PLAN

In order to implement the environmental protection measures, an amount of **Rs.4300739** as capital cost and recurring cost as **Rs.1818020** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be **Rs. 14346445**.

CHAPTER XII

DISCLOSURES OF CONSULTANT

The Project Proponent, **V. Shanmugam** has engaged **Geo Technical Mining Solutions**, a NABET accredited consultancy for carrying out the EIA study as per the ToR issued.

Address of the consultancy:

No: 1/213B Natesan Complex,
Oddapatti, Dharmapuri – 636705,
Tamil Nadu, India.
Email: info.gtmsdpi@gmail.com
Web: www.gtmsind.com
Phone: 04342 232777.

The accredited experts and associated members who were engaged in this EIA study are given below:

S.No	Name of the expert	In house/ Empanelled	Sector	Functional Area	Category
Approved Functional Area Experts & EC					
1	Dr.R.Arunbalaji	EIA Coordinator (EC) In-house	1(a)(i)	AQ, AP & NV	B
2	P. Vellaiyan	In-house, FAE	1(a)(i)	GEO	B
3	R.Elavarasan	In-house, FAE	1(a)(i)	EB	B
4	K. Udayakumar	In-house, FAE	1(a)(i)	SE	B
5	Dr. D.Kalaimurugan	In-house, FAE	1(a)(i)	SC	B
6	J.N. Manikandan	Empanelled FAE	1(a)(i)	RH, SHW, AP	B
7	R. Revathy	In-house, FAE	1(a)(i)	WP	B
8	G. Umamaheswaran	In-house, FAE	1(a)(i)	HG	B
9	P. Venkatesh	In-house, FAE	1(a)(i)	AP	B
10	C. Kumaresan	In-house, FAE	1(a)(i)	NV	B
11	G. Prithiviraj	In-house, FAE	1(a)(i)	LU & LC	B
Approved Functional Area Associates					
12	V. Malavika	FAA	1(a)(i)	NV	B
13	P. Dhatchayini	FAA	1(a)(i)	AQ	B
14	M. Arunkumar	FAA	1(a)(i)	WP	B
15	C. Ragul	FAA	1(a)(i)	LU & LC	B

16	K. Ravichandiran	FAA	1(a)(i)	GEO	B
17	K. Prithivi	FAA	1(a)(i)	HG	B
18	G. Kavitha	FAA	1(a)(i)	EB,SC	B
Abbreviations					
EC	EIA Coordinator	NV	Noise and Vibration		
FAE	Functional Area Expert	SE	Socio Economics		
FAA	Functional Area Associates	HG	Hydrology, ground water and water conservation		
TM	Team Member	SC	Soil conservation		
GEO	Geology	RH	Risk assessment and hazard management		
WP	Water pollution monitoring, prevention and control	SHW	Solid and hazardous wastes		
AP	Air pollution monitoring, prevention and control	MSW	Municipal Solid Wastes		
LU	Land Use	ISW	Industrial Solid Wastes		
AQ	Meteorology, air quality modelling, and prediction	HW	Hazardous Wastes		
EB	Ecology and bio-diversity	GIS	Geographical Information System		

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA & EMP

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

Signature

:



Date

:

Name

: **Dr.R. Arun Balaji**

Designation

: EIA Coordinator

Name of the EIA Consultant Organization



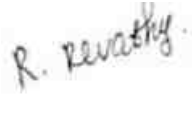

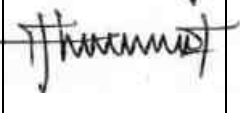


: Geo Technical Mining Solutions







Period of Involvement

: Till date


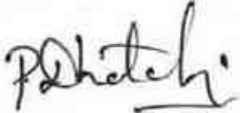
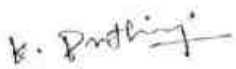



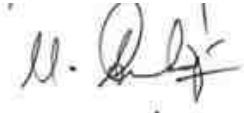
We, the FAEs and FAAs hereby declare that information furnished in this EIA/EMP report for **V. Shanmugam** rough stone and gravel quarry project with the extent of 1.98.0ha situated in the cluster with the extent of **11.58.17ha** in Pachapalayam Village, Suler Taluk, Coimbatore District of Tamil Nadu is true and correct to the best of our knowledge.

List of Functional Area Experts Engaged in this Project

S. No.	Functional Area	Involvement	Name of the Experts	Signature
1	AP	<ul style="list-style-type: none"> ○ Identification of different sources of air pollution due to the proposed mine activity ○ Prediction of air pollution and propose mitigation measures / control measures 	J.N. Manikandan	
			P.Venkatesh	
2	WP	<ul style="list-style-type: none"> ○ Suggesting water treatment systems, drainage facilities ○ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures. 	R.Revathy	
3	HG	<ul style="list-style-type: none"> ○ Interpretation of ground water table and predict impact and propose mitigation measures. ○ Analysis and description of aquifer Characteristics 	G.Umamaheshwaran	
4	GEO	<ul style="list-style-type: none"> ○ Field Survey for assessing the regional and local geology of the area. ○ Preparation of mineral and geological maps. ○ Geology and Geo morphological analysis/description and Stratigraphy/Lithology. 	P. Vellaiyan	
5	SE	<ul style="list-style-type: none"> ○ Revision in secondary data as per Census of India, 2011. ○ Impact Assessment & Preventive Management Plan ○ Corporate Environment Responsibility. 	K. Udayakumar	
6	EB	<ul style="list-style-type: none"> ○ Collection of Baseline data of Flora and Fauna. ○ Identification of species labelled as Rare, Endangered and threatened as 	R.Elavarasan	

		<p>per IUCN list.</p> <ul style="list-style-type: none"> ○ Impact of the project on flora and fauna. ○ Suggesting species for greenbelt development. 		
7	RH	<ul style="list-style-type: none"> ○ Identification of hazards and hazardous substances ○ Risks and consequences analysis ○ Vulnerability assessment ○ Preparation of Emergency Preparedness Plan ○ Management plan for safety. 	J.N. Manikandan	
8	LU	<ul style="list-style-type: none"> ○ Construction of Land use Map ○ Impact of project on surrounding land use ○ Suggesting post closure sustainable land use and mitigative measures. 	G. Prithviraj	
9	NV	<ul style="list-style-type: none"> ○ Identify impacts due to noise and vibrations ○ Suggesting appropriate mitigation measures for EMP. 	C. Kumaresan	
10	AQ	<ul style="list-style-type: none"> ○ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. ○ Recommending mitigations measures for EMP 	Dr.R. Arun Balaji	
11	SC	<ul style="list-style-type: none"> ○ Assessing the impact on soil environment and proposed mitigation measures for soil conservation 	Dr. D.Kalaimurugan	
12	SHW	<ul style="list-style-type: none"> ○ Identify source of generation of non-hazardous solid waste and hazardous waste. ○ Suggesting measures for minimization of generation of waste and how it can be reused or recycled. 	J.N. Manikandan	

List of Functional Area Associate Engaged in this Project


S. No.	Name	Functional Area	Involvement	Signature
1	V. Malavika	NV, SHW	<ul style="list-style-type: none"> ○ Site visit along with FAE Assistance in report preparation. ○ Assistance to FAE in both primary and secondary data collection ○ Assistance in noise prediction modelling 	
2	P. Dhatchayini	AQ	<ul style="list-style-type: none"> ○ Site visit with FAE ○ Assistance to FAE in collection of both primary and secondary data 	
3	K.Prithivi	HG	<ul style="list-style-type: none"> ○ Site visit with FAE ○ Provide inputs & Assisting FAE for HG 	
4	K.Ravichandiran	GEO	<ul style="list-style-type: none"> ○ Field visits along with FAE ○ Assistance to FAE in both primary and secondary data collection 	
5	C.Ragul	LU & LC	<ul style="list-style-type: none"> ○ Field visits along with FAE ○ Assistance to FAE in both primary and secondary data collection 	
6	G.Kavitha	EB, SC	<ul style="list-style-type: none"> ○ Site visit with FAE ○ Collection of Baseline data of Flora and Fauna. ○ Impact of the project on flora and fauna. 	
7	M.Arunkumar	WP	<ul style="list-style-type: none"> ○ Field visits along with FAE ○ Assistance to FAE in both primary and secondary data collection 	

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, **Dr. S. KARUPPANNAN**, Managing Partner, **Geo Technical Mining Solutions**, hereby, confirm that the above-mentioned functional area experts and team members prepared the EIA/EMP report for **V. Shanmugam** rough stone and gravel quarry project with the extent of 1.98.0ha situated in the cluster with the extent of **11.58.17ha** in Pachapalayam Village, Sulur Taluk, Coimbatore District of Tamil Nadu is true and correct to the best of our knowledge.

Signature

:



Date

:

Name

:

Dr. S. Karuppannan

Designation

:

Managing Partner

Name of the EIA Consultant Organization

:

Geo Technical Mining Solutions

NABET Certificate No & Issue Date

:

NABET/EIA/23-26/RA 0319

Validity

:

Till 31.12.2026

TERMS OF REFERENCE (ToR) COMPLIANCE

ToR File No.11549

TOR Identification No. TO24B0108TN5989504N, dated.11/01/2025

Thiru.V.Shanmugam, Rough Stone and Gravel Quarry

Specific Terms of Reference for (Mining of Minerals).

1. SEIAA Specific Conditions

S.No	Terms of Reference	Remarks	
1.1	1	The PP shall furnish the Compliance Certificate Report for the EC obtained earlier from the DEIAA, duly audited by the RO, MoEF & CC, Chennai with the percentage of non-compliances, reasons for non-compliances, status on half-yearly compliance report submitted during the mine operation, actions taken on the non-compliances, etc during the EIA appraisal without fail.	The CCR report will be submitted in the final EIA report.
	2	The detailed studies on the Loss of Vegetation, Loss of Biodiversity shall be carried out and the action plan to prevent the same shall be included in the EIA report.	The details on biodiversity have been provided in Section 3.5 under Chapter III in the EIA report page 64-78.
	3	The detailed studies on the Impact on water bodies and human health shall be carried out and the action plan to prevent the same shall be included in the EIA report.	The impact and mitigation measures on water environment, human health for this quarry project is discussed in the Section 4.3 and 4.7 under Chapter IV in the EIA report page 93 & 106.
	4	The detailed studies on the Impact on Agriculture shall be carried out and the action plan to prevent the same shall be included in the EIA report.	The details of reserve forest within 5km radius is discussed in the Table 3.40 under Chapter III in the EIA report page 90. The impact on agriculture is discussed in the Section 4.6 under

		Chapter IV in the EIA report page 103-106.
5	The detailed studies on the Impact on temperature rise and human health shall be carried out and the action plan to prevent the same shall be included in the EIA report	The detailed study is discussed in the Section 3.3.1.1 under Chapter III in the EIA report page 51. The mitigation measures is provided in the Chapter IV in the EIA report.
6	The detailed studies on the Impact on Free ranging Wildlife & grazing domestic animals, cattle breeds and animal husbandry shall be carried out and the action plan to prevent the same shall be included in the EIA report.	The impact and mitigation measures on ecology and bio-diversity is studied Section 4.6 under Chapter IV in the EIA report page 103-106.
7	The detailed studies on the Livelihood shall be carried out and the action plan to prevent the same shall be included in the EIA report.	The detailed study on socio-economy is Section 3.6 under Chapter III in the EIA report page 79-87.
8	The PP shall carry out the scientific studies to assess the hydrogeological condition of the quarry by involving any one of the reputed Research and Academic Institution. A copy of such scientific study report shall be included in the EIA report.	The detailed hydrogeological report by the reputed Research and Academic Institution will be submitted in the final EIA report.
9	The PP shall carry out the scientific studies with prior permission from the DMS/Chennai Region, to design the controlled blast parameters for reducing the blast-induced ground/air vibrations and eliminating the fly rock from the blasting operations carried out in the	The scientific study on control design of blast parameters by the Research and Academic Institution will be submitted in the final EIA report.

		quarry, by involving anyone of these reputed Research and Academic Institution. A copy of such scientific study report shall be included in the EIA report.	
	10	The PP shall furnish the details of EMP addressing the revegetation and restoration activities proposed for the project activity.	The details are given in the Section 4.6 under Chapter IV in the EIA report page 103-106.

2. SEAC Conditions – Site Specific

S.No		Terms of Reference	Remarks
2.1	1	As the quarrying was carried out without benches of appropriate geometry in accordance with the provisions of the MMR 1961 and considering the safety aspects, the SEAC have decided to restrict the depth of mining to 47m. Hence, the PP shall furnish the Modified Mining Plan incorporated with proper bench geometry and slope stability action plan duly approved by the competent authority	The approved mining plan plates are attached in the Annexure III.
	2	The PP shall furnish the Compliance Certificate Report for the EC obtained earlier from the DEIAA, duly audited by the RO, MoEF & CC, Chennai with the percentage of non-compliances, reasons for non-compliances, status on half-yearly compliance report submitted during the mine operation, actions taken on	The CCR Compliance report will be submitted in the final report.

	the non-compliances, etc during the EIA appraisal without fail.	
3	<p>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 of an Affidavit during the EIA appraisal:</p> <p>(i) Copy of the agreement forming CMC.</p> <p>(ii) The Organisation chart of the Committee with defining the role of the members</p> <p>(iii) The ‘Standard Operating Procedures’ (SoP) executing the planned activities.</p>	A Cluster Management Committee (CMC) affidavit will be submitted in the final EIA report.
4	The PP shall erect DGPS reference of EIA appraisal.	The DGPS reference pillar points will be erected in blue and white colour indicating the safety barrier of 7.5m.
5	As this is an existing quarry, the PP shall ensure that the CCTV Cameras are installed inside the mine premises and the photographs of the	The photographs of the existing quarry will be submitted in the final EIA report.

		same shall be submitted at the time of EIA appraisal.	
	6	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	The greenbelt and fencing photos will be submitted during final EIA report.
	7	The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.	The Bio-diversity study is discussed in the Section 3.5 under Chapter III in the EIA report page 64-78.
	8	The PP shall prepare the EMP for the entire project life of mine, and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	The EMP budget is discussed in the Table 10.1 & 10.2 under Chapter X in the EIA report page 129-135. The sworn affidavit will be submitted in the final EIA report.
	9	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	The cumulative study of the existing and proposed quarries is discussed in the Section 7.4 under Chapter VII in the EIA report 120-123.

3.SEAC Standard Conditions

3.1	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	

	<p>(ii) Quantity achieved Vs EC Approved Quantity</p> <p>(iii) Balance Quantity as per Mineable Reserve calculated.</p> <p>(iv) Mined out Depth as on date Vs EC Permitted depth</p> <p>(v) Details of illegal/illicit mining</p> <p>(vi) Violation in the quarry during the past working.</p> <p>(vii) Quantity of material mined out outside the mine lease area</p> <p>(viii) Condition of Safety zone/benches</p> <p>(ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.</p>	The details of AD mines letter will be submitted in the final EIA report.
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.	The VAO certificate is attached in Annexure IV.
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	There are no any permanent structures within 300m radius from the mine lease area. The VAO letter is attached in the Annexure IV.

	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.	Detailed hydrological study is discussed in the Section 3.2.3 under the Chapter III in the EIA report page 38-50.
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	The details of Bio diversity from the reputed institution will be submitted in the final 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.	The DFO letter will be submitted in the final EIA report.
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 Slope Stability report will be submitted during final EIA report.

	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.	The Slope Stability report will be submitted during final EIA report.
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.	The affidavit for blasting will be enclosed in the final EIA report.
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.	A conceptual design of blasting has been given in Section 2.6 under Chapter II in the EIA report page 18-24.
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.	The proposed lease area was previously granted to quarrying of rough stone and gravel in favour of MR.V.Shanmugam, S/o.Velusamy Gounder in S.F.No: 236/2A, 238/1,

		239/1A, 239/2A, 240/1 & 240/2A over an extent of 4.73.0ha. The previous quarry details is discussed in the approved mining plan book which is attached in the Annexure III.
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?	The details of AD mines letter will be submitted in the final EIA report.
14	Quantity of minerals mined out.	
	<ul style="list-style-type: none"> • Highest production achieved in any one year. 	
	<ul style="list-style-type: none"> • Detail of approved depth of mining. • Actual depth of the mining achieved earlier. 	
	<ul style="list-style-type: none"> • 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. 	
15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Toposheet, 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	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.3, under Chapter II in the EIA report page 11.

	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.,	The drone video will be submitted during final EIA presentation.
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.	Photographs of adequate fencing, green belt along the periphery of the project area and the photographs showing nearby water bodies will be included in final EIA report.
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.	The Resources and Reserves of Rough Stone were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. The plate used for reserve estimation has discussed in the Section 2.5 under the Chapter II in the EIA report page 15-17. The approved mining plates is attached in the Annexure III.
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.	Details of manpower required for this project have been given in Table 2.14 under Chapter II in the EIA report page 25.

20	<p>The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p>	<p>The hydrogeological study is discussed in the Section 3.2.3 under the Chapter III in the EIA report page 38-50.</p>
21	<p>The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.</p>	<p>The baseline data were collected for the environmental components including land, soil, water, air, noise, biology, socio-economy, and traffic and the results have been discussed under Chapter III in the EIA report page 26-91.</p>
22	<p>The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the</p>	<p>Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII in the EIA report page 120-123.</p>

	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.	As part of rainwater harvesting measures, the rain water from garland drainage system will be diverted to nearby check dams after treating the water in settling tanks.
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.	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 discussed in Section 3.1 in the EIA report page 28-37 under Chapter III. The details of surrounding sensitive ecological features have been provided in Table 3.40 under Chapter III in the EIA report page 90. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.8 under Chapter II in the EIA report page 21.
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.	This condition is not applicable to this project because no dumps have been proposed outside the lease area.
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area

	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.	and does not come under 'Aravalli Range.
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 rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
28	Impact on local transport infrastructure due to the Project should be indicated.	Details regarding the impact of the project on traffic are given in Section 3.7 under Chapter III in the EIA report page 87-89.
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.	A detailed tree survey was carried out within 300 m radius and the results have been discussed in Section 3.5 under Chapter III in the EIA report page 64-78.
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.9 under Chapter II in the EIA report page 21.
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	The EIA coordinator and the FAE for ecology and biodiversity visited the study area and educated the local

	importance of preserving local flora and fauna by involving them in the study, wherever possible.	students about the importance of protecting the biological environment.
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.	A detailed greenbelt development plan has been provided in Section 4.6 under Chapter IV in the EIA report page 103-106.
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 FAE of ecology and biodiversity has advised the project proponent that saplings of one year old raised in the eco-friendly bags should be purchased and planted with the spacing of 3 m between each plant around the proposed project area as per the advice of local forest authorities/botanist.
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.	A disaster management plan for the project has been provided in Section 7.3 under Chapter VII in the EIA report page 118-120.

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.	A risk assessment plan for the project has been provided in Section 7.2 under Chapter VII in the EIA report page 115-118.
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 and preventive measures have been discussed in detail in Section 4.8 under Chapter IV in the EIA report 107-108.
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.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 125-126.
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.	No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the socio-economic environment by offering employment for 20 people directly as discussed in Section 8.1 under Chapter VIII in the EIA report page 124.

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 in any court against this project.
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.	The benefits of the project are discussed in the Chapter VIII in the EIA report page 124-127.
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.	The CCR details will be submitted in the final EIA report.
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.	A detailed environment management plan has been prepared following the suggestion made by SEAC, as shown in Chapter X in the EIA report page 128-135. The sworn affidavit stating to abide the EMP for the entire life of mine will be submitted during 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.	The EIA report has been prepared keeping in mind the fact that concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may lead to withdrawal of this terms of

		reference besides attracting penal provisions in the Environment (Protection) Act, 1986.
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4. SEIAA Standard Conditions:

S.No	Terms of Reference	Remarks
4.1	Cluster Management Committee	
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	A cluster management committee including all the proponents of the rough stone quarrying projects within the cluster of 500 m radius will be constituted for the effective implementation of green belt development plan, water sprinkling, blasting, etc.
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	The members of the cluster management committee will be instructed to carry out EMP in coordination.
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.	The list of members of the committee formed will be submitted to AD/Mines before the execution of mining lease.
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	All the information has been discussed in Section 2.6 under Chapter II in the EIA report page 18-24.

	individual quarry in the form of route map and network.	
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	It will be informed to the committee.
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	It will be advised to the cluster management committee 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 will be given in detail.
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.	A proper action plan regarding the restoration will be followed by the committee.
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	The information on the health of the workers and the local people will be updated periodically.
Agriculture & Agro-Biodiversity		
9	Impact on surrounding agricultural fields around the proposed mining Area.	There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated

		to affect the surrounding vegetation significantly, as shown in Section 4.6 under Chapter IV in the EIA report page 103-106.
10	Impact on soil flora & vegetation around the project site.	The details on flora have been provided in Section 3.5 under Chapter III in the EIA report page 64-78. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
11	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Details of vegetation in the lease area have been provided in Section 3.5 under Chapter III in the EIA report page 64-78. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV in the EIA report page 103-106.
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 ecological details have been provided in Section 3.5 under Chapter III in the EIA report page 64-78. and measures have been provided in Section 4.6 under Chapter IV in the EIA report page 103-106.
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	All the essential environmental protective measures will be followed by the proponent to manage the surrounding environment and restore

		the ecosystem, as discussed in Chapter IV in the EIA report page 92-109.
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The impact of project on the land environment has been discussed in Section 4.1 under Chapter IV in the EIA report page 92.
Forests		
15	The project proponent shall detail study on impact of mining on Reserve forests free ranging wildlife.	The project proponent shall do barbed wire fencing work and develop a green belt around the lease area to prevent wildlife from entering the site.
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The impacts of the project on ecology and biodiversity have been discussed in Section 4.6 under Chapter IV in the EIA report page 103-106.
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	The impacts of the project on standing trees and the existing trees have been discussed in Section 4.6 under Chapter IV in the EIA report page 103-106.
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	The protected areas, National Parks, Corridors and Wildlife pathways near project site within 10 km radius has been provided in Table 3.40 under Chapter III in the EIA report page 90.
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	The hydrogeological study is discussed in the Section 3.2.3 under Chapter III in the EIA report page 38-50.

	<p>water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</p>	
20	Erosion Control measures.	Garland drainage structures will be constructed around the lease area to control the erosion, as discussed in Section 4.3 under Chapter IV in the EIA report page 93.
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 matter has been discussed under Chapter IV in the EIA report page 92-109.
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and	An analysis for food chain in aquatic ecosystem has been discussed in Section 3.5 under Chapter 3 in the EIA report page 64-78.
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The impacts of the proposed project on the surrounding environment have discussed in Chapter IV in the EIA report page 92-109.
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape,	The impact of the proposed project on aquatic plants and animals in water bodies has been discussed in Section

	damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	4.6 under Chapter IV in the EIA report page 103-106.
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV in the EIA report page 93.
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The impacts on water bodies, streams, lakes have been discussed in Section 4.3 under Chapter IV in the EIA report page 93-94.
27	The EIA shall include the impact of mining activity on the following:	
	a) Hydrothermal / Geothermal effect due to destruction in the Environment.	The proposed mining area and the surrounding falls under Hornblende-Biotite Gnesis, commercially called as rough stone and the district has not recorded any Hydrothermal / Geothermal effect and as per the Seismic Zonation Map of India, the district falls under the Seismic Zone III classification. The resultant of this open cast mining shall not have any Hydrothermal/Geothermal effect on the surrounding environment.
	b) Bio-geochemical processes and its foot prints including environmental stress.	No, Bio-geochemical processes and its foot prints including environmental stress are anticipated and at the end of life of mine the proposed quarry shall be left as an artificial reservoir

		structure and allowed to collect rain water and shall enrich the ecosystem.
	c) Sediment geochemistry in the surface streams.	Sediment geochemistry is discussed in the Table 3.5 under the Chapter III in the EIA report page 64-78.
Energy		
28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	The measures taken to control noise, air, water, and dust have been given under Chapter IV in the EIA report page 92-109.
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.	The carbon emission and the measures to mitigate carbon emission have been discussed in Section 4.6 under Chapter IV in the EIA report page 103-106.
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 matter has been discussed in Chapter IV in the EIA report page 92-109.
31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	There is no emission impact to local livelihood from this quarry project. All the vehicles used for transportation of the quarry materials will be maintained regularly to keep the GHGs emissions within statutory limits.

Mine Closure Plan		
32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.9 under Chapter II in the EIA report page 21.
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.	A detailed Environment Management plan has been given under Chapter X in the EIA report page 128-135.
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.	A detailed Environment Management plan has been given in Tables 10.1 & 10.2 under Chapter X in the EIA report page 129-135.
Risk Assessment		
35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	The risk assessment and management plan for this project has been provided in Section 7.2 under Chapter VII in the EIA report page 115-118.
Disaster Management Plan		
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/unfavorable accidents in & around the proposed mine lease area	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 118-120.

	due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	
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.	The VAO certificate of 300 m radius have been attached in the attached in the Annexure IV.
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.	The concerns raised during the public consultation will be submitted in the final EIA report.
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.	The plastic waste management has been given in Section 7.5 under Chapter VII in the EIA report page 123.

Standard Terms of Reference for (Mining of Minerals)

1.

S.No	Terms of reference	Remarks
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.	Not applicable. This is not a violation category project. This proposal falls under B1 category.
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.	The proposed site for quarrying is a private land. A copy of the document showing that the proponent is the rightful lessee has been enclosed along with the approved mining plan in Annexure III.
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.	All the documents are 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 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).	All corner coordinates of the mine lease area have been superimposed on a high- resolution Google Earth Image, as shown in Figure 2.3 under Chapter II in the EIA report page 11.

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.	Toposheets of Survey of India have been used for showing sampling locations of air, soil, water, and noise, as shown in Chapter III in the EIA report page 26-91.
1.6.	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.	The lease area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
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	The Environmental Policy is discussed in the Section 10.1 under Chapter X in the EIA report page 128-129.
1.8.	Issues relating to Mine Safety, including subsidence study in case of underground	It is an opencast quarrying operation proposed to operate in Manual

	<p>mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.</p>	<p>method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90° bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.</p>
1.9.	<p>The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.</p>	<p>The study area considered for this study is of 5 km radius for air, soil, water, and noise level sample collections, while the study area is 10 km radius for ecology and biodiversity studies and all data contained in the EIA report such as waste generation etc., is for the life of the mine / lease period.</p>
1.10.	<p>Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p>	<p>Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features has been discussed in Section 3.1 under Chapter III in the EIA report page 28-37. The details of surrounding sensitive ecological features have been provided in Table 3.40 under Chapter III in the EIA report page 90.</p>

		Land use plan of the project area showing pre- operational, operational and post- operational phases are discussed in Table 2.8 under Chapter II in the EIA report page 21.
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.	It is not applicable as no dumps have been proposed outside the lease area. The entire quarried out rough stone will be transported to the needy customers.
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 State Expert Appraisal Committees.	It is not applicable as there is no forest land involved within the proposed project area. The details have been discussed in Table 3.40 under Chapter III in the EIA report page 90.
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.	It is not applicable as the proposed project area does not involve any forest land.
1.14.	Implementation status of recognition of forest rights under the Scheduled Tribes and	Not Applicable.

	<p>other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.</p>	<p>The project doesn't attract Recognition of Forest Rights Act, 2006 as there are neither forests nor forest dwellers / forest dependent communities in the mine lease area. There shall be no forest impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project.</p>
1.15.	<p>The vegetation in the RF / PF areas in the study area, with necessary details, should be given.</p>	<p>Reserve Forest is found within the study area. The matter has been discussed Section 3.5.1 under Chapter III in the EIA report page 66-74.</p>
1.16.	<p>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.</p>	<p>There is no any wildlife/protected area within 10 km radius from the periphery of the project area. Information regarding the same has been given in Table 3.40 under Chapter III in the EIA report page 90.</p>
1.17.	<p>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</p>	<p>There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km radius from the periphery of the project area. Information regarding the same has been given in Table 3.40 under Chapter III in the EIA report page 90.</p>

	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 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.	A detailed biological study was carried out in both core and buffer zones and the results have been discussed in Section 3.5 under Chapter III in the EIA report page 64-78.
1.19.	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli 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.	Not Applicable. Project area / Study area is not declared. in 'Critically Polluted' Area and does not come under 'Aravalli Range.
1.20.	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area,	Not Applicable The project doesn't attract the C.R.Z. Notification, 2018.

	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 aspect should be discussed in the Report	Not Applicable. There are no approved habitations of SCs/STs and other weaker sections in the lease area. Therefore, R&R Plan / Compensation Plan for the Project Affected People (PAP) are not provided.
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	Baseline data were collected for the period of December 2024 to February 2025 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.1-3.8 under Chapter III in the EIA report page 28-90.

	<p>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.</p>	
1.23.	<p>Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. 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</p>	<p>Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The model results have been given in Section 4.4 under the Chapter IV in the EIA report page 94-98.</p>
1.24.	<p>The water requirement for the project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated.</p>	<p>The water requirement for the project, its availability and source have been provided in Table 2.11 under Chapter II in the EIA report page 23.</p>
1.25.	<p>Necessary clearance from the competent Authority for drawl of requisite quantity of water for the project should be provided.</p>	<p>Not Applicable. Water for dust suppression, greenbelt development and domestic use will be</p>

		sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis. Drinking water will be sourced from the approved water vendors.
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.	Part of the working pit will be allowed to collect rain water during the spell of rain. The water thus collected will be used for greenbelt development and dust suppression. The mine closure plan has been prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season.
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.	Impact studies and mitigation measures of water environment including surface water and ground water have been discussed in Section 4.3 under Chapter IV in the EIA report page 93.
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.	The ground water table is found at the depth of 70m below ground level. The ultimate depth of quarry is 35m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.2 under Chapter III in the EIA report page 37-50.

	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.	
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	Not Applicable. There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated
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.	The highest elevation of the project area is 422m AMSL. Ultimate depth of the mine is 35m BGL. Depth to the water level in the area is 70m BGL.
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	Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 103-106.

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.	Traffic density survey was carried out to analyses the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.7 under Chapter III in the EIA report page 87-89.
1.33.	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure & other facilities will be provided to the mine workers after the grant of quarry lease and the same has been discussed in Section 2.6.6 under Chapter II in the EIA report page 23.
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.	Progressive mine closure plan has been prepared for this project and is given in Section 2.6.4 under Chapter II in the EIA report page 21.
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 mitigation	Occupational health impacts of the project and preventive measures have been explained in detail in Section 4.8 under Chapter IV in the EIA report page 107-108.

	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.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 125-126.
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.	No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the socio-economic environment by offering employment for 20 people directly as discussed in Section 8.1 under Chapter VIII in the EIA report page 124.
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.	A detailed Environment Management Plan has been prepared and provided in Tables 10.1 & 10.2 under Chapter X in the EIA report page 129-135.
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.	The outcome of public hearing will be submitted during the final EIA report.
1.40.	Details of litigation pending against the project, if any, with direction /order passed	No litigation is pending in any court against this project.

