

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

For

Rough Stone and Gravel Quarry- 2.18.0 Ha

At

**S.F.Nos : 76/2, 76/3A & 76/6,
Eraiyr Village,
Vanur Taluk,
Villupuram District, Tamilnadu**

**Project Proponent
Thiru.K.Anandavelu,
S/o. Kesavan,
No. 225, Mettu Street, Eraiyr Village,
Vanur Taluk,
Villupuram District – 604 304.**

**Project termed under schedule 1(a)
Category B₁ (Cluster Mining)
Baseline Period : June, July & August 2023**

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



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

**October
2023**

Date:

From
Thiru. K. Anandavelu,
S/o. Kesavan,
No. 225, Mettu Street,
Eraiyr Village,
Vanur Taluk,
Villupuram District – 604 304.

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

Sir,

Sub: Public Hearing for Thiru. K. Anandavelu Rough Stone and Gravel Quarry over a total extent of 2.18.0 Ha at S.F.No. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District – Request to conduct Public Hearing – Reg.

Ref: ToR issued by SEIAA vide Letter No. SEIAA-TN/F.No.9895/ToR-1488/2023
Dated: 16.06.2023

With Reference to the above subject, I propose to establish Thiru. K. Anandavelu Rough Stone and Gravel Quarry over a total extent of 2.18.0 Ha at S.F.No. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District, Tamil Nadu.

In this regard, we had obtained the Terms of Reference (ToR) from State Environmental Impact Assessment Authority (SEIAA), Tamil Nadu for conducting EIA studies vide letter cited in reference. Further, we have prepared the draft EIA report complying with all the conditions imposed in the TOR issued.

I herewith submitting hard & soft copies of Draft EIA Report, Executive Summaries (English & Tamil) along with necessary enclosures towards conducting public hearing for Thiru. K. Anandavelu Rough Stone and Gravel Quarry over a total extent of 2.18.0 Ha at S.F.No. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District, Tamil Nadu.

We have also enclosed a Demand Draft for Rs. _____ /- vide DD No _____ dated _____ as initial Public Hearing fee and agree to pay the difference amount in the publication cost.

We kindly request the TNPCB to make the necessary arrangements for conducting the Public hearing for the Rough stone and Earth Quarry.

Thanking you,
Yours Sincerely,

Authorized Signatory

Thiru. K. Anandavelu,
S/o. Kesavan,
No. 225, Mettu Street, Eraiyur Village,
Vanur Taluk, Villupuram District – 604 304.

UNDERTAKING

I, Thiru. K. Anandavelu, undertaking that the Draft Environmental Impact Assessment (EIA) Report for Rough Stone and Gravel Quarry over an extent of 2.18.0 Ha at S.F.No. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District, Tamilnadu State under project category B1 and Schedule S.No.1(a)

TOR issued by the State Expert Appraisal Committee, TN vide Letter No. SEIAA-TN/F. No. 9895/ToR-1488/2023 Dated: 16.06.2023.

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

Place: Villupuram

Date:

Yours faithfully

Thiru. K. Anandavelu

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



Eco Tech Labs Pvt Ltd

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

UNDERTAKING

I, Dr. A. Dhamodharan, Managing Director confirms that this Draft EIA Report of Rough Stone and Gravel Quarry over an extent of 2.18.0 Ha at S.F.No. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District, Tamilnadu State has been prepared at M/s. Ecotech Labs Pvt. Ltd., Chennai.

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

Signature:

Name: Dr. A. Dhamodharan

Designation: Managing Director

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

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

Date:

Place: Chennai

Declaration by Experts contributing to the EIA of Rough Stone and Gravel Quarry- 2.18.0 Ha by Thiru. K. Anandavelu at S.F.No.76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District, Tamil Nadu State

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

EIA Coordinator: Dr. A. Dhamodharan



Dr. A. DHAMODHARAN
(NABET APPROVED EIA COORDINATOR)
NABET/EIA/2124/SA 0147
Environmental Consultant
Eco Tech Labs Pvt. Ltd
Plot No.48A, 2nd Main Road, Ram Nagar South Extn.
Pallikaranai, Chennai - 600 100.


Signature:




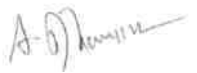
Period of involvement: 01.03.2022 to Till now





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

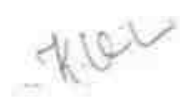

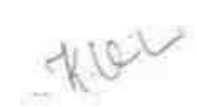
No. 48, 2nd Main road, Ram Nagar South Extension,

Pallikaranai – 600100.

S. No.	Functional areas	Name of the experts	Involvement (period and task)	Signature and date
1	AP	Mrs. K. Vijayalakshmi	1. Selection of Baseline Monitoring stations based on the wind direction 2. Interpretation of Baseline data by comparing it with standards prescribed by CPCB against the type of area 3. Identification of sources of air pollution and suggesting mitigation measures to minimize impact <i>Period: March 2022 – Till now</i>	

2	WP	Dr. A. Dhamodhara n	<p>1. Selection of baseline Monitoring Locations for Ground water analysis and also identifying nearest surface water to be studied.</p> <p>2. Interpretation of baseline data collected</p> <p>3. Identification of impacts based on the baseline study conducted and also to the ground water and nearby surface water due to the proposed project</p> <p>4. Preparation of suitable and appropriate mitigation plan.</p> <p>Period: March 2022 – Till now</p>	
3	SHW	Dr. A. Dhamodhara n	<p>1. Identification of nature of solid waste generated</p> <p>2. Categorization of the generated waste and estimating the quantity of waste to be generated based on the per capita basis. Identification of impacts of SHW on Environment</p> <p>3. Suggesting suitable mitigation measures by recommending appropriate disposal method for each category of waste generated</p> <p>4. Top soil and refuse management</p> <p>Period: March 2022 – Till now</p>	
4	SE	Mr. S. Pandian	<p>1. Primary data collection through the census questionnaire</p> <p>2. Obtaining Secondary data from authenticated sources and incorporating the same in EIA report.</p> <p>3. Impact assessment & proposing suitable mitigation plan</p> <p>4. CSR budget allocation by discussing with the local body and allotting the same for need based activity.</p> <p>Period: March 2022 – Till now</p> <p>*Involves Public Hearing</p>	
5	EB	Dr. A. Dhamodhara n	<p>1. Primary data collection through field survey and sheet observation for ecology and biodiversity</p> <p>2. Secondary Collection through various authenticated sources</p> <p>3. Prediction of anticipated impacts and suggesting appropriate mitigation measures.</p>	

			<i>Period: March 2022 – Till now</i>	
6	HG	Dr. T. P. Natesan	<p>1. Study of existing surface drainage arrangements in the core and buffer zone, impact due to mining on these drainage courses and suggestion of mitigative measures</p> <p>2. Determination of groundwater use pattern, development of rainwater harvesting program. Storm water management through garland drainage system.</p> <p><i>Period: March 2022 – Till now</i></p>	
7	GEO	Dr. T. P. Natesan	<p>1. Field survey for assessing regional and local geology, aquifer distribution, Determination of groundwater use pattern, development of rainwater harvesting program.</p> <p><i>Period: March 2022 – Till now</i></p>	
8	SC	Dr. A. Dhamodharan	<p>1. Interpretation of baseline report</p> <p>2. Identification of possible impacts on soil, prediction of soil conservation and suggesting suitable mitigation measures.</p> <p><i>Period: March 2022 – Till now</i></p>	
9	AQ	Mrs. K. Vijayalakshmi	<p>1. Collection of Meteorological data for the baseline study period</p> <p>2. Plotting wind rose plot and thereby selecting the monitoring locations based on the wind pattern</p> <p>3. Estimation of sources of air emissions and air quality modeling is done</p> <p>4. Interpretation of the results obtained</p> <p>5. Identification of the impacts and suggesting suitable mitigation measures.</p> <p><i>Period: March 2022 – Till now</i></p>	

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

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

I, Dr. A. Dhamodharan, hereby, confirm that the above-mentioned experts prepared the Draft EIA report of mining project at Survey Numbers. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District. I also confirm that the consultant organization shall be fully accountable for any misleading information mentioned in this statement.

Signature:



Name: Dr. A. Dhamodharan

Designation: Managing Director

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

NABET Certificate No. & Issue Date: NABET/EIA/2124/SA 0147

DRAFT EIA REPORT

Project	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
Project Proponent	<i>Thiru K Anandavelu</i>	
Project Location	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

Contents

	<i>EXECUTIVE SUMMARY</i>	10
1	INTRODUCTION	27
1.1	PREAMBLE.....	27
1.2	GENERAL INFORMATION ON MINING OF MINERALS	27
1.3	ENVIRONMENTAL CLEARANCE.....	29
1.4	TERMS OF REFERENCE (TOR).....	30
1.5	POST ENVIRONMENTAL CLEARANCE MONITORING	30
1.5.1	<i>Methodology adopted</i>	30
1.6	GENERIC STRUCTURE OF THE EIA DOCUMENT.....	30
1.7	DETAILS OF PROJECT PROPONENT.....	32
1.8	BRIEF DESCRIPTION OF THE PROJECT	32
1.8.1	<i>Project Nature, Size & Location</i>	32
2	PROJECT DESCRIPTION	34
2.1	GENERAL	34
2.1.1	<i>Need for the project:</i>	36
2.2	BRIEF DESCRIPTION OF THE PROJECT.....	37
2.2.1	<i>Site Connectivity:</i>	40
2.3	LOCATION DETAILS:	41
2.3.1	<i>Site Photographs</i>	44
2.3.2	<i>Land Use Breakup of the Mine Lease Area</i>	45
2.3.3	<i>Human Settlement</i>	45
2.4	LEASEHOLD AREA	45
2.5	GEOLOGY.....	46
2.6	QUALITY OF RESERVES:	48
2.6.1	<i>Estimation of Reserves</i>	49
2.6.2	<i>Geological Reserves</i>	49
2.6.3	<i>Mineable Reserves</i>	51

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

2.6.4	<i>Year wise Production Plan</i>	52
2.7	TYPE OF MINING	54
2.7.1	<i>Method of Working:</i>	54
2.7.2	<i>Overburden</i>	54
2.7.3	<i>Machineries to be used</i>	54
2.7.4	<i>Blasting:</i>	55
2.8	MAN POWER REQUIREMENTS	57
2.8.1	<i>Water Requirement</i>	57
2.9	PROJECT IMPLEMENTATION SCHEDULE	58
2.10	SOLID WASTE MANAGEMENT	58
2.11	MINE DRAINAGE	58
2.12	POWER REQUIREMENT.....	59
2.13	PROJECT COST	59
2.14	GREENBELT	59
3	DESCRIPTION OF THE ENVIRONMENT	61
3.1	GENERAL:	61
3.1.1	<i>Study Area:</i>	61
3.1.2	<i>Instruments Used</i>	62
3.1.3	<i>Baseline Data Collection Period:</i>	62
3.1.4	<i>Frequency of Monitoring</i>	62
3.1.5	<i>Secondary data Collection</i>	64
3.1.6	<i>Study area details</i>	64
3.1.7	<i>Site Connectivity:</i>	67
3.2	LAND USE ANALYSIS.....	68
3.2.1	<i>Land Use Classification</i>	68
3.2.2	<i>Methodology</i>	68
3.2.3	<i>Satellite Data</i>	69
3.2.4	<i>Scale of mapping</i>	69
3.2.5	<i>Interpretation Technique</i>	69

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

3.2.6	<i>Field Verification</i>	70
3.2.7	<i>Description of the Land Use / land cover classes</i>	71
3.3	WATER ENVIRONMENT	74
3.3.1	<i>Contour & Drainage</i>	74
3.3.2	<i>Geomorphology</i>	75
3.3.3	<i>Geology:</i>	76
3.3.4	<i>Hydrogeology</i>	78
3.3.5	<i>Ground water quality monitoring</i>	81
3.3.6	<i>Interpretation of results:</i>	84
3.3.7	<i>Surface Water Analysis</i>	86
3.3.8	<i>Climatology & Meteorology:</i>	87
3.3.9	<i>Selection of Sampling Locations:</i>	90
3.4	AMBIENT AIR QUALITY	90
3.4.1	<i>Ambient Air Quality: Results & Discussion</i>	91
3.4.2	<i>Interpretation of ambient air quality:</i>	93
3.5	NOISE ENVIRONMENT:	95
3.5.1	<i>Day Noise Level (Leq day)</i>	96
3.5.2	<i>Night Noise Level (Leq Night)</i>	96
3.6	SOIL ENVIRONMENT	97
3.6.1	<i>Baseline Data:</i>	98
3.7	ECOLOGY AND BIODIVERSITY	100
3.7.1	<i>Methods available for floral analysis:</i>	101
3.7.2	<i>Field study& Methodology adopted:</i>	101
3.7.3	<i>Study outcome:</i>	102
3.7.4	<i>Calculation of species diversity by Shannon – wiener Index, Evenness and richness by Margalef:..</i>	107
3.7.5	<i>Calculation of species diversity by Shannon – wiener Index, Evenness and richness by Margalef:..</i>	107
3.7.6	<i>Floral study in the Buffer Zone:</i>	110
3.7.7	<i>Faunal Communities</i>	110
3.8	DEMOGRAPHY AND SOCIO ECONOMICS	113
3.9	TRAFFIC IMPACT ASSESSMENT	117

Project	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
Project Proponent	<i>Thiru K Anandavelu</i>	
Project Location	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

4	ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES	119
4.1	INTRODUCTION	119
4.2	LAND ENVIRONMENT:	120
4.3	WATER ENVIRONMENT:	121
4.4	AIR ENVIRONMENT:	123
4.4.1	<i>Source Characterization</i>	<i>125</i>
4.5	NOISE ENVIRONMENT:.....	128
4.6	BIOLOGICAL ENVIRONMENT:.....	129
4.7	SOCIO ECONOMIC ENVIRONMENT:	130
4.8	OTHER IMPACTS:	132
5	ANALYSIS OF ALTERNATIVES.....	133
5.1	GENERAL	133
5.1.1	<i>Analysis for Alternative Sites and Mining Technology</i>	<i>133</i>
6	ENVIRONMENTAL MONITORING PROGRAM.....	136
6.1	GENERAL:	136
7	ADDITIONAL STUDIES.....	140
7.1	GENERAL	140
7.1.1	<i>Public Hearing:</i>	<i>140</i>
7.1.2	<i>Risk assessment:</i>	<i>140</i>
7.1.3	<i>Identification of Hazard</i>	<i>141</i>
7.1.4	<i>General Precautionary measures for the Risk involved in the proposed mine:</i>	<i>143</i>
7.1.5	<i>Safety Team:.....</i>	<i>143</i>
7.1.6	<i>Emergency Control Centre.....</i>	<i>144</i>
7.2	DISASTER MANAGEMENT	144
7.2.1	<i>Emergency Management Plan For Proposed Mines On Site- Offsite Emergency Preparedness Plan:</i>	
	<i>144</i>	
7.2.1	<i>Onsite off-site emergency Plan:.....</i>	<i>145</i>
7.2.2	<i>Emergency Plan:</i>	<i>145</i>

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

7.2.3	<i>Emergency Control:</i>	145
7.3	NATURAL RESOURCE CONSERVATION	146
7.4	RESETTLEMENT AND REHABILITATION:.....	146
8	PROJECT BENEFITS	147
8.1	GENERAL	147
8.1.1	<i>Physical Benefits</i>	147
8.2	SOCIAL BENEFITS.....	147
8.3	PROJECT COST / INVESTMENT DETAILS.....	148
9	ENVIRONMENTAL MANAGEMENT PLAN	149
9.1	INTRODUCTION	149
9.2	SUBSIDENCE	149
9.3	MINE DRAINAGE	149
9.3.1	<i>Storm water Management</i>	149
9.3.2	<i>Drainage</i>	149
9.3.3	<i>Administrative and Technical Setup</i>	150
10	SUMMARY & CONCLUSION.....	157
10.1	INTRODUCTION	157
10.2	PROJECT OVERVIEW	157
10.3	JUSTIFICATION OF THE PROPOSED PROJECT	159
11	DISCLOSURE OF CONSULTANT.....	162
11.1	INTRODUCTION	162
11.2	ECO TECH LABS PVT. LTD – ENVIRONMENT CONSULTANT	162

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

List Of Tables:

TABLE 1-1: POST ENVIRONMENTAL CLEARANCE MONITORING	30
TABLE 2-1: QUARRY WITHIN 500M RADIUS	35
TABLE 2-2 SALIENT FEATURES OF THE PROJECT	37
TABLE 2-3: LOCATION DETAILS	41
TABLE 2-4: LAND USE PATTERN	45
TABLE 2-5: HABITATION	45
TABLE 2-6: DETAILS OF MINING	49
TABLE 2-7: GEOLOGICAL RESERVES.....	50
TABLE 2-8: MINEABLE RESERVES.....	51
TABLE 2-9: YEAR WISE PRODUCTION PLAN.....	52
TABLE 2-10: LIST OF MACHINERIES USED	54
TABLE 2-11: DRILLING AND BLASTING PARAMETERS	55
TABLE 2-12: BLASTING DETAILS	56
TABLE 2-13: MAN POWER REQUIREMENTS.....	57
TABLE 2-14: WATER REQUIRMENT	57
TABLE 2-15: SOLID WASTE MANAGEMENT	58
TABLE 3-1: FREQUENCY OF SAMPLING AND ANALYSIS	62
TABLE 3-2 STUDY AREA DETAILS	64
TABLE 3-3 LAND USE PATTERN	74
TABLE 3-4 GROUND WATER QUALITY ANALYSIS.....	81
TABLE 3-5: STANDARD PROCEDURE.....	82
TABLE 3-6 GROUND WATER SAMPLING RESULTS	83
TABLE 3-7 SURFACE WATER SAMPLE RESULTS	86
TABLE 3-8: SELECTION OF SAMPLING LOCATION.....	90
TABLE 3-9 AMBIENT AIR QUALITY.....	92
TABLE 3-10 NOISE ANALYSIS.....	95
TABLE 3-11 DAY NOISE LEVEL (LEQ DAY)	96
TABLE 3-12 NIGHT NOISE LEVEL (LEQ NIGHT)	96
TABLE 3-13 SOIL QUALITY ANALYSIS	98