	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.	Project Cost is Rs.1,31,08,000/- CER Cost is Rs.5,00,000/- In order to implement the environmental protection measures, an amount of Rs.43,00,739 as capital cost and recurring cost as Rs.18,18,020 as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be Rs.14346445 as shown in Tables 10.1 & 10.2 under Chapter X in the EIA report page 129-135.
1.42.	A disaster management plan shall be prepared and included in the EIA/EMP Report.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 118-120.
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.	Benefits of the project details have been given under Chapter VIII in the EIA report page 124-126.
1.44	Besides the above, the below mentioned general points are also to be followed:	
a)	Executive Summary of the EIA/EMP Report.	Executive summary has been enclosed as a separate booklet.
b)	All documents to be properly referenced with index and continuous page numbering.	All the documents have been 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.	List of tables and source of the data collected have been mentioned.
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.	Original Baseline monitoring reports will be submitted in the final EIA report.
e)	Where the documents provided are in a language other than English, an English translation should be provided.	All the documents provided here are in English language.
f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The questionnaire will be submitted in the final EIA report.
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.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 th August, 2009 have been followed while preparing the EIA report
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	No changes are made in the basic scope and the project parameters.

	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.	As it is a new lease area, the condition is not 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.	All the plans including surface & geological plans, and progressive closure plan have been included in Annexure III.

A. Standard Terms of Reference.

S.No	Terms of reference	Remarks
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.	Not applicable. This is not a violation category project. This proposal falls under B1 category.
2	A copy of the document in support of the fact that the proponent is the rightful lessee of the mine should be given.	The proposed site for quarrying is a private land. A copy of the document showing that the proponent is the rightful lessee has been enclosed

		along with the approved mining plan in 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, mining technology etc. and should be in the name of the lessee.	All the documents are in the name of the lessee.
4	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ toposheet, 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).	All corner coordinates of the mine lease area have been superimposed on a high- resolution Google Earth Image, as shown in Figure 2.3 under Chapter II in the EIA report page 11.
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.	Toposheets of Survey of India have been used for showing sampling locations of air, soil, water, and noise, as shown in Chapter III in the EIA report page 26-91.
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.	The lease area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
7	It should be clearly stated whether the proponent Company has a well laid down	The Environmental Policy is discussed in the Section 10.1 under

	<p>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</p>	<p>Chapter X in the EIA report page 128-129.</p>
8	<p>Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.</p>	<p>It is an opencast quarrying operation proposed to operate in Manual method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90° bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.</p>
9	<p>The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as</p>	<p>The study area considered for this study is of 5 km radius for air, soil, water, and noise level sample</p>

	waste generation etc., should be for the life of the mine / lease period.	collections, while the study area is 10 km radius for ecology and biodiversity studies and all data contained in the EIA report such as waste generation etc., is 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.	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 discussed in Section 3.1 under Chapter III in the EIA report page 28-37. The details of surrounding sensitive ecological features have been provided in Table 3.40 under Chapter III in the EIA report page 90. Land use plan of the project area showing pre- operational, operational and post- operational phases are discussed in Table 2.8 under Chapter II in the EIA report page 21.
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.	It is not applicable as no dumps have been proposed outside the lease area. The entire quarried out rough stone will be transported to the needy customers.
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	It is not applicable as there is no forest land involved within the proposed project area. The details have been discussed in Table 3.40 under Chapter III in the EIA report page 90.

	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 State 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.	It is not applicable as the proposed project area does not involve any forest land.
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable. The project doesn't attract Recognition of Forest Rights Act, 2006 as there are neither forests nor forest dwellers / forest dependent communities in the mine lease area. There shall be no forest impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project.
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	Reserve Forest is found within the study area. The matter has been discussed Section 3.5.1 under Chapter III in the EIA report page 66-74.
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of	There is no any wildlife/protected area within 10 km radius from the

	<p>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.</p>	<p>periphery of the project area. Information regarding the same has been given in Table 3.40 under Chapter III in the EIA report page 90.</p>
17	<p>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.</p>	<p>There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km radius from the periphery of the project area. Information regarding the same has been given in Table 3.40 under Chapter III in the EIA report page 90.</p>
18	<p>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</p>	<p>A detailed biological study was carried out in both core and buffer zones and the results have been discussed in Section 3.5 under Chapter III in the EIA report page 64-78.</p>

	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 'Aravalli 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.	Not Applicable. Project area / Study area is not declared. in 'Critically Polluted' Area and does not come under 'Aravalli Range.
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).	Not Applicable The project doesn't attract the C.R.Z. Notification, 2018.
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	Not Applicable. There are no approved habitations of SCs/STs and other weaker sections in the lease area. Therefore, R&R Plan / Compensation Plan for the Project Affected People (PAP) are not provided.

	<p>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 aspect should be discussed in the Report</p>	
22	<p>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.</p>	<p>Baseline data were collected for the period of December 2024 to February 2025 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.1-3.8 under Chapter III in the EIA report page 28-90.</p>
23	<p>Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles</p>	<p>Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The model results have been</p>

	for transportation of mineral. The details of the model used and input parameters used for modelling 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	given in Section 4.4 under the Chapter IV in the EIA report page 94-98.
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.	The water requirement for the project, its availability and source have been provided in Table 2.11 under Chapter II in the EIA report page 23.
25	Necessary clearance from the competent Authority for drawl of requisite quantity of water for the project should be provided.	Not Applicable. Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis. Drinking water will be sourced from the approved water vendors.
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.	Part of the working pit will be allowed to collect rain water during the spell of rain. The water thus collected will be used for greenbelt development and dust suppression. The mine closure plan has been prepared for converting the excavated pit into rain water harvesting structure and serve

		as water reservoir for the project village during draught season.
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 studies and mitigation measures of water environment including surface water and ground water have been discussed in Section 4.3 under Chapter IV in the EIA report page 93.
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.	The ground water table is found at the depth of 70m below ground level. The ultimate depth of quarry is 35m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.2 under Chapter III in the EIA report page 37-50.
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	Not Applicable. There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated
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.	The highest elevation of the project area is 422m AMSL. Ultimate depth of the mine is 35m BGL. Depth to the water level in the area is 70m BGL.

31	<p>A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up. Front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should 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</p>	<p>Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 103-106.</p>
32	<p>Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.</p>	<p>Traffic density survey was carried out to analyses the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.7 under Chapter III in the EIA report page 87-89.</p>

33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure & other facilities will be provided to the mine workers after the grant of quarry lease and the same has been discussed in Section 2.6.6 under Chapter II in the EIA report page 23.
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.	Progressive mine closure plan has been prepared for this project and is given in Section 2.6.4 under Chapter II in the EIA report page 21.
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.	Occupational health impacts of the project and preventive measures have been explained in detail in Section 4.8 under Chapter IV in the EIA report page 107-108.
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.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 125-126.
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.	No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the socio-economic environment by offering employment for 20 people directly as discussed in

		Section 8.1 under Chapter VIII in the EIA report page 124.
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.	A detailed Environment Management Plan has been prepared and provided in Tables 10.1 & 10.2 under Chapter X in the EIA report page 129-135.
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.	The outcome of public hearing will be submitted during the final EIA report.
40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given	No litigation is pending in any court against this project.
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.	Project Cost is Rs.1,31,08,000/- CER Cost is Rs.5,00,000/- In order to implement the environmental protection measures, an amount of Rs.43,00,739 as capital cost and recurring cost as Rs.18,18,020 as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be Rs.14346445 as shown in Tables 10.1 & 10.2 under

		Chapter X in the EIA report page 129-135.
42	A disaster management plan shall be prepared and included in the EIA/EMP Report.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 118-120.
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 details have been given under Chapter VIII in the EIA report page 124-126.
44	Besides the above, the below mentioned general points are also to be followed:	
a)	Executive Summary of the EIA/EMP Report.	Executive summary has been enclosed as a separate booklet.
b)	All documents to be properly referenced with index and continuous page numbering.	All the documents have been 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.	List of tables and source of the data collected have been mentioned.
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.	Original Baseline monitoring reports will be submitted in the final EIA report.
e)	Where the documents provided are in a language other than English, an English translation should be provided.	All the documents provided here are in English language.
f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The questionnaire will be submitted in the final EIA report.

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.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 th August, 2009 have been followed while preparing the EIA report
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	No changes are made in the basic scope and the project parameters.
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.	As it is a new lease area, the condition is not 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.	All the plans including surface & geological plans, and progressive closure plan have been included in Annexure III.



File No: 11549
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority (SEIAA),
TAMIL NADU)



Dated 11/01/2025



To,

Thiru.SHANMUGAM
 Thiru.V.Shanmugam, S/o.M.Velusamy Gounder, No.1/240, M.V.S.Thottam, Eachaneri, Coimbatore district., Coimbatore, COIMBATORE, TAMIL NADU, 641107
 Shanmugamroughstoneandgravel@gmail.com

Subject: Grant of Terms of Reference with Public Hearing (ToR) under the provision of the EIA Notification 2006-as amended regarding.

Sir/Madam,

SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for rough stone and Gravel Quarry Mining Lease- S.F. No: 238/1 over an extent of 1.98.0 hectares (Patta land) in Pachapalayam Village, Sulur Taluk, Coimbatore District- Tamil Nadu by Thiru.V. Shanmugam – under project category - “B1” and Schedule S.No.1(a) – ToR issued along with Public Hearing – preparation of EIA report – Regarding.

Ref:

1. Online proposal No. SIA/TN/MIN/511756/2024, Dated: 04/12/2024.
2. Your application submitted for Terms of Reference dated: 06.12.2024.
3. Minutes of the 523th meeting of SEAC held on 27.12.2024.
4. Minutes of the 787th SEIAA meeting held on 08.01.2025.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5989504N
(ii) File No.	11549
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	Pachapalayam Village Rough Stone and Gravel Quarry Lease
(viii) Name of Company/Organization	SHANMUGAM
(ix) Location of Project (District, State)	COIMBATORE, TAMIL NADU
(x) Issuing Authority	SEIAA

(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

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 08/01/2024. 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 of **Thiru.V. Shanmugam** 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 OM No. 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 Principal 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, Coimbatore District
8. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. Assistant Director, Department of Geology & Mining, Coimbatore 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. Seiaa Specific Conditions:

S. No	Terms of Reference
1.1	1. The PP shall furnish the Compliance Certificate Report for the EC obtained earlier from the DEIAA, duly audited by the RO, MoEF & CC, Chennai with the percentage of non-compliances,

S. No	Terms of Reference
	<p>reasons for non-compliances, status on half-yearly compliance report submitted during the mine operation, actions taken on the non-compliances, etc during the EIA appraisal without fail.</p> <p>2. The detailed studies on the Loss of Vegetation, Loss of Biodiversity shall be carried out and the action plan to prevent the same shall be included in the EIA report.</p> <p>3. The detailed studies on the Impact on water bodies and drainage pattern shall be carried out and the action plan to prevent the same shall be included in the EIA report.</p> <p>4. The detailed studies on the Impact on Agriculture shall be carried out and the action plan to prevent the same shall be included in the EIA report.</p> <p>5. The detailed studies on the Impact on temperature rise and human health shall be carried out and the action plan to prevent the same shall be included in the EIA report.</p> <p>6. The detailed studies on the Impact on Free ranging Wildlife & grazing domestic animals, cattle breeds and animal husbandry shall be carried out and the action plan to prevent the same shall be included in the EIA report.</p> <p>7. The detailed studies on the Livelihood shall be carried out and the action plan to prevent the same shall be included in the EIA report.</p> <p>8. The PP shall carry out the scientific studies to assess the hydrogeological condition of the quarry by involving any one of the reputed Research and Academic Institution. A copy of such scientific study report shall be included in the EIA report.</p> <p>9. The PP shall carry out the scientific studies with prior permission from the DMS/Chennai Region, to design the controlled blast parameters for reducing the blast-induced ground/air-vibrations and eliminating the fly rock from the blasting operations carried out in the quarry, by involving anyone of these reputed Research and Academic Institution. A copy of such scientific study report shall be included in the EIA report.</p> <p>10. The PP shall furnish the details of EMP addressing the revegetation and restoration activities proposed for the project activity.</p>

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	<p>1. As the quarrying was carried out without benches of appropriate geometry in accordance with the provisions of the MMR 1961 and considering the safety aspects, the SEAC have decided to restrict the depth of mining to 47m. Hence, the PP shall furnish the Modified Mining Plan incorporated with proper bench geometry and slope stability action plan duly approved by the competent authority.</p> <p>2. The PP shall furnish the Compliance Certificate Report for the EC obtained earlier from the DEIAA, duly audited by the RO, MoEF & CC, Chennai with the percentage of non-compliances, reasons for non-compliances, status on half-yearly compliance report submitted during the mine operation, actions taken on the non-compliances, etc during the EIA appraisal without fail.</p> <p>3. 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 of an Affidavit during the EIA appraisal:</p> <p>(i) Copy of the agreement forming CMC.</p> <p>(ii) The Organisation chart of the Committee with defining the role of the members</p> <p>(iii) The 'Standard Operating Procedures' (SoP) executing the planned activities.</p> <p>4. The PP shall erect DGPS reference pillars as per MCDR Rules, 1988 and furnish photographic</p>

S. No	Terms of Reference
	<p>evidences of the same at the time of EIA appraisal.</p> <p>5. As this is an existing quarry, the PP shall ensure that the CCTV Cameras are installed inside the mine premises and the photographs of the same shall be submitted at the time of EIA appraisal.</p> <p>6. 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.</p> <p>7. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.</p> <p>8. The PP shall prepare the EMP for the entire project life of mine, and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.</p> <p>9. 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.</p>

3. Seac Standard Conditions

S. No	Terms of Reference
3.1	<p>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:</p> <ul style="list-style-type: none"> (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. <p>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.</p> <p>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.</p> <p>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.</p> <p>5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.</p> <p>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.</p> <p>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</p>

S. No	Terms of Reference
	<p>Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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,</p> <p>13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>14. Quantity of minerals mined out.</p> <ul style="list-style-type: none"> · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted. · Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. <p>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).</p> <p>16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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</p>

S. No	Terms of Reference
	<p>traffic/vehicular movement study.</p> <p>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.</p> <p>23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>28. Impact on local transport infrastructure due to the Project should be indicated.</p> <p>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.</p> <p>30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.</p> <p>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.</p> <p>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.</p> <p>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</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>37. Public health implications of the Project and related activities for the population in the impact</p>

S. No	Terms of Reference
	<p>zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

4. Seiaa Standard Conditions:

S. No	Terms of Reference
4.1	<p>Cluster Management Committee</p> <ol style="list-style-type: none"> 1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry. 2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc., 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. 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. 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. 6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail 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.

S. No	Terms of Reference
	<p>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.</p> <p>Agriculture & Agro-Biodiversity</p> <p>9. Impact on surrounding agricultural fields around the proposed mining Area.</p> <p>10. Impact on soil flora & vegetation around the project site.</p> <p>11. 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.</p> <p>12. 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.</p> <p>13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</p> <p>14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.</p> <p>Forests</p> <p>15. The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife.</p> <p>16. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.</p> <p>17. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.</p> <p>18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.</p> <p>Water Environment</p> <p>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.</p> <p>20. Erosion Control measures.</p> <p>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.</p>

S. No	Terms of Reference
	<p>22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>23. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</p> <p>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.</p> <p>25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p>27. The EIA shall include the impact of mining activity on the following:</p> <ul style="list-style-type: none"> a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams. <p>Energy</p> <p>28. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.</p> <p>Climate Change</p> <p>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.</p> <p>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.</p> <p>31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.</p> <p>Mine Closure Plan</p> <p>32. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.</p> <p>EMP</p> <p>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.</p>

S. No	Terms of Reference
	<p>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.</p> <p>Risk Assessment</p> <p>35. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.</p> <p>Disaster Management Plan</p> <p>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.</p> <p>Others</p> <p>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.</p> <p>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.</p> <p>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.</p>

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/

S. No	Terms of Reference
	toposheet, 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)
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 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
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 State 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

S. No	Terms of Reference
	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. 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

S. No	Terms of Reference
	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 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

S. No	Terms of Reference
	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 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

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



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 OM No. J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

From

To

Thiru.K.Vijayaragavan, M.Sc.,
Assistant Director,
Geology and Mining,
Coimbatore

Thiru.V.Shanmugam,
S/o.Velusamy Gounder,
1/240, MVS Thottam,
Seerapalayam,
Coimbatore

Rc.No.973/Mines/2023 Dated: 25.10.2024.

Sir,

Sub: Mines and Quarries - Minor Minerals - Coimbatore District - Sulur Taluk - Pachapalayam Village - Survey No.238/1 - over an extent of 1.98.0 hectares of patta land - Rough stone & Gravel quarry lease - Precise area communicated - 500 mts Radius letter requested-regarding.

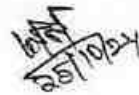
Ref: 1. Application of Thiru.V.Shanmugam, Coimbatore dt: 11.09.2023.
2. Precise area communication in Rc.No. 973/Mines/2023 dated: 03.10.2024.
3. Thiru.V.Shanmugam letter dt.09.10.2024

With reference to your letter in the reference 3rd cited, the details of existing and lease expired quarries located within 500m radius from the proposed Rough stone & gravel quarry, over an extent of 1.98.0 hectares of patta land in Survey No.238/1 of Pachapalayam Village, Sulur Taluk, Coimbatore District are as follows:

Sl. No	Name of the quarry Owner	Name of the Village & Survey Number	Extent (in Hects)	Remarks
a. Existing Quarries				
1.	S.G.Aakash Arumugam	Pachapalayam 273/2A & 281/2	2.03.0	27.06.2024 to 26.06.2029
b. Expired Quarries				
1.	K.Chinnasamy	Pachapalayam 282/1A & 282/1B(P)	1.73.0	06.12.2017 to 05.12.2022
c. Abandoned Quarries				
1.	M.Muralikrishnan	Pachapalayam 281/1 & 286/1B4	2.30.0	02.06.2014 to 01.06.2018
2.	A.Velusamy	Pachapalayam 285/1B1	1.72.5	09.02.2005 to 08.02.2010
3.	V.Gopalakrishnan	Pachapalayam 282/2A2	1.28.5	02.06.2014 to 01.06.2018

d. Present proposed Quarries				
1.	V.Shanmugam	Pachapalayam 238/1	1.98.0	applied area (Rough Stone and gravel)
2.	Tvl.Gomuki Blue Metals L.L.P.	Pachapalayam 238/2(P), 239/1B, 239/2B, 240/2B(P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P)	2.47.9	Pending with SEIAA
3.	M.Selvathal	Pachapalayam 279/2C1B	1.13.70	Pending with SEIAA
4.	R.S.Senthilkumar	Pachapalayam 285/3 & 286/2	3.15.0	Precise area communicated
5.	A.Vijayakumar	Pachapalayam 272/2A, 272/2B, 272/3A2	0.80.57	Land availability report awaited


 Assistant Director,
 Geology and Mining,
 Coimbatore


 25/10/24

From

Thiru.K.Vijayaragavan, M.Sc.,
Assistant Director,
Geology and Mining,
Coimbatore

To

Thiru.V.Shanmugam,
S/o.Velusamy Gounder,
1/240, MVS Thottam,
Scerapalayam,
Coimbatore.

Rc.No.973/Mines/2023 Dated: 25.10.2024.

Sir,

Sub: Mines and Quarries - Minor Minerals - Coimbatore District - Suler Taluk - Pachapalayam Village - Survey No.238/1 - over an extent of 1.98.0 hectares of patta land - Rough stone & Gravel quarry lease - Precise area communicated - Draft mining plan submitted by Thiru.V.Shanmugam - Approval of mining plan - Regarding.

- Ref: 1. Application of Thiru.V.Shanmugam dated: 11.09.2023
2. Precise area communication in Rc.No. 973/Mines/2023 dated: 03.10.2024.
3. Thiru.V.Shanmugam letter dt.09.10.2024.


In the reference 1st cited, Thiru.V.Shanmugam has applied for the grant of lease to quarry rough stone & Gravel, over an extent of 1.98.0 hectares of patta land in Survey No.238/1 of Pachapalayam Village, Suler Taluk, Coimbatore District under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

2) The precise area has been communicated to the applicant vide reference 2nd cited above, based on the recommendations of the Revenue Divisional Officer, Coimbatore South, Block Development Officer, Sultanpet and the Assistant Geologist of Geology and Mining, Coimbatore.

3) In exercise of powers delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan submitted by Thiru.V.Shanmugam for grant of lease to quarry rough stone & gravel, over an extent of 1.98.0 hectares of patta land in Survey No.238/1 of Pachapalayam Village, Suler Taluk, Coimbatore District for a period of Five years and the proposed mineable reserves after leaving

safety distance is arrived as **2,35,982 M³** of rough stone and **24,568 M³** of gravel of the proposed depth of 35 m. This approval is subject to the following conditions:-

- (i). That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
- (ii). 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 Mines and Minerals (Development and Regulation) Act, 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884(Central Act IV of 1884) and the rules made there under the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii). That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv). No hindrance should be caused to the adjacent pattadars and public
- (v). A safety distance of 7.5 meters should be provided for adjacent patta land from the lease applied area.
- (vi). The scheme of mining shall be submitted to the Assistant Director of Geology and Mining atleast 180 days before the expiry of the five years period for which it was approved on the last occasion.


Assistant Director,
Geology and Mining,
Coimbatore

Encl: 2 copies of Approved Mining Plan.

Copy submitted to :

1. The Chairman, State Level Environment Impact Assessment Authority, Chennai
2. The Commissioner of Geology and Mining, Industrial Estate, Guindy, Chennai- 32

MINING PLAN

FOR

PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL MINING LEASE WITH
PROGRESSIVE QUARRY CLOSURE PLAN

Patta- Ryotwari land/Open cast-Semi-Mechanized mining/Non-forest/Captive Use – "B" Category

Lease period 5 Years from the date of lease execution

(Prepared under rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959)

LOCATION OF THE LEASE AREA

STATE : TAMILNADU
DISTRICT : COIMBATORE
TALUK : SULUR
VILLAGE : PACHAPALAYAM
S.F.No : 238/1
EXTENT : 1.98.0 Hectares

ADDRESS OF THE APPLICANT

V.Shanmugam,
S/o. Velusamy Gounder,
1/240, M.V.S.Thottam,
Seerapalayam,
Coimbatore District.

PREPARED BY

Dr.S.KARUPPANNAN.M.Sc., Ph.D.,

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

(A NABET Accredited & ISO Certified Company)

No: 1/213 -B, Ground Floor, Natesan Complex,

Oddapatti, Collectorate Post office,

Dharmapuri -636705. Tamil Nadu.

Mob. : +91 9443937841, +917010076633.

E-mail: info.gtmsdpi@gmail.com .

Website: www.gtmsind.com



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LIST OF PLATES

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11.	Mine layout plan and Land use pattern	V	1:1000
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Mr. V. Shanmugam,
S/o. Velusamy Gounder,
1/240, M.V.S.Thottam,
Seerapalayam,
Coimbatore District.



CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of rough stone and gravel quarry lease in S.F.No: 238/1 over an extent of 1.98.0hectares of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State has been prepared by

Dr. S. KARUPPANNAN. M.Sc., Ph.D., Regn. No. RQP/MAS/263/2014/A

I request "The Assistant Director", Department of Geology and Mining, Coimbatore District to make further correspondence regarding modifications of the Mining Plan with the said Recognized Qualified Person on this following address,

Dr. S.KARUPPANNAN.M.Sc., Ph.D.,
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
(A NABET Accredited & ISO certified Company)
No: 1/213-B, Ground Floor, Natesan Complex,
Oddapatti, Collectorate Post office, Dharmapuri-636705
Ph: +91 9443937841,7010076633.
E-mail: info.gtmsdpi@gmail.com,
Website: www.gtmsind.com

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

Place: Coimbatore, TN.

Date:

V. Shanmugam

Signature of the applicant

(V.Shanmugam)

Mr. V.Shanmugam,
S/o. M.Velusamy Gounder,
1/240, M.V.S.Thottam,
Seerapalayam,
Coimbatore District.



DECLARATION

The Mining Plan in respect of rough stone and gravel quarry lease in S.F.No: 238/1 over an extent of 1.98.0hectares of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State have been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Place: Coimbatore, TN.

Date:

V. Shanmugam

Signature of the applicant

(V.Shanmugam)

V. Shanmugam 239

Dr. S.KARUPPANNAN.M.Sc., Ph.D.,
 RQP/MAS/263/2014/A
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 E-mail: info.gtmsdpi@gmail.com,
 Website: www.gtmsind.com



CERTIFICATE

This is to certify that, the provisions of 19 Tamil Nadu Minor Minerals Concession Rules, 1959 have been observed in the Mining Plan for the grant of rough stone and gravel quarry lease in S.F.No: 238/1 over an extent of 1.98.0hectares of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State applied to **Mr.V.Shanmugam**, Coimbatore District.

Wherever specific permission / exemptions / relaxations or approvals are required, the applicant will approach the concerned authorities of State and Central governments for granting such permissions etc.

Place: Dharmapuri, TN

Date: 5/10/24

Signature of the Recognized Qualified Person.

Dr.S.KARUPPANNAN,M.Sc,Ph.D.,
 RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
 A NABET Accredited and ISO Certified Company
 1/213-B, Ground Floor, Natesan Complex,
 Collectorate Post Office, Oddapatti,
 Dharmapuri-636705, TamilNadu, India

V. Shanmugam

Dr. S.KARUPPANNAN.M.Sc., Ph.D.,
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E-mail: info.gtmsdpi@gmail.com,
Website: www.gtmsind.com



CERTIFICATE

I certify that, in preparation of Mining Plan for rough stone and gravel quarry lease in S.F.No: 238/1, over an extent of 1.98.0hectares of Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu State prepared to **Mr.V.Shanmugam**, Coimbatore District, covers all the provisions of Mines Act, Rules, and Regulations etc., made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Place: Dharmapuri, TN

Date: 5/10/24

Signature of the Recognized Qualified Person.

Dr.S.KARUPPANNAN,M.Sc,Ph.D.,
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
A NABET Accredited and ISO Certified Company
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri-636705, TamilNadu, India

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L. V. Shanmugam

MINING PLAN

FOR PACHAPALAYAM VILLAGE ROUGH STONE AND GRAVEL MINING LEASE

WITH PROGRESSIVE QUARRY CLOSURE PLAN

Patta- Ryotwari land / Open cast-Semi-Mechanized mining/Non-forest/Captive Use - B Category

Lease period 5 Years from the date of lease execution

(Prepared under rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959)

INTRODUCTORY NOTES:

- a) **Introduction:** The applicant **Mr.V.Shanmugam** S/o. Velusamy Gounder residing at 1/240, M.V.S.Thottam, Seerapalayam, Coimbatore District, Tamil Nadu State and filed with new proposals has submitted to the Assistant Director, Department of Geology and Mining (ADG & M), Coimbatore dated 11.09.2023 had requested to grant the quarry lease for rough stone and gravel in S.F.No: 238/1 over an extent of 1.98.0 hectares of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State.
- b) **The Precise area communication letter:** The Assistant Director, Department of Geology and Mining, Coimbatore has directed to the applicant **Mr. V.Shanmugam** through his precise area communication letter Rc.No. 973/Mines/2023 Dated 03.10.2024, for quarrying lease rough stone and gravel at Tamil Nadu State, Coimbatore District, Sulur Taluk, Pachapalayam Village in S.F.No: 238/1 over an extent of 1.98.0hectares has recommended as following conditions for a period of five (5) years under Rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.
- (i) Safety should be maintained nearby patta lands and peoples without any hindrance while quarrying of rough stone and gravel.
- (ii) A safety distance of 7.5meter should be provided to the adjacent patta lands.
- (iii) The applied lease area should be Surveyed using DGPS and Demarcation of boundary pillars by the Government Recognized firm.
- c) **The previous lease particulars:** The proposed lease area was previously granted to quarrying of rough stone and gravel in favor of Mr.V.Shanmugam S/o. Velusamy Gounder, by the District Collector, Coimbatore his proceedings vide R.c. No.748/2009/MM2 dated 10.12.2009 in S.F.No's: 236/2A, 238/1, 239/1A, 239/2A, 240/1 & 240/2A over an extent of 4.73.0hectares. The lease was executed on 10.12.2009 to 09.12.2014 for a period of five years.



V. Shanmugam 242

The proposed lease area was previously granted to quarrying of rough stone and gravel in favor of Mr.V.Shanmugam S/o. Velusamy Gounder, by the District Collector, Coimbatore his proceedings vide R.c.No.354/Mines/2018 Dated: 25.01.2019 in S.F.No: 238/1 (Part) over an extent of 1.00.0hectares. The applicant got environmental clearance Lr.No.DEIAA-CBE-V/F.No.351/H&M/2018 No.32/2018 dated: 10.12.2018. The lease was executed on 25.01.2019 to 24.01.2024 for a period of five years.

Now, new application was submitted by Mr.V.Shanmugam S/o. Velusamy Gounder have submitted to the Assistant Director, Department of Geology and Mining (ADG & M), Coimbatore dated 11.09.2023 and his precise area communication letter **Rc.No. 973/Mines/2023 Dated 03.10.2024** for period of five years for quarrying lease rough stone and gravel at Tamil Nadu State, Coimbatore District, Sulur Taluk, Pachapalayam Village in S.F.No: 238/1 over an extent of 1.98.0hectares.

There is existing pit was noticed with an average pit dimension as given under the table and the existing pit marked in the surface and Geological plan (Ref Plate No: III).

AVERAGE EXISTING PIT DIMENSIONS			
Bench	Length in Meter	Width in Meter	Depth in Meter
I	13	40	2
II	10	56	7
III	47	11	10
IV	35	60	35

- d) **Preparation and Submission of Mining Plan:** The Mining Plan with progressive quarry closure plan has been prepared under rule 41 and submitted under rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 for mining lease as per conditions mentioned in the precise area communication letter **Rc.No. 973/Mines/2023 Dated 03.10.2024**.
- e) **Geological resources and Mineable reserves:** Geological resource of estimated as **585887m³** including the resources of safety zone, gravel etc. Of which, rough stone resources of about **555093m³**, and gravel is **30794m³**. The total mineable reserve is estimated to be **260550m³** by deducting the reserve safety zone, block in benches from the total Geological resources. of which, rough stone is about **235982m³** and gravel is **24568m³** up to a depth of 35m from the below ground level (R.L.422m to 387m) (Refer Plate No. VI & VIA).



f) **Proposed Production Schedule:** Total proposed production rough stone is 235982m³ and gravel is 24568m³ up to a depth of 35m from the below ground level (R.L.422m to 387m) for five years plan period. (Refer Plate No. IV & IVA)

g) **Environmental Sensitivity of the proposed lease area: -**

- i). **Interstate boundary:** There is no interstate boundary within the 10km radius from the lease area.
- ii). **Wildlife Protection Act, 1972:** There is no wild life animal sanctuary within radius of 10Km from the project site area under the Wildlife (Protection) Act, 1972.
- iii). **Indian Reserve Forest Act, 1980:** There is no reserve forest within the 1.0km radius periphery of proposed lease area.
- iv). **CRZ Notification, 2019:** There is no Sea coastal zone found within radius of 10km and this project site doesn't attract CRZ Notification, 2019.

h) **Environmental measures to be adopted during the ongoing activity period,**

- a. Usage of sharp drill bits while drilling which will help in reducing noise.
- b. Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders.
- c. Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained.
- d. Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise.
- e. Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation.
- f. Transportation of material will be carried out during day time and material will be covered with tarpaulin.
- g. The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- h. And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

1.9 GENERAL:

a.	Name of the Applicant	:	Mr V.Shanmugam
	Applicant address	:	S/o.Velusamy Gounder, 1/240, M.V.S.Thottam, Seerapalayam,
	District	:	Coimbatore
	State	:	Tamil Nadu

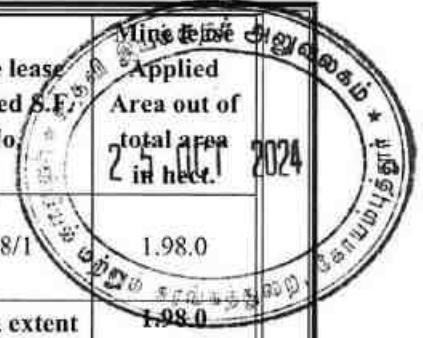


	Pin code	:	
	Phone	:	
	Fax	:	Nil
	Gram	:	Nil
	Telex	:	Nil
	E-mail	:	.....
b.	Status of the Applicant		
	Private individual	:	Private individual
	Cooperative Association	:	---
	Private company	:	--
	Public Company	:	--
	Public Sector Undertaking	:	---
	Joint Sector Undertaking	:	---
	Other (pl. specify)	:	---
c.	Mineral(s) Which are occurring in the area and which the applicant intends to mine	:	Rough stone and gravel quarry lease
d.	Period for which the mining lease granted /renewed/ proposed to be applied	:	The precise area has been communicated to the applicant for quarrying period of five (5) years.
	Name of the RQP / QP preparing the Mining Plan	:	Dr. S.KARUPPANNAN.M.Sc.,Ph.D.,
	Address	:	Geo Technical Mining Solutions (A NABET Accredited & ISO certified Company) No: 1/213-B, Ground Floor, Natesan Complex, Oddapatti, Collectorate Post office, Dharmapuri-636705 Web site: www.gtmsind.com
	Phone	:	+91 9443937841, 7010076633
	Fax	:	Nil
	e-mail	:	info.gtmsdpi@gmail.com
	Telex	:	Nil
	Registration number	:	RQP/MAS/263/2014/A
	Date of grant/renewal	:	16.12.2014
	Valid upto	:	15.12.2024
f.	Reference No. and date of consent letter from the state government	:	The precise area communication letter issued by the Assistant Director, Department Geology and Mining, Coimbatore vide Rc.No. 973/Mines/2023 Dated 03.10.2024.

2.0 LOCATION AND ACCESSIBILITY:

a.	Details of the Area:	:	Refer plate no: IA & IB
	District & State	:	Coimbatore, Tamil Nadu
	Taluk	:	Sulur
	Village	:	Pachapalayam
	Khasra No./ Plot No./ Block Range/ Felling Series etc.:		

Survey No.	Sub division	Total Extent in Hect	Patta No.	Village and Name of the Land Owner	Mine lease Applied S.F. No.	Mine lease Applied Area out of total area in hect.	
238	1	1.98.0	822	Mr. V.Shanmugam S/o.Velusamy Gounder	238/1	1.98.0	
Total Extent		1.98.0	Applied lease area extent			1.98.0	
Lease area (hectares)				:	1.98.0 hectares		
Whether the area is recorded to be in forest (please specify whether protected, reserved, etc)				:	It is a patta land		
Ownership / Occupancy				:	This is a patta land S.F.No. 238/1 is registered in the name of V.Shanmugam S/o.Velusamy Gounder as vide patta no. 822. (Ref. Annex. No: V & VI).		
Existence of Public Road / Railway line if any nearby and approximate distance				:	<ul style="list-style-type: none"> ✓ Exploited quarry materials will be transported to the village road in situated on the northeast side. ✓ There is an MDR-522 road situated on the west side about 1.21km from the lease area. ✓ There is an SH-163 road situated on the northwest side about 3.4km from the lease area which connecting Palladam – Cochin Frontier road. ✓ There is no NH road situated around 5km radius from the lease area. ✓ There is a railway line is situated on the west side about 3.3km from the lease area. 		
Toposheet No. with latitude and longitude				:	Toposheet No. 58 F/1 Latitude. From 10°53'53.31"N to 10°54'0.96"N longitude: From 77°3'58.55"E to 77°4'2.15"E		



V. Shan

Geo-Coordinates of the lease boundary:

PILLAR ID	LATITUDE	LONGITUDE
1	10°54'0.53"N	77° 4' 59.7"E
2	10°53'58.18"N	77° 4' 53"E
3	10°53'56.97"N	77° 4' 50"E
4	10°53'53.71"N	77° 4' 2.15"E
5	10°53'53.31"N	77° 3'59.98"E
6	10°53'55.00"N	77° 3'59.39"E
7	10°53'57.68"N	77° 3'58.86"E
8	10°54'0.96"N	77° 3'58.55"E



Land use pattern (Forest, Agricultural, Grazing, Barren etc.) : It is an barren Land.

b. *Attach a general location and vicinity map showing area boundaries and existing and proposed access routs. It is preferred that the area to be marked on a survey of India topographical map or a cadastral map or forest map as the case may be. However if none of these are available, the area should be shown on an accurate sketch map on scale of 1 : 5000.* : Refer plate no-IA & IB

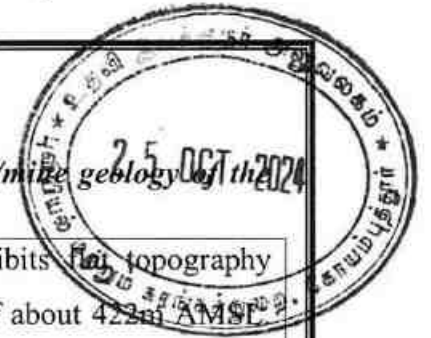
i) INFRASTRUCTURE AND COMMUNICATION:

S.No	Description	Place	Distance	Direction
a.	Nearest post office	Chettipalayam	3.3Km	Northwest
b.	Nearest police station	Chettipalayam	3.7km	Northwest
c.	Nearest fire station	Kovaipudur	15.4km	Northwest
d.	Nearest medical facility	Chettipalayam	3.7Km	Northwest
e.	Nearest school	Chettipalayam	3.8km	Northwest
f.	Nearest railway station	Chettipalayam	4.0km	Northwest
g.	Nearest port facility	Cochin	133km	Southwest
h.	Nearest airport	Coimbatore	14.8km	North
i.	Nearest DSP office	Podanur	11.3km	Northwest
j.	Nearest villages	Chinnakuyili	3.5Km	North
		Pachapalayam	0.5Km	East
		Thekani	1.5Km	South
		Chettipalayam	2.4km	West

PART - A

3.0 GEOLOGY AND MINERAL RESERVES:

(a) Briefly describe the topography and general geology and local/mineral deposit including drainage pattern:



(i)	Topography	: The proposed lease area exhibits flat topography which is an average altitude of about 422m AMSL. The slope is towards south side and falls in Toposheet no. 58-F, i.
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(ii) General Geology of the district:

Geologically, the district is covered by rocks belonging to Archean age comprising the khondalite group, Charnockite Group, migmatite group, Sathayamangalam group, Bhavani Group and Alkali complex of Proterozoic age and Recent to Late Pleistocene rocks of Cainozoic age. The Charnockite Group of rocks consisting of Charnockite, pyroxene granulites and associated magnetite quartzite, the Knodalite Group comprising gametiferous – sillimanite gneiss, calc-granulite, crystalline limestone, sillimanite quartzites and associated migmatitic gneisses. The rocks are restricted to the central and southern portions of the district, especially around Sulur, Pollachi and Pollachi taluks. The fissile homblende gneisses (Peninsular gneiss – younger phase) of Bhavani Group with enclaves of schistose, micaceous and amphibolitic rocks, fuchsitge – kyanite quartzites, ferruginous quartzite (Satyamangalam Group) intruded by a number of ultramafic and basic rocks and granites are seen in the Northern portions of the district especially around Mettupalayam and Northern areas of Coimbatore. The granites are Proterozoic age and occupy the Western end and Eastern Part of the District as separate bodies and are recognized as Maruthamalai Granite and Punjabuliyampatti Granites respectively. The quaternary alluvium is seen in the Western areas of Coimbatore town. The alluvium is more than 30m thick in the Chinnathadagam valley northwest of Coimbatore and in the Siruvani valley west of Coimbatore.

Order of superposition of the proposed lease area,

Age	Group	Rock Formation
Recent to Sub recent	---	Block Soil (1-2m thick),
Proterozoic	Acid intrusive	Granite, Granite gneiss
Archaean	Charnockite Group	Charnockite / Crystalline limestone / limekankar



(iii) Local / Mine Geology of The Mineral Deposit:

Topography of the proposed lease area:

The proposed lease area exhibits flat topography which is an average altitude of about 422m AMSL. The slope is towards southern side.

Gravel is obtained about 0-2.0m (R.L.422 to 417m) and rough stone starts from 2-35m (R.L.417 to 387m) from the ground level. The Surface plan showing elevation, contour, accessibility road and Geological map was prepared the proposed lease area.

Mode of origin:

The Charnockite series originally was assumed to have developed by the fractional crystallization of silicate magma. Subsequent studies have shown, however, that many, if not all, of the rocks are metamorphic, formed by recrystallization at high pressures and moderately high temperatures.

Physiography of the rocks:

General characteristics of the rocks of this series has recorded that the rocks are in general bluish gray or darkish in colour and extremely fresh in appearance with an even grained granular structure

Chemical composition of rocks:

The compositional characteristics of coexisting orthopyroxene, garnet and biotite have established several petrographic varieties within the Charnockites-Enderbites such as the granulite's and gneisses. Plagioclase feldspars, alkali feldspars and quartz are the salic minerals present in this series of rocks. **Order of superposition of the proposed lease area,**

Age	Group	Rock Formation
Recent to Sub recent	---	Gravel (Clayey soil)
Archaean	Charnockite Group	Charnockite.

(iv) Drainage Pattern : There is no major river situated around 50m radius from the lease area. The drainage in the area is dendritic in nature.

(b)... *The topographic plan of the lease area prepared on a scale of 1 :1000 or 1 : 2000 with contour interval of 3 to 10m depending upon the topography of the area should be taken as the base plan for preparation of geological plan. The details of exploration already carried out including evidences of mineral existence should be shown on the geological plan:*

	a. Present status:	:	The RQP examined the surface features during survey. It is an Existing quarry (four pit noticed during the mining survey.	
	b. Surface Plan	:	Surface plan showing elevation contour, Existing pit Details and accessibility road was prepared at the scale of 1: 1000, as shown in Plate No. III.	
(c)	Geological sections should be prepared at suitable intervals on a scale of 1: 1000 / 1: 2000:	:	Longitudinal and transverse geological cross sections were prepared at the horizontal scale of 1: 1000 and at the vertical scale of 1:500, as shown in Plate No. IIIA	
(d)	<i>Broadly indicate the Yearwise future programme of exploration, taking into consideration the future production programme planned in next five years as in table below :-</i>			
	Year	No.of boreholes	Total meterage	No.of Pits and Dimensions
I	N.A	---	---	N.A
II	N.A	---	---	N.A
III	N.A	---	---	N.A
IV	N.A	---	---	N.A
V	N.A	---	---	N.A
No future programmed proposed in this area. Its massive homogeneous parent rock. Hence exploration proposal is not required to this mining project.				

(e) Indicate geological and recoverable reserves and grade, duly supported by standard method of estimation and calculations along with required sections (giving split up of various categories i.e. proved, probable, possible). Indicate cut-off grade. Availability of resources should also be indicated for the entire leasehold.

The geological resources were computed by cross section method with respect to the boundaries of the lease area. In this method, the lease area was divided into one longitudinal and transverse sections to calculate the volume of material up to the depth of 35m from the below ground level (R.L.422m to 387m) for five years plan period. (Refer Plate No. III & IIIA). The longitudinal and transverse cross sections were assigned XY-AB as respectively. Using the cross-sectional method, total reserve is estimated to be **585887m³** including the

resources of safety zone, and gravel, etc. Of which, rough stone resources of about 555093m³ and gravel is 30794m³.



GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Geological Resources in M ³	Gravel in M ³
XY-AB	I	173	89	2	30794	.....	30794
	I	185	89	3	49395	49395	.....
	II	185	89	2	32930	32930	.....
		189	89	3	50463	50463	.....
	III	189	89	5	84105	84105	.....
	IV	190	89	5	84550	84550	.....
	V	190	89	5	84550	84550	.....
	VI	190	89	5	84550	84550	.....
VII	190	89	5	84550	84550	.....
TOTAL				35	585887	555093	30794

(f) Indicate mineable reserves by slice plan / level plan method, as applicable, as per the proposed mining parameters: -

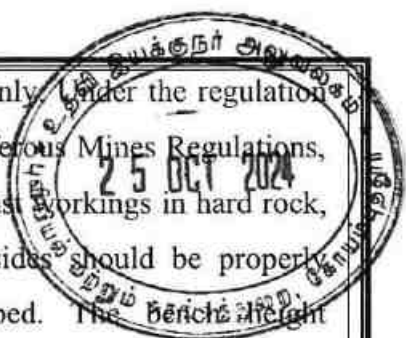
The total mineable reserve is estimated to be 260550m³ by deducting the reserve safety zone, block in benches from the total Geological resources up to a depth of 35m below ground level (R.L.422m to 387m). Of which, rough stone is about 235982m³ and gravel is about 24568m³. The commercially viable rough stone has been prepared on 1: 1000 scale and sections are prepared in a scale of 1:1000 in horizontal axis and 1:500 as vertical axis (Refer plate no's. IVA).

MINEABLE RESERVES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Mineable Reserves in M ³	Gravel in M ³
XY-AB	I	166	74	2	24568	.....	24568
	I	177	74	3	39294	39294	.....
	II	173	64	2	22144	22144	.....
		177	64	3	33984	33984	.....
	III	172	54	5	46440	46440	.....
	IV	167	44	5	36740	36740	.....
	V	163	34	5	27710	27710	.....
	VI	158	24	5	18960	18960	.....
VII	153	14	5	10710	10710	.....
TOTAL					260550	235982	24568

4.0 MINING:

a)	Briefly describe the existing / proposed method	:	The mining operation is open-cast, semi-mechanized method are adopted and on
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for developing / working the deposit with all design parameters.
(Note: In case of pocket deposits, sequence of development/working may be indicated on the same plan)

single shift basis only. Under the regulation 106 of the Metalliferous Mines Regulations, 1961 in all open cast workings in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed 5m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.

b) **Indicate quantum of development and tonnage and grade of production expected pit wise as in table below.**

Total proposed production rough stone is about 235982m³ and Gravel is about 24568m³ up to a depth of 35m from the below ground level (R.L.422m to 387m) for five years plan period. (Refer Plate No's. IVA).

Year	Pit No.(s)	Topsoil/Overburden (m ³)	ROM (m ³)	Saleable rough stone (m ³) @ 100%	Rough stone rejects(m ³)	Sub grade/ Weathered rock (m ³)	Saleable Gravel (m ³)	Rough stone to waste ratio
First	I	...	59870	51730	...	...	8140	...
Second	I	...	53760	45472	...	...	8288	...
Third	I	...	52800	44660	...	...	8140	...
Fourth	I	...	48640	48640	...	...	...	...
Fifth	I	...	45480	45480	...	...	...	...
Total	---	...	260550	235982	...	...	24568	...

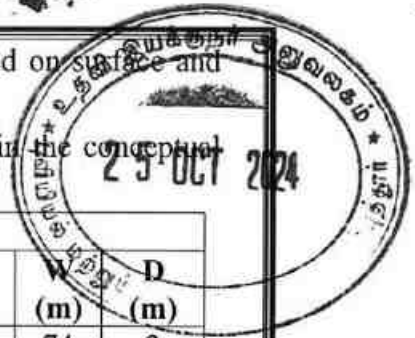
c) **Composite plans and Year wise sections (In case of 'A' class mines):** : Not applicable. It is a "B" class quarry lease

YEARWISE PRODUCTIONS								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Production Reserves in M ³	Gravel in M ³
I - Year	XY-AB	I	55	74	2	8140	.....	8140
		I	66	74	3	14652	14652	.....
		II	62	64	2	7936	7936	.....
			66	64	3	12672	12672	.....
		III	61	54	5	16470	16470	.....
Total						59870	51730	8140
II - Year	XY-AB	I	56	74	2	8288	.....	8288
		I	56	74	3	12432	12432	.....

		II	56	64	2	7168		
			56	64	3	10752		
		III	56	54	5	15120		
Total						53760		
III - Year	XY-AB	I	55	74	2	8140		
		I	55	74	3	12210		
		II	55	64	2	7040		
			55	64	3	10560		
		III	55	54	5	14850		
TOTAL						52800	44660	8140
IV - Year	XY-AB	IV	167	44	5	36740	36740	.....
		V	70	34	5	11900	11900	.....
TOTAL						48640	48640	0
V - Year	XY-AB	V	93	34	5	15810	15810	.....
		VI	158	24	5	18960	18960	.....
		VII	153	14	5	10710	10710	.....
TOTAL						45480	45480	0
GRAND TOTAL						260550	235982	24568



- d) Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade mineral, if any, etc. : Composite plan not prepared in this proposed lease area
- e) *Indicate proposed rate of production when the mine is fully developed and the expected life of the mine and the year from which effected:*
 At this rate of production, the expected life of quarry is calculated as given below:
Rough stone:
 Mineable reserves of rough stone = 235982m³
 Annual Peak production = 51730m³
Gravel:
 Mineable reserves of gravel = 24568m³
- f) *Attach a note furnishing a conceptual mining plan for the entire lease period (for "B" category mines) and upto the life of the mine (for "A" category mines) based on the geological, mining and environments considerations:*
- i) Time frame of completion of mineral exploration program in leasehold area: Give broad description identified potential areas to be covered in the given time frame: : Exploration program is not proposed in this area. It's an Existing quarry lease and Massive Charnockites Homogeneous parent rock.



ii) Whether ultimate pit limit has been determined and demarcated on surface and geological plan:-
 The ultimate pit limit has been determined and demarcated in the conceptual plan

ULTIMATE PIT LIMIT-(XY-AB)							
Bench	Bench R.L	Period	Overburden/ Mineral	L (m)	W (m)	D (m)	
I	R.L.422-420m	5 years	Gravel	166	74	2	
I	R.L.420-417m			177	74	3	
II	R.L.417-415m			173	64	2	
	R.L.415-412m			177	64	3	
III	R.L.412-407m			Rough stone	172	54	5
IV	R.L.407-402m				167	44	5
V	R.L.402-397m				163	34	5
VI	R.L.397-392m				158	24	5
VII	R.L.392-387m				153	14	5
Total Depth						35	

iii) Whether the site for disposal of waste rock or an un-saleable material have/ has been examined for adequacy of land and suitability of long term use in the event of continuation of mining activity: - : The recovery of rough stone in this quarry is 100%. There are no rough stone rejects and any other wastes removed in this lease area.

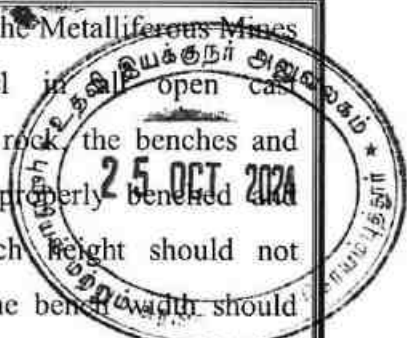
iv) Whether back filling of pits after recovery of mineral up to techno -economically feasible depth envisaged. If so, describe the broad features of the proposal: - : As the depth of persistence of the deposit may likely to continue for further depth, it is proposed not to backfilled the quarry pit.

v) Whether post mining land use envisaged: - : At the end of mining activities over the quarry pit may be utilized fish culture or storage of rain water reservoir used for irrigation purposes.

g) Open cost mining

i) Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, : The mining operation is open-cast, semi-mechanized methods are adopted and on single shift basis only. Under the

	manual)	<p>regulation 106 of the Metalliferous Mines Regulations, 1961 in open cast workings in hard rock the benches and sides should be properly benched sloped. The bench height should not exceed 5m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.</p> <p>Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic Excavators and tipper combination are adapted.</p>
ii)	Describe briefly the layout of mine workings, the layout of faces and sites for disposal of overburden/waste. A reference to the plans enclosed under 4(b) and 4(d) will suffice	<p>The rough stone is proposed to quarry at 5m bench height & width conventional opencast semi mechanized quarrying operation using shot hole drilling with the help of tractor mounted compressor attached with jack hammers, smooth blasting and waste and are removal using Hydraulic excavator and loaded directly to the tippers and transported to the needy customer.</p> <p>Bench height = 5mts. Bench width = 5mts.</p>
	a. Details of Topsoil/ Overburden	There is no topsoil shall be removed.
	b. Rough Stone waste and side burden waste:-	The recovery of rough stone in this quarry is 100%. There is no rough stone waste or side burden will be removed.
H	Underground Mining	Not applicable
i)	<p>Extent of mechanization: Describe briefly including the calculation for adequacy and type of machinery and</p>	





equipment proposed to be used in different mining operations.

(1) Drilling Machines:
 Drilling of shot holes will be carried out using tractor mounted compressor and jack hammer. Details of drilling equipment's are given below.

Type	Nos	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P.
Jack Hammer	3	32 mm	Hand held	--	Diesel	--
Compressor	2	---	Air	--	Diesel	--

(2) Loading Equipment:

Type	Nos	Size / Capacity	Make	Motive power	H.P.
Hydraulic Excavator	1	2.9-4.5m ³	--	Diesel	--

(3) Haulage and Transport Equipment
 (a) Haulage within the mining leasehold:

Type	Nos	Size / Capacity	Make	Motive power	H.P.
Tipper	9	--	--	Diesel	--

Whether the dumpers are fitted with exhaust conditioner should be indicated:
 The dumpers not used in this quarry area, hence it's a small "B" category mine.

b)	Transport from mine head to the destination		Transport from the mine head to customers crusher area.
c)	Describe briefly the transport system (please specify)		Hydraulic excavator and tippers utilized for internal transport sizeable rough stone lumps and deliver to the customer's area.
	i) Ore transported by: own trucks / hired trucks		Hired trucks for initially production purposes
	ii) Main destination to which ore is transported (giving to and from distance)		The excavated stone materials road metal will be supplied to the consumers like road laying, earth filling, building construction, etc

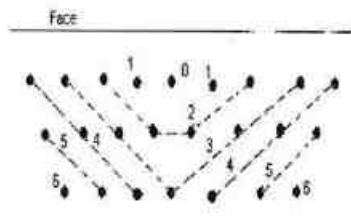
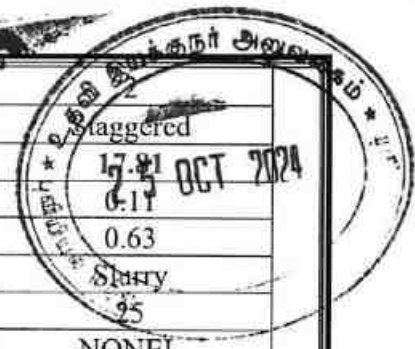
a)	Details of hauling / transport equipment:			
	Type	Nos	Size / Capacity	Make
	--	--	--	--

4)	(4).Miscellaneous: Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier.		
	(A) Operations		The mining operation is open-cast, semi-mechanized methods are adopted and on single shift basis only.
	(B) Machineries deployed		Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic Excavators and tipper combination are adapted.

5.	BLASTING: <i>a) Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.</i> Blasting pattern: The quarrying operation is proposed to carried by open cast mining in conjunction with conventional method using jack hammer drilling and blasting for shattering effect and loosen the rough stone. Rough Stone Production for Five years = 235982m³		
----	--	--	--

BLAST DESIGN	
Blasthole Diameter (D) in mm	32
Burden (B) in m	1.2
Spacing (S) in m	1.38
Subdrill in m	0.5
Charge length (C) in m	0.70
Stemming	0.5
Hole Length (L) in m	1.2
Bench Height (BH) in m	2.5
Mass of explosive/hole in g	437.5
Stemming material size in mm	3.2
Burden stiffness ratio	2.08
Blast volume/hole in m ³	4.14
Production of rough stone/day in m ³	169
Number of blast holes/day	41

Number of blast round/day	
Blasthole pattern	Staggered
Mass of explosive /day in kg	17.81
Powder factor in kg/m ³	0.17
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL



Blastholes/Initiation patterns for shot fired to an open face

b) Type of explosives used / to be used:

Following explosives are recommended for efficient blasting with safe practice.

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.

c) Measures proposed to minimize ground vibration due to blasting:

The control blasting measures is being adopted for minimizing ground vibration and fly rock.

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

Delay detonators:

Delay blasting permits to divide the shot to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals. The major advantages of delay blasting are:

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

Blasting program for the production per day

No of holes	:	41holes
Yield	:	169 tons
Total explosive required	:	17.81kg-Slurry explosives
Charge per hole	:	0.5kg
Blasting at day time only	:	12.0p.m-1.0p.m

c)	Powder factor in ore and overburden / waste / development heading / stope	:	Powder factor is proposed as 0.5kg per hole of explosives
d)	Whether secondary blasting is needed, if so describe it briefly		There is no secondary blasting involved.
e)	Storage of explosives (like capacity and type of explosive magazine)		<ol style="list-style-type: none"> 1. The applicant is advised to engage an authorized explosive agency to carry out blasting. 2. First Aid Box will be keeping ready at all the time. 3. Necessary precautionary announcement will be carried out before the blasting operation.
6.	MINE DRAINAGE:		
a)	Likely depth of water table based on observations from nearby wells and water bodies	:	The ground water table is reported as of 63m in summer and 55m in rainy season from the general ground level observed in the adjacent bore well.
b)	Workings expected to be _____ m. above / reach below water table by the year _____.	:	Proposed mining depth is 35m from the below ground level. Now, the present Mining lease shall be proposed above the water table and hence, quarrying may not affect the ground water.
c)	Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged	:	The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300 Lpm and it shall be pumped out periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor. The quality of water is potable and it is not contaminated with any hazardous things.
7.	STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE:		
a).	Indicate briefly the nature and quantity of top soil, overburden / waste and mineral rejects likely to be generated during the next five years:		

	No separate of topsoil or any other wastes are removed in the lease area.	
b).	Land chosen for disposal of waste with proposed justification	: There is no disposal of waste proposed in this lease area.
c).	Attach a note indicating the manner of disposal and configuration, sequence of buildup of dumps along with the proposals for the stacking of sub-grade ore, to be indicated Year wise.	: The recovery of rough stone in this quarry is 100%. If rough stone may be unsold will be keep within the lease boundary.
8.	USE OF MINERAL:	
a).	Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)	: The excavated stone materials will be supplied to the consumers like stone pillar, sized stone, etc. For instance, aggregates are mostly used for building, roads and footpaths., etc
b).	Indicate physical and chemical specifications stipulated by buyers	: Basically, the materials produced at this quarry are rough stone (charnockite) and gravel the same are used for building materials and road metal. So, there is no chemical specifications are specified. Only physical specifications are involved.
c).	Give details in case blending of different grades of ores is being practiced or is to be practiced at the mine to meet specifications stipulated by buyers.	: Not blending process is involved, after blasting the rough stone and gravel will be directly loaded to the needy customer.
9.	OTHERS	
	Describe briefly the following a) Site services	: Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and bath rooms have been provided as per the Metalliferous Mines Regulations, 1961 as a welfare amenity for our quarry laborers.

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b) Employment potential:

As per Mines safety under the provisions of Metalliferous Mines Rules, 1961 under the Mines Act, 1952, whenever the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the production workers directly under his control and supervision.

The following man power is proposed for quarrying rough stone during the five years period the same manpower will be utilized for this Mining Plan period to achieve the proposed production and to comply the provisions of the DGMS norms.

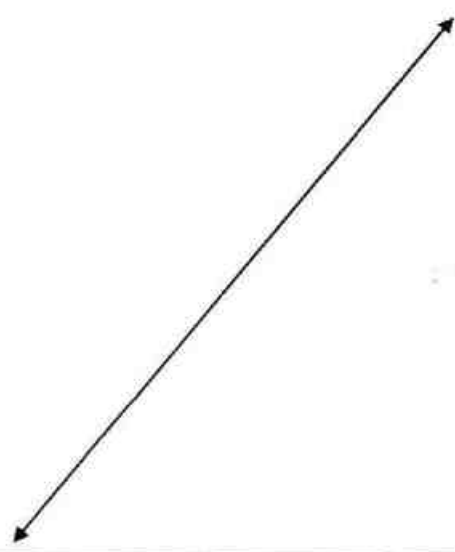
1.	Highly Skilled	Mines Manager	1No.
		Mine Engineer	1No.
		Mine Geologist	1No.
		Blaster	1No.
2.	Unskilled	Musdoor / Labours	16 No's
Total =			20 No's

10 MINERAL PROCESSING/BENEFICIATIONS:

<p>(a) If processing / beneficiations of the ore or minerals mined is planned to be conducted on site or adjacent to the extraction area, briefly describe the nature of the processing /beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.</p>	<p>: Excavated rough stone minerals directly will be used by the applicant in his own crusher for required size (i.e 1/4", 1/2", 1/3" and 1") The recovery of rough stone in this quarry is 100%.</p>
<p>(b) Explain the disposal method for tailings or waste from the processing plant (quantity and quality of tailings proposed to be discharged, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such</p>	<p>: No water shall be used for quarrying or any other processing except drinking water to be drawn from public sources. Some stagnation of rain water in the pit shall be used for drilling and spraying haul roads. Therefore, need for tailing dam doesn't arise. But tailing control of rain water flow during rainy season has to be done by</p>



	effect before their disposal and dealing of excess water from the tailing dam).	decanting the SPM in a pit before passing the water in to natural system
(c)	A flow sheet or schematic diagram of the processing procedure should be attached.	: Not applicable.
(d)	Specify quantity and type of chemicals to be used in the processing plant.	: Not applicable.
(e)	Specify quantity and type of chemicals to be stored on site / plant.	: Not applicable
(f)	Indicate quantity (cu.m. per day) of water required for mining and processing and sources of supply of water. Disposal of water and extent of recycling.	: Drinking is 0.3KLD, Domestic water is 0.7KLD, Dust suppression is 1.0KLD and Green Belt is 1.5KLD. Minimum quantity of water 3.5KLD per day. It is proposed to make an authorized water vendors for drinking water, dust suppression. The workers utilized water will be used for green belt development. The sewage water to a tune of 0.9KLD generated from the mine office toilet and mine labour toilet will be diverted to the septic tank followed by soak pit.