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

TABLE 3-14 SOIL QUALITY ANALYSIS	98
TABLE 3-15 CALCULATION OF DENSITY, FREQUENCY (%), DOMINANCE, RELATIVE DENSITY, RELATIVE FREQUENCY, RELATIVE DOMINANCE & IMPORTANT VALUE INDEX.....	102
TABLE 3-16 TREE SPECIES IN THE CORE ZONE	103
TABLE 3-17 SHRUBS IN THE CORE ZONE.....	105
TABLE 3-18 HERBS & GRASSES IN THE CORE ZONE.....	106
TABLE 3-19 CALCULATION OF SPECIES DIVERSITY	107
TABLE 3-20 LIST OF FAUNA SPECIES	111
TABLE 3-21: DEMOGRAPHY SURVEY STUDY	114
TABLE 3-22: NO. OF VEHICLES PER DAY.....	117
TABLE 3-23: EXISTING TRAFFIC SCENARIO AND LOS	118
TABLE 4-1 EMISSION FACTORS FOR UNCONTROLLED MINING.....	127
TABLE 5-1: ALTERNATIVE FOR TECHNOLOGY AND OTHER PARAMETERS.....	134
TABLE 6-1: ENVIRONMENTAL MONITORING PROGRAMME.....	136
TABLE 6-2: MONITORING SCHEDULE DURING MINING	139
TABLE 9-1: IMPACTS AND MITIGATION MEASURES	151
TABLE 9-2: BUDGETARY ALLOCATION FOR EMP DURING MINING	153
TABLE 10-1: PROJECT OVERVIEW.....	157
TABLE 10-2: ANTICIPATE IMPACTS & APPROPRIATE MITIGATION MEASURES.....	160

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

LIST OF FIGURES:

FIGURE 1.1: LOCATION MAP OF THE PROJECT SITE.....	33
FIGURE 2.1: LOCATION MAP OF THE PROJECT SITE	39
FIGURE 2.2: GOOGLE EARTH IMAGE AND COORDINATES OF THE PROJECT SITE	40
FIGURE 2.3: SITE CONNECTIVITY	41
FIGURE 2.4: TOPO MAP OF PROJECT SITE.....	42
FIGURE 2.5: ENVIRONMENTAL SENSITIVITY WITHIN 15KM RADIUS.....	43
FIGURE 2.6: SITE PHOTOGRAPHS	44
FIGURE 2.7: GEOMORPHOLOGY	47
FIGURE 2.8 LITHOLOGY	48
FIGURE 2.9 YEAR WISE PRODUCTION PLAN	53
FIGURE 3.1: SITE CONNECTIVITY	67
FIGURE 3.2 FLOW CHART SHOWING METHODOLOGY OF LAND USE MAPPING	69
FIGURE 3.3 LAND USE CLASSES AROUND 10 KM RADIUS FROM THE PROJECT SITE.....	73
FIGURE 3.4 GEOMORPHOLOGY WITHIN 10KM FROM THE PROJECT SITE	76
FIGURE 3.5 GEOLOGY WITHIN 10KM FROM THE PROJECT SITE.....	78
FIGURE 3.6 GROUND WATER PROSPECTS WITHIN 5 KM RADIUS OF THE PROJECT SITE	81
FIGURE 3.7 WIND ROSE	90
FIGURE 3.8 CONCENTRATION OF PM10 ($\mu\text{G}/\text{M}^3$) IN STUDY AREA.....	93
FIGURE 3.9 CONCENTRATION OF PM2.5 ($\mu\text{G}/\text{M}^3$) IN STUDY AREA.....	94
FIGURE 3.10 CONCENTRATION OF SOX ($\mu\text{G}/\text{M}^3$) IN STUDY AREA	94
FIGURE 3.11 CONCENTRATION OF NOX ($\mu\text{G}/\text{M}^3$) IN STUDY AREA.....	95
FIGURE 3.12 SOIL EROSION PATTERN WITHIN 5 KM RADIUS OF THE PROJECT SITE	97
FIGURE 3.13 SOCIO ECONOMIC MAP SURROUNDING THE PROJECT SITE.	113
FIGURE 3.14: SITE CONNECTIVITY	117

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

ABBREVIATION

LU –Land use

AP – Air Pollution monitoring, prevention and control

AQ- Meteorology, Air quality modeling and prediction

WP – Water pollution monitoring, prevention and control

EB- Ecology and Biodiversity

NV- Noise & Vibration

SE- Socio-economics

HG- Hydrology, ground water and water conservation

GEO –Geology

RH – Risk assessment and hazards management

SHW –Solid and Hazardous waste management

SC- Soil conservation

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

EXECUTIVE SUMMARY

1. Project Background:

The existing project total extent area is 2.18.0 Ha, Patta land in Eraiyur Village of Vanur Taluk, Villupuram District. The category of project is B1, It is an Existing Rough stone and Gravel quarry in Eraiyur village. The area is situated on Plain topography gently sloping towards South Eastern side covered with Gravel and Rough Stone which does not sustain any type of vegetation.

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

The quarry operation is proposed up to depth for 40 m BGL. The Total Geological reserve is about 7,31,480 m³ of Rough Stone and 22,728 m³ of Gravel. The Mineable Reserves of Rough stone is 2,26,322 m³ and Gravel is 16,554 m³. The yearwise production/recoverable resources of rough stone for 5 years are 2,26,322 m³ and Gravel is 16,554 m³.

Mining Plan was approved by The Deputy Director, Dept. of Geology & Mining, Villupuram vide Rc No. A/G&M/273/2020 dated 14.02.2023. The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, Wildlife sanctuaries as per Wild life protection Act 1972, within the radius of 15 Km. Oussudu Lake Bird Sanctuary is located at a distance of 14.94 kms, SE from the project site and Kazhuveli Wetland Bird Sanctuary is located at a distance of 16.64 kms, NE from the project site. National Fossil/Petrified Wood Park is located at a distance of 5 kms, SE from the project site, which is a National Geo-heritage Monument maintained by Geological Survey of India.

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

2. Nature & Size of the Project

The Existing Rough Stone and Gravel Quarry over an extent of 2.18.0 Hectares land is located at Eraiyur Village of Vanur Taluk, Villupuram District.

Mineral intends to quarry	: Rough stone and Gravel
District	: Villupuram
Taluk	: Vanur
Village	: Eraiyur
S. F. Nos.	: 76/2, 76/3A & 76/6
Extent	: 2.18.0 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	12° 04' 20.61" N to 12° 04' 28.15" N
2	Longitude	79° 38' 39.36" E to 79° 38' 45.89" E
3	Site Elevation above MSL	77 m from MSL
4	Topography	Plain
5	Land use of the site	Patta land
6	Extent of lease area	2.18.0 Ha
7	Nearest highway	<ul style="list-style-type: none"> ➤ MDR-808 : Perumbakkam to Pidaripattu Road is about 1.25 Kms on E of the area ➤ SH-136 Mailam to Puducherry Road is about 1 Kms on N of the area
8	Nearest railway station	<ul style="list-style-type: none"> ➤ Mailam Railway Station – 10.55 km, NW ➤ Villupuram Junction – 21.40 km, SW ➤ Puducherry Railway Station – 25.58 kms, SE
9	Nearest airport	<ul style="list-style-type: none"> ➤ Puducherry Domestic Airport – 21.20 km – SE ➤ Chennai International Airport – 114.76 km - NE
10	Nearest town / city	<ul style="list-style-type: none"> ➤ Town - Puducherry - 19.84 km - SE ➤ City - Villupuram - 19.89 km - SW

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

		➤ District - Villupuram - 19.89 km – SW
11	Rivers / Canal / Dam	<ul style="list-style-type: none"> ➤ Sankarabarani River – 4.93 kms, S ➤ Gingee River – 6.35 kms, SW ➤ Tondi River – 8.49 kms, NW ➤ Varaga Nadhi – 8.80 kms, SW ➤ Chettipattu Small Dam – 5.24 kms, S ➤ Sankarabarani Reservoir – 7.42 kms, SE ➤ Veedur Dam – 6.29 kms, W ➤ Sengadu-Mathur Small dam (Pambe Water Reservoir) – 13.23 kms, SW
12	Lake	<ul style="list-style-type: none"> • Konamangalam Lake – 1.81 kms, W • Thaludhali Lake – 2.62 kms, N • Thaludhali Kulam – 2.65 kms, N • Kunnam Lake – 3.86 kms, NE • Katterikuppam Lake – 9.05 kms, SE • Mailam Lake – 5.95 kms, NW • Avudayarattu Lake – 9.57 kms, SW • Thirukkanur Lake – 8.87 kms, S • Mannadipet Pond – 8.90 kms, S • Purana Singa Palayam Lake – 11.93 kms, S • Sompet Lake – 11.32 kms, S • Kumalam Lake – 11.79 kms, S • Mathur Lake – 12.08 kms, SW • New Lake – 12.92 kms, SW • Thoravi Lake – 13.29 kms, SW • Katrambakkam Lake – 11.70 kms, E • Pulichapallam Lake – 12.87 kms, SE • Kodur Lake – 14.94 kms, E • Nallavur Lake – 13.97 kms, NE • Omandur Lake – 11.32 kms, NE • Annamputhur Lake – 11.38 kms, NE • Budhur Lake – 13.64 kms, SW • Thalavaipattu Lake – 14.75 kms, NW • Melakondai Pond – 11.61 kms, W
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places/Monuments	<ul style="list-style-type: none"> • National Petrified/Fossil Wood Park, Thiruvakkarai – 5 kms, SE

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

15	National parks / Wildlife Sanctuaries	<ul style="list-style-type: none"> • Oussudu Lake Bird Sanctuary – 14.94 kms, SE • Kazhuveli Wetland Bird Sanctuary – 16.64 kms, NE
16	Reserved / Protected Forests	<ul style="list-style-type: none"> • Melkondai R.F – 10.71 Kms, W • Kongarampoondi R.F – 10.79 kms, W • Vikravandi R.F – 10.85 kms, W
17	Seismicity	Proposed Lease area come under Seismic zone-II (low risk area)
18	Defense Installations	Nil in 15 Km radius

3. Need for the Project

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Erariyur Village, Vanur Taluk, Villupuram District	



Figure 1: Location Map of the Project Site

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
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Figure 2: Google Image of the Project Site

4. Charnockite

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

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

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

5. Geological Resources

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

Table 2. Geological resources

GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Rough Stone in m ³	Gravel in m ³
XY-AB	I	6	22	2	264		264
	I	6	23	3	414	414	
	II	6	26	1	156	156	
	II	107	98	4	41944	41944	
	III	107	98	5	52430	52430	
	IV	107	98	5	52430	52430	
	V	107	98	5	52430	52430	
	VI	107	98	5	52430	52430	
	VII	107	98	5	52430	52430	
TOTAL				35	304928	304664	264
X1Y1-CD	I	108	104	2	22464		22464
	I	108	104	3	33696	33696	
	II	108	104	5	56160	56160	
	III	108	104	5	56160	56160	
	IV	108	104	5	56160	56160	
	V	108	104	5	56160	56160	
	VI	108	104	5	56160	56160	
	VII	108	104	5	56160	56160	
	VIII	108	104	5	56160	56160	
TOTAL				40	449280	426816	22464
TOTAL					754208	731480	22728

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Table 3. Yearwise Production Plan

YEARWISE PRODUCTION RESERVES								
Year	section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Rough Stone in m ³	Gravel in m ³
1	X1Y1-CD	I	50	89	2	8900		8900
		II	50	89	3	13350	13350	
		III	50	79	5	19750	19750	
	TOTAL						42000	33100	8900
2	X1Y1-CD	I	43	89	2	7654		7654
		I	43	89	3	11481	11481	
		II	33	79	5	13035	13035	
	XY-AB	II	74	72	4	21312	21312	
	TOTAL						53482	45828	7654
3	XY-AB	II	18	72	4	5184	5184	
		III	82	62	5	25420	25420	
	X1Y1-CD	III	60	69	5	20700	20700	
	TOTAL						51304	51304	0
4	X1Y1-CD	III	13	69	5	4485	4485	
		IV	63	59	5	18585	18585	
	XY-AB	IV	72	52	5	18720	18720	
		V	40	42	5	8400	8400	
	TOTAL						50190	50190	0
5	XY-AB	V	22	42	5	4620	4620	
		VI	52	32	5	8320	8320	
		VII	42	22	5	4620	4620	
	X1Y1-CD	V	53	49	5	12985	12985	
		VI	43	39	5	8385	8385	
		VII	33	29	5	4785	4785	
		VIII	23	19	5	2185	2185	
	TOTAL						45900	45900
GRAND TOTAL						242876	242876	16554

6. Mining

Opencast mining

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyyur Village, Vanur Taluk, Villupuram District	

The quarry operation is proposed to carry out with conventional open cast mechanized mining with 5.0 meter vertical bench with a bench width of 5.0 meter with slope of 60°. The Quarry operation involves shallow hand jack hammer drilling, mild explosives in blasting, excavation, loading and transportation of rough stone to the needy crusher.

Process Description

- The reserves and resource are arrived based upon the Geological investigation
- Removal of Gravel by Excavators and directly Loaded into Tippers.
- Removal of Rough Stone by Excavators by Drilling and Blasting.
- Shallow Drilling With Jackhammer of 30-35 mm Dia.
- Minimum Blasting With Class 3 Explosives.
- Loading of Rough Stone By Excavators Into Tippers.

7. Water Requirement

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

Table 4. Water Balance

Purpose	Quantity	Source
Domestic and Drinking Water	1.0 KLD	Packaged Drinking water vendors available in Perumbakkam which is about 1.28 Km NE of the area
Green belt	0.5 KLD	Other domestic activities through road tankers supply
Dust suppression	0.5 KLD	From road tankers supply
Total	2.0 KLD	

8. Manpower

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

Table 5. Man Power Requirement

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

1.	Highly Skilled	IInd Class Mines Manager	1 No.
		Mine Geologist	1 No.
		Blaster	1 No.
2.	Semi – skilled	Driver	2 Nos
		Hitachi Operator	1 No.
3.	Unskilled	Musdoor/Labours	12 Nos
Total			18 Nos.

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

9. Solid Waste Management

Table 6 Solid Waste Management

S. No	Type	Quantity	Disposal Method
1	Organic	3.24 kg/day	Municipal bin including food waste
2	Inorganic	4.86 kg/day	TNPCB authorized recyclers

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

Table 7. 500m Radius Cluster Mine

1) Existing other quarries:

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
1.	T. Vasudevan S/o. Thangavel, Eraiyur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur & Eraiyur	80/3, 80/4, 81/1, 81/3, 81/4, 81/5,	0.28.0 0.47.0 0.48.0 0.36.0 0.36.0 0.35.0	15.02.2019 to 14.02.2024

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

				81/6, 94/1A, 94/2, 94/3	1.18.0 0.27.0 0.29.0 0.79.5 4.83.5	
2	E. Jayasankar, S/o. Elumalai, No. 198, Vinayakar Koil Street, Eraiyur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur & Eraiyur	93/4 93/5 94/1B 94/4	1.14.0 0.21.0 0.27.0 1.75.5 Total 3.37.5	15.02.2019 to 14.02.2024

2) Proposed Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.
1.	Thiru. K. Anandavelu, S/o. Kesavan, No. 225, Mettu Street, Eraiyur Village, Vanur Taluk, Villupuram District	Rough Stone & Gravel	Vanur & Eraiyur	76/2 76/3A 76/6	0.86.0 0.22.0 1.10.0 2.18.0

3) Abandoned Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
-----Nil-----						

The Total extent of the Existing / Lease expired / Proposed quarries are 10.39.0 Ha

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

10. Land Requirement

The total extent area of the project is 2.18.0 Ha, Patta land in Eraiyur Village of Vanur Taluk, Villupuram District.

Table 8 Land Use Breakup

Sl. No.	Description	Present Area (Ha.)
01.	Area under Quarrying	0.79.50
02.	Infrastructure	Nil
03.	Roads	0.01.0
04.	Green Belt	1.37.50
05.	Unutilized Area	Nil
	TOTAL	2.18.0 Ha

11. Human Settlement

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

Table 9 Habitation

S.No	Direction	Village	Distance in kms	Population
1	South East	Eraiyr	1.71 Kms	3257
2	North	Thaludhali	1.81 Kms	2257
3	North West	Kanniyam	1.38 Kms	919
4	West	Konamangalam	1.56 Kms	907
5	South	Ambuzhukkai	2.42 Kms	558
6	North East	Perumbakkam	1.28 Kms	2184
7	East	Karasanur	2.66 Kms	2862

12. Power Requirement

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

The Rough Stone and Gravel Quarry project does not require huge water and electricity for the project. **16 Litre** diesel per hour for excavator for mining and loading for Rough stone needed and **10 Litre** diesel per hour for excavator for mining and loading for Earth.

13. Scope of the Baseline Study

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

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

13.1 Micro – Meteorology

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

- i) Average Minimum Temperature : 18⁰ C to 26⁰ C
- ii) Average Maximum Temperature. : 30⁰ C to 40⁰ C
- iii) Average Annual Rainfall of the area : 985 mm

13.2 Air Environment

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

The baseline levels of PM₁₀ (62-36 µg/m³), PM_{2.5} (32-14 µg/m³), SO₂ (20-5 µg/m³), NO₂ (39-9 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from May to July 2023.