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PART - B

11.0 ENVIRONMENTAL MANAGEMENT PLAN:



a) Attach a note on the status of Baseline information with regard to the following :

11.1	Existing land use pattern indicating the area already degraded due to quarrying /pitting, dumping, roads, processing plant, workshop, township etc in a tabular form. The present land use pattern is given as below.	<table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Land Use</th> <th>Present area (Hect.)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Area under Mining</td> <td>0.36.97</td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td>Nil</td> </tr> <tr> <td>3</td> <td>Roads</td> <td>0.03.0</td> </tr> <tr> <td>4</td> <td>Unutilized</td> <td>1.58.03</td> </tr> <tr> <td>5</td> <td>Green belt & Earth Bund</td> <td>Nil</td> </tr> <tr> <td colspan="2">Grand Total</td> <td>1.98.0</td> </tr> </tbody> </table>	Sl. No.	Land Use	Present area (Hect.)	1.	Area under Mining	0.36.97	2	Infrastructure	Nil	3	Roads	0.03.0	4	Unutilized	1.58.03	5	Green belt & Earth Bund	Nil	Grand Total		1.98.0
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4	Unutilized	1.58.03																					
5	Green belt & Earth Bund	Nil																					
Grand Total		1.98.0																					
11.2	Water Regime	: Water table in this area is noticed at a depth of 63m in summer and 57m in rainy season from the general ground level and presently the quarrying of rough stone is proposed up to a depth of 35m from the ground level. Hence, it will not affect the ground water depletion of this area. It is proposed to make an authorized water vendors for drinking water, dust suppression. The workers utilized water will be used for green belt development.																					
11.3	Flora and Fauna	: There is no major flora observed in this area and except bushes, shrubs, no other valuable trees are noticed in the lease area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.																					
11.4	Quality of air, ambient noise level and water.	: Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying. Quarrying of rough stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.																					



11.5 Climatic conditions:
Rainfall:- Tamilnadu is exposed to both southwest and northeast monsoons. The Western Ghats acting as a barrier deprives full blast of Southwest monsoon winds. However, Southwest monsoon offers nearly rainfall received by the State, which helps cultivation. The State depends mainly the Northeast monsoon rains which are brought by the troughs of low pressures established in south Bay of Bengal between October and December. However, summer showers are also not uncommon. The average annual rainfall for the basin area is 689.04 mm
Climatic Conditions: - The rest of the district lies in the rain shadow region of the Western Ghats and experiences salubrious climate most parts of the year. The mean maximum and minimum temperatures for Coimbatore city during summer and winter vary between 35 °C to 18 °C

11.6 Human Settlement:
 The nearest villages are found in the buffer zone with population as per 2011 census.

S.No	Village	Direction	Distance in Kms	Population
1	Chinnakuyili	3.5Km	North	1560
2	Pachapalayam	0.5Km	East	2359
3	Thekani	1.5Km	South	1080
4	Chettipalayam	2.4km	West	10366

11.7 Public buildings, places of worship and monuments : No infrastructure like residential building, are found within radius of 300m. The places of special interest like archeological monuments, Sanctuaries, etc., are found around 10km radius.

11.8 Attach plans showing the locations of sampling stations : The proposed Ambient air quality, Water quality Ambient noise level and vibration are periodically tested for every season (6 months once) around 5km radius as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.

11.9	Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974	: The proposed area not fall under notified area under Water (Prevention & Control of Pollution), Act, 1974
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b) Attach an Environmental Impact Assessment Statement describing the impact of Mining and beneficiation on environment on the following over the next five years (and upto conceptual plan period for 'A' category mines)

i)	<p>Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc:</p> <p>Due to quarrying and exploitation of the rough stone, there will impact in the form i.e. change in the ground profile, pits, and dumps. The details of the land use pattern, during the ensuing plan period and till lease period is shown in the tabular form:</p> <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Land Use</th> <th>Area in use during the quarrying period (Hect.)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Area under Mining</td> <td>1.40.0</td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td>0.03.0</td> </tr> <tr> <td>3</td> <td>Roads</td> <td>0.05.0</td> </tr> <tr> <td>4</td> <td>Green belt</td> <td>0.25.1</td> </tr> <tr> <td>5</td> <td>Un-utilized area</td> <td>0.19.7</td> </tr> <tr> <td>6</td> <td>Drainage & Settling Tank</td> <td>0.05.2</td> </tr> <tr> <td colspan="2">Grand Total</td> <td>1.98.0</td> </tr> </tbody> </table>	Sl. No.	Land Use	Area in use during the quarrying period (Hect.)	1.	Area under Mining	1.40.0	2	Infrastructure	0.03.0	3	Roads	0.05.0	4	Green belt	0.25.1	5	Un-utilized area	0.19.7	6	Drainage & Settling Tank	0.05.2	Grand Total		1.98.0	
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ii).	Air Quality	Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying.																								
iii).	Water quality	A water sample from the open/bore wells was tested to NABL approved lab to assess hardness, Salinity, colour, Specific gravity, etc.																								
iv).	Noise levels	Quarrying of rough stone and gravel will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.																								
v).	Vibration levels (due to blasting)	No deep hole blasting envisaged. Small dia shot holes are used for breaking boulders. The																								

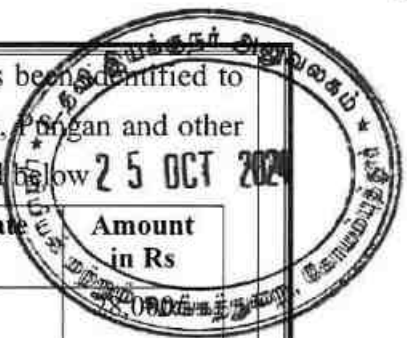


		maximum peak particles velocity shall be recorded using mini seismograph revisited as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
vi).	Water regime	No major river or any odai track are found around 50m radius.
vii).	Socio-economics	1. To provide Employment opportunities of the nearby villagers. 2. For the cultural development of the nearby villagers.
viii).	Historical monuments etc.	There are no historical monuments, etc found around 300m radius.

c) Attach an Environmental Management Plan (supported by appropriate plans and sections) defining the time bound action proposed to be taken with sequence & timing in the following areas (or diagrams should be used):

i).	temporary storage and utilization of topsoil	:	There is no topsoil shall be removed.
ii).	Yearwise proposal for reclamation of land affected by abandoned quarries and other mining activities during first five years (and upto conceptual plan period for 'A' category mines) clarifying the extent of back filling and re-contouring and / or alternative use of unfilled / partially filled excavations / road sides / slopes and mine. In case abandoned quarries/ pits are proposed to be used as reservoir, their size, water holding capacity and proposal for utilization of such water be given.	:	The present mining is proposed to an average depth of 35m from the existing ground level has been envisaged as workable depth for safe & economic mining during the lease period. The mined-out area will be fenced on top of working bench with S1 fencing. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
iii).	<i>Programme of afforestation, Yearwise for the initial five years (and upto conceptual plan period for 'A' category mines) indicating the number of plants with name of species to be afforested under different areas in hectares.</i> Green Belt Development:		

Safety barrier, school and nearest panchayat roads has been identified to be utilized for Greenbelt appropriate native species of Neem, Pongon and other regional trees will be planted in a phased manner as described below



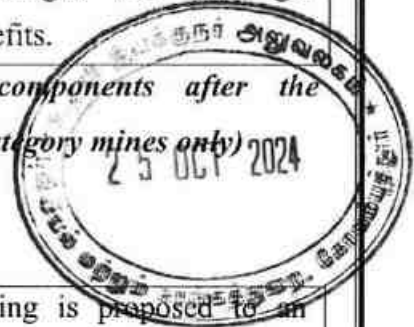
Year	Place	Area in Sq.m	No.of Plants	Rate of survival	Rate	Amount in Rs
First	Lease Boundary	2510	280	80%	@100 Rs Per sapling	30,000/-
Second	Approach road and Nearby Village Road	--	300	80%		
Third	Schools	--	300	80%		
Total						88,000/-

iv).	Stabilization and vegetation of dumps along with waste dump management Year wise for the first five years (and upto conceptual plan period for 'A' category mines).	:	No waste or rejects removed in this lease area.
v).	Measures to control erosion / sedimentation of water courses.	:	Not applicable. There is no major dumps are stabilize in this quarry area.
vi).	Treatment and disposal of water from mine.	:	It will not be harmful and it does not require any treatment before discharging into the natural courses.
vii).	Measures for minimizing adverse effects on water regime.	:	There is no water to be pumped out will be very pure and portable and therefore, it will not affect any water regime surrounding the quarry.
viii).	Protective measures for ground vibrations / air blast caused by blasting,	:	It is a small "B" category open cast, semi mechanized mining and no heavy machinery shall be used. The only smooth blasting is proposed, therefore no change for ground vibration or noise from the quarry.
ix).	Measures for protecting historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity.	:	No historical monuments and for rehabilitation of human settlements doesn't to be disturbed during mining activity.

x).	Socioeconomic benefits arising out of mining.	:	The nearest villages are will get employment benefits.
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d). *Monitoring schedules for different environmental components after the commencement of mining and other related activities. (for 'A' category mines only)* 2024

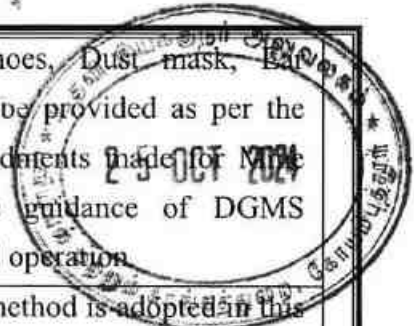
Not applicable. It is "B" category quarry



12.0 PROGRESSIVE QUARRY CLOSURE PLAN:

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	:	The Ultimate mining is proposed to an average depth of 35m from the below ground level. The mined-out area will be fenced on top of working bench with S1 fencing to arrest the entry of cattle's and public in to the quarry site.
12.2	Measures to be under taken on mine closure as per Act & Rules	:	Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by Barbed wire fencing. Green belt development at the rate of 280 trees will be proposed in the quarry area. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
12.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	:	The quarry lease is a fresh mining lease, no mitigation measures observed.
12.4	Mine closure activity	:	The present mining plan is proposed to depth of 35m from the below ground level has been envisaged as workable depth for safe & economic mining during the lease period. The mined-out area will be fenced on top of open cast working with S1 fencing. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
12.5	Safety and security	:	Safety measures implement to the prevent access to surface opening excavations will be taken as Metalliferous mine regulations, 1961, it is a small open cast mining method adopted. Safety provisions like helmet,

L.V. Shan



			goggles, safety shoes, Dust mask, muffs etc have to be provided as per the circulars and amendments made for mine labours under the guidance of DGMS being a mechanized operation.
12.6	Disaster management and Risk Assessment	:	Open cast mining method is adopted in this quarry. If the benches are made with proposed height and with no risk will be there. Even then if any minor or major accident happens the quarry staffs having First aid facilities with first aid box with all necessary medicine and stretches etc., to give first aid treatment at the site and will arrange immediately the vehicle to reach nearest hospital, if any disaster happens the lessee is capable to meet such eventualities. At the time of any accident during mining activity, proposal of first aid facility at quarry and one vehicle always ready at quarry site.
12.7	Care and maintenance during temporary discontinuance	:	A board of discontinuance will be changed on the main entrance of the working place. One watch man will be kept on the quarry area for security purposes also look after the survival of the plants.
12.8	Economic repercussions of closure of quarry and man power entrenchments	:	During the five years mining period the employment potential will be generated, general financial status and socio-economic conditions of approx. 20 labors will be improved.

12.9 Proposed Financial Estimate / Budget for (EMP) Environment Management:

A	Fixed Asset Cost:	
	1. Land Cost (Source: https://tnrcinet.gov.in/portal/)	: Rs. 64,00,000/-
	2. Labour Shed	: Rs. 1,50,000/-
	3. Sanitary Facility	: Rs. 1,50,000/-

V. Shanmugan

	4. Fencing	: Rs. 2,50,000/-
	5. Other expenses (Security guard, dust bin, etc)	: Rs. 4,00,000/-
	Total	: Rs. 73,50,000/-
B	B. Machinery cost	: Rs. 25,00,000/- (Hire Basis)
C	Total Expenditure of EMP cost (for five years)	
	1. Drinking Water Facility	: Rs. 1,00,000/-
	2. Sanitary facility & Maintenance	: Rs. 1,50,000/-
	3. Permanent water sprinkler	: Rs. 5,00,000/-
	4. Afforestation and its maintenance	: Rs. 1,00,000/-
	5. Safety Kits	: Rs. 1,00,000/-
	6. Provision of tyre washing facility	: Rs. 1,00,000/-
	7. Blasting materials with blast mat cost	: Rs. 15,00,000/-
	8. Drainage & Settling Tank (0.05.20Hect or 520Sq.m x 400)	: Rs. 2,08,000/-
	9. Environment monitoring	: Rs. 5,00,000/-
	Total	: Rs. 32,58,000/-
D	Total Project Cost (A+B+C)	: Rs. 1,31,08,000/-

13.0 FINANCIAL ASSURANCE:

Not applicable, it is a small "B" rough stone and gravel quarry.

14.0 CERTIFICATES:

All required certificates are enclosed.

15.0 PLAN AND SECTIONS, ETC:

Plan and Sections are submitted along with mining plan.

16.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

- (i) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (ii) The applicant will endeavor every attempt to quarry the rough stone economically without any wastage and to improve the environment and ecology.
- (iii) The Mining Plan is prepared by incorporating the conditions stipulated in the precise area communication issued by the Assistant Director, Department of Geology and Mining, Coimbatore vide letter Rc.No.973/Mines/2023 Dated 03.10.2024.
- (iv) Total proposed production rough stone is 235982m³ and gravel is 24568m³ up to a depth of 35m from the below ground level (R.L.422m to 387m) for five years plan period.

V. Shan



17.0 CSR Expenditure:

CSR (Corporate Social responsibility) shall provide by the applicant to the average net profit of the company for the last three financial years to the nearby village on the Ministry has notified the amendments in section 135 of the Act as well in the CSR Rules on 22nd January 2021 as circular no. CSR-05/01/2021-CSR-MCA dated 25th August 2021.

Place: Dharmapuri, TN

Date: 5/10/24

Signature of the Recognized Qualified Person

Dr.S.KARUPPANNAN, M.Sc, Ph.D.,
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
A NABET Accredited and ISO Certified Company
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri-636705, TamilNadu, India

This Mining Plan is Approved
subject to the conditions / stipulation
& indicated in the Mining Plan Approval
Letter No: 973/Mine/2023 dt 25-10-24
office of the A.D, Geology & Mining Coimbatore

This Mining Plan is Approved based on the incorporation of the particulars specified in the letter of the commissioner of Geology and Mining, Chennai ref No: 3863/LC/2012 Dated 19.11.2012 and subjected to further fulfillment of the condition laid down under Tamilnadu Minor Mineral Concession Rules 19F

ASSISTANT DIRECTOR
DEPARTMENT OF GEOLOGY & MINING
COIMBATORE DISTRICT

dy
25/10/24

V. Srinivasan

உதவி இயக்குநர் அலுவலகம்,
புவியியல் மற்றும் தரைவரைபடத் துறை
மாவட்ட ஆட்சியர் அலுவலகம், கோயம்புத்தூர்.
கோயம்புத்தூர் - 431 004

நாள்: 03.10.2024

ந.க.எண்.973/கனிமம்/2023

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - கோயம்புத்தூர் மாவட்டம் - குலூர் வட்டம் - பச்சாபாளையம் கிராமம் - புல எண்.238/1-ல் 1.98.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரி திரு.V.சண்முகம் என்பவர் விண்ணப்பம் செய்தது - வரைவு சுரங்கத்திட்டம் சமர்ப்பிக்க அறிவுறுத்துதல் - தொடர்பாக.

- பார்வை:
1. திரு.V.சண்முகம், உ/பெ.வேலுசாமி கவுண்டர், 1/240, MVS தோட்டம், சீரபாளையம், கோயம்புத்தூர் என்பவரின் மனு நாள் 11.09.2023
 2. இவ்வலுவலக கடிதம் இதே எண். நாள்: 19.09.2023 மற்றும் 04.12.2023.
 3. வட்டாட்சியர், குலூர் அவர்களின் கடிதம் ந.க.எண்.5427/2023/அ7 நாள்: 17.11.2023
 4. வருவாய் கோட்டாட்சியர், கோயம்புத்தூர் தெற்கு அவர்களின் கடிதம் மூ.மூ.எண்.8299/2023/அ2 நாள்: 28.11.2023.
 5. வட்டார வளர்ச்சி அலுவலர் (வ.ஊ), கல்தான் பேட்டை அவர்களின் கடிதம். ந.க.எண்.3017/2022/அ2 நாள்: 12.01.2024.
 6. கோயம்புத்தூர் புவியியல் மற்றும் சுரங்கத்துறை உதவி புவியியலாளர் தணிக்கை குறிப்பு நாள்: 28.08.2024.

பார்வை 1-ல் கோயம்புத்தூர் மாவட்டம், 1/240, MVS தோட்டம், சீரபாளையம் என்ற முகவரியில் வசிக்கும் திரு.வேலுசாமி கவுண்டர் என்பவரின் மகன் திரு.V.சண்முகம் என்பவர் கோயம்புத்தூர் மாவட்டம், குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்.238/1-ல் 1.98.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் கோரி உரிய ஆவணங்களுடன் விண்ணப்பித்துள்ளார்.

பார்வை 3, 4, 5 மற்றும் 6-ல் கண்ட கடிதங்களில் குலூர் வட்டாட்சியர், கோயம்புத்தூர் தெற்கு வருவாய் கோட்டாட்சியர், கல்தான் பேட்டை வட்டார/வளர்ச்சி அலுவலர் (வ.ஊ) மற்றும் புவியியல் மற்றும் சுரங்கத்துறை உதவி புவியியலாளர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கோயம்புத்தூர் மாவட்டம், குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்.238/1-ல் 1.98.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் திரு.வேலுசாமி கவுண்டர் என்பவரின் மகன் திரு.V.சண்முகம் என்பவருக்கு சாதாரண

கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிம வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

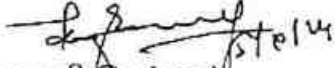


எனவே, கோயம்புத்தூர் மாவட்டம், குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்.238/1-ல் 1.98.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 1959-ம் வருடத்தில் தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.19-ன் கீழ் 5 வருட காலங்களுக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிம அனுமதி வழங்க உகந்த புலமாக கருதி அறிவிப்பு செய்யப்படுகிறது.

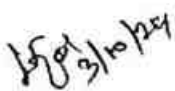
மேலும், திரு.V.சண்முகம் என்பவர் மூன்று மாத காலத்திற்குள் வரைவு சுரங்கத்திட்ட அறிக்கை (Draft Mining Plan) கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு தயார் செய்து கோயம்புத்தூர் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநரிடம் ஒப்புதல் பெற்றும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 41 & 42-ன் படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவாணைச் சான்று பெற்று சமர்ப்பிக்குமாறும் அறிவுறுத்தப்படுகிறது.

நிபந்தனைகள்

1. அருகிலுள்ள பட்டா நிலங்கள் மற்றும் பொது மக்களுக்கும் எவ்வித இடையூறும் இன்றி குவாரி பணி மேற்கொள்ள வேண்டும்.
2. அருகில் உள்ள பட்டா நிலத்திற்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
3. அனுமதி கோரும் புலத்தினை அரசு அங்கீகாரம் பெற்ற நிறுவனத்தினரால் DGPS (Differential Global Positioning System)-ன் படி ஆய்வு செய்யப்பட்டு ஒவ்வொரு எல்லைத் தூண்களும் நடப்படவேண்டும்.


உதவி இயக்குநர்
புவியியல் மற்றும் சுரங்கத்துறை
கோயம்புத்தூர்.

பெறுநர்:
திரு.V.சண்முகம்,
த/பெ.லேசாமி கவுண்டர்,
1/240, MVS தோட்டம்,
சீராபாளையம்,
கோயம்புத்தூர்



Thiru.T.N. Hariharan, I.A.S.,
CHAIRMAN/
DISTRICT COLLECTOR.

District Level Environment Impact
Assessment Authority - Coimbatore,
Second Floor,
Collectorate New Building,
Coimbatore - 641018.



ENVIRONMENTAL CLEARANCE

Tr.No.DEIAA - CBE - V/F.No. 351/1(a&b) / EC.No.52/2018 dated 10.12.2018

To
Thiru.V.Shanmugam,
S/o. M.Velusamy Gounder,
1/240, M.V.S.Thottam,
Eachanari,
Coimbatore District.

Sir,

Sub: DEIAA - CBE - Proposed Roughstone & Gravel quarry located at S.F.No. 238/1(P) of Pachapalayam Village, Sulur Taluk, Coimbatore District - Thiru.V.Shanmugam - Issue of Environmental Clearance - Reg.

- Ref: 1. Your application for Environmental Clearance dated 31.10.2018
2. Minutes of the 5th DEAC meeting held on 07.12.2018.
3. Minutes of the 5th DEIAA meeting held on 10.12.2018

-o/o-

Details of Minor mineral Activity:-

This has reference to your application first cited. The proposal is for obtaining Environmental Clearance for mining / quarrying of category 'B2' minor mineral based on the particulars furnished in your application as shown below:

1.	Name of Project Proponent and address	: Thiru.V.Shanmugam, S/o. M.Velusamy Gounder, 1/240, M.V.S.Thottam, Eachanari, Coimbatore District.
2.	Location of the Proposed Activity	
	Survey Number	: S.F.No. 238/1 (P)


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CHAIRMAN
DEIAA - CBE

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Latitude and Longitude		: 10°53'56.91"N to 10°54'00.54"N 77° 03'58.76"E to 77° 04'02.15"E
Village		: Pachapalayam
Taluk		: Sulur
District		: Coimbatore
3. Proposed Activity		
i.	Minor Mineral	: Roughstone & Gravel
ii.	Quarrying Lease Area	: 1.00.0 Ha.
iii.	Approved quantity	: Roughstone = 90,055 cu.mt Gravel = 13,706 cu.mt
iv.	Depth of quarrying	: 37m
v.	Type of quarrying	: Open cast, Mechanised
vi.	Category.(B1/ B2)	: "B2" category.
vii.	Precise Area Communication	: District Collector, Coimbatore Letter No. 351/Mines/2018 Dated 28.09.2018.
viii.	Mining Plan approval	: Joint Director / Assistant Director (i/c) of Geology and Mining, Coimbatore letter Rc.No. 351/Mines/2018 Dated 17.10.2018
ix.	Quarrying lease period	: 5 Years.
4.	Whether Project area attracts any general conditions specified in the EIA notification, 2006 as amended:-	: Not attracted. Affidavit furnished.
5.	Man power requirement per day:	: 17 Nos.
6. Utilities		
i.	Source of Water	: Water vendors
ii.	Water requirement"	
	1. Drinking & domestic purposes (in KLD)	1.2 KLD
	2. Dust suppression (in KLD)	1.0 KLD
	3. Green Belt (in KLD)	0.8 KLD

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 DEIAA - CBE

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iii.	Power requirement: a. Domestic purposes b. Industrial Purpose	Fuel is used for operating machineries and vehicles during quarrying process and electricity will be used only for mine office.
7.	Cost	
i.	Project cost	: Rs. 49,97,000/-
ii.	EMP cost	: Rs. 3,80,000/-
8.	Public Consultation	: Not required as per O.M. dated 24.12.2013 of MoEF, GOI
9.	Date of Appraisal by DEAC: Agenda No.	: 07.12.2018 V-11
10.	Date of review / discussion by DEIAA and the Remarks:- The proposal was placed before the DEIAA in its 5 th DEIAA meeting held on 10.12.2018 and the Authority after careful consideration, decided to grant Environmental Clearance to the said project Mining of "Roughstone & Gravel" subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.	
	Validity: This Environmental Clearance is granted to quarrying of "Roughstone & Gravel" for the production quantity of 90,055 cumt. of Rough Stone for the period of "five years" and 13,706 cumt. of Gravel for the period of "three years" from the date of execution of the quarry lease deed.	

Conditions to be Complied before / during commencing quarrying operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - i) the project has been accorded Environmental Clearance.
 - ii) copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - iii) Environmental Clearance may also be seen on the website of the District Level Environment Impact Assessment Authority.
 - iv) the advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the DEIAA.
2. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.

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DEIAA - CBE

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3. NOC from the Standing committee of the NBWL shall be obtained if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rules of Tamil Nadu Minor Mineral Concession Rules, 1959.
5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation; Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7 AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 15 mts. from any civil structure shall be kept from the periphery of any excavation area.
14. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation
16. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust
17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public: adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
21. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.

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- 22. The following measures are to be implemented to reduce Air transportation of mineral
 - (i) Roads shall be graded to mitigate the dust emission.
 - (ii) Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust.
- 23. The following measures are to be implemented to reduce Noise Pollution
 - (i) Proper and regular maintenance of vehicles and other equipment.
 - (ii) Limiting time exposure of workers to excessive noise.
 - (iii) The workers employed shall be provided with protection equipment and earmuffs etc.
 - (iv) Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
- 24. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoE&F, Govt to control noise to the prescribed levels.
- 25. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with the Regional Director, CGWP suitable measures should be taken for rainwater harvesting.
- 26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
- 27. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
- 28. The following measures are to be adopted to control erosion of dumps:-
 - (i). Retention/ toe walls shall be provided at the foot of the dumps.
 - (ii). Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
- 29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
- 30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- 31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
- 32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.

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 DEIAA - CBE

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- 33. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the ground water table is getting depleted due to the quarrying activity; necessary corrective measures shall be carried out. The Assistant Director Ground water Division, PWD Coimbatore shall monitor, the ground water related issues.
- 34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
- 35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
- 36. Ground water quality monitoring should be conducted once in 3 Months.
- 37. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
- 38. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI
- 39. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
- 40. Bunds to be provided at the boundary of the project site.
- 41. The project proponent shall undertake plantation/ afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place and progress report shall be submitted once in 3 months.
- 42. At least 10 Neem trees should be planted around the boundary of the quarry site.
- 43. Floor of excavated pit to be leveled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
- 44. The Project Proponent shall ensure a minimum of 2.5 of the annual turnover will be utilized for the CSR Activity
- 45. The CSR funds should be channelized for planning programme, nature conservation support, tribal development and activities that support forest and environment.
- 46. The Project Proponent shall provide solar lighting system to the nearby villages
- 47. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
- 48. Rainwater shall be pumped out Via Settling Tank only.
- 49. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
- 50. As per MoEF & CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from standing committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.

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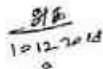
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51. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be decided by the District Authorities.
52. Safety equipments to be provided to all the employees.
53. Safety distance of 50 m has to be provided in case of railway, reservoir, canal/odai
54. The Assistant / Deputy Director, Department of Geology and Mining shall ensure that the proponent has engaged the blaster with valid Blasting license / certificate obtained from the competent authority before execution of mining lease.
55. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
56. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of quarrying lease.
57. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh case before commencing quarrying operation.
58. The proponent has to display the name board at the quarry site showing the details of proponent, leased period, extent etc, with respect to the existing activity before execution of mining.
59. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
60. The proponent shall ensure that project activity including blasting, mining transportation etc., should in no way in adverse impact to the forests, such as reserve forest and social forests, tree plantation and bio diversity, surrounding water bodies etc.,
61. The environmental norms shall be adhered by the Project Proponent and shall furnish a report periodically to the authority concerned.
62. Ground Water Level and quality shall be monitored by the Assistant Director, Public Works Department (WRO), Coimbatore.
63. NOC for sanitary certificate obtained from the Deputy Director of Health Services, Coimbatore should be submitted by the proponent.
64. Periodical medical examination of the quarry workers should be carried out by a registered medical practitioner and the report should be filed in the quarry office in a separate file and copy should be sent to the Health Department.
65. Machinery equipments friction / wear and cost of things have to be monitored then and there along with maintenance.
66. Staff secure will be maintained by the proponent as per labour act and rules in force.
67. Proper bench should be maintained by the proponent as per norms. proper safety measures should be provided by the proponent while quarrying.


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CHAIRMAN
DEIAA - CBE


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B. General Conditions:

- 1) EC is given only on the factual records, documents and the commitment furnished in non-judicial stamp paper by the proponent.
- 2) The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
- 3) No change in mining technology and scope of working should be made without prior approval of the DEIAA, Coimbatore District, Tamil Nadu.
- 4) No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
- 5) Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- 6) Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
- 7) A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
- 8) Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
- 9) Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying them mineral shall not be overloaded.
- 10) Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
- 11) All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
- 12) Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
- 13) Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
- 14) The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
- 15) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.

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CHAIRMAN
DEIAA - CBE

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- 16) The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
 - 17) This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance.
 - 18) The DEIAA, Coimbatore District may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
 - 19) The DEIAA, Coimbatore District may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this DEIAA Coimbatore District that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
 - 20) Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
 - 21) The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
 - 22) Any other conditions stipulated by other Statutory/ Government authorities shall be complied.
 - 23) Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.
 - 24) The proponent has to provide / maintain proper bench formation during mining operation.

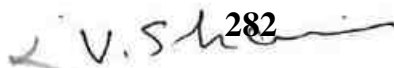

 CHAIRMAN, DEIAA - CBE/
 DISTRICT COLLECTOR,
 COIMBATORE.

Copy to:-

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi
2. The Principal Secretary, Environment and Forest Department, Government of Tamil Nadu, Tamil Nadu.


 10/12/2017


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3. The Principal Secretary to Government, Industries Department, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai-34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex East Arjun Nagar, New Delhi 110 032.
6. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
7. The Member Secretary, State Level Environmental Impact Assessment Authority, Tamil Nadu, 3rd Floor, Panagal maalgai, No. 1 Tennis Road, Saidapet, Chennai-15.
8. The Director of Geology and Mining, Guindy, Chennai-32.
9. E1 Division, Ministry of Environment and Forests Paryavaran Bhawan, New Delhi.
10. Spare.

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From

Dr.P.Umanath, I.A.S.,
District Collector,
Coimbatore.

To

The Sub Registrar
Sulur.



Ref. No.748/ 2009/MM2 Dated : . 12.2009

Sir,

Sub: MINES AND MINERALS – Minor Minerals – Rough Stone and Gravel – Coimbatore District, Sulur Taluk – Pachapalayam Village - S.F.Nos.236/2A(1.33.5),238/1 (1.98.0), 239/1A(0.54.0), 239/2A(0.03.0) 240/1(0.54.5) and 240/2A (0.30.0) hecets over an total extent 4.73.0 hecets lease granted to Thiru.V.Shanmugam, S/o.Velusamy Gounder - Registration of Lease Deed – Regarding.

Thiru.V.Shanmugam, S/o.Velusamy Gounder residing at 1/240, MVS Thottam, Eechanari, Coimbatore District-21 has been granted a lease to quarry Rough Stone and Gravel in S.F.Nos.236/2A(1.33.5), 238/1 (1.98.0), 239/1A(0.54.0), 239/2A(0.03.0) 240/1(0.54.5) and 240/2A (0.30.0) hecets over an total extent 4.73.0 hecets Pachapalayam Village of Sulur Taluk, Coimbatore District for a period from 10.12.2009 to 09.12.2014. The executed lease deed is sent herewith. The details are furnished below:-

1.	Anticipated Seigniorage Fee for Stone/Gravel For a lease period of 5 years	:-	Rs. 4,86,000/-
2.	Area Assessment @ Rs.100/- per hect per year	:-	Rs. 2,500/-
3.	Security Deposit paid by the lessee	:-	Rs. 5000/-

I have been exempted from appearing in person under section 88(1) of the Registration Act. I request you to register the lease deed executed in my presence and return the document through the lessee early.

Encl:- :Executed lease deed

[Signature]
For Collector,
Coimbatore.

[Signature]
10.12.09

284
[Signature]



தமிழ்நாடு தமிழ்நாடு TAMILNADU

V. Shanmugam

E 375402

வ. எண்: 15869 தேதி: 4.12.09.