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 62 dB(A) and 53 dB(A) respectively in Shri Ayyanar Temple & Mailam Engineering College. The minimum Day Noise and Night noise were 45 dB(A) and 39 dB(A) respectively which was observed in Project Site and Government High School, Kunnam. The observed values are all well within the Standards prescribed by CPCB.

13.4 Water Environment

- The average pH ranges from 7.02 – 8.09.
- TDS value varied from 285 mg/l to 1179 mg/l
- Hardness varied from 137 to 515 mg/l
- Chloride varied from 49.2 to 292 mg/l

13.5 Land Environment

The analysis results shows that the majority of soil in the project and surrounding area is slightly alkaline in nature and pH value ranges from 6.97 to 8.72 with organic matter 0.13 to 1.6 %. The concentration of Nitrogen, Phosphorus & Potassium has been found to be in good amount in the soil samples.

13.6 Biological Environment

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

14. Rehabilitation/ Resettlement

- The overall land of the mine is Patta land. There are no displacement of the population within the project area and adjacent nearby area. Social development of nearby villages will be considered in this project.

Project	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
Project Proponent	<i>Thiru K Anandavelu</i>	
Project Location	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

15. Greenbelt Development

1. The development of greenbelt in the peripheral buffer zone of the mine area.
2. Green belt has been recommended as one of the major component of Environmental Management Plan, which will improve ecology, environment and quality of the surrounding area.
3. Local trees like Neem, Vilvam, Panai, etc will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 218 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table.10 Plantation/ Afforestation Program

Name of species proposed	Survival	No of species
Neem, Vilvam, Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila Maram, Poo Marudhu, Panai, Marudha maram, Thandri, Sengondrai, Poovarasu, Pungam, Sandhana Vembu, Uva, Uzha, Illuppai, Sarakondrai, Puthranjivi, etc.,	80%	1090
Total		1090

16. Anticipated Environmental Impacts

16.1 Air Environment and Mitigation Measures

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

16.2 Noise Environment and Mitigation Measures

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

17. Responsibilities for Environmental Management Cell (EMC)

The responsibilities of the EMC include the following:

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

18. Environmental Monitoring Program

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

19. Project Cost

The total project cost is **Rs. 1,14,99,388/-** for deployment of machinery and creation of infrastructural facilities like approach road, mine office / Workers Shed, First Aid Room etc., including electrifications and water supply.

Table .11 Project Cost details

S. No.	Description	Cost (Rs.)
1	Fixed Asset Cost	13,87,500/-
2	Machinery Cost	25,00,000 /-
3.	EMP Cost	76,11,888 /-
	Total	1,14,99,388 /-

20. Corporate Environmental Responsibility

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

Table 12 CER Cost

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

S.No.	CER Activity	CER value (Rs)
1.	Government High School, Eraiyur – 1.76 km, SE <ul style="list-style-type: none"> ➤ Painting of Classroom, Compound Walls and Entire School Campus ➤ R.O. Water Purifier ➤ Tables, Desk and Bench ➤ Smart Classroom facility (Projector Attached) ➤ Environmental books, General Awareness and Social Leaders books for library (in Tamil language), ➤ Greenbelt facilities in and around the campus – 50 No's ➤ Hygienic Toilet Facilities and maintenance upto the lease period 	5,00,000/-
Total		5,00,000/-

21. Benefits of the Project

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

1 Introduction

1.1 PREAMBLE

Environment Impact Assessment (EIA) is a process used to identify the environmental, social & economic impacts of a project prior to decision making. It aims to predict environmental impacts at an early stage of project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the prediction options to the proponent. By using EIA, both environmental & economic benefits can be achieved. By considering environmental effects - prediction & mitigation, early benefits in project planning, protection of the environment, optimum utilization of resources, thus saving overall time & cost of the project.

1.2 GENERAL INFORMATION ON MINING OF MINERALS

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

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

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

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

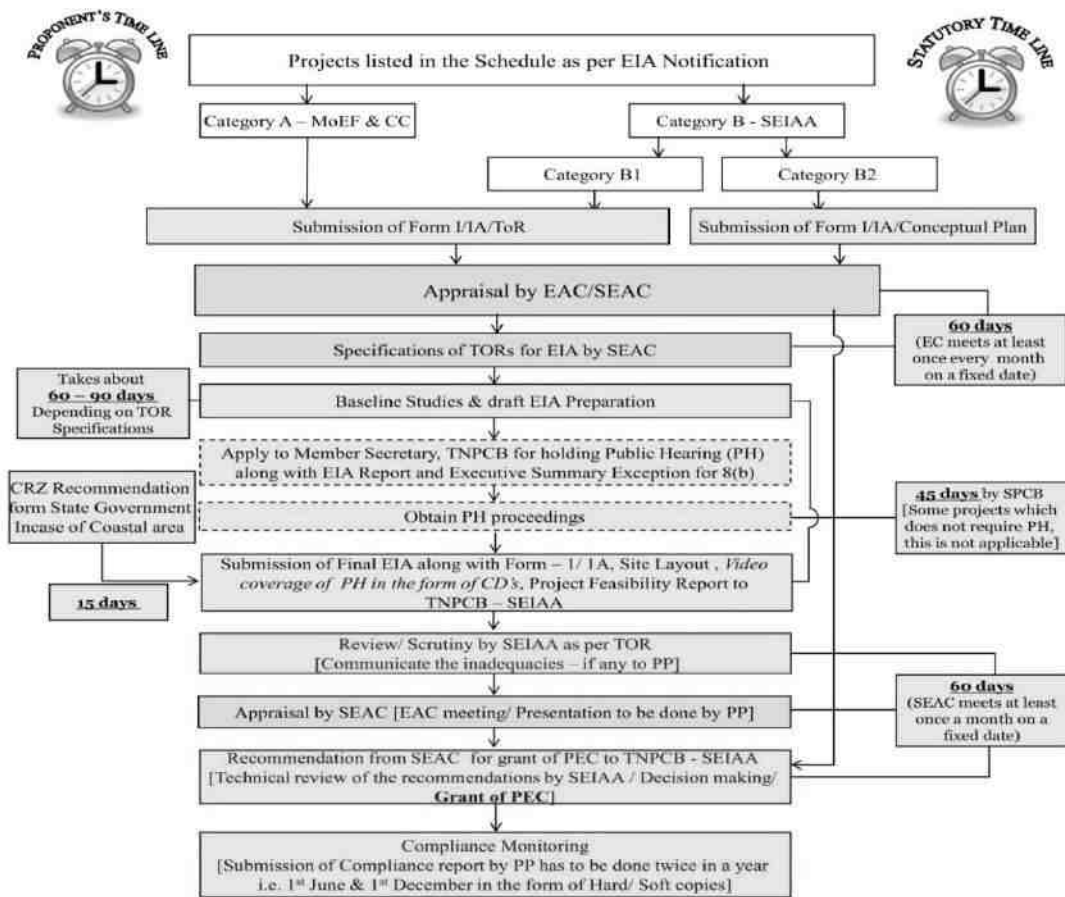
Hilly, undulated terrain like Kommedu, Mattaparai of Gingee Taluk, Mookkanur of Sankarapuram, Karadi of Tirukoilur, Ammanampakkam of Tindivanam are being mined for Multi-Colour Granite. The elevated hilly and undulating terrain around Thiruvakkarai, Kunnam, Semangalam, Siruvanoor, Karasanur, Perumbakkam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



Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

1.3 ENVIRONMENTAL CLEARANCE

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

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



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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

1.4 TERMS OF REFERENCE (TOR)

The Terms of Reference have been issued by SEAC TN vide Letter No. SEIAA-TN/F. No. 9208/SEAC/ToR-1250/2022 Dated: 07.09.2022. 39 additional ToR points were recommended by SEAC TN in addition to the Standard ToR Points. The replies for the same were addressed in this report.

1.5 POST ENVIRONMENTAL CLEARANCE MONITORING

1.5.1 *Methodology adopted*

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

Table 1-1: Post Environmental Clearance Monitoring

S. No.	Description	Frequency of Monitoring
1.	Ambient Air Quality Monitoring	Quarterly/ Half Yearly
2.	Water level & Quality Monitoring	Quarterly/ Half Yearly
3.	Noise Level Monitoring	Quarterly/ Half Yearly
4.	Soil Quality Monitoring	Yearly
5.	Medical Check-up	Yearly

1.6 GENERIC STRUCTURE OF THE EIA DOCUMENT

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

Chapter 2: Project Description. In this chapter the proponent should also furnish detailed description of the proposed project, such as the type of the project, need for the project, project location, layout, project activities during construction and operational phases, capacity of the project, project operation i.e., land availability, utilities (power and water supply) and infrastructure facilities such as roads, railways, housing and other requirements. If the project site is near a sensitive area it is to be mentioned clearly why an

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
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<i>Project Location</i>	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

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

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

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

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

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

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

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

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

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

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

1.7 DETAILS OF PROJECT PROPONENT

Project Proponent : Thiru. K. Anandavelu
Status of the Proponent : Private & Individual
Proponent's Name & Address : S/o. Kesavan,
No. 225, Mettu Street,
Eraiyr Village,
Vanur Taluk,
Villupuram District – 604 304.

1.8 BRIEF DESCRIPTION OF THE PROJECT

1.8.1 *Project Nature, Size & Location*

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

Proposed proposal pertains to rough stone and earth mining project by open cast mechanized method on allotted mine lease area at Eraiyr Village, Vanur Taluk of Villupuram District, Tamil Nadu. It is a Plain terrain. The total allotted mine lease for the proposed project is 2.18.0 Ha with their maximum production capacity i.e. 7,31,480 m³ of Rough stone and 22,728 m³ of Gravel for the period of Five years only.

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Erarayur Village, Vanur Taluk, Villupuram District	

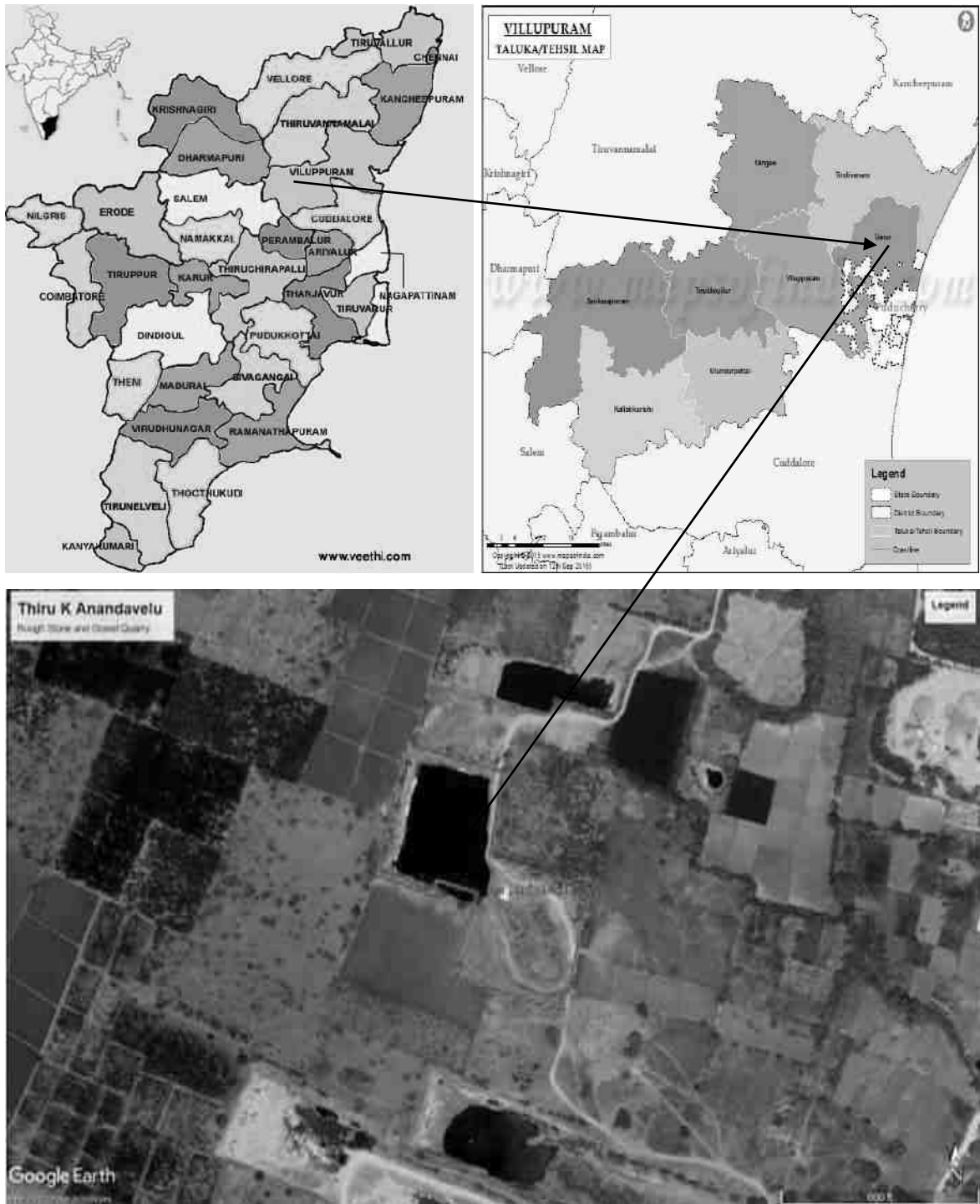


Figure 1.1: Location Map of the Project site

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru KAnandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

2 Project Description

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

2.1 GENERAL

Proposed proposal pertains to rough stone and earth mining project by open cast mechanized method on allotted mine lease area at Eraiyur Village, Vanur Taluk of Villupuram District, Tamil Nadu. It is a Plain terrain. We had operated the quarry in the part of a land earlier from the period of 2017 to 2020 by obtaining the letter from District Collector, Villupuram vide Proceedings vide Rc. A/G&M/977/2012 (Na.Ka.A/Puvi&Sura/977/2012) dated 28.07.2017 for a period of five years for the extent of 1.08.0 Ha Patta Land includes the Survey Numbers of 76/2 & 76/3A. Now, we have obtained fresh mining plan from 2023 to 2028 from Department of Geology and Mining, Villupuram District for 2.18.0 Ha land area in the S.F.Nos. 76/2, 76/3A & 76/6 for a proposed mining depth of 40 m below ground level and five years production of 2,26,322 m³ of Rough stone and 16,554 m³ of Gravel.

Type of the project:

As per EIA Notification, 2006 and its subsequent amendments (O.M vide No.F.No.L-11011/175/2018-IA-II(M) Government of India MoEF & CC on December 12th 2018) project comes under category B1 cluster & schedule 1(a) under item 1. The project required to be appraised at state level by State Environment Impact Assessment Authority, Tamil Nadu. Environment Clearance study will involve preparation of draft EIA report on the basis of baseline & impact assessment study is carried out. Also, before appraisal, under 7(III) of EIA notification 2006, the project involves the Public Consultation and the same will be conducted under SPCB (TN) in Villupuram District. The proceedings of the same will be incorporated in the Final EIA Report.

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
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<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Table 2-1: Quarry within 500m Radius

1) Existing other quarries:

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
1.	T. Vasudevan, S/o. Thangavel, Eraiyur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur & Eraiyur	80/3 80/4 81/1 81/3 81/4 81/5 81/6 94/1A 94/2 94/3 Total	0.28.0 0.47.0 0.48.0 0.36.0 0.36.0 0.35.0 1.18.0 0.27.0 0.29.0 0.79.5 4.83.5	15.02.2019 to 14.02.2024
2	E. Jayasankar, S/o. Elumalai, No. 198, Vinayakar Koil Street, Eraiyur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur & Eraiyur	93/4 93/5 94/1B 94/4 Total	1.14.0 0.21.0 0.27.0 1.75.5 3.37.5	15.02.2019 to 14.02.2024

2) Proposed Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.
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Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
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Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

1.	Thiru. K. Anandavelu, S/o. Kesavan, No. 225, Mettu Street, Eraiyr Village, Vanur Taluk, Villupuram District	Rough Stone & Gravel	Vanur & Eraiyr		0.86.0
				76/2	0.22.0
				76/3A	1.10.0
				76/6	Total
					2.18.0

3) Abandoned Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
-----Nil-----						

The Total extent of the Existing / Abandoned / Proposed quarries are 10.39.0 Ha

2.1.1 *Need for the project:*

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

Rough stone is one of the most valuable natural building materials. Aggregates are mostly used for building roads and footpaths. Aggregates – stone used for its strong physical properties – crushed and sorted into various sizes for use in concrete, coated with bitumen to make asphalt or used 'dry' as bulk fill in construction.

Mostly used in roads, concrete and building products. Aggregates represent about 98% of quarry output, most of which is used in road construction, maintenance and repair. Much of this goes to the production of asphalt; the remainder is used 'dry' without the addition of other materials to provide a sturdy base for roads.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
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Since Villupuram, a city known for its small-scale industries and also the soil in the area near project site is not very fertile making it unsuitable for carrying out agricultural activities. The topography near the project area is dry lands showing only less chance for crop growth and development of vegetation. Rocks and minerals of economic importance found to occur in Villupuram District are Black Granite, Rough Stone, Red soil, Gravel and Pebbles.

As a result of developmental activities and market demand for minor minerals, mining of minor mineral is vital. In addition to that, geological reserves of rough stone is abundant in the project area which is evident from the mining activities carried out in the nearby sites.

2.2 BRIEF DESCRIPTION OF THE PROJECT

Table 2-2 Salient Features of the Project

S. No.	Description	Details
1	Project Name	Rough Stone and Gravel Quarry-2.18.0 ha
2	Proponent	Thiru K Anandavelu
3	Mining Lease Area Extent	2.18.0 Ha
4	Location	S.F.Nos. 76/2, 76/3A & 76/6, Eraiyur Village, Vanur Taluk, Villupuram District.
5	Latitude	12° 04' 20.61" N to 12° 04' 28.15" N
6	Longitude	79° 38' 39.36" E to 79° 38' 45.89" E
7	Topography	Plain terrain
8	Site Elevation above MSL	77 m from MSL
9	Topo sheet No.	57-P/12
10	Minerals of Mine	Rough Stone and Gravel Quarry
11	Proposed production of Mine	2,42,876 m ³ of Rough stone 16,554 m ³ of Gravel
12	Ultimate depth of Mining	40 m below ground level
13	Method of Mining	Open cast mechanized mining
14	Water demand	2.00 KLD
15	Source of water	Water will be supplied through tankers supply

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
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<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

16	Man power	18 Nos.
17	Mining Lease	Precise area communication from The Assistant Director, Department of Geology & Mining, Villupuram District vide Na. Ka. En. A/Puvi (Ma) Sura/273/2020 dated 20.12.2022
18	Mining Plan Approval	Mining Plan was approved by The Deputy Director, Dept. of Geology & Mining, Villupuram vide Rc No: A/G&M/273/2020 dated 14.02.2023
19	Production details	Geological reserves: 7,31,480 m ³ of Rough stone and 22,728 m ³ of Gravel Proposed year wise recoverable reserves: 2,26,322 m ³ of Rough stone and 16,554 m ³ of Gravel
20	Boundary Fencing	7.5 m barrier all along the boundary for adjacent patta lands and 10 m safety distance for Govt. Lands. Fencing will be provided.
21	Disposal of overburden	The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling an levelling of low lying areas and will be supplied to those needy customers and seigniorage fee to the Government will be paid. The excavated Rough stone (100%) will be directly loaded into tippers to the needy customers. There is no waste anticipated during this plan period hence, disposal of waste does not arise.
22	Ground water	The quarry operation is proposed up to a depth of 40 m below ground level. The water table is below 65 m from ground level which is observed from the nearby open wells and bore wells. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.
23	Habitations within 300m radius of the Project Site	There is no Habitation within 300m radius of the project site.

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
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24	Drinking water	Water will be supplied through tankers from Perumbakkam village which is 1.28 Km NE of the area
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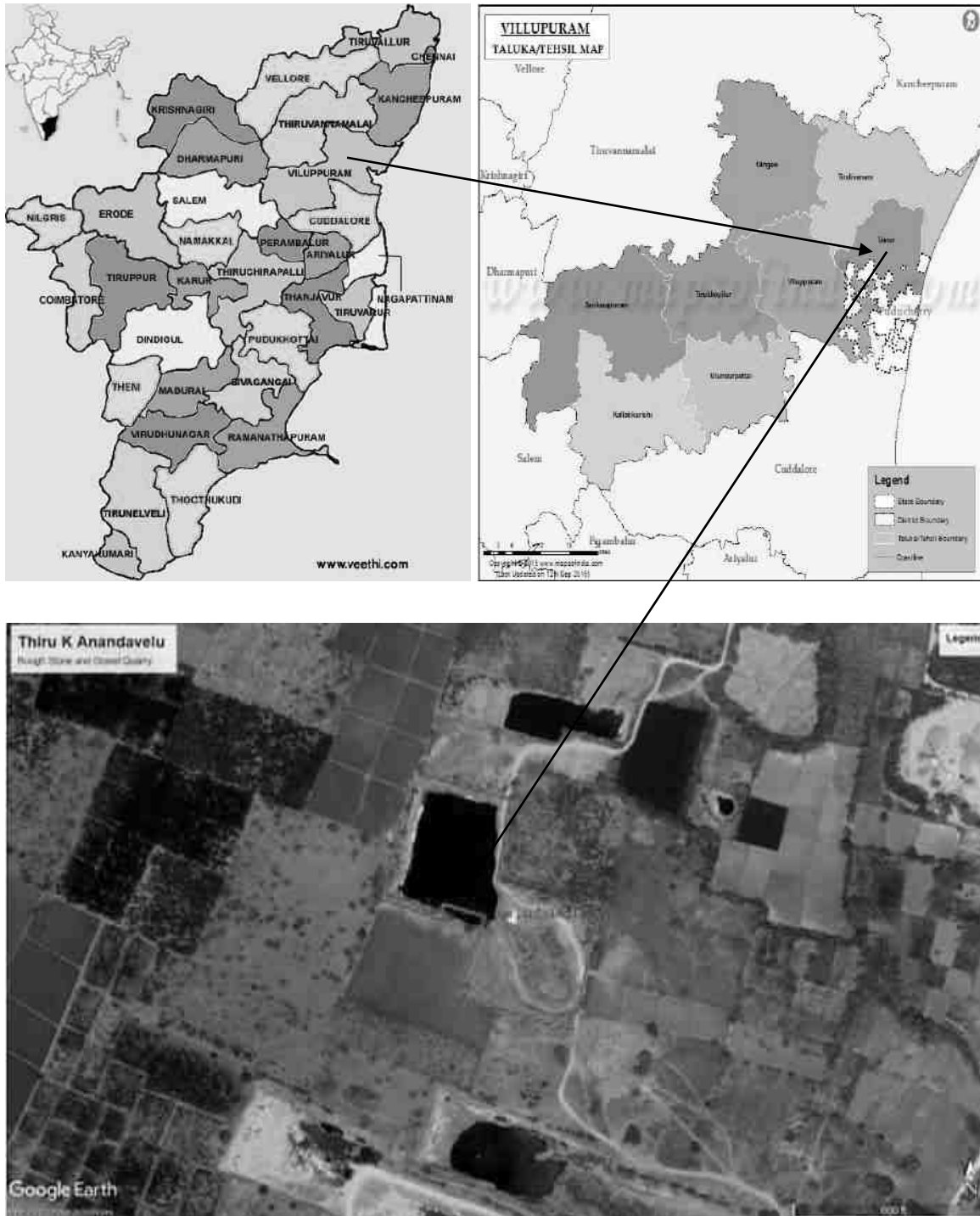


Figure 2.1: Location Map of the Project Site

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru KAnandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	



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

2.2.1 *Site Connectivity:*

The site is connected to the roadways as follows.

MDR 808 – Perumbakkam to Pidaripattu Highway – 1.25 km, E

SH 136 – Mailam to Puducherry – 1 km, N

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
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Project Location	Eraiyyur Village, Vanur Taluk, Villupuram District	



Figure 2.3: Site Connectivity

2.3 LOCATION DETAILS:

Table 2-3: Location Details

S. No	Particulars	Details
1.	Latitude	12° 04' 20.61" N to 12° 04' 28.15" N
2.	Longitude	79° 38' 39.36" E to 79° 38' 45.89" E
3.	Site Elevation above MSL	77 m from MSL
4.	Topography	Plain
5.	Land use of the site	Patta land
6.	Extent of lease area	2.18.0 Ha

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
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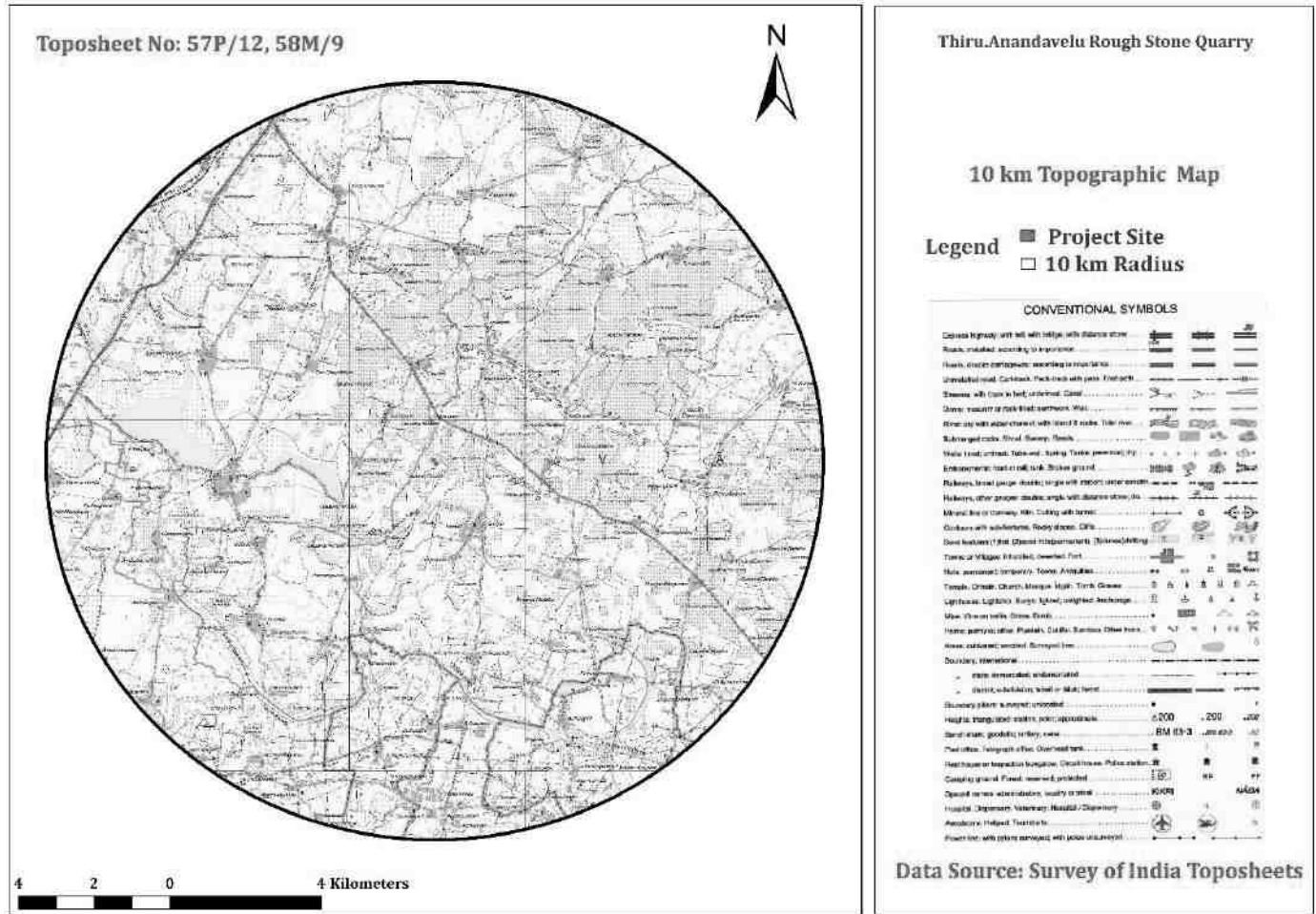


Figure 2.4: Topo Map of Project Site

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru KAnandavelu	
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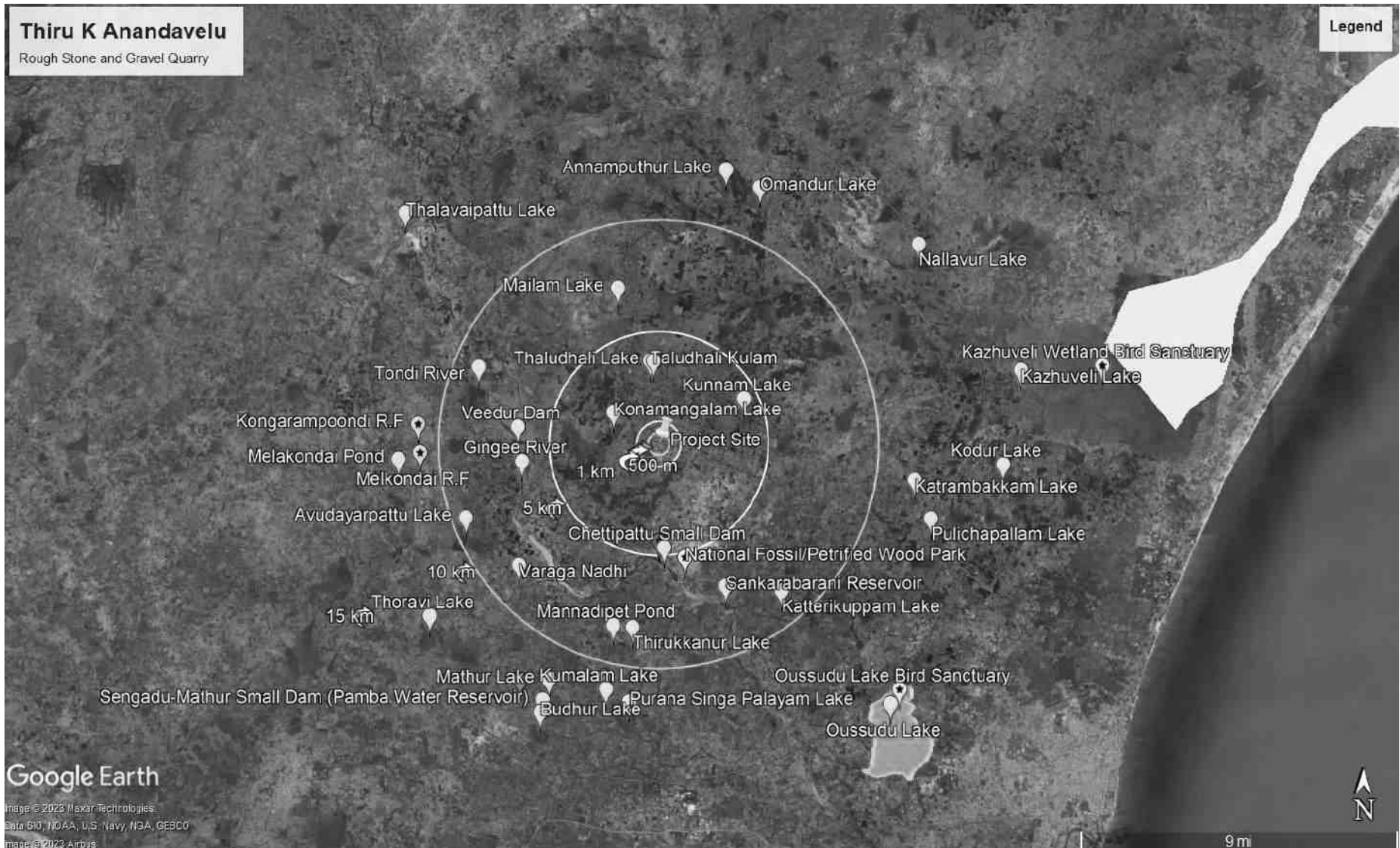


Figure 2.5: Environmental Sensitivity within 15 km radius

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
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<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

2.3.1 Site Photographs

The site photographs of the project site are as follows

East: 12°4'23.97"N, 79°38'45.90"E

Eraiyr, Vanur, Villupuram



South: 12°4'21.69"N, 79°38'41.56"E

Eraiyr, Vanur, Villupuram



West: 12°4'24.48"N, 79°38'39.36"E

Eraiyr, Vanur, Villupuram



North: 12°4'27.27"N, 79°38'43.23"E

Eraiyr, Vanur, Villupuram



Figure 2.6: Site Photographs

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru KAnandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

2.3.2 Land Use Breakup of the Mine Lease Area

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

Table 2-4: Land use pattern

S.No	Land Use	Present Area (Ha)
1	Area under Quarrying	0.79.50
2	Infrastructure	Nil
3	Roads	0.01.0
4	Green Belt	1.37.50
5	Unutilized area	Nil
	Total	2.18.0 Ha

2.3.3 Human Settlement

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

Table 2-5: Habitation

S.No	Village	Distance in kms	Direction	Population
1	South East	Eraiyr	1.71 Kms	3257
2	North	Thaludhali	1.81 Kms	2257
3	North West	Kanniyam	1.38 Kms	919
4	West	Konamangalam	1.56 Kms	907
5	South	Ambuzhukkai	2.42 Kms	558
6	North East	Perumbakkam	1.28 Kms	2184
7	East	Karasanur	2.66 Kms	2862

2.4 LEASEHOLD AREA

The Existing Rough Stone and Gravel Quarry mine of 2.18.0 Ha is a Patta land. The lease area falls in S.F No: 76/2, 76/3A & 76/6 of Eraiyr Village, Vanur Taluk, Villupuram District. There is no reserve forest or protected forest land within the lease area. There is neither human settlement within 300m radius from the lease area.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru KAnandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

2.5 GEOLOGY

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru KAnandavelu	
Project Location	Erailyur Village, Vanur Taluk, Villupuram District	