Handwritten signature and '1000/-' stamp

சு. சண்முகம்
முத்தியாரத்தாள் விநாயகப்பாளர்,
உ. எண்: 10 / திருப்பூர் / 93
குலார்.



-1-
APPENDIX IV
(See Rules 19 - 22)
Collr.Proc.R.c.No.748 / 2009/ MM2

(FORM OF AGREEMENT FOR QUARRYING AND CARRYING AWAY MINOR MINERALS FROM RYOTWARI LANDS IN WHICH THE MINERALS BELONG TO GOVERNMENT)

AGREEMENT made this 10th day of December 2009 between Thiru.V.Shanmugam, S/o.Velusamy Gounder, residing at 1/240, MVS Thottam, Eechanari, Coimbatore District-21 (hereinafter referred to as "the registered holder" which term shall include in these presents where the context so admits include also his heirs, executors, administrators, legal representatives and assigns) of the one part and the Governor of Tamil Nadu (hereinafter called "the Government" which term shall where the context so admits, include also his successors in office and assigns) of the other part.

WHEREAS the registered holder holds (amongst others) the lands described in the schedule hereunder written (hereinafter referred to as the said lands)

AND WHEREAS, the registered holder has made application to the Collector of the District of Coimbatore (hereinafter referred to as "the Collector") seeking grant of quarrying lease for quarrying Rough Stone/ Gravel in the said lands and to deposit mining waste in the said lands and has lodged with the Collector an accurate map or sketch of the said lands.

V. Shanmugam
REGISTERED HOLDER/LESSEE

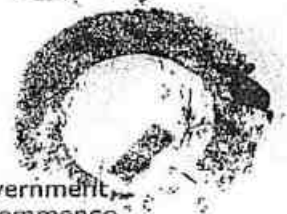
Collector
COLLECTOR
COIMBATORE

V. Shanmugam



தமிழ்நாடு தமிழ்நாடு TAMILNADU V. சண்முகம் E 375403

வ. எண்: 15870 தேதி: 4.12.09. ரூ. 1000.00
 கு. சண்முகம்
 முத்திரைத்தாள் விநாயகர்
 உ. எண்: 10, திருப்பூர்/93
 குலார்.



-2-

AND WHEREAS, the Collector, acting for and on behalf of the Government, has granted a quarrying lease to the registered holder and allowed him to commence quarrying operations for **Rough Stone/ Gravel** in the said lands and to deposit mining waste thereon by the registered holders for a period from ...12.12.09...to ...12.12.14

AND WHEREAS, the registered holder has deposited with the Collector, the sum of **Rs.5000/- (Rupees Five Thousand only) CHALAN No.96, dated.4.12.2009, STATE BANK OF INDIA, TREASURY BRANCH, COIMBATORE** as security against any loss or damage which may be incurred by the Government by reason of any of the said lands being rendered unfit for cultivation by any mining operations thereon of the registered holder or by the deposit of mining waste thereon by the registered holder.

NOW THESE PRESENTS WITNESS and the registered holder doth hereby agree with the Government in the manner following, that is to say:

1. The registered holder shall be at liberty at all times during the period of the lease to carry on mining operations for **Rough Stone/ Gravel** in the said lands in a proper and workman like manner and to deposit mining waste on the said lands and shall at all times be answerable and accountable to the Government for all acts and defaults by any of his nominees, servants or agents in carrying on such operations or in making such deposit.

V. S. M. S.
 REGISTERED HOLDER / LESSEE

Collector
 COLLECTOR
 COIMBATORE

V. S. 286



தமிழ்நாடு தமில்நாடு TAMILNADU
 வ. எண்: 15871 தேதி: 4.12.09. V. Shalun
 கு. ந.ஸ்வரன், ரி. சி. சி. மார், E 375404
 முத்திரைத்தாள் மிறபயலகாரவர், ரூ. 1000.00

உ. எண்: 10 The registered holder shall pay to the collector for and on behalf of the Government in addition to the land assessment for the time being payable in respect of the said lands, seigniorage on the minor minerals at the rate specified in Appendix II to the Tamil Nadu Minor Minerals Concession Rules 1959.

3. The registered holder shall and will keep correct accounts in such form as the Collector shall from time to time require and direct showing the quantities and other particulars of all minerals obtained by the registered holder from the said lands and also the number of persons employed in carrying on the said mining operations therein and shall from time to time when so directed by the Collector prepare and maintain complete and correct plans of all mines and working in the said lands and shall allow any officer hereunto authorized by the Director of Geology and Mining, Tamilnadu from time to time and at any time to examine such accounts and any such plans and shall when so required supply and furnish all such informations and returns regarding all or any of the matter aforesaid as the Government shall, from time to time, require and direct.

4. The registered holder shall and will at all times allow any officer authorized by the Director of Geology and Mining, Tamil Nadu in that behalf to enter upon any part of the said lands where any mining operations may be carried on for the purpose of inspecting the same.

5. The registered holder shall forthwith send to the District Collector a report of any accident which may occur at or in the said lands and also of the discovery of any mineral other than **Rough Stone/ Gravel**.

V. Shalun
 REGISTERED HOLDER / LESSEE

Collector
 COLLECTOR
 COIMBATORE



தமிழ்நாடு தமில்நாடு TAMILNADU

V. Shanmugam

E 375405

ப. எண்: 15872

தேதி: 4.12.09.

4.12.09.

N. Shanmugam

₹ 1000/-

சு. ச. சுவாமிநாதன்

முத்திரைத்தாள் விநியோகாளர்.

ப. எண்: 10, திருப்பூர் / 93

-4-

6. It shall be lawful for the registered holder at any time to cease mining operations under these presents provided he shall pay to Collector for and on behalf of the Government land assessment, cess and seigniorage due to the Government and shall restore the said lands or fence or fill in abandoned pits and excavations therein if required by the Collector and upon his so doing these presents shall cease and determine.

7. In case the registered holder shall relinquish the whole or any part of the said lands or in case of the expiry or sooner determination of this agreement then and in any such case, he shall restore the lands so relinquished or so much thereon as the Collector shall require to be restored to a state fit for cultivation or shall securely and permanently fence or fill in all such abandoned pits and excavations therein as the Collector shall require to be so fenced or filled in, and in case the registered holder shall fail or neglect to restore any such land which he shall be required to restore to a state fit for cultivation or to so fence, or fill in any such abandoned pit or excavation which he shall be required to so fence or fill in them and in any such case, it shall be lawful for the Collector to so restore any such lands, or as the case may be, to so fence or fill any such pits of excavation at the expense of the registered holder and to apply the said sum of Rs.5000/- so deposited in or towards the cost of so doing and to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands which shall have been rendered unfit for cultivation. If however, the amount of deposit is not sufficient to cover the cost of such restoration of fencing or filling in or to meet thirty times the assessment on the area rendered uncultivable, it shall be lawful for the Government to recover balance by resort to civil Court.

V. Shanmugam
REGISTERED HOLDER / LESSEE

Y. Shanmugam
COLLECTOR
COIMBATORE
5/12



भारतीय गैर न्यायिक INDIA NON JUDICIAL

एक हजार रुपये
रु.1000

ONE THOUSAND RUPEES
Rs.1000



தமிழ்நாடு மிலநாடு TAMILNADU

E 375406

ச. எண்: 15873
தேதி: 4.12.09.
சு. ரெவின்யூ

V. S. Shanmugam
சு. ரெவின்யூ

1000.00

முத்திரைத்தாள் விற்பனை யாளர்,
உ. எண்: 10, திருப்பூர் 193

-5-

- 8. The registered holder shall not be entitled to any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste, unless thirty times the assessment thereon has already been deducted under the preceding clause.
- 9. The registered holder shall not assign, lease or part with the possession of the said lands or any part thereof for the whole or any part of the said term without previous intimation in writing to the Collector.
- 10. If the registered holder does not intend to carry on mining operations himself, but intends to lease out the right to do so to another person, the registered holder and his lessee shall enter into an agreement with Government binding themselves jointly and severally to accept the conditions and stipulations herein contained which agreement shall be in the Form set out in Appendix V to the Tamil Nadu Minor Mineral Concession Rules, 1959.
- 11. All land assessment, cess and seigniorage payable under these presents shall be recoverable under the provisions of the Tamil Nadu Revenue Recovery Act, 1864, as if they were arrears of land revenue.
- 12. In the event of any breach by the registered holder by any of the conditions of this agreement, it shall be lawful for the Government to levy enhanced seigniorage or for the Collector to give notice in writing to the registered holder of his intention to cancel these presents whereupon the same shall stand cancelled but without prejudice to any rights which the Government may have against the pattadar in respect of any antecedent claim or breach of covenant or condition.

V. Shanmugam

REGISTERED HOLDER / LESSEE

6/12
Collector

COLLECTOR
COIMBATORE

V. Shanmugam 289



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13. Any notice to be given to the registered holder may be addressed to his last known place of abode and where a notice has been so addressed, I shall be deemed to have been duly served for the purpose of these presents.

14. Should any question or dispute arise regarding the agreement executed in pursuance of these rules or any matter or thing connected therewith or the powers of the registered holder thereunder, the amount or payment of the seigniorage fee or area assessment made payable thereby, the matter in issue shall be decided by the Director of Geology and Mining. In case the registered holder / registered holders, lessee / lessees is / are not satisfied with the decision of the Director of Geology and mining, the matter shall be referred to the State Government for decision.

15. The registered holder shall abide by the conditions laid down in, the Payment of Wages Act, 1936 (Central Act IV of 1936), the Mines Act, 1952 (Central Act XXXV of 1952) and the Indian Explosives Act 1884 (Central Act IV of 1884).

சிறப்பு நிபந்தனைகள்

புலத்தின் வடக்கு பகுதியில் கிழமேலாக செல்லும் செட்டிபாளையம் - பெரியகுயிலி செல்லும் ரோட்டிற்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி செய்ய வேண்டும்.

நிபந்தனைகள்

1. குத்தகைதாரர் தனக்கு அளிக்கப்பட்ட குத்தகை பகுதியின் எல்லைகளை தெரிவிக்க காட்டும் வகையில் கல் நட்டு வண்ணம் இட்டு குத்தகை காலம் முழுமைக்கும் பராமரிக்க வேண்டும்.
2. குத்தகையின் முழு விவரங்கள் அடங்கிய தகவல் பலகை வைத்தல் வேண்டும்.
3. குவாரிக்கு சென்று வரும் பாதைவசதிகளை குத்தகைதாரர்கள் அவர் தம் சொந்த பொறுப்பிலேயே அமைத்துக் கொள்ள வேண்டும்.
4. குத்தகை உரிமம் வழங்கப்பட்ட பகுதியில் சாதாரண கட்டுமான கல், ஜல்லி, அளவுக்கல், கல்தூண் போன்றவைகளை மட்டுமே உடைக்க வேண்டும். ஏற்றுமதிக்குரிய பெரிய கன மீட்டர் அளவிலான மெருகூட்ட கூடிய தகுதிவாய்ந்த ஆபரணகற்களை உடைக்க கூடாது.
5. குவாரியிலிருந்து கொண்டு செல்லப்படும் மேற்கண்டவகை கற்களுக்கு 1959-ஆம் ஆண்டு தமிழ்நாடு சிறு கனிம சலுகை விதிகள் பின் இணைப்பு 2-ல் கண்டுள்ளவாறு உரிமவரி செலுத்த வேண்டும். அரசு அவ்வப்போது அறிவிக்கும் உரிமவரி செலுத்த வேண்டும். அரசு அவ்வப்போது அறிவிக்கும் உரிமவரி மாற்றங்களுக்கு ஏற்ப எவ்வித ஆட்சேபணை இன்றி செலுத்துதல் வேண்டும்.
6. குத்தகை அனுமதி வழங்கப்பட்ட நிலத்திலிருந்து கொண்டு செல்லப்பட்ட கற்களுக்கு முறையான கணக்குகளும், குழிவாயில் பதிவேடும் முறையாகப் பராமரித்தல் வேண்டும். அவற்றை சம்பந்தப்பட்ட அலுவலர்கள் தணிக்கைக்கு ஆஜர்படுத்த கோரினால் தவறாது சமர்ப்பிக்க வேண்டும்.
7. துணை இயக்குநர் (புவியியல் மற்றும் கரங்கத்துறை)-ன் அலுவலக கையொப்பமுத்திரையுடன் கூடிய உரிய அனுப்புகைச் சீட்டை வாகனங்களுக்கு கொடுக்கப்படும் போது அனுப்புகைச் சீட்டில் வாகன எண் தேதி, புறப்படும் நேரம், செல்லுமிடம் ஆகியவற்றை முறையாகக் குறிப்பிட்டு கையொப்பம் இட்டபின்னரே குத்தகைதாரரோ அல்லது அவரது அனுமதி பெற்ற நபரோ கொடுக்க வேண்டும். மேற்கண்டவாறு குறிப்பிடுவதில் ஏதேனும் தவறுகள் இருந்தாலோ, கலங்கள் பூர்த்தி செய்யப்படாமல் இருந்தாலோ முறையற்ற வகையில் கனிமம் எடுத்துச் செல்வதாகக் கருதப்பட்டு வாகனத்தை கைப்பற்றி அபராதம் விதிப்பதோடு அதற்கு குத்தகைதாரரை பொறுப்பாக்கி கனிம விதிகளின்படி மேல் நடவடிக்கை எடுக்கப்படும்.
8. இந்த ஆணையில் குத்தகை அனுமதி வழங்கப்பட்ட புலத்தை முழுமையாகவே, பகுதியாகவோ எவருக்கும் உள் குத்தகைக்கு விடுவதோ அல்லது கிரையம் செய்வதோ கூடாது.
9. குத்தகைதாரர், தமக்கு குத்தகை வழங்கப்பட்டுள்ள பகுதிக்கு அருகில் உள்ள பட்டா நிலத்திற்கு எவ்வித இடையூறும் இல்லாமல் குவாரி பணி செய்யப்பட வேண்டும்.
10. மேற்கூறப்பட்ட நிபந்தனைகள் மற்றும் கனிமவிதிகளை மீறியுள்ளது உறுதிபடும் தருணத்தில் விதிமுறைகளுக்கு உட்பட்டு குத்தகை உரிமம் இரத்து செய்ய நடவடிக்கை எடுக்கப்படும். மேற்கண்ட நிபந்தனைகள் ஒப்பந்தப் பத்திரத்தில் கண்டுள்ள நிபந்தனைகள் மற்றும் 1959-ம் ஆண்டு தமிழ்நாடு சிறு கனிம சலுகை விதிகள் ஆகியவற்றின் அடிப்படையில் குத்தகைதாரர் குவாரிப்பணி புரிய வேண்டும்.

V. Shan
REGISTERED HOLDER / LESSEE

Young 7/12
COLLECTOR
COIMBATORE



For the purpose of calculating stamp duty the anticipated seigniorage fee for stone / earth for Five years is estimated as Rs.4,86,000/-

THE SCHEDULE

- 1) Name of the District : COIMBATORE
- 2) Name of the Taluk : Sulur
- 3) Name of the Village : Pachapalayam
- 4) Name of the Sub Registration District : Sulur
- 5) Lease Period : 5 Years

From 01.10.2009 to 30.09.2014

Survey Number	Total Extent Hects.	Area Assessment Rs.	BOUNDARIES			
			NORTH BY S.F.No.	EAST BY SF No.	SOUTH BY SF No.	WEST BY SF No.
236/2A	1.33.5	2500/-	237	236/2B	243	240
238/1	1.98.0		178	237	239	238/2
239/1A	0.54.0		237	240	241	238
239/2A	0.03.0		239/1A	240	239/2B	239/1A
240/1	0.54.5		236	243	240/2B	239
240/2A	0.30.0		236	243	240/2B	139
Total	4.73.0					

IN WITNESS whereof Thiru.V.Shanmugam, S/o.Velusamy Gounder, residing at 1/240, MVS Thottam, Eechanari, Coimbatore District-21 the Registered holder/ lessee and Dr.P.Umanath, I.A.S. District Collector, Coimbatore acting for and on behalf of and by the order and direction of the Governor of Tamil Nadu have hereunto set their hands.

V. Shanmugam
REGISTERED HOLDER / LESSEE

[Signature]
COLLECTOR
COIMBATORE

Signed by the above named
in the presence of :

Signed by the above named
in the presence of :

- 1. S. Shanmugam
S. Shanmugam
S. Shanmugam
- 2. K. Shanmugam
S. Shanmugam
S. Shanmugam

1. *[Signature]*
DEPUTY DIRECTOR
GEOLOGY AND MINING
COIMBATORE

2. *[Signature]*
DEPUTY TAHSILDAR (MINES)
COIMBATORE

[Signature]



From

To

Thiru.T.N.Hariharan, I.A.S.,
District Collector,
Coimbatore District,
Coimbatore - 18.

The Sub-Registrar,
Sulur.

R.C. 351 / Mines/2018 Dated 25.01.2019

Sir,

Sub Mines and Minerals - Minor Minerals - Rough Stone and Gravel - Coimbatore District - Sulur Taluk - Pachapalayam Village - Survey No. 238/1(Part) - over an extent of 1.00.0 hectares out of 1.98.0 hectares of patta land - Rough stone and Gravel quarry lease granted to Thiru.V.Shanmugam - Registration of lease deed - Regarding.

Ref Coimbatore District Collector's Proceedings RC.No.351/ Mines/2018 dated 25.01.2019

Thiru.V.Shanmugam has been granted a lease to quarry Roughstone and Gravel in S.F.No. 238/1(Part), over an extent of 1.00.0 hectares out of 1.98.0 hectares of patta land in Pachapalayam Village, Sulur Taluk for a period of five years from 25.01.2019 to 24.01.2024. The lease deed is having 8 pages from page No.1 to 8 with 1 Map is sent herewith.

1. Anticipated seigniorage fee for Rough Stone for the entire lease period	: Rs. 53,13,245/-
2. Anticipated seigniorage fee for Gravel for the entire lease period	: Rs. 4,52,298/-
3. Area Assesment @ Rs. 150/- Per hect	: Rs. 750/-
4. Security Deposit paid by way of Chalan	: Rs. 10,000/-
Total	: Rs. 57,76,293/-

Thus the stamp duty is calculated for the value Rs. 58,000/-. But the applicant has produced the stamp paper for the value of Rs. 20,000/- only for executing the lease deed. Therefore, I request to collect the deficit stamp

2 V292 Shanmugam

भारतीय गैर न्यायिक INDIA NON JUDICIAL

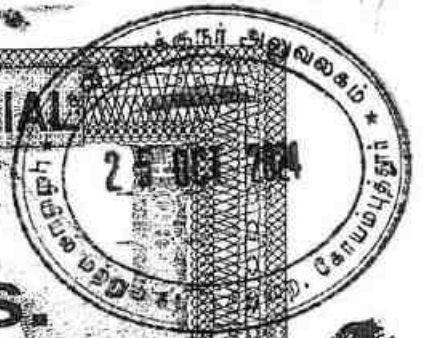
दस हजार रुपये

रु. 10000



Rs. 10000

TEN THOUSAND RUPEES



தமிழ்நாடு TAMILNADU

ரூ. 10,000.00
D 554335

V. Shan mugam
Eachaneri

(21) தேதி 4.1.19

ச.க. ராஜா
பொது இயக்குநர்
புதுச்சேரி
மலர் : 8 / 2008 / TUP

APPENDIX IV
(See Rules 19 (1) and 22)

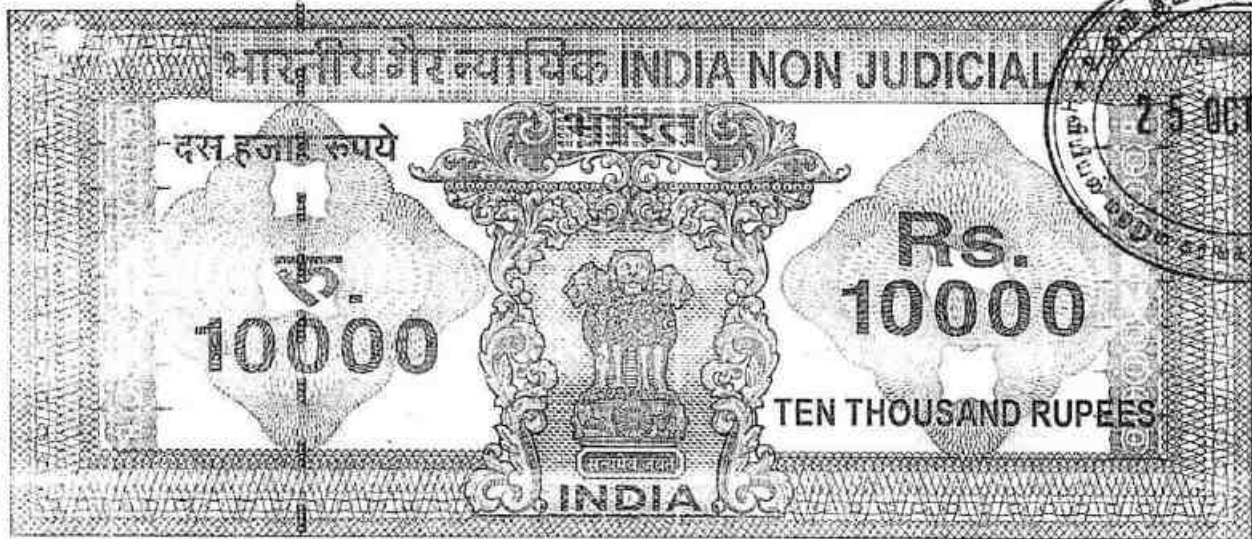
- I. Coimbatore District Collector's Ref. No. 351 / Mines / 2018
- ii. The Chairman, DEIAA-CBE, Coimbatore-18, Environment Clearance Letter No. DEIAA -- CBE-V / F. No. 351/1(a&b) / EC.No:52/2018 Dated 10.12.2018.
- iii. Stamp Duty Calculation: -

1. Anticipated S. Fee for Stone 90055 cbm x59/-	: Rs. 53,13,245/-
2. Anticipated S. Fee for Gravel 13706 cbm x 33/-	: Rs. 4,52,298/-
3 Security Deposit	: Rs. 10,000/-
4. Area Assessment for 5 years	: Rs. 750/-

Total Rs. 57,76,293/-

V. Shan
REGISTERED HOLDER / LESSEE

DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



தமிழ்நாடு தமில்நாடு TAMILNADU

₹.10000.00
D 554391

V. Shanmugam
Eachanari

தமிழ்நாடு
சி. ஏண் : 122
முதி 4.1.19
E.N. ராஜர்
முத்திரைத்தாள் விடுபடையாளர்
உள்ளிண் : 8 / 2008 / TUP
கலூர்

-2-

FORM OF AGREEMENT FOR QUARRYING AND CARRYING AWAY MINOR MINERALS (ROUGHSTONE AND GRAVEL) FROM RYOTWARI LANDS IN WHICH THE MINERALS BELONG TO GOVERNMENT

This AGREEMENT made this 25th day of January 2019 between **Thiru V. Shanmugam, S/o.M.Velusamy Gounder** residing at 1/240, M.V.S.Thottam, Eachanari, Coimbatore District (hereinafter referred to as "the registered holder / lessee" which term shall include in these presents where the context so admits include also his heirs, executors, administrators, legal representatives and assigns) of the one part and the **Governor of Tamil Nadu** (hereinafter called "the Government" which term shall where the context so admits, include also his successors in office and assigns) of the other part

V. Shanmugam
REGISTERED HOLDER / LESSEE

[Signature]
DISTRICT COLLECTOR
COIMBATORE
(LESSOR)

Document No. 1716 of 2019 Book:
1 contains 15 Sheets 2 Sheet
Registering office:

WHEREAS the registered holder holds (amongst others) the lands described in the schedule hereunder written (hereinafter referred to as the said lands)

AND WHEREAS, the registered holder has made application to the Collector of the District of **Coimbatore** (hereinafter referred to as "the Collector") seeking grant of quarrying lease for quarrying **Roughstone and Gravel** in the said lands and to deposit mining waste in the said lands and has lodged with the Collector an accurate map or sketch of the said lands.

AND WHEREAS, the Collector, acting for and on behalf of the Government, has granted a quarrying lease to the registered holder and allowed him to commence quarrying operations for **Roughstone and Gravel** in the said lands and to deposit mining waste thereon by the registered holders for a period of **5 (Five) years from 01.01.2019 to 01.01.2024 for Rough Stone and for a period of 3 (Three) years from 01.01.2019 to 01.01.2022 for Gravel.**

AND WHEREAS, the registered holders has deposited with the Collector, the sum of **Rs.10,000/- (Rupees Ten Thousand only) vide Challan No.45, dated 04.01.2019 at State Bank of India, Treasury Branch, Coimbatore** as security against any loss or damage which may be incurred by the Government by reason of any of the said lands being rendered unfit for cultivation by any mining operations therein of the registered holder or by the deposit of mining waste thereon by the registered holder.

NOW THESE PRESENTS WITNESS and the registered holder doth hereby agree with the Government in the manner following, that is to say:

1. The registered holder shall be at liberty at all times during the period of the lease to carry on mining operations for **Roughstone and Gravel** in the said lands in a proper and workman like manner and to deposit mining waste on the said lands and shall at all times be answerable and accountable to the Government for all acts and defaults by any of his nominees, servants or agents in carrying on such operations or in making such deposit.
2. The registered holder cum lessee has paid a sum of **Rs.750/- (Rupees Seven Hundred and Fifty only) towards land assessment / Area assessment @ Rs.150/- per hectare per annum in lump sum for a whole period of lease (5 years) vide challan No.44 dated 04.01.2019 at State Bank of India, Treasury Branch, Coimbatore** lease shall pay to the collector for and on behalf of the Government in addition to the land assessment for the time being payable in respect of the said lands, seigniorage on the minor minerals at the rate specified in Appendix II to the Tamil Nadu Minor Minerals Concession Rules 1959.
3. The registered holder shall and will keep correct accounts in such form as the Collector shall from time to time require and direct showing the quantities and other particulars of all minerals obtained by the registered holder from the said lands and also the number of persons employed in carrying on the said mining operations therein and shall from time to time when so directed by the Collector prepare and maintain complete and correct plans of all mines and working in the said lands and shall allow any officer hereunto authorized by the Director of Geology and Mining, Tamilnadu from time to time and at any time to examine such accounts and any such plans and shall when so required supply and furnish all such informations and returns regarding all or any of the matter aforesaid as the Government shall, from time to time, require and direct.
4. The registered holder shall and will at all times allow any officer authorized by the Director of Geology and Mining, Tamil Nadu in that behalf to enter upon any part of the said lands where any mining operations may be carried on for the purpose of inspecting the same.
5. The registered holder shall forthwith send to the District Collector a report of any accident which may occur at or in the said lands and also of the discovery of any mineral other than **Roughstone & Gravel**.

V. Shan

REGISTERED HOLDER / LESSEE

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Registering officer

DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



6. It shall be lawful for the registered holder at any time to cease mining operations under these presents provided he shall pay to Collector for and on behalf of the Government land assessment, cess and seigniorage due to the Government and shall restore the said lands or fence or fill in abandoned pits and excavations therein if required by the Collector and upon his so doing these presents shall cease and determine.

7. In case the registered holder shall relinquish the whole or any part of the said lands or in case of the expiry or sooner determination of this agreement then and in any such case, he shall restore the lands so relinquished or so much thereon as the Collector shall require to be restored to a state fit for cultivation or shall securely and permanently fence or fill in all such abandoned pits and excavations therein as the Collector shall require to be so fenced or filled in, and in case the registered holder shall fail or neglect to restore any such land which he shall be required to restore to a state fit for cultivation or to so fence, or fill in any such abandoned pit or excavation which he shall be required to so fence or fill in them and in any such case, it shall be lawful for the Collector to so restore any such lands, or as the case may be, to so fence or fill any such pits or excavation at the expense of the registered holder and to apply the said sum of Rs.10,000/- so deposited in or towards the cost of so doing and to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands which shall have been rendered unfit for cultivation. If however, the amount of deposit is not sufficient to cover the cost of such restoration of fencing or filling in or to meet thirty times the assessment on the area rendered uncultivable, it shall be lawful for the Government to recover balance by resort to civil Court.

8. The registered holder shall not be entitled to any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste, unless thirty times the assessment thereon has already been deducted under the preceding clause.

9. The registered holder shall not assign, lease or part with the possession of the said lands or any part thereof for the whole or any part of the said term without previous intimation in writing to the Collector.

10. If the registered holder does not intend to carry on mining operations himself, but intends to lease out the right to do so to another person, the registered holder and his lessee shall enter into an agreement with Government binding themselves jointly and severally to accept the conditions and stipulations herein contained which agreement shall be in the Form set out in Appendix V to the Tamil Nadu Minor Mineral Concession Rules, 1959.

11. All land assessment, cess and seigniorage payable under these presents shall be recoverable under the provisions of the Tamil Nadu Revenue Recovery Act, 1864, as if they were arrears of land revenue.

12. In the event of any breach by the registered holder by any of the conditions of this agreement, it shall be lawful for the Government to levy enhanced seigniorage or for the Collector to give notice in writing to the registered holder of his intention to cancel these presents whereupon the same shall stand cancelled but without prejudice to any rights which the Government may have against the pattadar in respect of any antecedent claim or breach of covenant or condition.

13. Any notice to be given to the registered holder may be addressed to his last known place of abode and where a notice has been so addressed, It shall be deemed to have been duly served for the purpose of these presents.

14. Should any question or dispute arise regarding the agreement executed in pursuance of these rules or any matter or thing connected therewith or the powers of the registered holder there under, the amount or payment of the seigniorage fee or area assessment

V. S. H. ~~~~~

REGISTERED HOLDER / LESSEE

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Registering officer

DISTRICT COLLECTOR
COIMBATORE
(LESSOR)

V. S. H. ~~~~~

-6-

(16) The lessee shall be held responsible for all losses due to improper working of the quarry during and after the period of lease and he should pay the penalty to be levied for this.

(17) Simple interest at the rate of 24% per annum shall be levied, if the amount due to Government is not paid within the due date.

(18) The arrears of any amount payable shall be recovered under the provisions of the Tamil Nadu Revenue Recovery Act, 1864.

(19) In case of breach by the lessee or his transferee or assignee of any of Tamil Nadu Minor Mineral Concession Rules, 1959 or of the conditions of the lease, the Government/the Commissioner/Director of Geology and Mining/the District Collector without prejudice to any other penalty which may be imposed in respect of such breach, may cancel the lease after granting an opportunity of hearing to the said person.

(20) The terms and conditions are also subject to such further modifications, deletion and additions alteration as may be ordered by the Government from time to time.

(21) Blasting of rock should be done by the shot fire method with less explosives in between 12.00 Noon to 12.30 P.M. after giving proper signal by siren as per the provisions of Indian Explosive Act 1884.