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

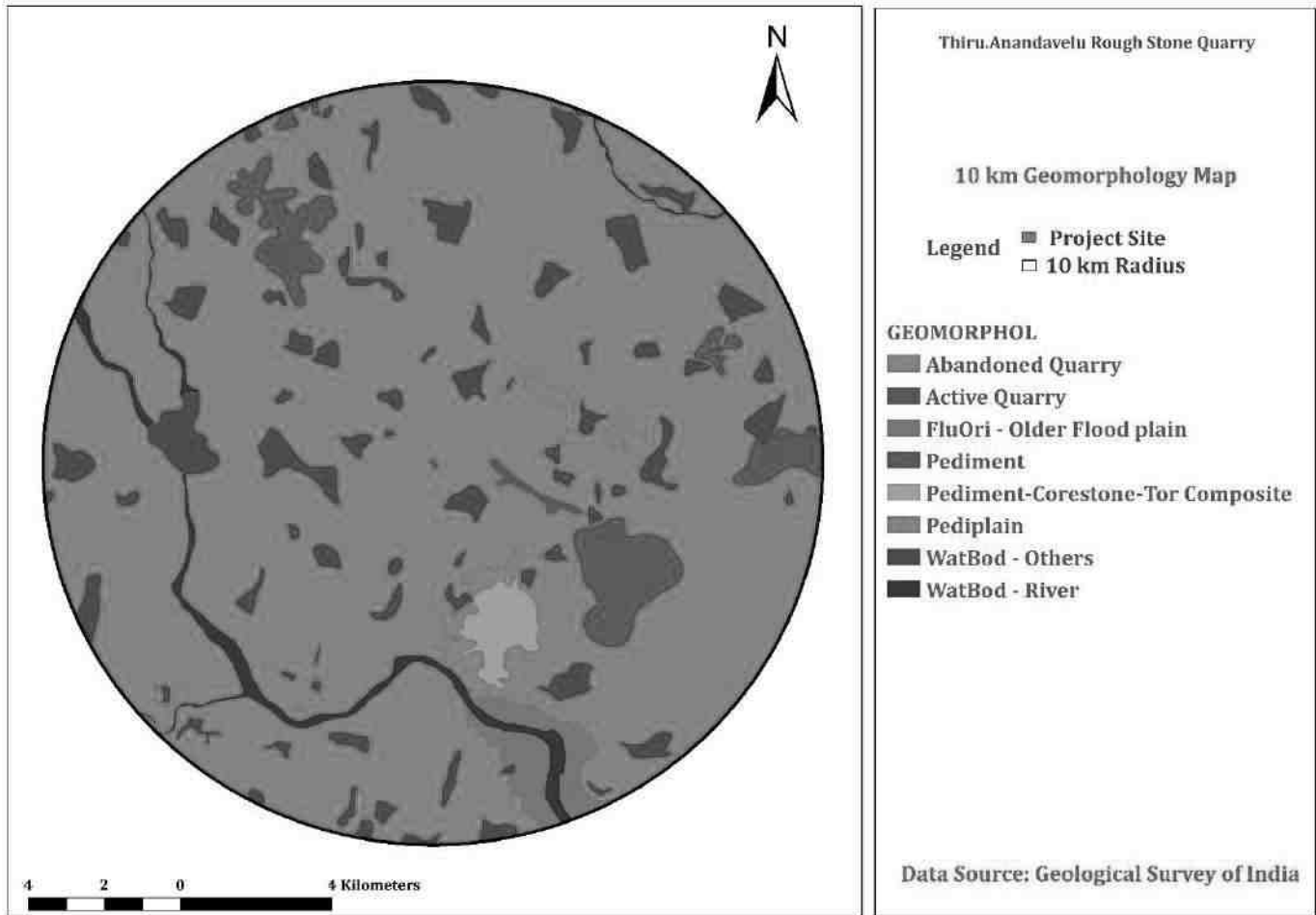


Figure 2.7: Geomorphology

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru KAnandavelu	
Project Location	Erailyur Village, Vanur Taluk, Villupuram District	

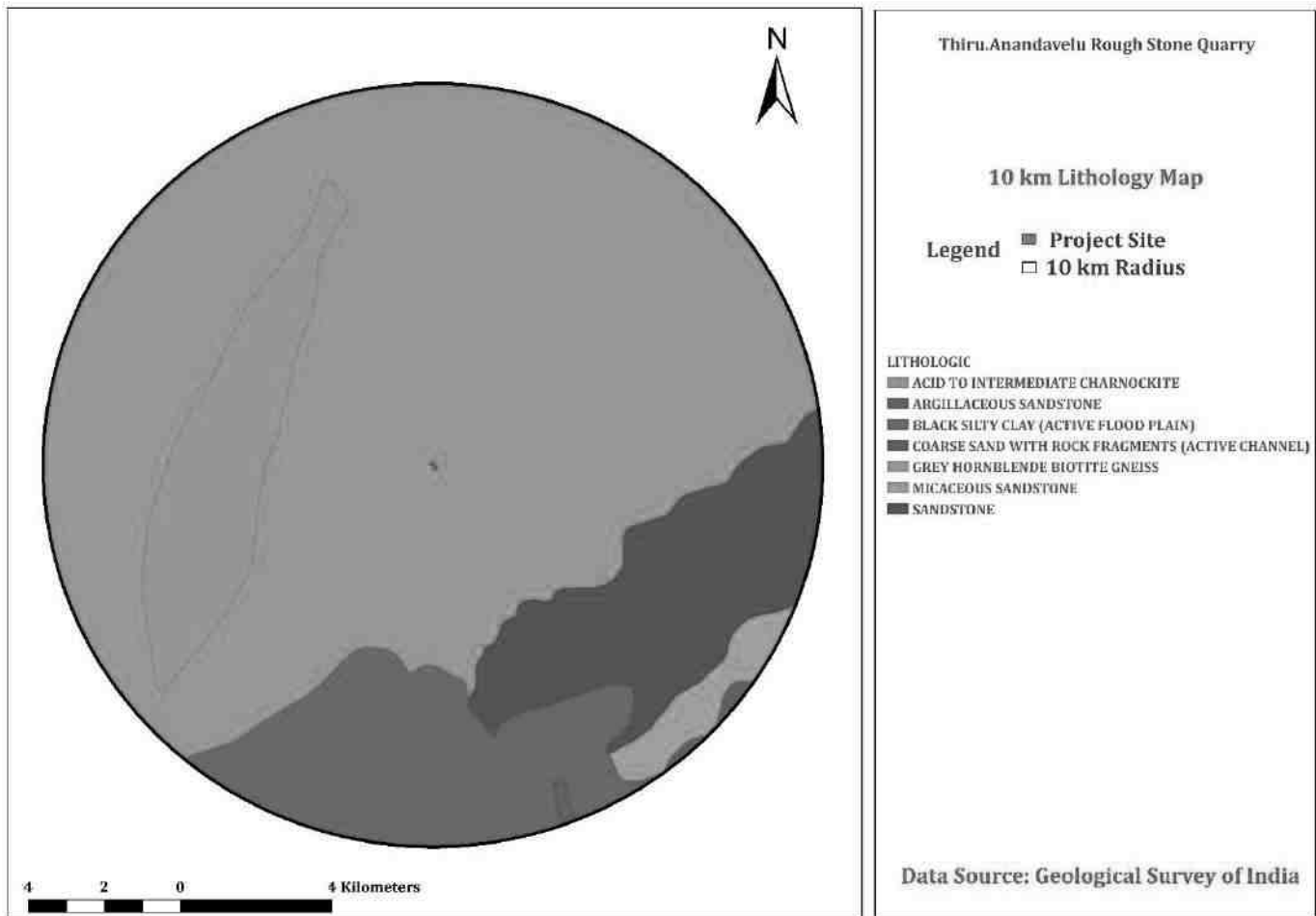


Figure 2.8 Lithology

2.6 QUALITY OF RESERVES:

The mining lease area is of 2.18.0 Ha, with production capacity of 2,26,322 m³ of Rough Stone and 16,554 m³ of Gravel. Due to significant role in the domestic as well as infrastructural market, making the mining of Stone and Gravel along with associated minor minerals is economically viable.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru KAnandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

Table 2-6: Details of Mining

S. No	Particulars	Details
1	Method of Mining	Open Cast mechanized
2	Geological Reserves	7,31,480 m ³ of Rough stone, 22,728 m ³ of Gravel
3	Recoverable Reserves	2,26,322 m ³ of Rough stone, 16,554 m ³ of Gravel
4	Proposed Production	2,26,322 m ³ of Rough stone, 16,554 m ³ of Gravel
5	Elevation Range of the Mine Site	77 m MSL

2.6.1 *Estimation of Reserves*

The practical method of the systematic geological mapping and delineation of Rough stone (Charnockite) within the field was done and careful evaluation of body luster, physical properties, engineering properties, commercial aspects, etc. The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in 1:1000 scale and the estimated balance Geological Reserves as 7,31,480 m³ of Rough stone and 22,728 m³ of Gravel.

2.6.2 *Geological Reserves*

Rough Stone and Gravel:

Geological Resources is estimated at 7,31,480 m³ of Rough stone and 22,728 m³ of Gravel.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru KAnandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

Table 2-7: Geological Reserves

GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Rough Stone in m ³	Gravel in m ³
XY-AB	I	6	22	2	264		264
	I	6	23	3	414	414	
	II	6	26	1	156	156	
	II	107	98	4	41944	41944	
	III	107	98	5	52430	52430	
	IV	107	98	5	52430	52430	
	V	107	98	5	52430	52430	
	VI	107	98	5	52430	52430	
	VII	107	98	5	52430	52430	
TOTAL				35	304928	304664	264
X1Y1-CD	I	108	104	2	22464		22464
	I	108	104	3	33696	33696	
	II	108	104	5	56160	56160	
	III	108	104	5	56160	56160	
	IV	108	104	5	56160	56160	
	V	108	104	5	56160	56160	
	VI	108	104	5	56160	56160	
	VII	108	104	5	56160	56160	
	VIII	108	104	5	56160	56160	
TOTAL				40	449280	426816	22464
TOTAL					754208	731480	22728

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru KAnandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

2.6.3 Mineable Reserves

The mineable reserves and the Recoverable Reserves are 2,26,322 m³ of Rough stone and 16,554 m³ of Gravel respectively, at the rate of 100% recovery upto the permissible depth. Total Depth – 40 m.

Table 2-8: Mineable Reserves

MINEABLE RESERVES								
Year	section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Rough Stone in m ³	Gravel in m ³
1	X1Y1-CD	I	50	89	2	8900		8900
		II	50	89	3	13350	13350	
		III	50	79	5	19750	19750	
	TOTAL						42000	33100	8900
2	X1Y1-CD	I	43	89	2	7654		7654
		I	43	89	3	11481	11481	
		II	33	79	5	13035	13035	
	XY-AB	II	74	72	4	21312	21312	
	TOTAL						53482	45828	7654
3	XY-AB	II	18	72	4	5184	5184	
		III	82	62	5	25420	25420	
	X1Y1-CD	III	60	69	5	20700	20700	
	TOTAL						51304	51304	0
4	X1Y1-CD	III	13	69	5	4485	4485	
		IV	63	59	5	18585	18585	
	XY-AB	IV	72	52	5	18720	18720	
		V	40	42	5	8400	8400	
	TOTAL						50190	50190	0
5	XY-AB	V	22	42	5	4620	4620	
		VI	52	32	5	8320	8320	
		VII	42	22	5	4620	4620	
	X1Y1-CD	V	53	49	5	12985	12985	
		VI	43	39	5	8385	8385	
		VII	33	29	5	4785	4785	
		VIII	23	19	5	2185	2185	
	TOTAL						45900	45900
GRAND TOTAL						242876	242876	16554

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru KAnandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

2.6.4 Year wise Production Plan

The proposed rate of production of Rough Stone is about 2,26,322 m³ and Gravel is about 16,554 m³ for Five Years. Total Depth-40 m (2 m Gravel + 38 m Rough Stone).

Table 2-9: Year wise Production Plan

YEARWISE PRODUCTION RESERVES								
Year	section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Rough Stone in m ³	Gravel in m ³
1	X1Y1-CD	I	50	89	2	8900		8900
		II	50	89	3	13350	13350	
		III	50	79	5	19750	19750	
	TOTAL						42000	33100	8900
2	X1Y1-CD	I	43	89	2	7654		7654
		I	43	89	3	11481	11481	
		II	33	79	5	13035	13035	
	XY-AB	II	74	72	4	21312	21312	
	TOTAL						53482	45828	7654
3	XY-AB	II	18	72	4	5184	5184	
		III	82	62	5	25420	25420	
	X1Y1-CD	III	60	69	5	20700	20700	
	TOTAL						51304	51304	0
4	X1Y1-CD	III	13	69	5	4485	4485	
		IV	63	59	5	18585	18585	
	XY-AB	IV	72	52	5	18720	18720	
		V	40	42	5	8400	8400	
	TOTAL						50190	50190	0
5	XY-AB	V	22	42	5	4620	4620	
		VI	52	32	5	8320	8320	
		VII	42	22	5	4620	4620	
	X1Y1-CD	V	53	49	5	12985	12985	
		VI	43	39	5	8385	8385	
		VII	33	29	5	4785	4785	
		VIII	23	19	5	2185	2185	
	TOTAL						45900	45900	0
GRAND TOTAL						242876	242876	16554

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
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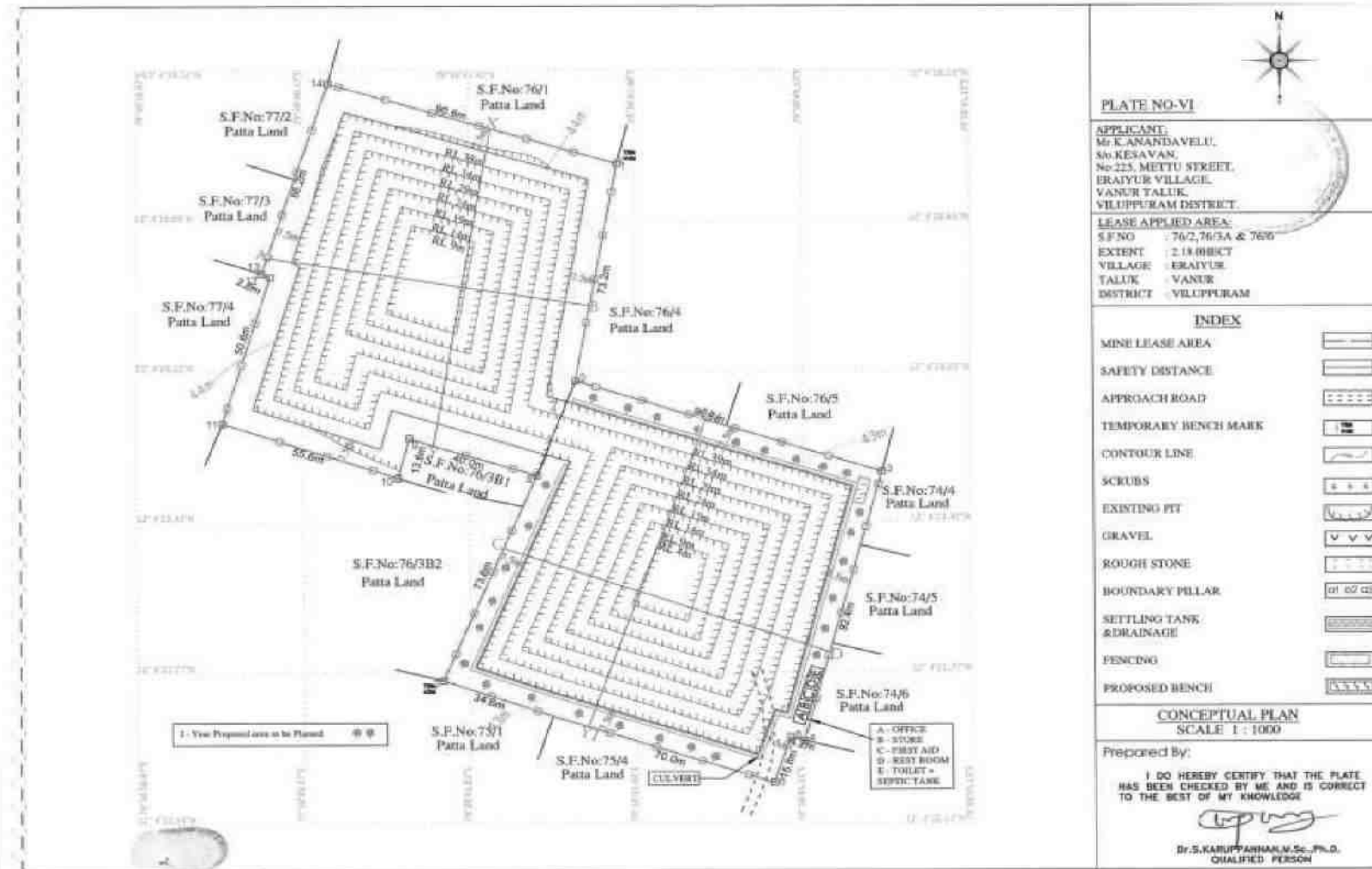


Figure 2.9 Year wise Production Plan

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

2.7 TYPE OF MINING

The proposed project is an open cast mechanized mining with one 5.0 m bench for Rough Stone & Gravel followed by 5.0m vertical bench with a bench width not less than the bench height with a slope of 60°. However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of regulations 106(2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence, it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106(2) (b) of MMR-1961, under Mines Act- 1952.

2.7.1 *Method of Working:*

The rough stone and gravel is proposed to quarry at 5m bench height & width with conventional Open cast mechanized method with a slope of 60°. The quarry operation involves Shallow jack hammer drilling, blasting, Loading & transportation of Rough Stone to the nearby crusher units/road formation works and gravel to the nearby needy users. The production of Rough Stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining. Splitting of rock mass of considerable volume from the parent rocks by jackhammer drilling and blasting by manually braking and loading the Rough Stone from pit head to the needy crushing units/civil works for the needy sectors.

2.7.2 *Overburden*

The overburden in the form of Gravel formation, Gravel will be directly loaded into the tipper to needy buyers. This will be done only after obtaining permission and paying necessary seigniorage fees to the Government.