(22) The lessee shall quarry rough stones, jelly, size stones and pillar stones and shall not produce rough blocks or slabs or any other form of stone, either for export purpose in the form of raw blocks, slab etc., or for using them in cutting and polishing industry,

(23) The lessee shall pay the seigniorage fee prescribed in Appendix II of Tamilnadu Minor Mineral Concession Rule, 1959, for the rough stone transported from the quarry and shall not raise any objection for the revision of seigniorage fee as and when announced by the Government

(24) The lessee shall remove, or allow and transportation of rough stone from the area, where quarrying is permitted only after obtaining transport permits in the form prescribed. The lessee shall issue the transport permit to the vehicle used for transportation for the rough stone, furnishing the particulars in the transport permits, specifically indicating the vehicle number, the quantity of the rough stone allowed to be transported by the vehicle mentioning the date and time of issue of transport permit, to the vehicle owner / driver. If any violation is noticed, the vehicle along with the mineral will be seized and the lessee is punishable for the illicit transportation of the mineral, under the provisions of the TNMMCR 1959.

(25) In addition to the above conditions, the lessee shall abide by the conditions specified in TNMMC Rules 1959, and also the conditions stipulated in the lease deed. Any violation of the above conditions will lead to penal action and also for cancellation of lease.

(26) Besides, the above said conditions, the lessee shall abide by the conditions laid down in District Collector's Coimbatore Proceedings Roc.351/Mines/2018 dated 25.01.2019 in Tamil Nadu Minor Mineral Concession Rules, 1959, Mines and Minerals (Development and Regulation) Act, 1957 and the orders of the Government, Commissioner/Director of Geology and Mining and District Collector to be issued from time to time.

(27) The lessee shall strictly follow all the conditions imposed by Coimbatore District Environment Impact Assessment Authority in their letter No. DEIAA -CBE-V / F. No. 351/1(a&b) / EC.No:52/2018 Dated 10.12.2018.

(28) The lessee should not employ Child labours in stone quarry work.

V. Shanmugam

REGISTERED HOLDER / LESSEE

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Registering officer

DISTRICT COLLECTOR
COIMBATORE
(LESSOR)

(29) A safety distance of 7.5 meters should be provided for all along the boundary of the lease granted area.

(30) If lease granted, the transport permit obtained for this area should not be used in other areas

(31) In order to avoid splinters of stone pieces into the air less affective explosives only to be used for breaking the stone by the well experienced certified blaster (or) short firer

(32) While carrying out blasting, usage of Ammonium Nitrate mixed with soil and diesel and dried in the air (an explosive substance) should be avoided to curtail the stone pieces flown into the air and create trouble to the nearby villagers (or) habitants

(33) Mild explosives, with less blasting sound only to be used for breaking the stones.

(34) The lessee shall comply with provisions of labour laws applicable to quarries/mines. Any contravention of this provision shall attract legal proceedings of appropriate authority

(35) The lessee shall strictly comply with the provisions of labour legislations such as:-

1. Minimum Wages Act, 1948 and Central Rules, 1950
2. Payment of Wages Act, 1936 and Mines Rules, 1955
3. Equal Remuneration Act and Central Rules, 1976
4. The Indian Explosives Act, 1884 (Central Act IV of 1884)

(36) With regard to the safety of the public property the lessee is also hereby expressly bound by the relevant regulations of "the Metalliferous Mines Regulations, 1961" and the lessee shall be responsible for non-compliance and consequential eventuality.

(37) The lessee shall obtain consent to operate from the Tamil Nadu Pollution Control Board before commencing the activity and effectively implement all the conditions stipulated therein.

For the purpose of calculating stamp duty the anticipated seigniorage fee for Rough stone and Gravel for Five years is estimated as Rs. 57,76,293/- (Rupees Fifty seven lakhs seventy six Thousand two hundred and ninety three Only)

Special Conditions.

1. No hindrance should be caused to the adjacent pattadars and public.
2. A safety distance of 7.5 meter to be maintained to the adjacent patta land
3. The lessee should not quarry stone blocks for using polishing purpose.
4. The applicant should used only low explosives for the blasting
5. Child labourer should not be engaged.

V. Shanmugam

REGISTERED HOLDER / LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR)

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Registering officer				

V. Shanmugam

THE SCHEDULE

- 1) Name of the District : Coimbatore
 2) Name of the Taluk : Sulur
 3) Name of the Village : Pachapalayam
 4) Name of the Sub Registrar Office : Sulur
 5) Lease Period : 5 (Five) Years



From 25.01.2019 to 24.01.2024

Survey Number	Area Assessment per hectares per year Rs.	Total Extent Hects.	BOUNDARIES			
			NORTH BY S.F.No.	SOUTH BY SF No.	EAST BY SF No.	WEST BY SF No.
238/1(P)	Rs.750/- for 5 years (Rs. 150 / hectare / year)	1.00.0 Hectares out of 1.98.0 hectares	239	Remaining part of 238/1	238/2	237
	Total	1.00.0				

IN WITNESS whereof Thiru V.Shanmugam, S/o.M.Velusamy Gounder residing at 1/240, M.V.S.thottam, Eachanari, Coimbatore District the Registered holder/ lessee and Thiru.T.N.Hariharan, I.A.S, District Collector, Coimbatore acting for and on behalf of and by the order and direction of the Governor of Tamil Nadu have hereunto set their hands.

V. Shanmugam

REGISTERED HOLDER / LESSEE

(Signature)

DISTRICT COLLECTOR
COIMBATORE
(LESSOR)Signed by the above named
in the presence of:

1. *(Signature)*
 C. CHINNA KARUPPA SAMY
 S/O P. CHELLA MUTHU
 Vaalakeku Aththam, Thalargodhu
 Palani (TK) Dindimur (DS)

2. A. Rajendran
 A. RAJENDRAN
 S/o Ambikai velautham
 B, Lenin St
 Ulankeeri CB-35

Signed by the above named
in the presence of:

1. *(Signature)*
 (A. Katar Selvan)
JOINT DIRECTOR AND
 ASSISTANT DIRECTOR (i/c)
 DEPARTMENT OF GEOLOGY & MINING
 COIMBATORE.

2. *(Signature)*
 ASSISTANT GEOLOGIST
 GEOLOGY AND MINING
 COIMBATORE

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	1	contains	15	Sheets
			8	Sheet
Registering officer				

(Signature)
 299

மாவட்டம். கோயம்புத்தூர்

எண். 58

மாவட்டம். பல்லடம்

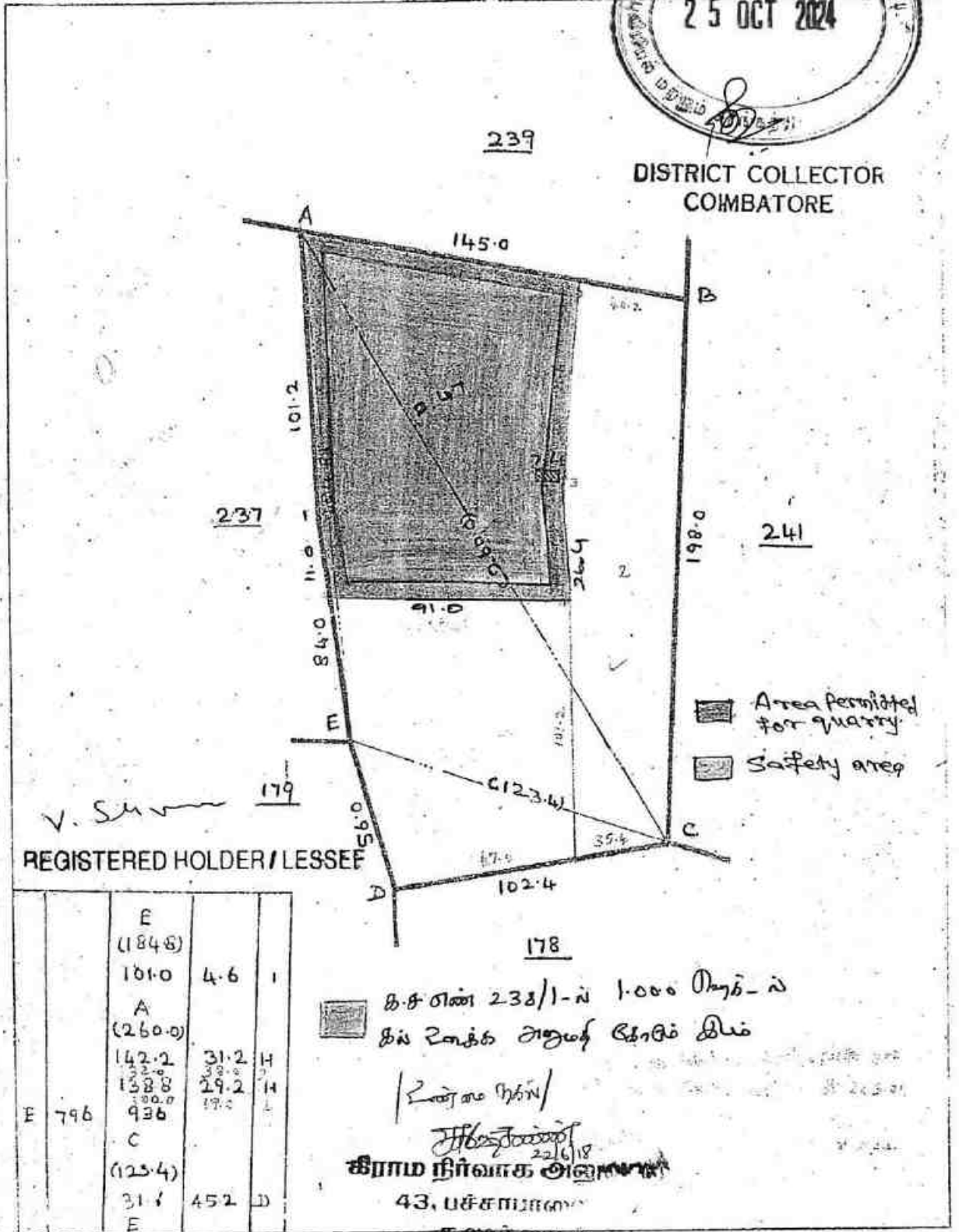
பிரதமம்

புல எண். 238

மரபு: வெங்கட்



DISTRICT COLLECTOR
COIMBATORE



V. Shan 179
REGISTERED HOLDER / LESSEE

E	796	E	(184.8)	101.0	4.6	1
		A	(260.0)	142.2	31.2	H
			32.0	138.8	29.2	H
			30.0	93.6	17.0	L
		C	(123.4)	31.1	45.2	D
		E				

க-ச எண் 238/1-ல் 1.000 மீட்டர் - ல்
தீர்மானம் செய்து கொடுக்கப்பட்டுள்ளது

பஞ்சவர்ணம்
22/6/18
கிராம நிர்வாக அலுவலர்
43, பச்சையாண்டி

கிராம நிர்வாக அலுவலர்
பஞ்சவர்ணம்

கிராம நிர்வாக அலுவலர்
அளவு: 1:2000 161/18

வகை: 796
பஞ்சவர்ணம்
27/7/20

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1 contains 15 Sheets 9 Sheet
300
V. Shan
Registering officer

வட்டாட்சியர் அலுவலக இணைய சேவை - நில உரிமை விபரங்கள்



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தூலூர்

வருவாய் கிராமம் : பச்சாபாளையம்

பட்டா எண் : 822

உரிமையாளர்கள் பெயர்

1. வேலுச்சாமி கவுண்டர்

மகன்

சண்முகம்

நன்செய்		புன்செய்		மற்றவை			
பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை		
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
236	2A	--	--	1 - 33.50	2.67	--	--
238	1	--	--	1 - 98.00	5.48	--	--
239	1A	--	--	0 - 54.00	1.50	--	--
239	2A	--	--	0 - 3.00	0.08	--	--
240	1	--	--	0 - 54.50	1.50	--	--
240	2A	--	--	0 - 30.00	0.83	--	--
				4 - 73.00	12.06		

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/10/025/00822/100522 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 20-06-2018 அன்று 04:59:12 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

V. Shan

V. Shan

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15 10 Sheet
301 Registering officer



India Driving Licence (Tamil Nadu)
Form 7
DOI 12/08/2014

TN37 20140066775
SHANMUGAM V
VECUSAMY GOUNDER

N NO 1/240 SEERAPALAYAM

COIMBATORE 641021
MARUTI DRIVING SCHOOL
01/07/1964

Licensed to drive throughout India, vehicles of the following Descriptions
LAV 1902/2014 TN37

Non-Transport Veh Valid upto 18/08/2019

(Signature)
Signature of the Holder

V. Shan

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Registering officer

V. Shan 302

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भारत सरकार
GOVERNMENT OF INDIA



ராஜேந்திரன் அ
Rajendran A
பிறந்த நாள் / DOB : 05/06/1967
ஆண் / MALE



7079 0834 6044

भारतीय निर्वाचन प्रधिकरण
ELECTION IDENTIFICATION AUTHORITY OF INDIA



आधार
मुकदमा
S/O அம்பிகை வேலாயுதம்,
1/13, லெனின் வீதி,
விலங்குறிச்சி,
கொயம்புத்தூர், தமிழ் நாடு,
641035

Address:
S/O Ambikai Velayutham, 1/13
LENIN STREET,
VILANKURUCHI, Vilankurichi,
Coimbatore, Tamil Nadu,
641035



ஆதார - சாதாரண மனிதனின் அதிகாரம்

A. Deval

10A7 1200 200 1947 hel@uidai.gov.in www.uidai.gov.in P.O. Box No. 1947 Bangalore-560 901

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1 Contains 15 of 12 Sheet
Registering officer

V. Shan 303



இந்திய தேர்தல் ஆணையம்
வாக்காளர் அடையாள அட்டை
ELECTION COMMISSION OF INDIA
IDENTITY CARD

TRN0201749




வாக்காளர் பெயர் : சின்னாரூப்பசாமி
 Elector's Name : Chinnakaruppusamy
 தந்தை பெயர் : செல்லமுத்து
 Father's Name : Chellamuthu
 பாலினம் / Sex : ஆண் / Male
 பிறந்த தேதி / Date of Birth: 20/05/1980

முகவரி: 1-227A / No
 வ. அ. ச. ம. ம. ப.
 தாலையூறு
 பாலம்

Address: 1-227A / No
 North thottam
 Thalsyuthu
 Palani

நாள் / Date : 28/09/2010

வாக்காளர் பதிவு அலுவலரின்
 முத்திரை
 இ. தே. ஆ. ச. ம. ம. ப.
 தாலையூறு
 பாலம்
 Facsimile Signature of
 Electoral Registration Officer
 1203, Thandorchastram
 Palani Constituency

Handwritten signature

பக்கங்களின் எண்ணிக்கை 1716
 1 கொட்டை 15
 201 பக்கப் புத்தகம்
 13 சீட்டு
 Registering office:

Handwritten signature
304

R/தலூர்/புத்தகம்-1/1716/2019



1899ம் ஆண்டு இந்திய முத்திரைச் சட்டம் 42வது பிரிவின் கீழான சார்பதிவாளர் சட்டம் 1950-ம் ஆண்டு வரிசை எண் 889


1740, சீர்ப்பாளையம், கோயம்புத்தூர், தமிழ்நாடு, இந்தியா, 641021-ல் வசிக்கும் திரு சண்முகம் பதிவுசெய்துள்ள பதிவு எண் 38,000- (ரூபாய் முப்பத்தெட்டாயிரம் மட்டும்) இந்த ஆவணத்திற்காக இந்திய முத்திரைச் சட்டம் 41வது பிரிவின் கீழான குறைவாயிருந்த முத்திரைக் கட்டணம் வசூலிக்கப்பட்டது என நான் இதன் மூலம் சான்றளிக்கிறேன்.

சார்பதிவாளர் : தலூர்
நாள்: 15/02/2019

சார்பதிவாளர் மற்றும் இந்திய முத்திரைச் சட்டம் பிரிவு
41ன் படி ஆட்சியர்

2019 ஆம் ஆண்டு பிப்ரவரி மாதம் 15ம் தேதி மு.ப. 11:29 மணியளவில் தலூர் சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்து கட்டணம் ₹ 20,195/- செலுத்தியவர்.

இடது பெருவிரல்




V. Shivan

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

பதிவுச் சட்டம் பிரிவு 88(1)ன் கீழ் நேரில் வருவதற்குரிய விலக்களிக்கப்பட்ட திரு சண்முகம், சீர்ப்பாளையம், கோயம்புத்தூர், தமிழ்நாடு, இந்தியா, 64102 (அரசு பிரதிநிதி, கோயம்புத்தூர்) அவர்களால், இந்த ஆவணம் எழுதிக் கொடுத்தமை குறித்து நான் மனநிறைவடைந்துள்ளேன்.

சார்பதிவாளர் : தலூர்

எழுதி வாங்கியதாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



V. Shivan

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

இந்திய பதிவுச்சட்டம் பிரிவு 88(1)ன் கீழ் பதிவுக்கு வருவதற்குரிய விலக்களிக்கப்பட்டவர் என திரு சண்முகம் பதிவுசெய்துள்ள அவர்களால் ஆவணம் எழுதிக் கொடுத்தமை குறித்து நான் நிறைவடைகிறேன்.

சார்பதிவாளர்
தலூர்

Document No. 1716 of 2019 of Book
1 contains 15 Sheets 11 Sheet

Registering officer

V. Shivan

275



R/சுலார்/புத்தகம்-1/1716/2019

இன்னாரென்று நிரூபித்தவர்கள்

திரு ராஜேந்திரன் த/பெ அம்பிகை வேலாயுதம் 1/13, விளங்குறிச்சி, கோயம்புத்தூர்,
தமிழ்நாடு, இந்தியா, 641035

திரு சின்னகருப்புசாமி த/பெ செல்லமுத்து 1-227ஏஎன் ஏ, பழனி, திண்டுக்கல்,
தமிழ்நாடு, இந்தியா, 624601

2019 ஆம் ஆண்டு பிப்ரவரி மாதம் 15ம் நாள்

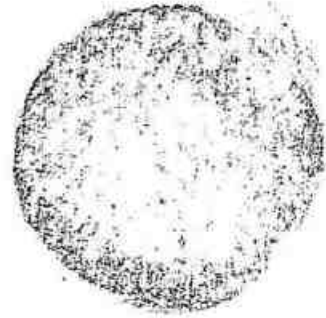
இளங்கோ என்
சார்பதிவாளர்
சுலார்

R/சுலார்/புத்தகம்-1/1716/2019 எண்ணாகப் பதிவு செய்யப்பட்டது

நாள்: 15/02/2019

சுலார்

இளங்கோ என்
சார்பதிவாளர்



REGISTRATION NO.	1716	219 of Book
LOCAL NO.	15	15 Sheet
Registering officer		

2/2

306

மாவட்டம். கோயம்புத்தூர்

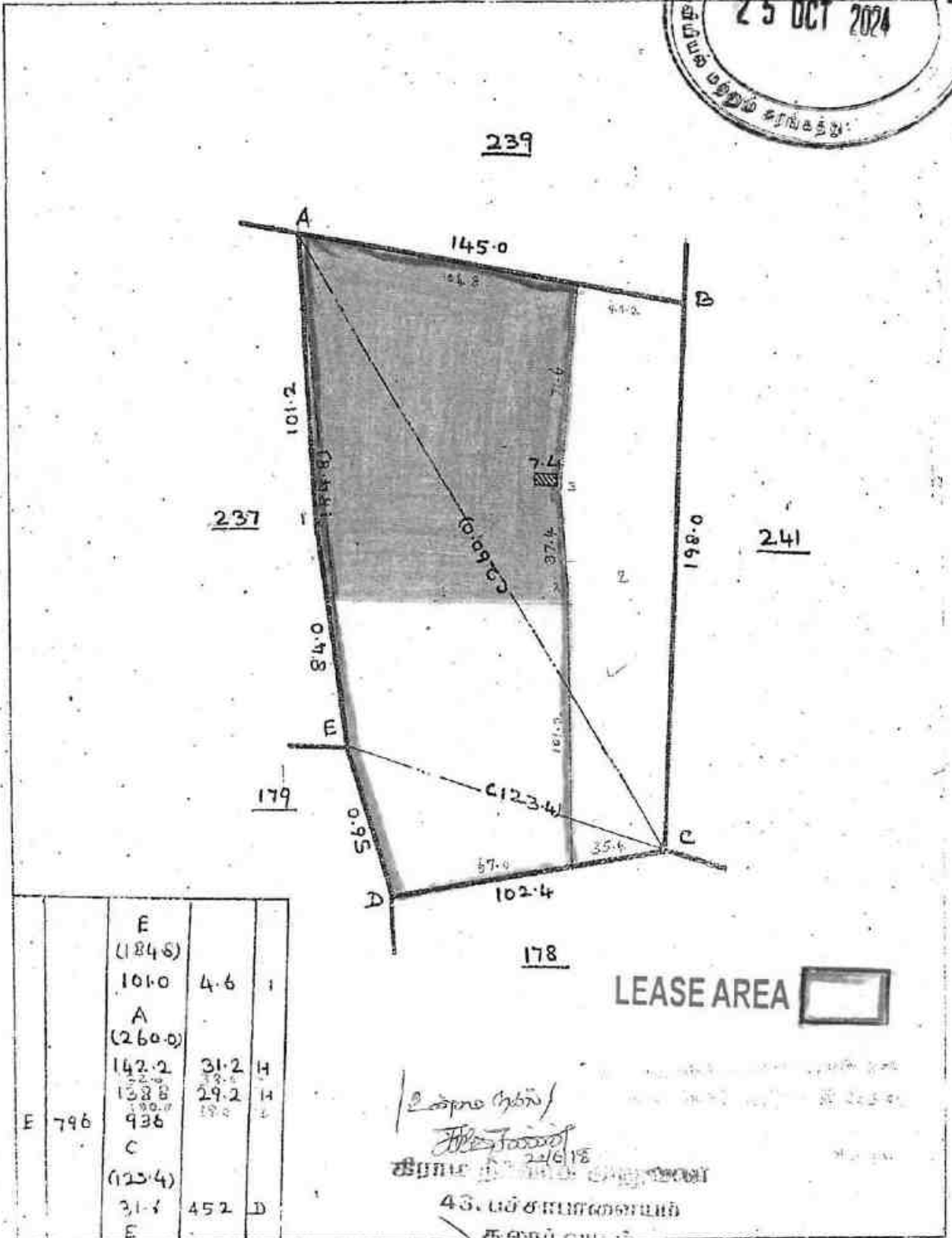
எண். 98

வட்டம். பஸ்லட்

அரசமம்

புல எண். 238

பரப்பு: ஹெக்டேர்



LEASE AREA

(Signature)
 24/6/18
 43. பச்சையப்பன்
 காரை வட்டம்

கோயம்புத்தூர்
 மாவட்டம்

அளவு: 1:2000 161

பச்சையப்பன்
 காரை வட்டம்

L.V. Sh 307

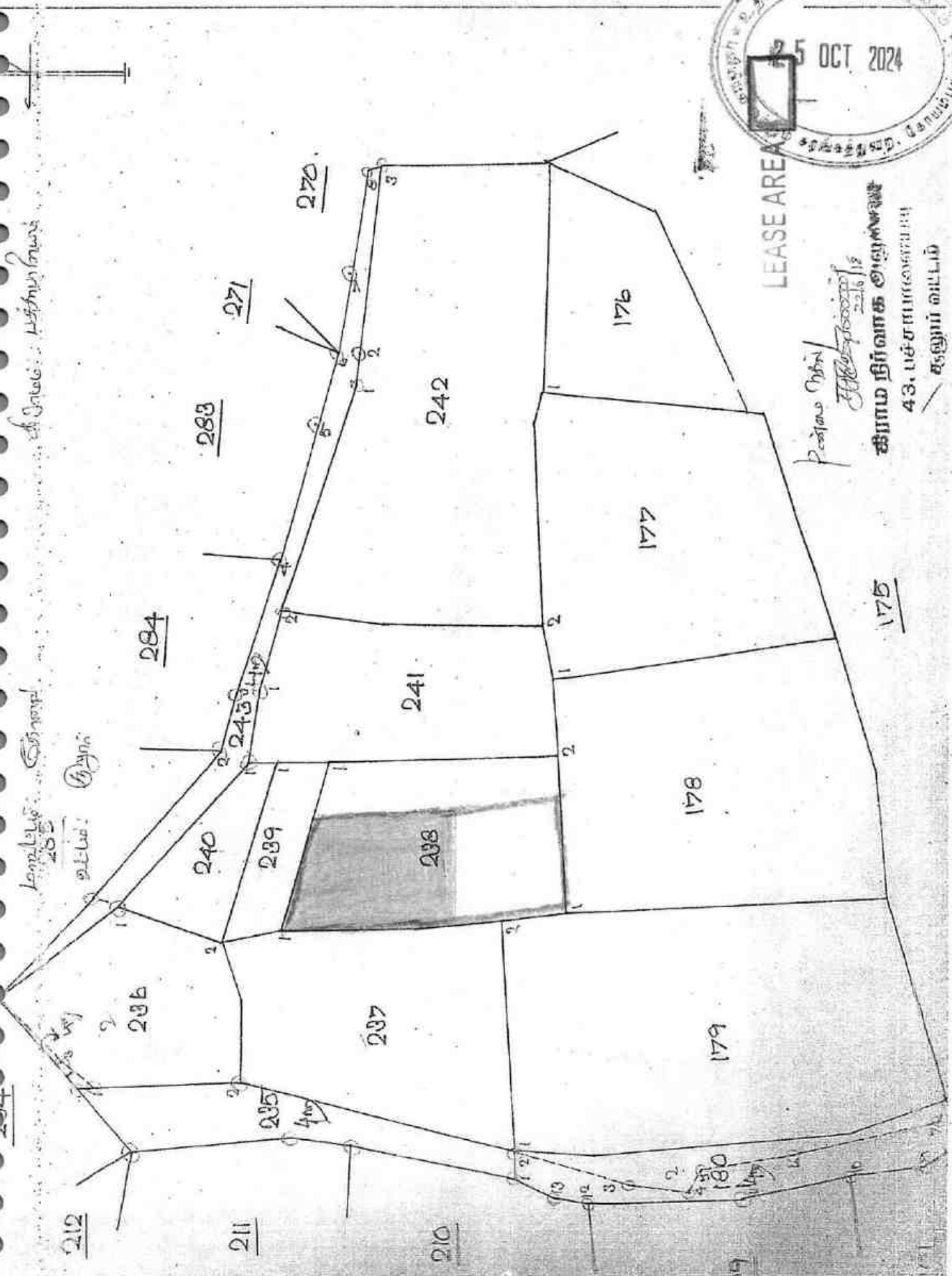


LEASE AREA

P. ...
 22.16.18
 43. ...
 ...



...
 ...
 ...



V. S. ...
 308

259

10/4/24, 11:03 PM

வட்டாட்சியர் அலுவலக இணைய சேவை - அ-பதிவேடு விவரங்களை பார்வையிட

அ-பதிவேடு விவரங்கள் - ஊரகம்



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : சூலூர்

கிராமம் : பச்சாபாளையம்

1. புல எண்	238	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	1	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	238	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	1 - 98.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	5.48
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	822
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	1	16. பெயர்	1.சண்முகம்

குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/10/025/238/1/40522 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

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தமிழ்நாடு அரசு
வருவாய்த் துறை

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



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : சூலூர்

வருவாய் கிராமம் : பச்சாபாளையம்

பட்டா எண் : 822

உரிமையாளர்கள் பெயர்

1. வேலுச்சாமி கவுண்டர்

மகன்

சண்முகம்



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	
236	2A	1 - 33.50	2.67	--	--	--	--	M04/3893- -189/1413 ---- ---- 07-12- 2004
238	1	1 - 98.00	5.48	--	--	--	--	M04/3893- -189/1413 ---- ---- 07-12- 2004
239	1A	0 - 54.00	1.50	--	--	--	--	M04/3893- -189/1413 ---- ---- 07-12- 2004
239	2A	0 - 3.00	0.08	--	--	--	--	----- 27- 09-2014
240	1	0 - 54.50	1.50	--	--	--	--	----- 27- 09-2014
240	2A	0 - 30.00	0.83	--	--	--	--	----- 27- 09-2014
		4 - 73.00	12.06					

குறிப்பு :

	<p>மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து</p> <p>1. பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 12/10/025/00822/100522 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.</p>
	<p>2. இத் தகவல்கள் 20-06-2024 அன்று 01:21:37 PM நேரத்தில் அச்சடிக்கப்பட்டது.</p>
	<p>3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்</p>

V. Shanmugam



PHOTOCOPY OF THE APPLIED LEASE AREA

Site photos in respect of rough stone and gravel quarry lease S.F.No's:
238/1(1.98.0Hect)- Patta land - over an extent of 1.98.0 hectares - Pachapalayam
Sulur Taluk – Coimbatore District, Tamil Nadu State in belongs to Mr.V.Shanmugam.



V. Shanmugam




இந்திய அரசாங்கம்
Government of India


சண்முகம் வேலுசாமி
Shanmugam Velusamy
 பிறந்த நாள்/DOB: 13/03/1964
 ஆண/ MALE

6295 4855 2428
 VID: 9147 9008 4840 1998

எனது ஆதார். எனது அடையாளம்


இந்திய அரசாங்கம் அடையாளம் அமைப்பு ஆணையர் அமைப்பு
Unique Identification Authority of India

முகவரி:
 S/O: வேலுசாமி, 1/240(1), பைபாஸ் ரோடு,
 போடிபாளையம், எச்சனாரி, கோயம்புத்தூர்
 தெற்கு, கோயம்புத்தூர்,
 தமிழ் நாடு - 641021

Address:
 S/O: Velusamy, 1/240(1), BYPASS ROAD,
 PODIPALAYAM, EACHANARI, Coimbatore
 South, Coimbatore,
 Tamil Nadu - 641021

6295 4855 2428
 VID: 9147 9008 4840 1998

< V. Shanmugam

भारत सरकार / GOVERNMENT OF INDIA
खान मंत्रालय / MINISTRY OF MINES
भारतीय खान ब्यूरो / INDIAN BUREAU OF MINES



Signature of Shri S. Karuppannan

अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रमाण पत्र
(खनिज रियायत नियमावली, 1960 के नियम 22सी के तहत)
CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON
(Under Rule 22C of Mineral Concession Rules, 1960)

श्री एस. करुपण्णन, मॉंगनीकाडू, मुत्तमपट्टी पोस्ट, बोम्मीडी वर्यो, ओमलूर तालुक, सेलम डीस्ट्रीक्ट, तमिलनाडू - 635 301, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोंने अपनी अर्हता और अनुभव का संतोष जनक साक्ष्य दिया है, को खनन योजना तैयार करने हेतु खनिज रियायत नियमावली 1960 के नियम 22सी के तहत अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रदान की जाती है।

Shri S. Karuppannan, Manganikadu, Muthampatty (Post), Bommididi (Via), Omalur Taluk, Salem District, Tamilnadu - 635 301, whose **Photograph and signature** is affixed herein above, having given satisfactory evidence of his qualifications & experience hereby **RECOGNISED** under Rule 22C of the Mineral Concession Rule, 1960 as a Qualified Person to prepare Mining Plans.

उनकीपंजीयन संख्या है

His registration number is

RQP /MAS/263/2014/A

यह मान्यता 10 वर्षों की अवधि के लिए मान्यता है जो दिनांक 15.12.2024 को समाप्त होगी।

This recognition is valid for a period of 10 years ending on 15.12.2024.

उनके द्वारा प्रस्तुत खनन योजना में गलत जानकारी / दस्तावेज पाए जाने की स्थिति में यह प्रमाण पत्र वापस लिया जाएगा / निरस्त किया जाएगा।

This certificate will liable to be withdrawn / cancelled in the event of furnishing the wrong information / documents in the Mining Plan submitted by him.