2.7.3 *Machineries to be used*

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

Table 2-10: List of Machineries used

For Mining operation	Excavator of 1.2 Cu.m bucket capacity Jack Hammer (30-32 mm dia) Tractor mounted compressor
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<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Loading Equipment	Excavator of 1.2 Cu.m bucket capacity
Transportation	Tipper 5 No. of 15 T capacity

2.7.4 *Blasting:*

2.7.4.1 **Blasting Pattern:**

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

2.7.4.2 **Drilling & Blasting:**

Drilling and Blasting Parameters are as follows

Table 2-11: Drilling and Blasting Parameters

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

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

Slurry Class 3 explosives, type of nitro compound are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling or primary blasting is proposed. Detonators of Class 3 and Safety fuse of Class 6 are used.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

2.7.4.4 Measures to minimize ground vibration due to blasting:

The quarry is situated more than 1 km from the nearby villages. Controlled blasting measures will be adopted for minimizing the ground vibration and fly of rocks. Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly of rock.

Blasting program for the production per day:

No. of holes = 89 Holes

Powder factor = 44 kg

Charge/hole = 0.5 Kg

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

Staggered “V” Pattern of Blasting Design:

Spacing = 1.2 m

Burden = 1.0 m

Depth of the hole = 1.5 m

No. of holes proposed per day = 78 Holes

Table 2-12: Blasting Details

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

2.7.4.5 Storage & Safety measures taken during blasting:

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

2.8 MAN POWER REQUIREMENTS

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

Table 2-13: Man Power Requirements

1.	Skilled	2 nd Class Mines Manager	1 No.
		Mine Geologist	1 No.
		Blaster	1 No.
2.	Semi – skilled	Driver	2 Nos
		Hitachi Operator	1 No.
3.	Unskilled	Musdoor/Labours	12 Nos
	Total =		18 Nos

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

2.8.1 *Water Requirement*

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

Table 2-14: Water Requirement

Purpose	Quantity	Sources
Domestic & Drinking Water	1.0 KLD	Packaged Drinking water vendors available in Perumbakkam which is about 1.28 Km NE of the area
Green belt	0.5 KLD	Other domestic activities through road tankers supply

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyrur Village, Vanur Taluk, Villupuram District	

Dust suppression	0.5 KLD	From road tankers supply
Total	2.0 KLD	

2.9 PROJECT IMPLEMENTATION SCHEDULE

The implementation schedule of the proposed Mine Lease of Thiru K Anandavelu (2.18.0 ha) is as follows.

Table 2-15: Mining Schedule

MINING SCHEDULE					
Activity	Dec-24	Dec-25	Dec-26	Dec-27	Dec-28
Site Clearance					
Excavation – Gravel Removal/Overburden					
I Year Production – 33,100 Cum - Rough Stone, 8,900 Cbm -Gravel					
II Year Production – 45,828 Cum - Rough Stone, 7,654 cu.m - Gravel					
III Year Production – 51,304 Cum - Rough Stone					
IV Year Production – 50,190 Cum - Rough Stone					
V Year Production – 45,900 Cum - Rough Stone					

2.10 SOLID WASTE MANAGEMENT

Table 2-15: Solid Waste Management

S.No	Type	Quantity	Disposal Method
1	Organic	3.24 kg/day	Municipal bin including food waste
2	Inorganic	4.86 kg/day	TNPCB authorized recyclers

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

2.11 MINE DRAINAGE

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

The quarry operation is proposed up to a depth of 40 m below ground level. The water table is below 65 m from the ground level which is observed from the nearby bore wells and bore wells of this area. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.

2.12 POWER REQUIREMENT

This rough stone quarry project does not require huge water and electricity for the project.

16 Litre diesel per hour for excavator for mining and loading for Rough Stone needed and **10 Litre** diesel per hour for excavator for loading of Gravel needed.

2.13 PROJECT COST

1	<u>A. Fixed Asset Cost:</u>	
	1. Land Cost	: Rs. 2,87,500/-
	2. Labour Shed	: Rs. 1,50,000/-
	3. Sanitary Facility	: Rs. 1,50,000/-
	4. Refilling/Fencing cost	: Rs. 4,00,000/-
	5. Other Items	: Rs. 4,00,000/-
	Total	: Rs.13,87,500/-
2	<u>B. Operational Cost:</u>	
	<u>Machinery cost</u>	: Rs.25,00,000/-
3.	<u>EMP Cost</u>	Rs. 76,11,888/-
	Total Project Cost	: Rs. 1,14,99,388/-

2.14 GREENBELT

1. The development of greenbelt in the peripheral buffer zone of the mine area.
2. Green belt has been recommended as one of the major components of Environmental Management plan, which will improve ecology, environment and quality of the surrounding area.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

3. Local trees like, Neem, Vilvam Vaagai, Naval etc will be planted along the lease boundary and avenues as well as over non-active dumps at a rate of 218 trees per annum with interval 5m.

4. The rate of survival expected to be 80% in this area

Table. 2-17 Plantation/ Afforestation Program

Name of species proposed	Survival	No of species
Neem, Vilvam Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila maram, Poo Marudhu, Panai Maram, Marudha Maram, Thandri, Sengondrai, Poovarasu, Pungam, Puthranjivi, Sarakondrai, Sandhana Vembu, etc.,	80%	1090
Total		1090

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

3 Description of the Environment

3.1 GENERAL:

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

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

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

3.1.1 *Study Area:*

The study area for the mining projects is as follows:

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

We have obtained Terms of Reference from SEIAA vide Letter No. SEIAA-TN/F. No. 9895/SEIAA/ ToR-1488/2023 Dated: 16.06.2023. The baseline monitoring is carried out in May to July 2023 and the

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyrur Village, Vanur Taluk, Villupuram District	

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

3.1.2 *Instruments Used*

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

1. Respirable Dust Sampler with attachment for gaseous Pollutants, Envirotech APM 460, APM411.
2. Fine Particulate Matter (FPM) Sampler, APM 550
4. Sound Level Meter Model SL-4010
5. 2000 series watchdog automatic weathering monitoring station

3.1.3 *Baseline Data Collection Period:*

The baseline data is collected in accordance with the CPCB Guidelines. The Baseline study is carried out from May to July 2023.

3.1.4 *Frequency of Monitoring*

Table 3-1: Frequency of Sampling and Analysis

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

3.1.5 Secondary data Collection

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

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

3.1.6 Study area details

Table 3-2 Study area details

S. No	Description	Details	Source
1.	Project Location	S.F.No. 76/2, 76/3A & 76/6 – 2.18.0 Ha, Eraiyur Village, Vanur Taluk, Villupuram District, Tamil Nadu State	Field Study
2.	Latitude & Longitude	Latitude: 12° 04' 20.61" N to 12° 04' 28.15" N Longitude: 79° 38' 39.36" E to 79° 38' 45.89" E	Topo Sheet
3.	Topo Sheet No.	57 P/12	Survey of India Toposheet
4.	Mine Lease Area	2.18.0 Ha	--
Demography in the study area (as per Census 2011)			
5.	Total Population	3257	Census Survey of India
6.	Total Number of Households	740	
7.	Maximum Temperature (°C)	40	IMD
8.	Minimum Temperature (°C)	18	

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

9.	<p>Ecological Sensitive Areas - Wetlands, watercourses or other waterbodies, coastal zone, biospheres, mountains, forests</p>	<ul style="list-style-type: none"> • Konamangalam Lake – 1.81 kms, W • Thaludhali Lake – 2.62 kms, N • Thaludhali Kulam – 2.65 kms, N • Kunnam Lake – 3.86 kms, NE • Katterikuppam Lake – 9.05 kms, SE • Mailam Lake – 5.95 kms, NW • Avudayarattu Lake – 9.57 kms, SW • Thirukkanur Lake – 8.87 kms, S • Mannadipet Pond – 8.90 kms, S • Purana Singa Palayam Lake – 11.93 kms, S • Sompet Lake – 11.32 kms, S • Kumalam Lake – 11.79 kms, S • Mathur Lake – 12.08 kms, SW • New Lake – 12.92 kms, SW • Thoravi Lake – 13.29 kms, SW • Katrambakkam Lake – 11.70 kms, E • Pulichapallam Lake – 12.87 kms, SE • Kodur Lake – 14.94 kms, E • Nallavur Lake – 13.97 kms, NE • Omandur Lake – 11.32 kms, NE • Annamputhur Lake – 11.38 kms, NE • Budhur Lake – 13.64 kms, SW • Thalavaipattu Lake – 14.75 kms, NW • Melakondai Pond – 11.61 kms, W • Sankarabarani River – 4.93 kms, S • Gingee River – 6.35 kms, SW • Tondi River – 8.49 kms, NW • Varaga Nadhi – 8.80 kms, SW • Chettipattu Small Dam – 5.24 kms, S • Sankarabarani Reservoir – 7.42 kms, SE • Veedur Dam – 6.29 kms, W • Sengadu-Mathur Small dam (Pambe Water Reservoir) – 13.23 kms, SW • National Petrified/Fossil Wood Park, Thiruvakkarai – 5 kms, SE • Oussudu Lake Bird Sanctuary – 14.94 kms, SE • Kazhuveli Wetland Bird Sanctuary – 16.64 kms, NE • Melkondai R.F – 10.71 Kms, W • Kongarampoondi R.F – 10.79 kms, W • Vikravandi R.F – 10.85 kms, W 	<p>Google Earth/Field Study</p>
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<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

10.	Densely Populated area	Villupuram - 21.40 Km - SW																																								
11.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	<table border="1"> <thead> <tr> <th>S. No</th> <th>Places</th> <th>Dist. From Project Site</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;">Schools & Colleges</td> </tr> <tr> <td>1</td> <td>Eraiyr Government High School</td> <td>1.81 km, SE</td> </tr> <tr> <td>2</td> <td>Kanniyam Government School</td> <td>1.63 kms, NW</td> </tr> <tr> <td>3</td> <td>Mass College of Physical Education</td> <td>4.67 kms, SE</td> </tr> <tr> <td>4</td> <td>Mailam Engg. College, Mailam</td> <td>5.63 Kms, NW</td> </tr> <tr> <td colspan="3" style="text-align: center;">Hospitals</td> </tr> <tr> <td>1</td> <td>Govt. Primary Health Centre, Kunnam</td> <td>3.66 kms, NE</td> </tr> <tr> <td>2</td> <td>Shifa Clinic</td> <td>9.29 kms, NW</td> </tr> <tr> <td>3</td> <td>Govt. Hospital, Vanur</td> <td>7 Kms, SE</td> </tr> <tr> <td>4</td> <td>Govt. Primary Health Centre, Mailam</td> <td>6.58 kms, NW</td> </tr> <tr> <td colspan="3" style="text-align: center;">Worship Places</td> </tr> <tr> <td>1.</td> <td>Rahmath Masjid, Veedur</td> <td>5.25 kms, W</td> </tr> </tbody> </table>	S. No	Places	Dist. From Project Site	Schools & Colleges			1	Eraiyr Government High School	1.81 km, SE	2	Kanniyam Government School	1.63 kms, NW	3	Mass College of Physical Education	4.67 kms, SE	4	Mailam Engg. College, Mailam	5.63 Kms, NW	Hospitals			1	Govt. Primary Health Centre, Kunnam	3.66 kms, NE	2	Shifa Clinic	9.29 kms, NW	3	Govt. Hospital, Vanur	7 Kms, SE	4	Govt. Primary Health Centre, Mailam	6.58 kms, NW	Worship Places			1.	Rahmath Masjid, Veedur	5.25 kms, W	Google Earth/ Field Study
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Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

		2	Arulmigu Mailam Murugan Temple	6.88 kms, NW	
		3	St. Francis Xavier's Church	10.03 kms, NE	

3.1.7 Site Connectivity:

The site is connected to the roadways as follows.

MDR 808 – Perumbakkam to Pidaripattu Road – 1.25 km, E

SH 136 – Mailam to Puducherry – 1 km, N



Figure 3.1: Site Connectivity

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

3.2 LAND USE ANALYSIS

3.2.1 *Land Use Classification*

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

3.2.2 *Methodology*

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

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

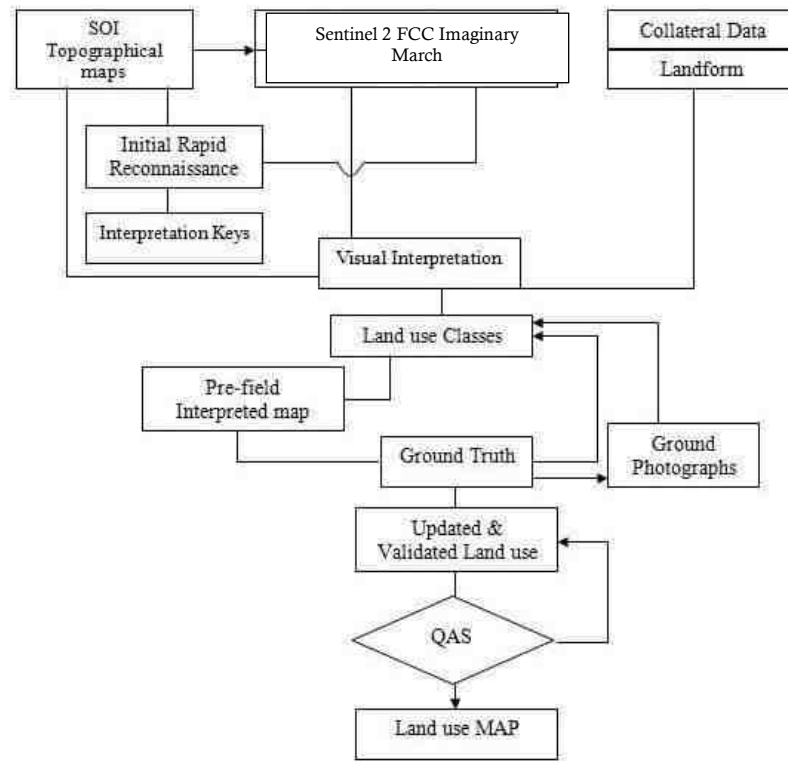


Figure 3.2 Flow Chart showing Methodology of Land use mapping

3.2.3 *Satellite Data*

Sentinal 2 multispectral satellite data of 2020 was utilized for the present study. Details of satellite data is given below. The rectification of imagery was carried out on to bring the digital data on the earth coordinate system by means of ground control point (GCP) assignments/SOI topo sheets.

3.2.4 *Scale of mapping*

Considering the user defined scale of mapping, 1:50000 Sentinal 2 data was used for Land use / Land cover mapping of 10 km radius for proposed site. The description of the land use categories for 10 km radius and the statistics are given for 10 km radius.

3.2.5 *Interpretation Technique*

Standard on screen visual interpretation procedure was followed. The various Land use / Land cover classes interpreted along with the SOI topographical maps during the initial rapid reconnaissance of the

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

study area. The physiognomic expressions conceived by image elements of color, tone, texture, size, shape, pattern, shadow, location and associated features are used to interpret the FCC imagery. Image interpretation keys were developed for each of the LU/LC classes in terms of image elements.

June 2016 FCC imagery (Digital data) of the study area was interpreted for the relevant land use classes. On screen visual interpretation coupled with supervised image classification techniques are used to prepare the land use classification.

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

The LULC Classification has been done at three levels where level -I being the broad classification about the land covers that is Built-up land, agriculture land, waste land, wet lands, and water bodies. These are followed by level –II where built-up land is divided into towns/cities as well villages. The Agriculture land is divided into different classes such as cropland, Fallow, Plantation, while wastelands are broadly divided into, Land with scrub and without Scrub and Mining and Industrial wasteland. The wetlands are classified into inland wetlands, coastal wetlands and islands. The water bodies are classified further into River/stream, Canal, Tanks and bay. In the present study level II classification has been undertaken. The SOI Topo map is presented in Annexure and Satellite imagery of 10 km radius from the project site is presented Annexure

3.2.6 *Field Verification*

Field verification involved collection, verification and record of the different surface features that create specific spectral signatures / image expressions on FCC. In the study area, doubtful areas identified in course of interpretation of imagery is systematically listed and transferred on to the corresponding SOI topographical maps for ground verification. In addition to these, traverse routes were

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

planned with reference to SOI topographical maps to verify interpreted LU/LC classes in such a manner that all the different classes are covered by at least 5 sampling areas, evenly distributed in the area. Ground truth details involving LU/LC classes and other ancillary information about crop growth stage, exposed soils, landform, nature and type of land degradation are recorded and the different land use classes are taken the Land use map is presented in Annexure

3.2.7 Description of the Land Use / land cover classes

3.2.7.1 Water

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

3.2.7.2 Trees

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

3.2.7.3 Grass

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

3.2.7.4 Flooded vegetation

Mix of small clusters of plants or single plants dispersed on a landscape that shows exposed soil or rock; scrub-filled clearings within dense forests that are clearly not taller than trees; examples: moderate to

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

sparse cover of bushes, shrubs and tufts of grass, savannas with very sparse grasses, trees or other plants

3.2.7.5 Crops

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

3.2.7.6 Scrub/Shrub

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

3.2.7.7 Built Area

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

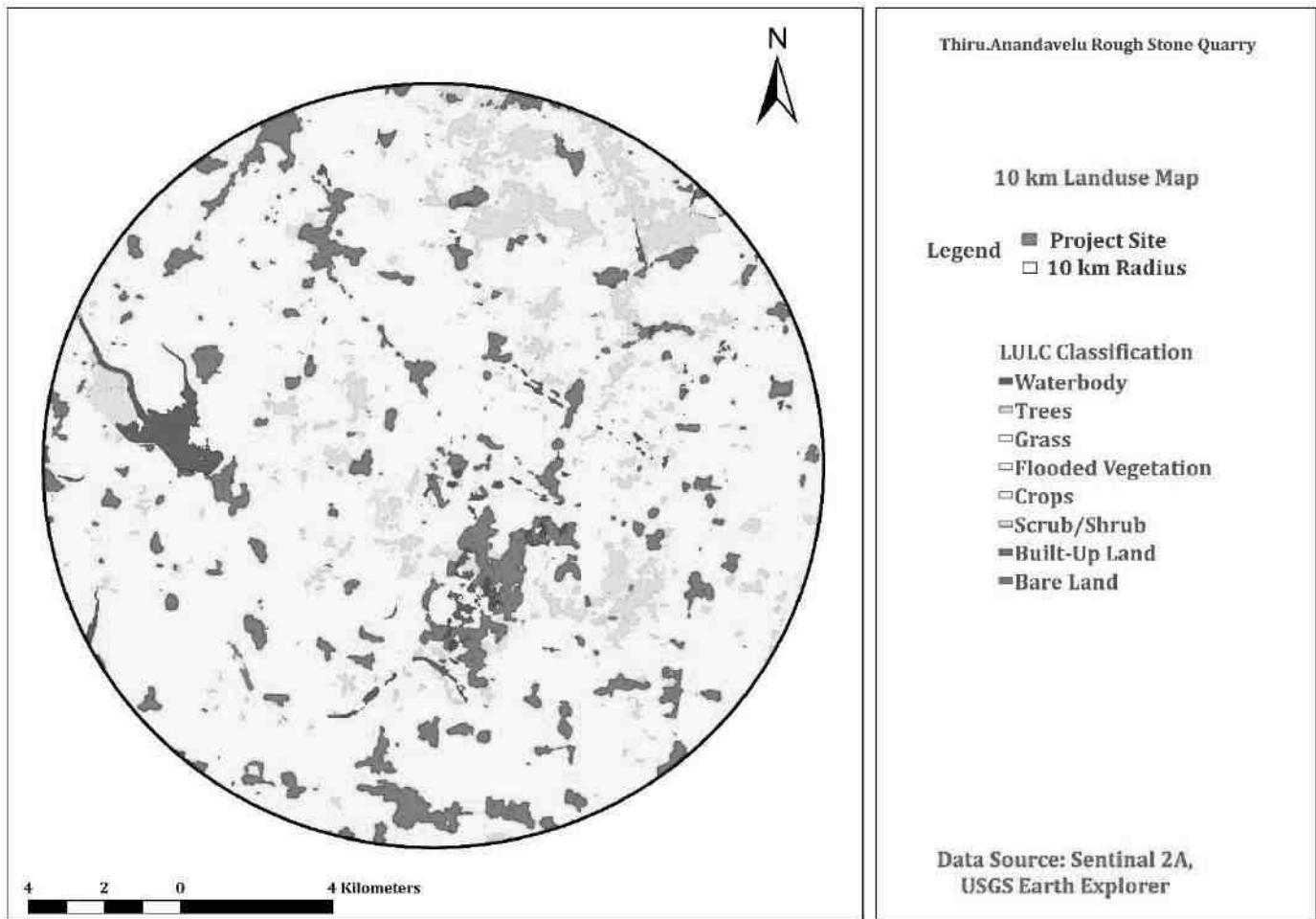


Figure 3.3 Land use classes around 10 km radius from the project site

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyur Village, Vanur Taluk, Villupuram District	

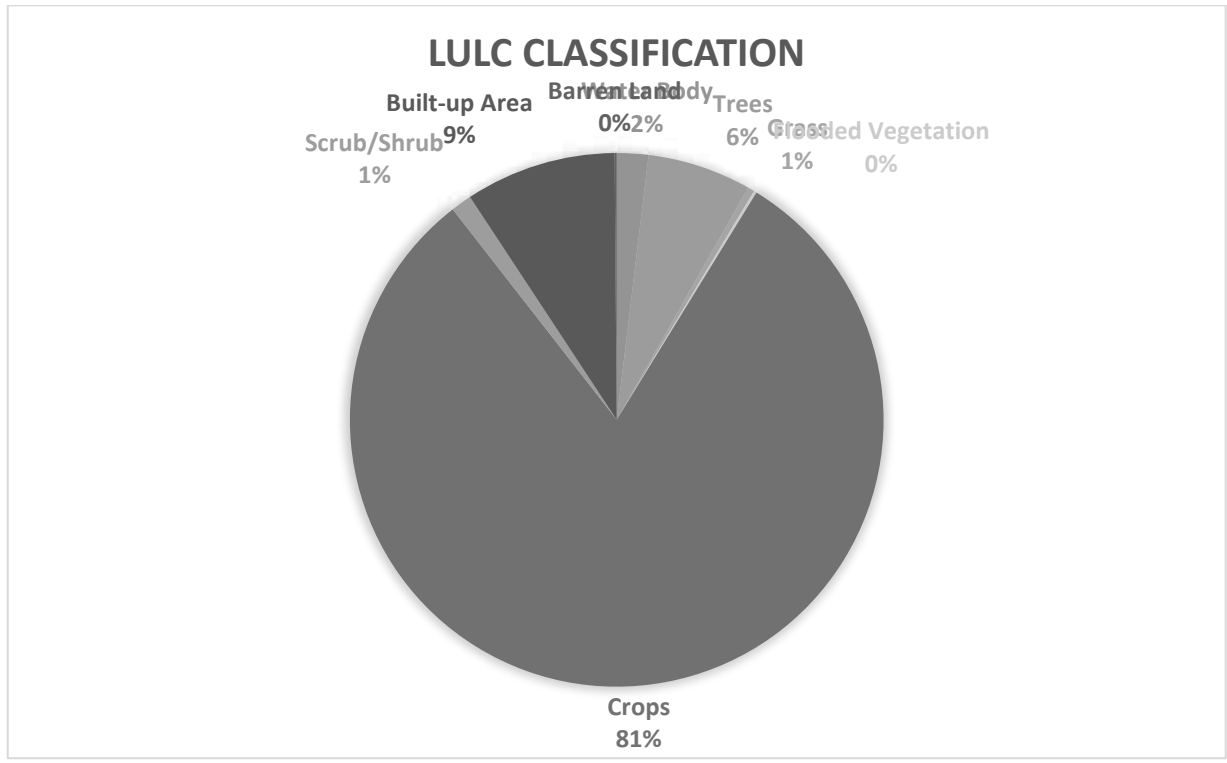


Table 3-3 Land use pattern

Sl.No	Categories	Area in Sq.m
1	Water Body	6.02
2	Trees	19.88
3	Grass	1.26
4	Flooded Vegetation	0.54
5	Crops	254.73
6	Scrub/Shrub	4
7	Built Area	28.86
8	Barren Land	0.4

3.3 WATER ENVIRONMENT

3.3.1 *Contour & Drainage*

The project site is 77 m AMSL. The drainage pattern within in the 10 km of the project site is dendritic.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

3.3.2 *Geomorphology*

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

Soils

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

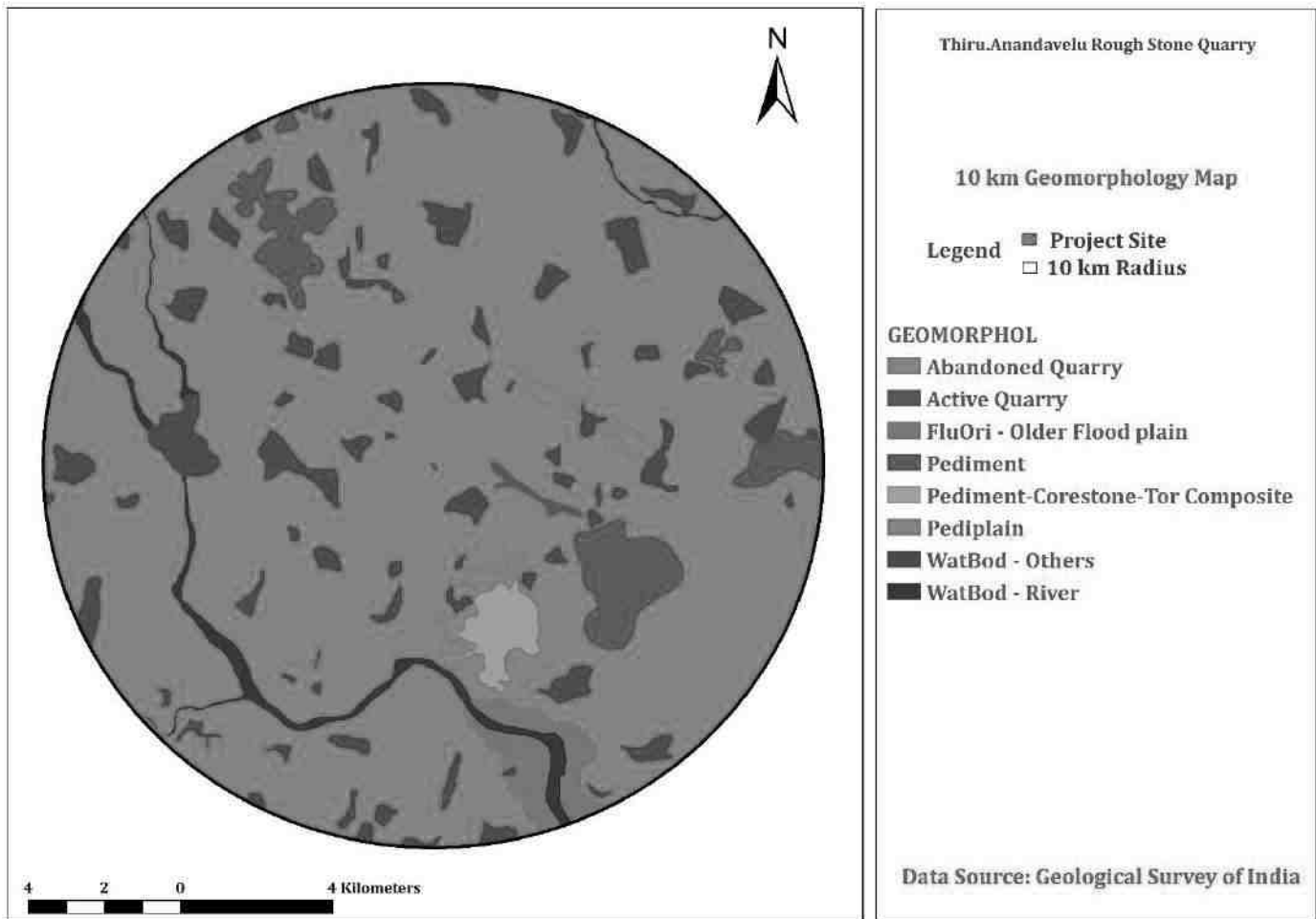


Figure 3.4 Geomorphology within 10km from the project site

3.3.3 *Geology:*

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

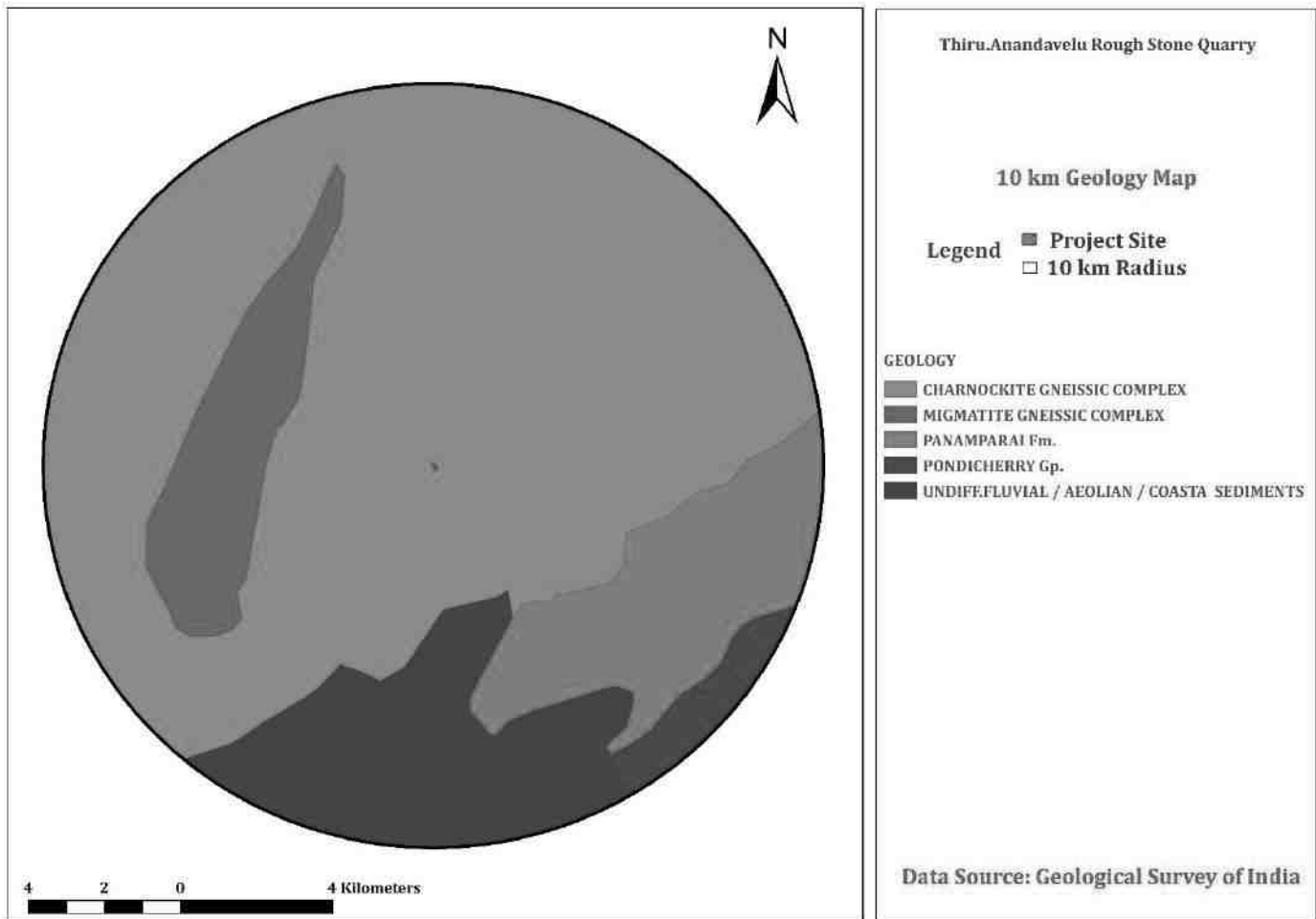


Figure 3.5 Geology within 10km from the project site

3.3.4 Hydrogeology

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

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

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

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

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

Long Term Fluctuations

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

Aquifer Parameters

The transmissivity values of fractured aquifers range from < 1 to $141 \text{ m}^2/\text{day}$ and storativity varies between 2.84×10.5^{-5} and 8.9×10^{-3} . The transmissivity of sedimentary formation varies from 21 to $748 \text{ m}^2/\text{day}$ and storativity is in the order of 2.75×10^{-3} .

Groundwater Quality

Ground water in phreatic aquifers in Villupuram district is, in general, colorless, odorless and slightly alkaline in nature. The specific electrical conductance of ground water in phreatic zone ($\mu\text{S}/\text{cm}$ at 25^0 C) during May 2006 was in the range of 770 to 3650 in the district. Conductance below 750 has been observed only in select pockets of the district.