स्थान/ Place : Chennai

दिनांक/ Date : 16.12.2014.

Signature of Regional Controller of Mines

क्षेत्रीय खाननियंत्रक / Regional Controller of Mines
भारतीय खानब्यूरो/ Indian Bureau of Mines
चेन्नई क्षेत्र / Chennai Region

Signature of V. Shanmugam 313

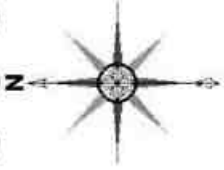


PLATE NO-I

APPLICANT:

Mr.V.SHANMUGAM,
S/o. VELUSAMY GOUNDER,
1/240, M.V.S. THOTTAM,
SEERAPALAYAM,
COIMBATORE DISTRICT.

LEASE APPLIED AREA:

S.F.NO : 238/1
EXTENT : 1.98.0Hect
VILLAGE : PACHAPALAYAM
TALUK : SULUR
DISTRICT : COIMBATORE

INDEX

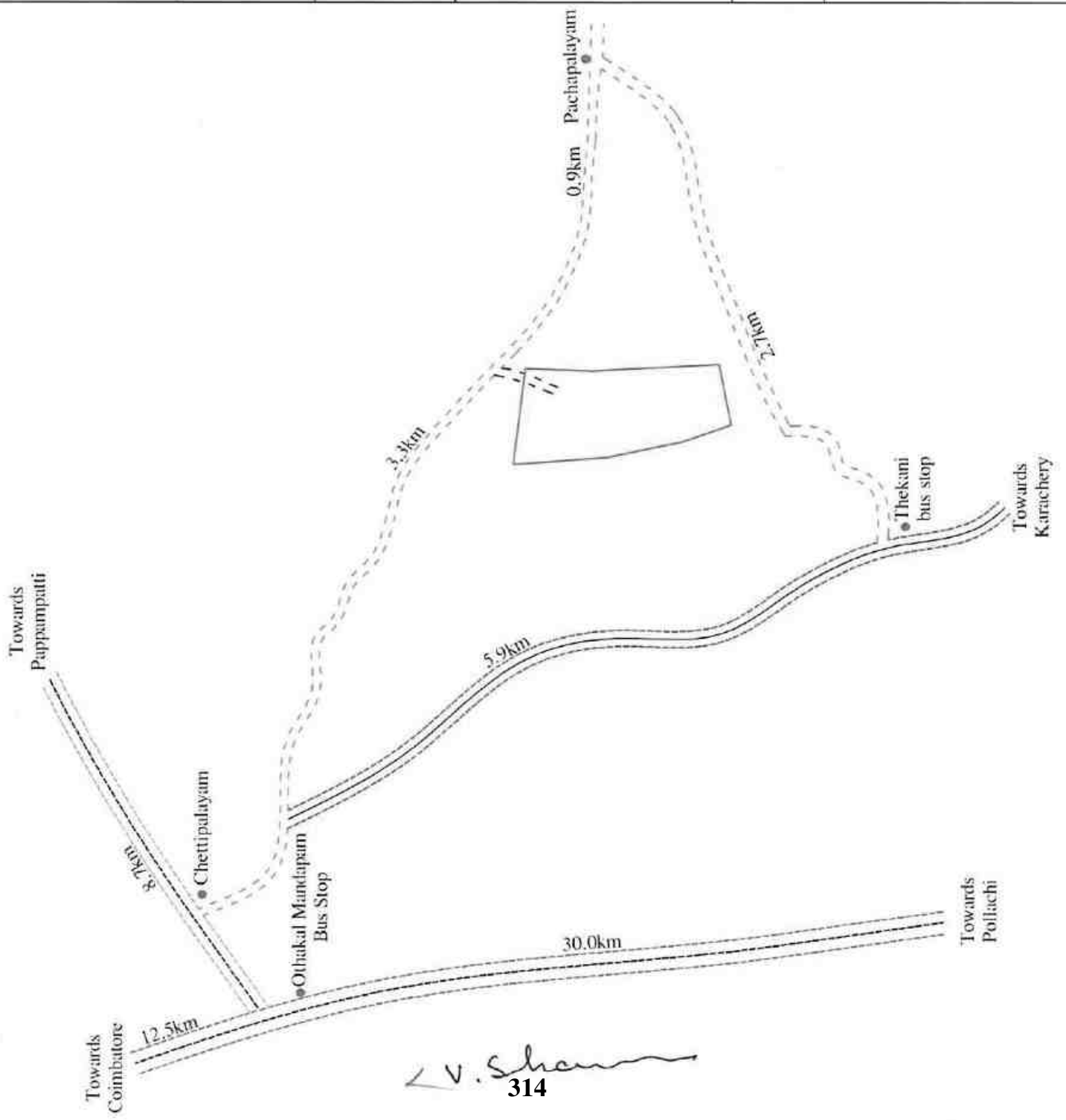
- MINE LEASE AREA
- APPROACH ROAD
- VILLAGE ROAD
- MDR - 522 ROAD
- SH-163 ROAD
- NH - 83 ROAD



Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A



V. Shanmugam
314

10°54'0.96"N

77°58'35"E

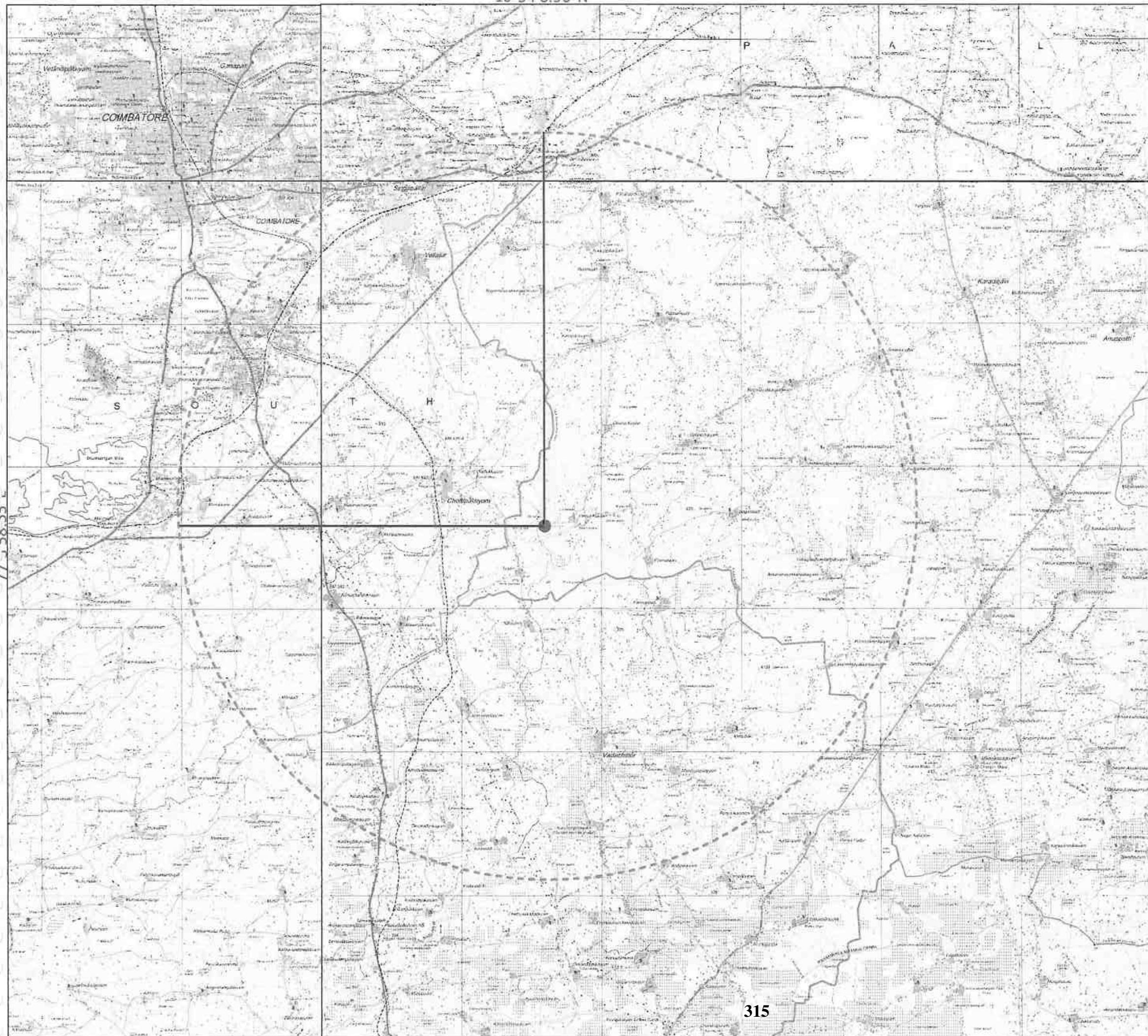


PLATE NO-IB 5 OCT 2024

APPLICANT:
Mr.V.SHANMUGAM,
 S/o. VELUSAMI,FOUNDER
 1/240, M.V.S. THOTTAYAM,
 SEERAPALAYAM,
 COIMBATORE DISTRICT.

LEASE APPLIED AREA:
 S.F.NO : 238/1
 EXTENT : 1.98.0Hect
 VILLAGE : PACHAPALAYAM
 TALUK : SULUR
 DISTRICT : COIMBATORE

TOPO SHEET NO : 58-F/1

LATITUDE : 10°53'53.31"N to 10°54'0.96"N

LONGITUDE: 77°3'58.55"E to 77°4'2.15"E

MINE LEASE AREA 

10KM RADIUS 

CONVENTIONAL SYMBOLS	
Water	
Highway	
Tramway	
Major Road	
Minor Road	
Railway	
Canal	
Drainage	
Contour	
Spot Height	
Spot Elevation	
Spot Depression	
Spot Height of Top of Hill	
Spot Height of Bottom of Hill	
Spot Height of Mountain Peak	
Spot Height of Mountain Summit	
Spot Height of Mountain Top	
Spot Height of Mountain Base	
Spot Height of Mountain Foot	
Spot Height of Mountain Slope	
Spot Height of Mountain Ridge	
Spot Height of Mountain Valley	
Spot Height of Mountain Gully	
Spot Height of Mountain Ravine	
Spot Height of Mountain Cliff	
Spot Height of Mountain Escarpment	
Spot Height of Mountain Plateau	
Spot Height of Mountain Tableland	
Spot Height of Mountain Plain	
Spot Height of Mountain Step	
Spot Height of Mountain Trench	
Spot Height of Mountain Depression	
Spot Height of Mountain Basin	
Spot Height of Mountain Valley	
Spot Height of Mountain Gully	
Spot Height of Mountain Ravine	
Spot Height of Mountain Cliff	
Spot Height of Mountain Escarpment	
Spot Height of Mountain Plateau	
Spot Height of Mountain Tableland	
Spot Height of Mountain Plain	
Spot Height of Mountain Step	
Spot Height of Mountain Trench	
Spot Height of Mountain Depression	
Spot Height of Mountain Basin	
Spot Height of Mountain Valley	
Spot Height of Mountain Gully	
Spot Height of Mountain Ravine	
Spot Height of Mountain Cliff	
Spot Height of Mountain Escarpment	
Spot Height of Mountain Plateau	
Spot Height of Mountain Tableland	
Spot Height of Mountain Plain	
Spot Height of Mountain Step	
Spot Height of Mountain Trench	
Spot Height of Mountain Depression	
Spot Height of Mountain Basin	

TOPOSHEET MAP
SCALE- 1:1,00,000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

V. Shanmugam

Towards
Chettipalayam

10°54'0.96"N

297



77°3'58.55"E

Towards
Thekani

Towards
Pachapalayam

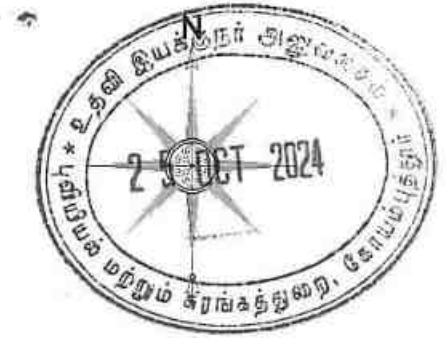


PLATE NO-IC

APPLICANT:
Mr.V.SHANMUGAM,
 S/o. VELUSAMY GOUNDER,
 1/240, M.V.S. THOTTAM,
 SEERAPALAYAM,
 COIMBATORE DISTRICT.

LEASE APPLIED AREA:
 S.F.NO : 238/1
 EXTENT : 1.98.0Hect
 VILLAGE : PACHAPALAYAM
 TALUK : SULUR
 DISTRICT : COIMBATORE

INDEX

MINE LEASE AREA	
SAFETY DISTANCE	
APPROACH ROAD	
VILLAGE ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
EXISTING PIT	

TOPO SHEET NO : 58-F/1

LATITUDE : 10°53'53.31"N to 10°54'0.96"N

LONGITUDE: 77°3'58.55"E to 77°4'2.15"E

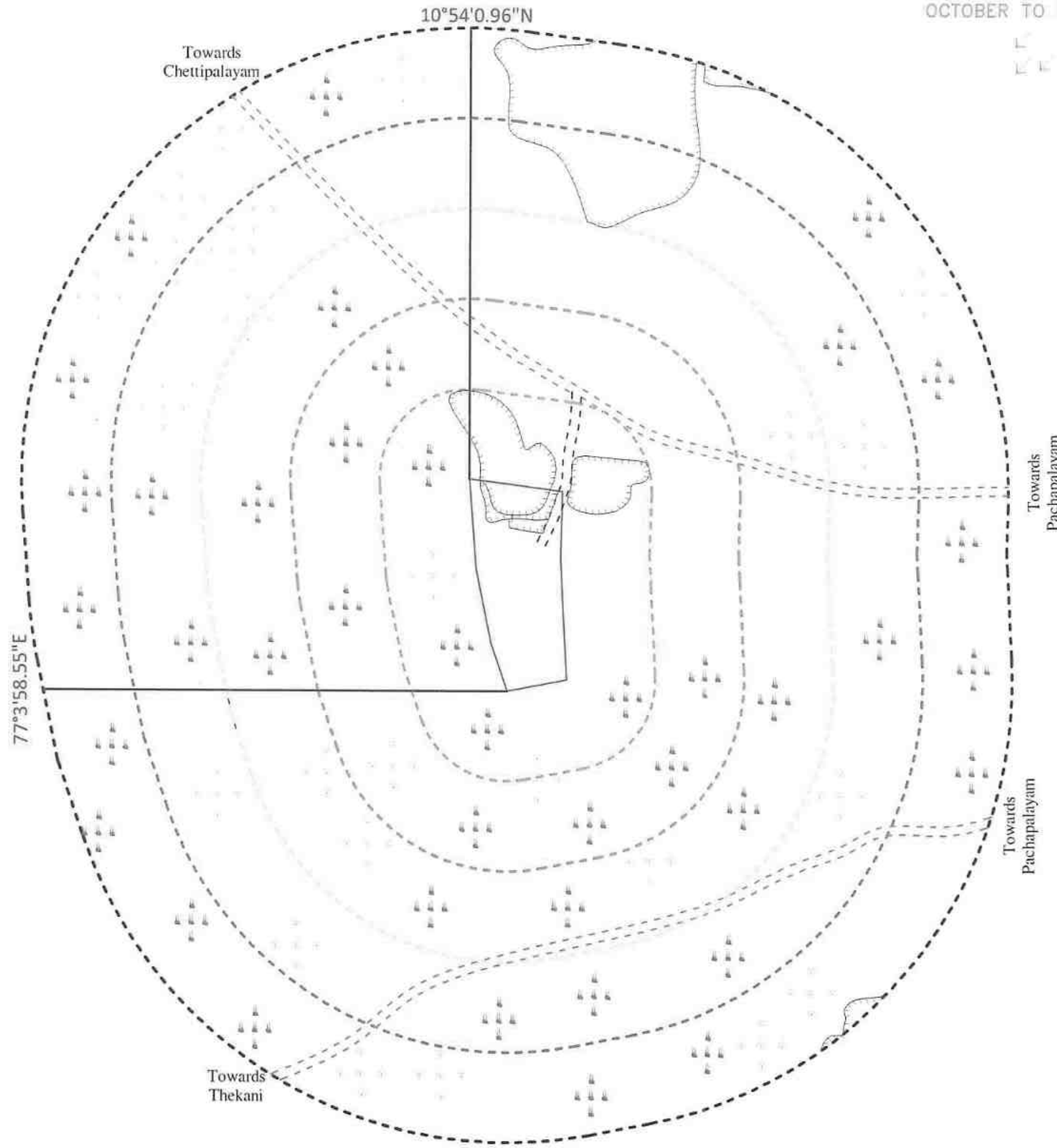
SATELITE IMAGERY MAP

SCALE- 1:5000

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN, M.Sc., Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A

V. Shanmugam



OCTOBER TO DECEMBER



PLATE NO. 10

APPLICANT:
 Mr.V.SHANMUGAM,
 S/o. VELUSAMY GOUNDER,
 1/240. M.V.S. THOTTAM,
 SEERAPALAYAM,
 COIMBATORE DISTRICT.

LEASE APPLIED AREA:
 S.F.NO : 238/1
 EXTENT : 1.98.0Hect
 VILLAGE : PACHAPALAYAM
 TALUK : SULUR
 DISTRICT : COIMBATORE

INDEX

MINE LEASE AREA	
SAFETY DISTANCE	
APPROACH ROAD	
VILLAGE ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
SHRUBS & TREES	
EXISTING PIT	
WIND DIRECTION	

TOPO SHEET NO : 58-F/1
 LATITUDE : 10°53'53.31"N to 10°54'0.96"N
 LONGITUDE: 77°3'58.55"E to 77°4'2.15"E

ENVIRONMENTAL PLAN
 SCALE- 1:5000

I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN, M.Sc., Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A

JULY TO SEPTEMBER

V. Shanmugam

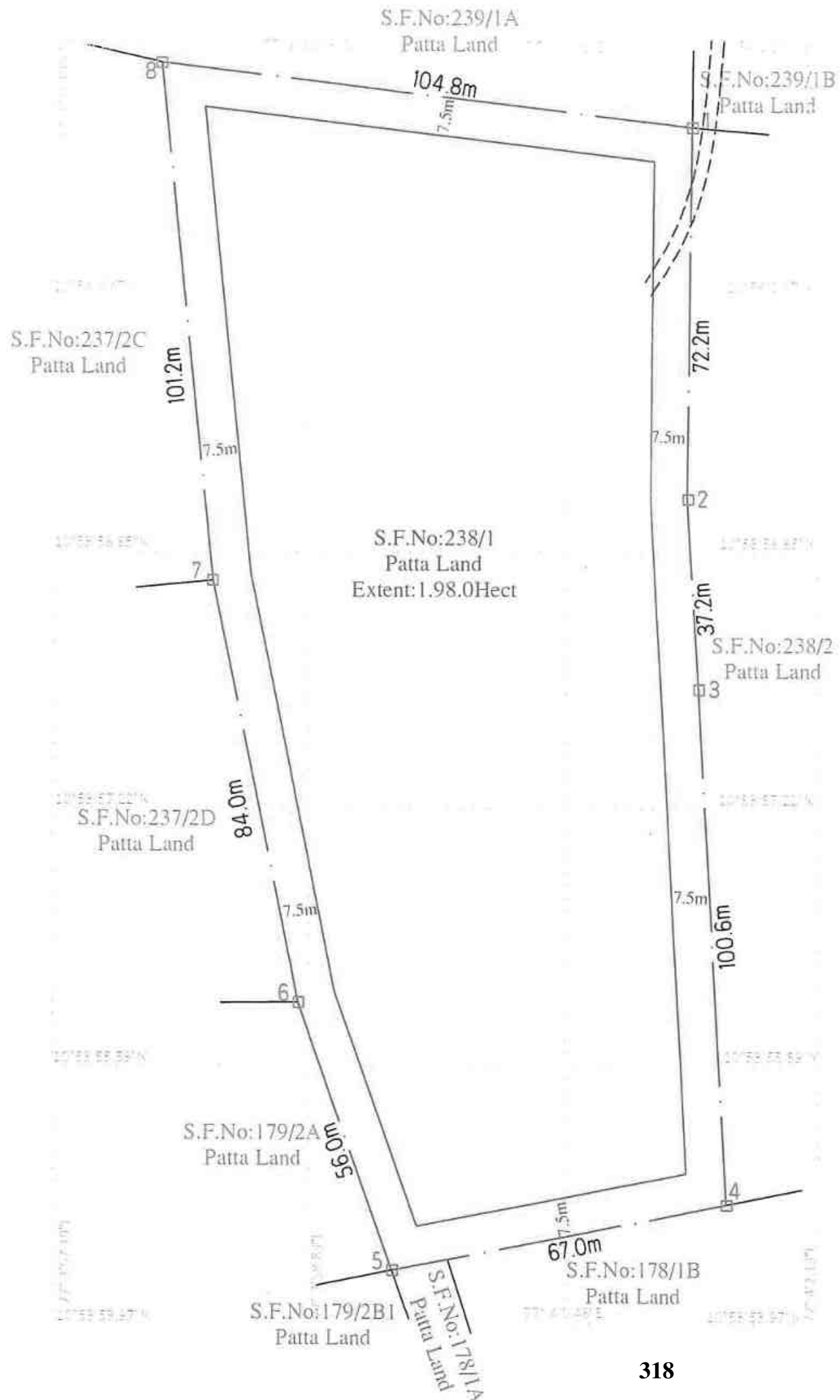


PLATE No-I

APPLICANT:
Mr.V.SHANMUGAM,
 S/o.VELUSAMY GOUNDER,
 1/240, M.V.S. THOTTAM,
 SEERAPALAYAM
 COIMBATORE DISTRICT

LEASE APPLIED AREA:
 S.F.No : 238/1
 EXTENT : 1.98.0Hect
 VILLAGE : PACHAPALAYAM
 TALUK : SULUR
 DISTRICT : COIMBATORE

PILLAR ID	LATITUDE	LONGITUDE
1	10°54'0.53"N	77° 4'1.97"E
2	10°53'58.18"N	77° 4'1.93"E
3	10°53'56.97"N	77° 4'1.99"E
4	10°53'53.71"N	77° 4'2.15"E
5	10°53'53.31"N	77° 3'59.98"E
6	10°53'55.00"N	77° 3'59.39"E
7	10°53'57.68"N	77° 3'58.86"E
8	10°54'0.96"N	77° 3'58.55"E

INDEX

- PROPOSED LEASE AREA
- SAFETY DISTANCE
- BOUNDARY PILLAR
- APPROACH ROAD

MINE LEASE PLAN
 SCALE- 1:1000

Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE
 HAS BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A

V. Shanmugam

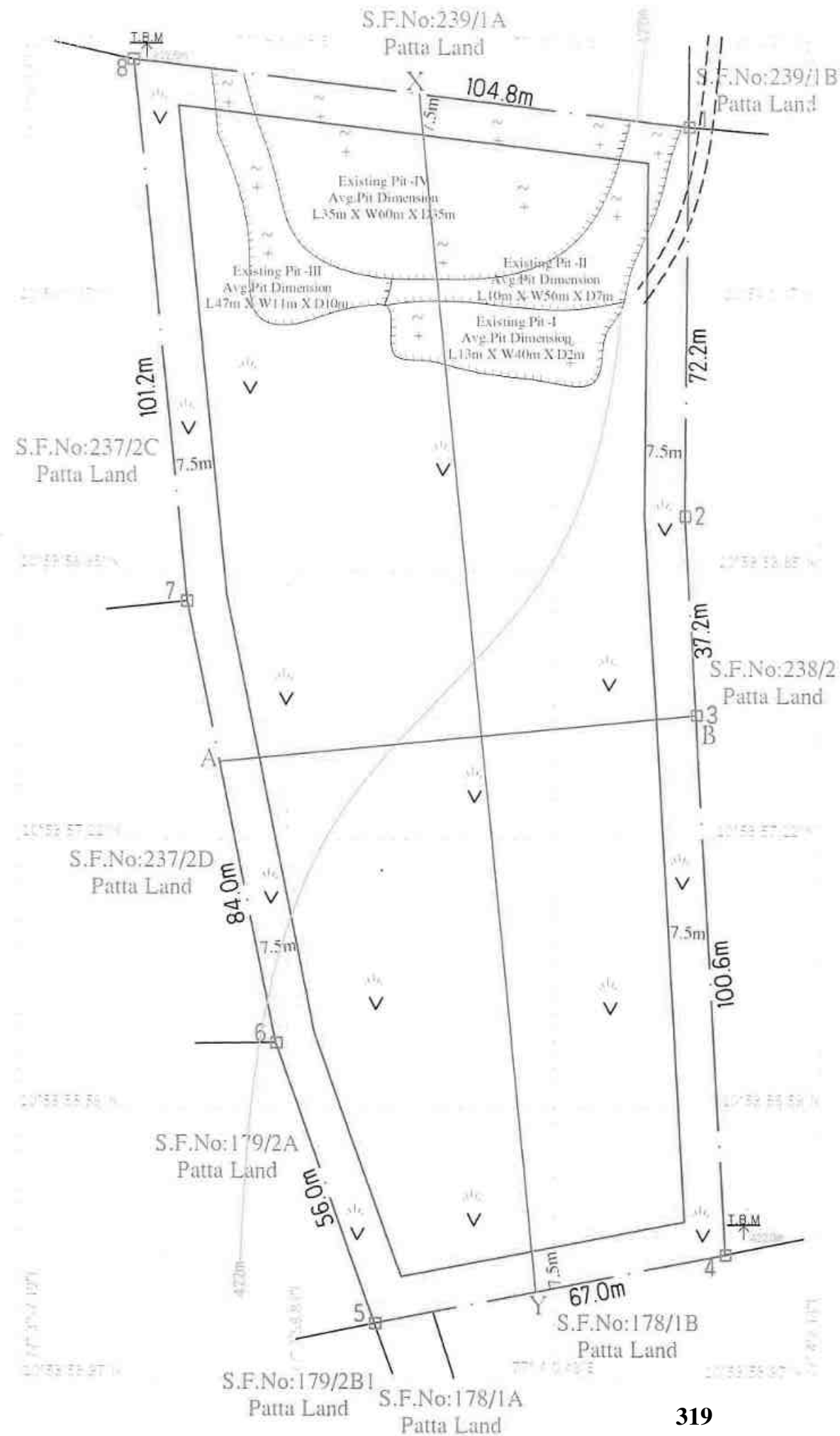


PLATE No-III

APPLICANT:
Mr.V.SHANMUGAM,
 S/o.VELUSAMY GOUNDER,
 1/240. M.V.S. THOTTAM,
 SEERAPALAYAM
 COIMBATORE DISTRICT

LEASE APPLIED AREA:
 S.F.No : 238/1
 EXTENT : 1.98.0Hect
 VILLAGE : PACHAPALAYAM
 TALUK : SULUR
 DISTRICT : COIMBATORE

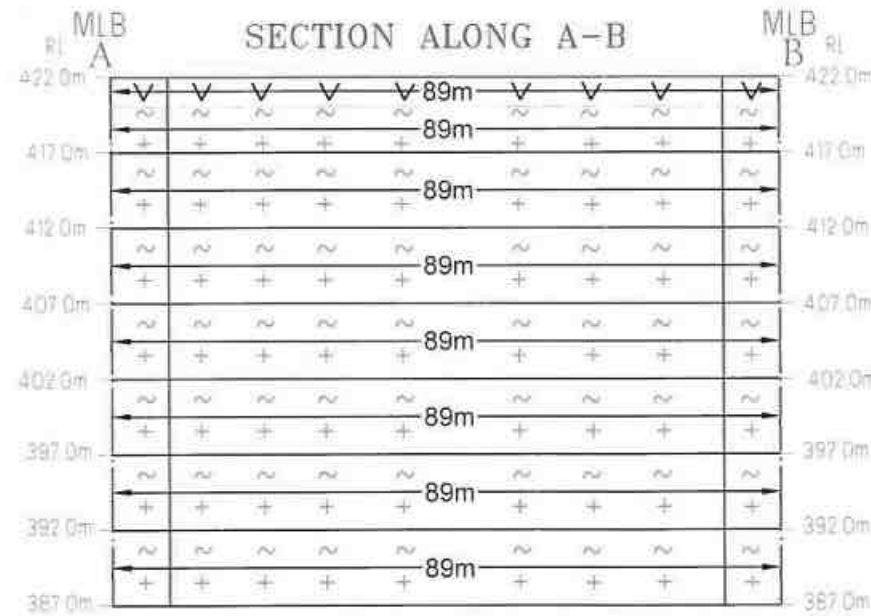
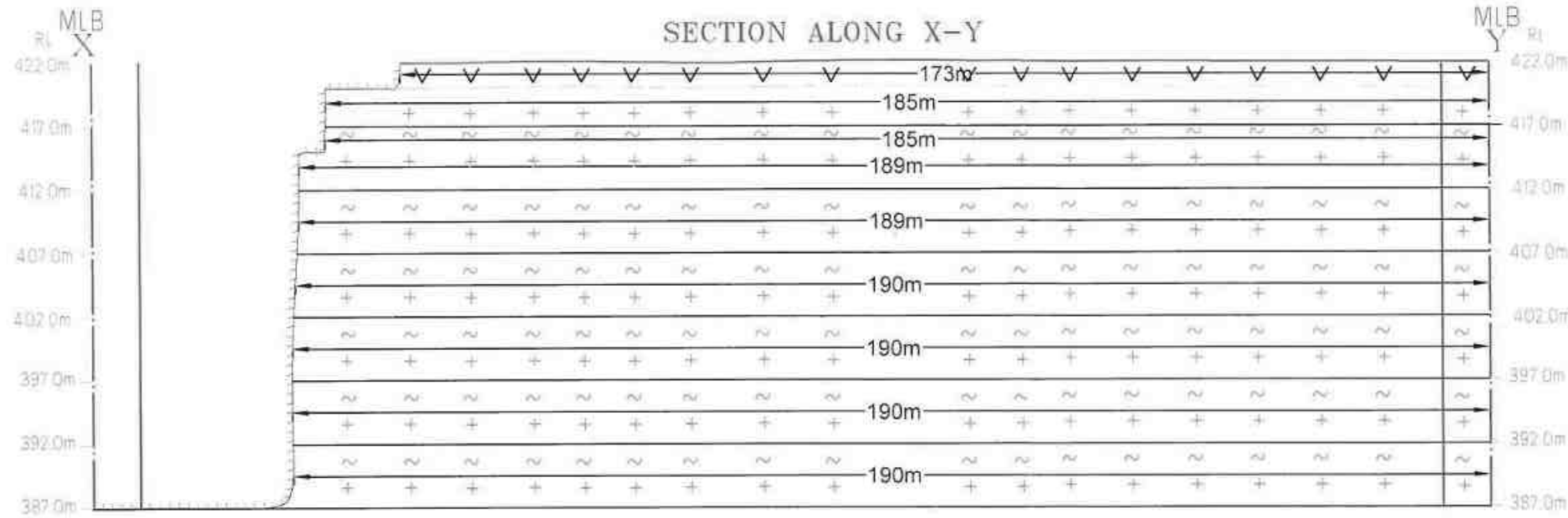
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APPROACH ROAD	
TEMPORARY BENCH MARK	
CONTOUR LINES	
SHRUBS	
GRAVEL	
EXISTING PIT	
ROUGH STONE	

SURFACE & GEOLOGICAL PLAN
 SCALE 1: 1000

Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE
 HAS BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN, M.Sc., Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A

V. Shanmugam



GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Geological Resources in M ³	Gravel in M ³
XY-AB	I	173	89	2	30794	.....	30794
	I	185	89	3	49395	49395	.....
	II	185	89	2	32930	32930	.....
		189	89	3	50463	50463	.....
	III	189	89	5	84105	84105	.....
	IV	190	89	5	84550	84550	.....
	V	190	89	5	84550	84550	.....
VI	190	89	5	84550	84550	.....
VII	190	89	5	84550	84550	.....
TOTAL				35	585887	555093	30794

320

L.V. Shan



PLATE No-III A

APPLICANT:

Mr.V.SHANMUGAM,
S/o.VELUSAMY GOUNDER,
1/240. M.V.S. THOTTAM,
SEERAPALAYAM
COIMBATORE DISTRICT

LEASE APPLIED AREA:

S.F.No : 238/1
EXTENT : 1.98.0Hect
VILLAGE : PACHAPALAYAM
TALUK : SULUR
DISTRICT : COIMBATORE

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MINE LEASE AREA

SAFETY DISTANCE

GRAVEL

ROUGH STONE

EXISTING PIT

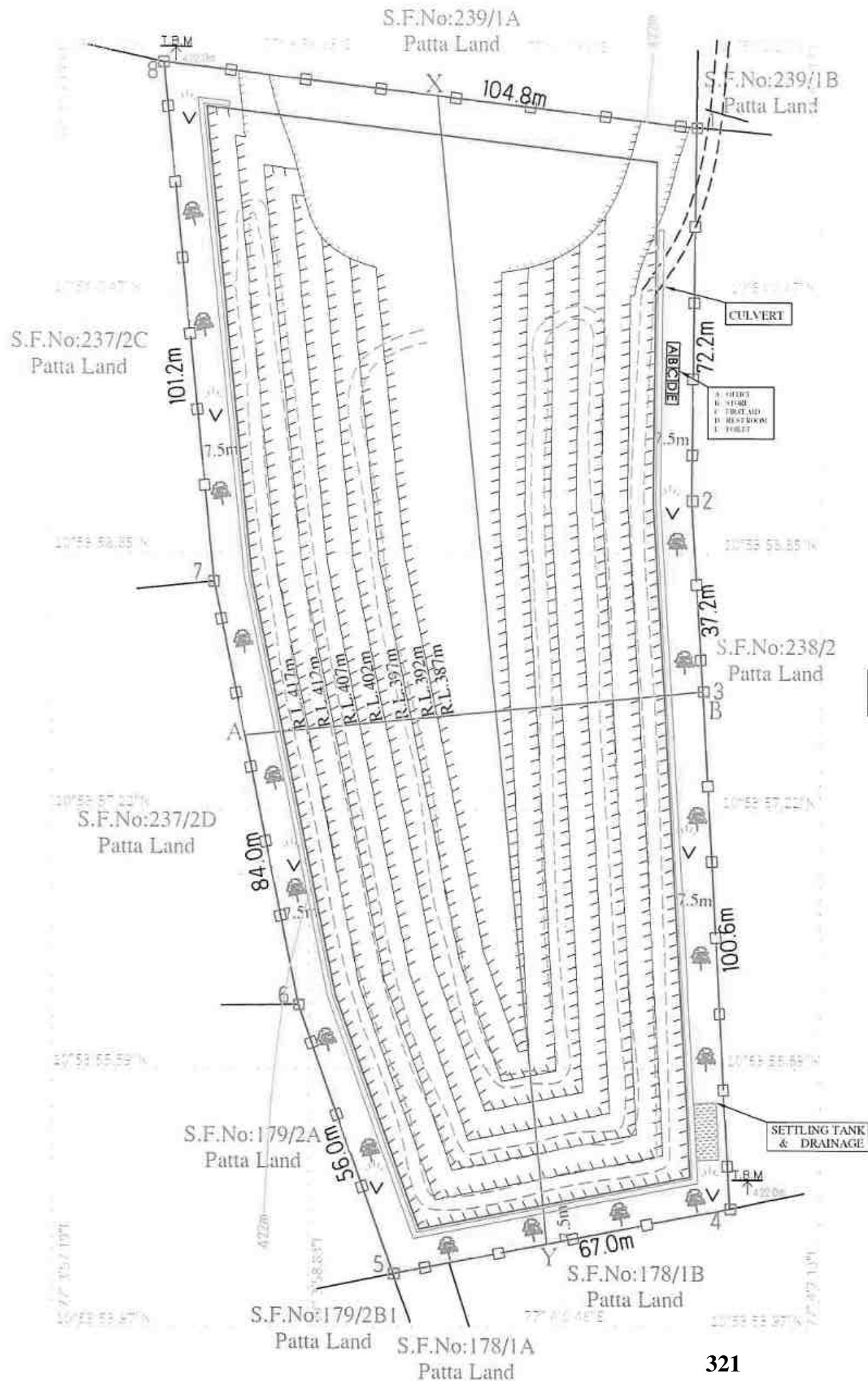
GEOLOGICAL SECTIONS



SECTION HOR 1 : 1000 & VER 1 : 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN, M.Sc., Ph.D.
RECOGNIZED QUALIFIED PERSON
ROP/MAS/263/2014/A



I- Year Proposed area to be Planted  

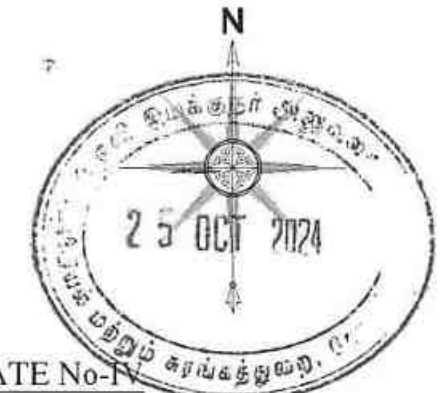


PLATE No-1


APPLICANT:
Mr.V.SHANMUGAM,
 S/o.VELUSAMY GOUNDER,
 1/240, M.V.S. THOTTAM,
 SEERAPALAYAM
 COIMBATORE DISTRICT

LEASE APPLIED AREA:
 S.F.No : 238/1
 EXTENT : 1.98.0Hect
 VILLAGE : PACHAPALAYAM
 TALUK : SULUR
 DISTRICT : COIMBATORE

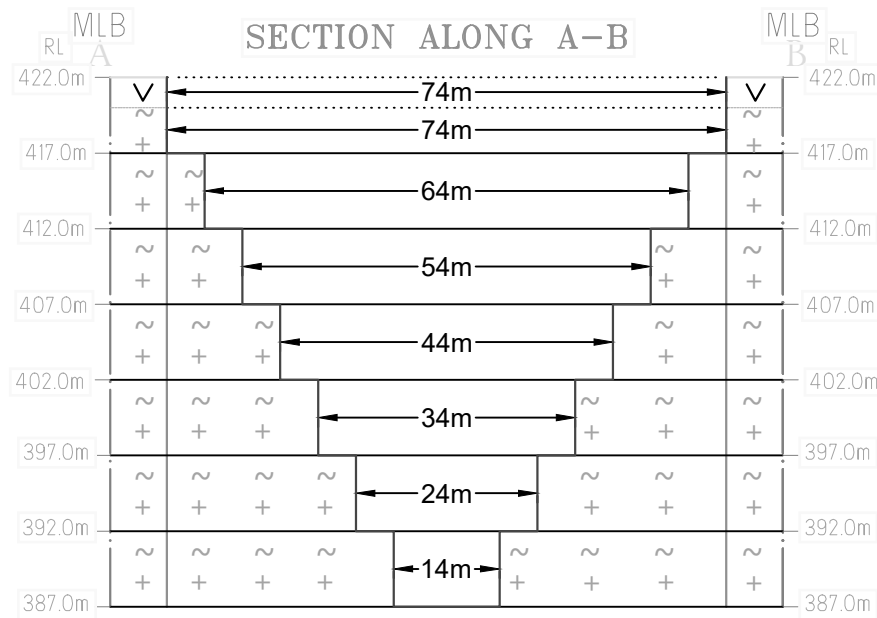
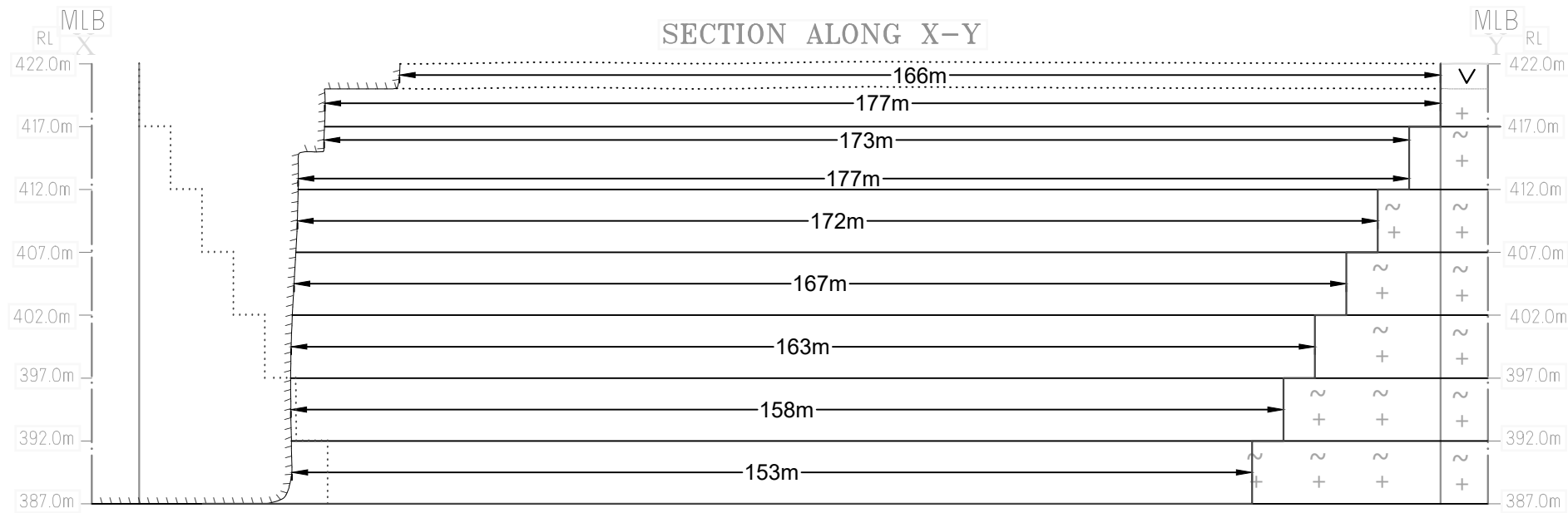
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SHRUBS	
GRAVEL	
EXISTING PIT	
FENCING	
DRAINAGE & SETTLING TANK	
ULTIMATE BENCH	

CONCEPTUAL PLAN
 SCALE 1: 1000

Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE
 HAS BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE


 Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A

V. Shan



MINEABLE RESERVES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Mineable Reserves in M ³	Gravel in M ³
XY-AB	I	166	74	2	24568	.....	24568
	I	177	74	3	39294	39294	.....
	II	173	64	2	22144	22144	.....
		177	64	3	33984	33984	.....
	III	172	54	5	46440	46440	.....
	IV	167	44	5	36740	36740	.....
	V	163	34	5	27710	27710	.....
VI	158	24	5	18960	18960	.....
VII	153	14	5	10710	10710	.....
TOTAL					260550	235982	24568

PLATE No-IVA

APPLICANT:
Mr.V.SHANMUGAM,
 S/o.VELUSAMY GOUNDER,
 1/240, M.V.S. THOTTAM,
 SEERAPALAYAM
 COIMBATORE DISTRICT

LEASE APPLIED AREA:
 S.F.No : 238/1
 EXTENT : 1.98.0Hect
 VILLAGE : PACHAPALAYAM
 TALUK : SULUR
 DISTRICT : COIMBATORE

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MINE LEASE AREA	
SAFETY DISTANCE	
GRAVEL	
ROUGH STONE	
EXISTING PIT	
ULTIMATE BENCH	

CONCEPTUAL SECTIONS
 SECTION HOR 1 : 1000 & VER 1: 500

Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A

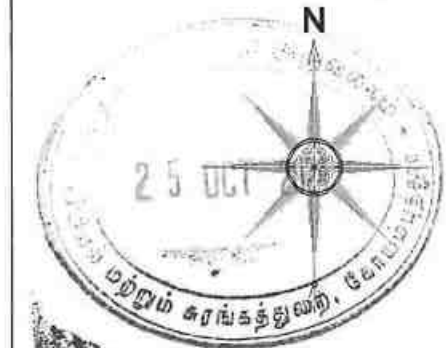
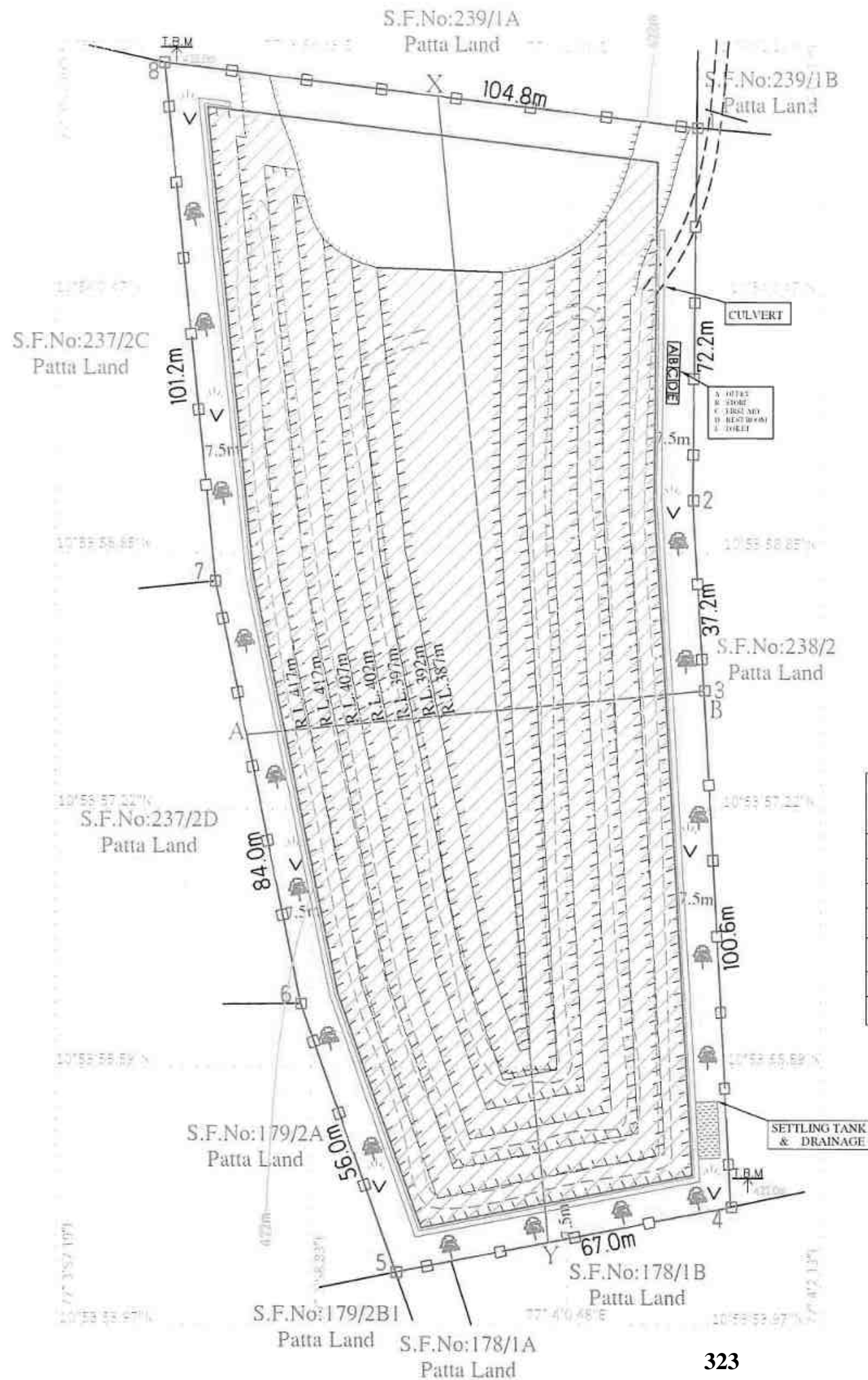


PLATE No-V

APPLICANT:
Mr.V.SHANMUGAM,
 S/o.VELUSAMY GOUNDER,
 1/240, M.V.S. THOTTAM,
 SEERAPALAYAM
 COIMBATORE DISTRICT

LEASE APPLIED AREA:
 S.F.No : 238/1
 EXTENT : 1.98.0Hect
 VILLAGE : PACHAPALAYAM
 TALUK : SULUR
 DISTRICT : COIMBATORE

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- PROPOSED LEASE AREA
- SAFETY DISTANCE
- BOUNDARY PILLAR
- APPROACH & MINE HAUL ROAD
- TEMPORARY BENCH MARK
- CONTOUR LINES
- SHRUBS
- GRAVEL
- EXISTING PIT
- FENCING
- DRAINAGE & SETTLING TANK
- PROPOSED BENCH

I - Year Proposed area to be Planted

MINE LAYOUT LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Hect)	AREA IN USE DURING THE QUARRYING PERIOD(Hect)	COLOR CODE
AREA UNDER QUARRYING	0.36.97	1.40.00	
INFRASTRUCTURE	NIL	0.03.00	
ROADS	0.03.00	0.05.00	
GREEN BELT	NIL	0.25.10	
DRAINAGE & SETTLING TANK	NIL	0.05.20	
UN-UTILIZED AREA	1.58.03	0.19.70	NIL
GRAND TOTAL	1.98.00	1.98.00	NIL

MINE LAYOUT PLAN AND LAND USE PATTERN
 PLAN SCALE 1: 1000

Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A

L.V.Shun

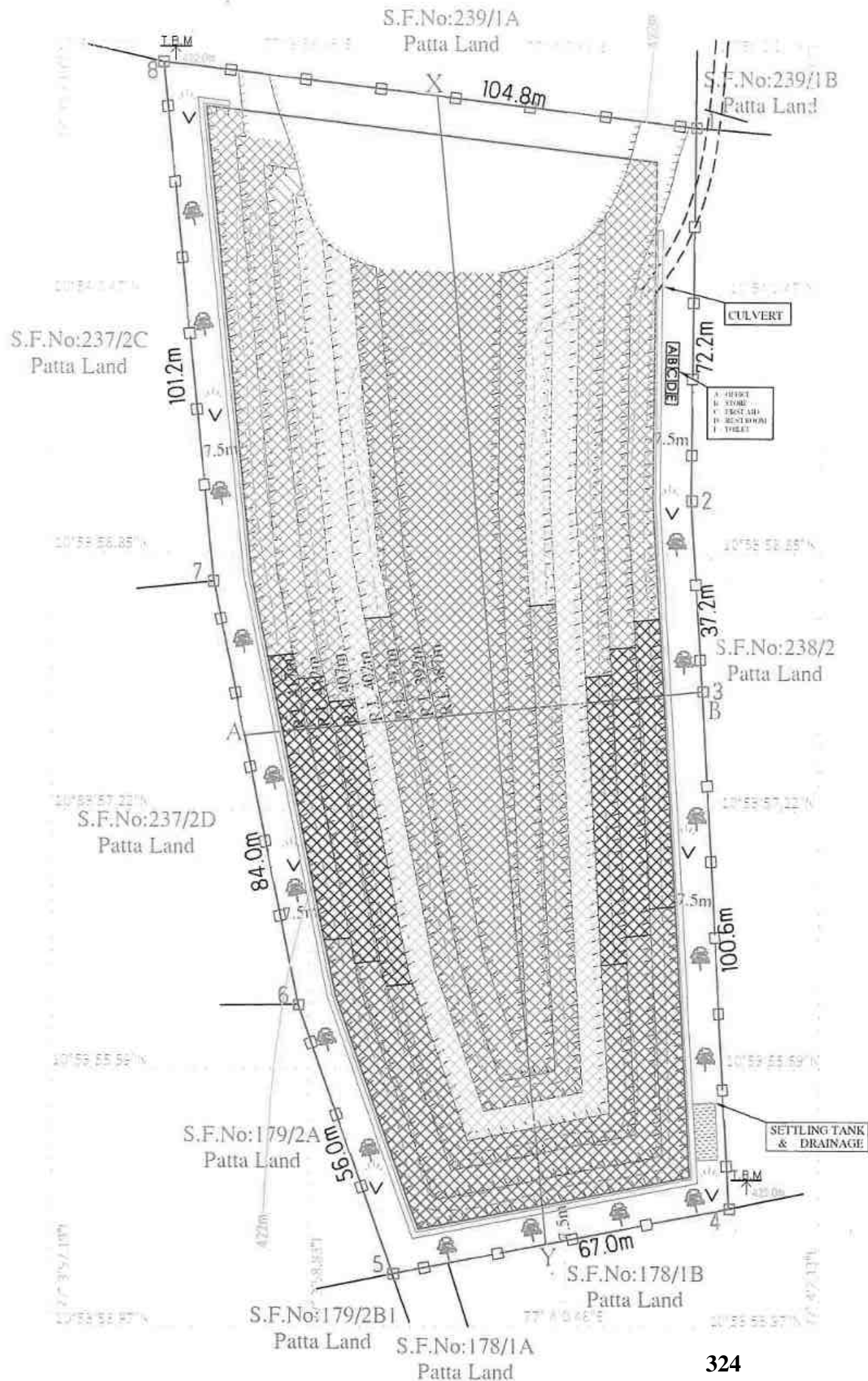


PLATE No-VI

APPLICANT:

Mr.V.SHANMUGAM,
S/o.VELUSAMY GOUNDER,
1/240, M.V.S. THOTTAM,
SEERAPALAYAM
COIMBATORE DISTRICT

LEASE APPLIED AREA:

S.F.No : 238/1
EXTENT : 1.98.0Hect
VILLAGE : PACHAPALAYAM
TALUK : SULUR
DISTRICT : COIMBATORE

INDEX

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CONTOUR LINES	
SHRUBS	
GRAVEL	
EXISTING PIT	
FENCING	
DRAINAGE & SETTLING TANK	
PROPOSED BENCH	

1 - Year Proposed area to be Planted

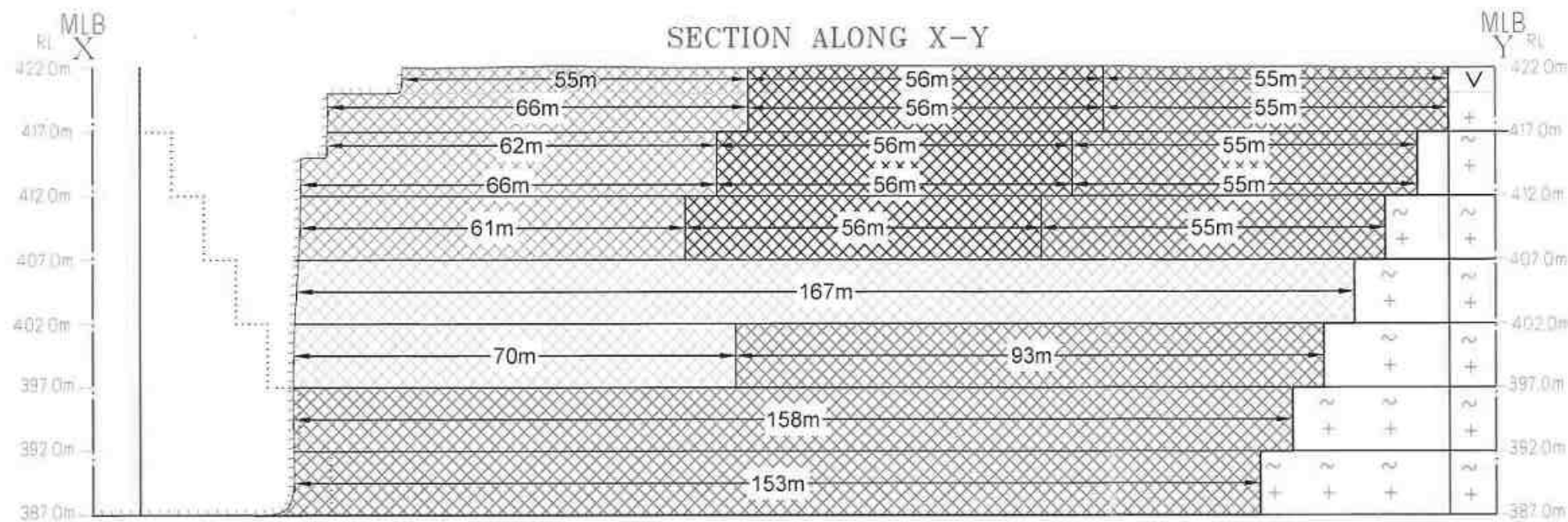
YEARWISE DEVELOPMENT & PRODUCTION PLAN
SCALE 1: 1000

Prepared By:

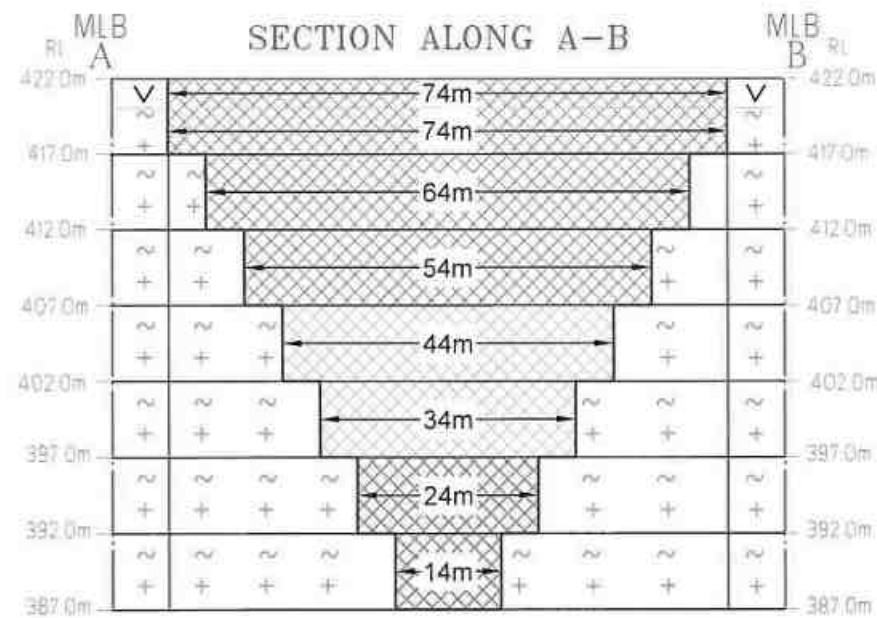
I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN, M.Sc., Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

V. Shanmugam



I - Year Proposed area to be Quarried	
II - Year Proposed area to be Quarried	
III - Year Proposed area to be Quarried	
IV - Year Proposed area to be Quarried	
V - Year Proposed area to be Quarried	



YEARWISE PRODUCTIONS								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Production Reserves in M ³	Gravel in M ³
I - Year	XY-AB	I	55	74	2	8140	.....	8140
		I	66	74	3	14652	14652	.....
		II	62	64	2	7936	7936	.....
		II	66	64	3	12672	12672	.....
Total						59870	51730	8140
II - Year	XY-AB	I	56	74	2	8288	.....	8288
		I	56	74	3	12432	12432	.....
		II	56	64	2	7168	7168	.....
		III	56	64	3	10752	10752	.....
Total						53760	45472	8288
III - Year	XY-AB	I	55	74	2	8140	.....	8140
		I	55	74	3	12210	12210	.....
		II	55	64	2	7040	7040	.....
		III	55	64	3	10560	10560	.....
TOTAL						52800	44660	8140
IV - Year	XY-AB	IV	167	44	5	36740	36740	.....
		V	70	34	5	11900	11900	.....
TOTAL						48640	48640	0
V - Year	XY-AB	V	93	34	5	15810	15810	.....
		VI	158	24	5	18960	18960	.....
		VII	153	14	5	10710	10710	.....
TOTAL						45480	45480	0
GRAND TOTAL						260550	235982	24568

PLATE No-VIA

APPLICANT:

Mr.V.SHANMUGAM,
S/o.VELUSAMY GOUNDER,
1/240, M.V.S. THOTTAM,
SEERAPALAYAM
COIMBATORE DISTRICT

LEASE APPLIED AREA:

S.F.No : 238/1
EXTENT : 1.98.0Hect
VILLAGE : PACHAPALAYAM
TALUK : SULUR
DISTRICT : COIMBATORE

INDEX

MINE LEASE AREA	
SAFETY DISTANCE	
GRAVEL	
ROUGH STONE	
EXISTING PIT	
PROPOSED BENCH	

YEARWISE DEVELOPMENT &
PRODUCTION SECTIONS
SECTION HOR 1 : 1000 & VER 1 : 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

V.S.H

திரும்ப சீர்திருத்த விவரலாறு
ஆய்வுக்கை

கோவை டிரைப்ட், சூயஸ் உட்பட

பஞ்சபாணையம் திரும்ப சீர்திருத்த-238/1 -ல்
4. 1980 அக்டோபர் 1-ல் பஞ்சபாணையம்
திரும்ப சீர்திருத்த-222-ல் படி சீர்திருத்தம்
செய்யப்பட்டுப் பத்திரப்படுத்தப்பட்டது. மேற்படி
பஞ்சபாணையம் சீர்திருத்தம் மற்றும் திரும்ப சீர்திருத்த
உட்பட சீர்திருத்தம் சீர்திருத்தம் சீர்திருத்தம் சீர்திருத்தம்
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சீர்திருத்தம் சீர்திருத்தம் சீர்திருத்தம் சீர்திருத்தம்
சீர்திருத்தம் சீர்திருத்தம் சீர்திருத்தம் சீர்திருத்தம்
சீர்திருத்தம் சீர்திருத்தம் சீர்திருத்தம் சீர்திருத்தம்

சி. சீர்திருத்தம்
25, பஞ்சபாணையம்
சூயஸ் உட்பட



National Accreditation Board for Education and Training

Certificate of Accreditation

Geo Technical Mining Solutions, Dharmapuri

5/1485-3, Salem Main Road, Elakkiyampatty, Dharmapuri, Tamil Nadu

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

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals - including opencast and underground mining	1	1 (a) (i)	A


Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated January 24, 2024, posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/24/3142 dated Feb 19, 2024. The accreditation needs to be renewed before the expiry date by Geo Technical Mining Solutions, Dharmapuri following due process of assessment.

Issue Date
Feb 19, 2024

Valid up to
Dec 31, 2026




Mr. Ajay Kumar Jha
Sr. Director, NABET

Certificate No.
NABET/EIA/23-26/RA 0319


Prof (Dr) Varinder S Kanwar
(CEO NABET)