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

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

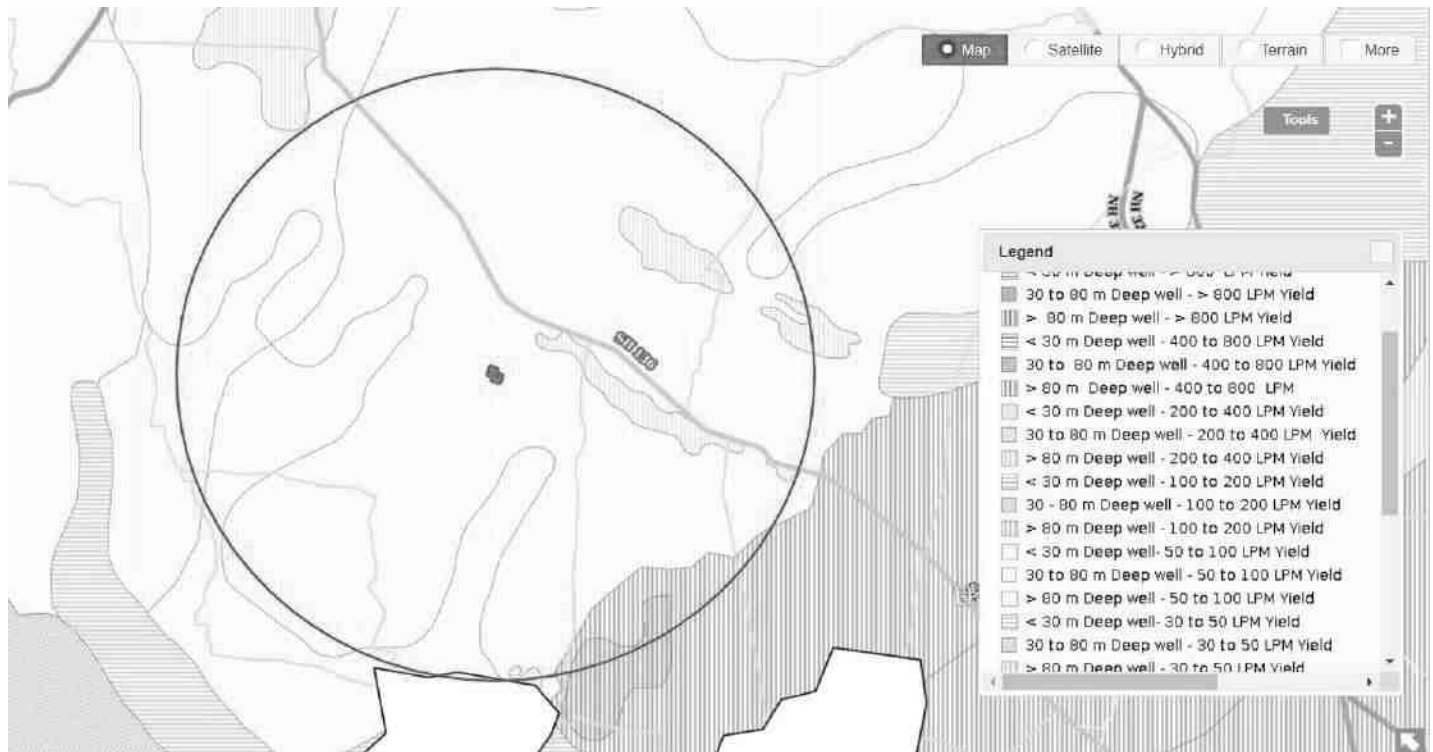


Figure 3.6 Ground water prospects within 5 km radius of the project site

3.3.5 Ground water quality monitoring

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

Table 3-4 Ground water Quality Analysis

Environmental Parameters: Ground water Quality Analysis	
Monitoring Period	May 2023 to July 2023
Design Criteria	Based on the Environmental settings in the study area
Monitoring Locations	Project Site - GW 1 Eraiyr Government High School – GW 2 Poncos Hr. Sec. School – GW 3 Govt. High School, Kunnam – GW 4 Shri Ayyanar Temple – GW 5 Rahmath Masjid, Veedur – GW 6 Mailam Engineering College – GW 7
Methodology	Water Samples were collected in 5 Liter fresh cans as per IS 3025 Part I and transported to the laboratory in Iceboxes

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Frequency of Monitoring	Once in a season
-------------------------	------------------

3.3.5.1 Sampling Procedure

Quality of ground water was compared with IS: 10500: 1991 (Reaffirmed 1993 With Amendment NO -3 July 2010) for drinking purposes. Water samples were collected as Grab sample from five sampling locations in a 5-liter plastic jerry can and 250 ml sterilized clean glass/pet bottle for complete physico-chemical and bacteriological tests respectively. The samples were analyzed as per standard procedure / method given in IS: 3025 (Revised Part) and standard method for examination of water and wastewater Ed. 21st, published jointly by APHA.

Table 3-5: Standard Procedure

S. No	Parameters	Test Method
1	pH (at 25°C)	IS:3025(P -11)1983 RA: 2012
2	Electrical Conductivity	IS:3025(P -14) 2013
3	Colour	IS:3025 (P -4)1983 RA: 2012
4	Turbidity	IS:3025(P -10)1984 RA: 2012
5	Total Dissolved Solids	APHA 22 nd Edn.2012-2540-C
6	Total Suspended Solids	IS:3025(P-17)-1984 RA:2012
7	Total Hardness as CaCO ₃	APHA 22 nd Edn.2012-2340-C
8	Calcium as Ca	APHA 22 nd Edn2012.3500 Ca-B
9	Magnesium as Mg	APHA 22 nd Edn.2012-3500 Mg-B
10	Chloride as Cl	IS:3025(P -32)-1988 RA: 2014
11	Sulphate as SO ₄	APHA 22 nd Edn.2012-4500 SO ₄ ⁻ -E
12	Total Alkalinity as CaCO ₃	APHA 22 nd Edn.2012-2320-B
13	Iron as Fe	IS:3025(P -53):2003 RA: 2014
14	Silica as SiO ₂	IS:3025(P -35)1988 RA: 2014
15	Fluoride as F	APHA 22 nd Edn.2012-4500-F-D
16	Nitrate as NO ₃	IS:3025(P -34):1988 RA: 2014
17	Sodium as Na	IS:3025(P -45):1993 RA: 2014
18	Potassium as K	IS:3025(P -45):1993 RA: 2014
19	Coliform	IS:1622:1981:RA:2014
20	E.coli	IS:1622:1981:RA:2014

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyrur Village, Vanur Taluk, Villupuram District	

Table 3-6 Ground water sampling results

S. No	Parameters	Units	Project Site – GW 1	GW 2	GW 3	GW 4	GW 5	GW 6	GW 7
1	pH (at 25°C)	-	8.02	7.67	8.07	7.02	7.63	7.38	8.09
2	Electrical Conductivity	µS/cm	513	2040	609	1107	627	1719	513
3	Colour	Hazen Unit	3	5	3	3	4	3	3
4	Turbidity	NTU	BQL (LOQ:1)	BQL (LOQ:1)	BQL(LOOQ:1)	BQL(LOOQ:1)	BQL(LOOQ:1)	BQL(LOOQ:1)	BQL(LOOQ:1)
5	Total Dissolved Solids	mg/L	285	1179	357	609	345	972	285
6	Total Suspended Solids	mg/L	BQL (LOQ:2)	BQL(LOOQ:2)	BQL(LOOQ:2)	BQL(LOOQ:2)	BQL(LOOQ:2)	BQL(LOOQ:2)	BQL(LOOQ:2)
7	Total Hardness as CaCO ₃	mg/L	137	515	252	412	202	501	137
8	Calcium Hardness as CaCO ₃	mg/L	54.5	313	117	182	95	291	54.5
9	Magnesium Hardness as MgCO ₃	mg/L	82.8	202	135	230	107	210	82.8
10	Calcium as Ca	mg/L	21.9	125	46.9	72.9	38.1	117	21.9
11	Magnesium as Mg	mg/L	20.1	49.1	32.9	55.8	25.9	51.1	20.1
12	Chloride as Cl	mg/L	49.2	292	55.4	92.6	32.2	280	49.2
13	Sulphate as SO ₄	mg/L	26.8	229	41.5	76.6	19.5	58.8	26.8
14	Total Alkalinity as CaCO ₃	mg/L	162	267	166	257	255	291	162
15	Iron as Fe	mg/L	BQL (LOQ:0.1)	BQL(LOOQ:0.1)	BQL(LOOQ:0.1)	BQL(LOOQ:0.1)	BQL(LOOQ:0.1)	BQL(LOOQ:0.1)	BQL(LOOQ:0.1)

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyur Village, Vanur Taluk, Villupuram District	

16	Silica as SiO ₂	mg/L	10.1	34.6	9.25	18.5	11.2	29.6	10.1
17	Fluoride as F	mg/L	1.3	0.13	BQL(L OQ:0.2)	0.45	0.28	0.63	1.3
18	Nitrate as NO ₃	mg/L	9.44	48.3	25.6	28.5	18.4	17.6	9.44
19	Potassium as K	mg/L	8.7	43.1	2.4	5.9	1.9	15.3	8.7
20	Sodium as Na	mg/L	38.2	198	43.4	86.4	29.3	227	38.2
21	Coliform	mg/L	70MPN /100ML	110MPN /100 ML	<2 MPN/100ML	<2MPN /100ML	220MPN /100 ML	90MPN/100ML	70MPN/100ML
22	E Coli	mg/L	11MPN /100ML	27MPN /100ML	<2MPN /100ML	<2MPN /100ML	17MPN /100ML	22MPN/100ML	11MPN/100ML

3.3.6 Interpretation of results:

3.3.6.1 Physical parameters of water:

The basic physical parameters of water include

Colour:

Value observed in Project Site (True/Apparent Color): 3 Hazen unit.

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

pH:

Value observed in the Project Site: 8.02

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

Turbidity:

Value observed in the Project Site: <1

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Acceptable and permissible limits: 1 NTU & 5 NTU respectively. The value of turbidity generally indicates the presence of phytoplanktons and other sediments. The value in the project site indicates the water is slightly turbid.

Total Dissolved Solids:

Value observed in the Project Site: 285 mg/L.

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

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

3.3.6.2 Chemical parameters of water:

The chemical parameters of the drinking water include,

Calcium:

Value observed in the Project Site: 21.9 mg/L.

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

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

Magnesium:

Value observed in the Project Site: 20.1 mg/L.

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

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

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<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

Chloride

Value observed in the project site: 49.2 mg/L.

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

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

Total Alkalinity as CaCO₃:

Value observed in the project site: 162 mg/L.

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

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

Hardness:

Value observed in the Project Site: 137 mg/L.

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

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

3.3.7 Surface Water Analysis

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

Table 3-7 Surface Water Sample Results

S. No	Parameters	Units	Sankarabarani River
1	pH (at 25°C)	-	8.31
2	Electrical Conductivity	µS/cm	962
3	Colour	Hazen Unit	4
4	Turbidity	NTU	BQL (LOQ:1)
5	Total Dissolved Solids	mg/L	555

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

6	Total Suspended Solids	mg/L	BQL (LOQ:2)
7	Total Hardness as CaCO ₃	mg/L	139
8	Calcium Hardness as CaCO ₃	mg/L	48.5
9	Magnesium Hardness as CaCO ₃	mg/L	90.9
10	Calcium as Ca	mg/L	19.4
11	Magnesium as Mg	mg/L	22.1
12	Chloride as Cl	mg/L	178
13	Sulphate as SO ₄	mg/L	34.6
14	Total Alkalinity as CaCO ₃	mg/L	162
15	Iron as Fe	mg/L	BQL (LOQ:0.1)
16	Silica as SiO ₂	mg/L	19.3
17	Fluoride as F	mg/L	0.46
18	Nitrate as NO ₃	mg/L	10.6
19	Potassium as K	mg/L	18.3
20	Sodium as Na	mg/L	156
21	Total Kjeldahl Nitrogen	mg/L	5.54
22	Chemical Oxygen Demand	mg/L	36.8
23	Biochemical Oxygen Demand	mg/L	9.8
24	Dissolved Oxygen	mg/L	6.42
25	Coliform	-	140MPN/100ML
26	E Coli	-	22MPN/100ML

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

3.3.8 *Climatology & Meteorology:*

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

The year may broadly be divided into four seasons:

Winter season : December to February

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<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

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

i) Climate

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

ii) Temperature

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

iii) Rainfall

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

VILLUPURAM DISTRICT -NORMAL AND ACTUAL RAINFALL

Unit in mm.

Year	Actual Rainfall
2014	980.42
2015	1390.25
2016	563.68
2017	1066.9
2018	727.5
2019	906.3
2020	1137.7
2021	1935.2
2022	908.6
2023 (Upto Sep 16)	427.5
Normal Rainfall	337

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<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Source: District survey report & TWAD Board, Villupuram & IMD

Meteorological Data

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

vi) Wind Rose Diagram

The wind rose denotes a class of diagrams designed to display the distribution of wind direction at a given location over a period of time. Wind roses are also useful as they project a large quantity of data in a simple graphical plot.

The wind speed & wind direction data are taken and wind rose is plotted for May to July 2023.

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	



Windrose Plot for [VOPC] Pendicherry
Obs Between: 01 May 2023 12:30 PM - 27 Jul 2023 01:30 PM Asia/Kolkata

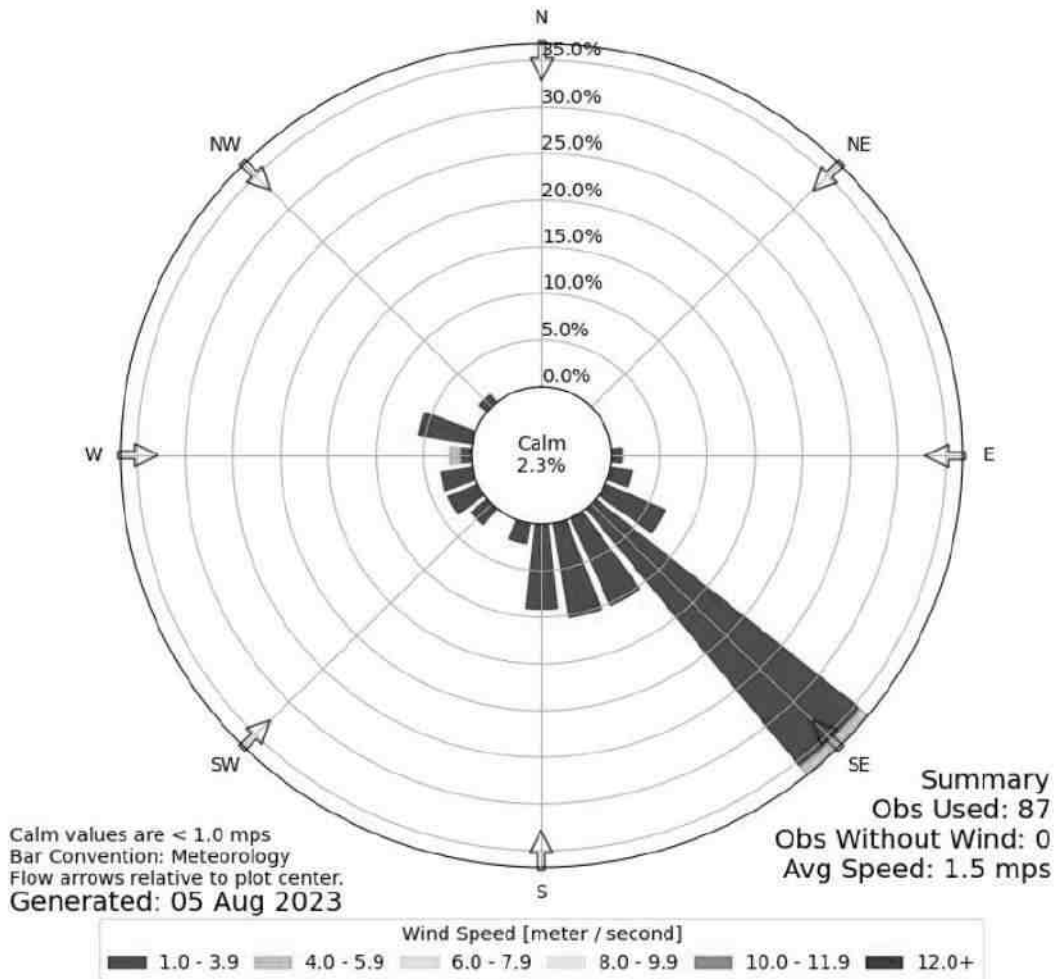


Figure 3.7 Wind rose

3.3.9 Selection of Sampling Locations:

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

3.4 AMBIENT AIR QUALITY

Table 3-8: Selection of Sampling Location

Environmental Parameters: <i>Ambient Air</i>	
Monitoring Period	May 2023 to July 2023

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

Design Criteria	The monitoring stations are selected based on factors like topography/terrain, prevailing meteorological conditions like predominant wind direction (May to July 2023), etc, play a vital role in the selection of air sampling stations. Based on these criteria, 5 air sampling station were selected in the area as shown below.		
Monitoring Locations	Location & Code	Distance (km)	Direction
	Project Site	--	--
	Eraiyr Government High School	1.80	Upwind SE
	Shri Ayyanar Temple	1.74	Downwind NW
	Poncos Higher Secondary School	8.13	Upwind SE
	Mailam Engineering College	5.69	Downwind NW
	Rahmath Masjid, Veedur	5.25	Crosswind SW
	Government School, Kunnam	4.32	Crosswind NE
Methodology	Respirable Particulate Matter (PM10) - Gravimetric (IS 5182: Part 23:2006) Particulate Matter PM2.5 - Gravimetric (Fine particulate matter) Sulphur Dioxide - Calorimetric (West & Gaeke Method) (IS 5182: Part 02: 2001) Nitrogen Dioxide - Calorimetric (Modified Jacob & Hocheiser Method) (IS 5182: Part 06:2006)		
Frequency of Monitoring	2 days in a week, 4 weeks in a month for 3 months in a season.		

3.4.1 *Ambient Air Quality: Results & Discussion*

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

Table 3-9 Ambient Air Quality

Code	Location	PM 10 ($\mu\text{g}/\text{m}^3$)				PM 2.5 ($\mu\text{g}/\text{m}^3$)				NOx ($\mu\text{g}/\text{m}^3$)				SO2 ($\mu\text{g}/\text{m}^3$)			
		Min	Max	Avg	98 percentile	Min	Max	Avg	98 percentile	Min	Max	Avg	98 percentile	Min	Max	Avg	98 percentile
AAQ 1	Project Site	36	50	42.8	48.62	14	21	18	21	9	19	14	18.54	5	10	7.4	9.54
AAQ 2	Eraiyyur Government High School	44	54	48.6	53.54	17	25	21.7	25	12	22	16.6	22	6	13	8.4	12.08
AAQ 3	Shri Ayyanar Temple	52	58	54.9	57.54	20	27	23.7	26.54	19	29	22.9	29	10	19	13.6	18.54
AAQ 4	Poncos Higher Secondary School	46	56	52.1	56	19	26	23.1	25.54	12	23	17.7	22.54	7	14	10.6	14
AAQ 5	Mailam Engineering College	53	62	57.5	61.08	25	32	27.7	31.08	22	39	28.5	38.54	13	20	15.5	20
AAQ 6	Rahmath Masjid, Veedur	43	55	48.2	53.58	17	26	21.9	25.45	13	25	20.3	25.40	6	12	9.0	11.88
AAQ 7	Government School, Kunnam	47	57	51.7	56.83	19	26	23.5	26.35	15	28	22.1	27.66	6	13	9.7	12.19
NAAQ Standards - Residential Area		100 ($\mu\text{g}/\text{m}^3$)				60($\mu\text{g}/\text{m}^3$)				80 ($\mu\text{g}/\text{m}^3$)				80 ($\mu\text{g}/\text{m}^3$)			

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Erailur Village, Vanur Taluk, Villupuram District	

3.4.2 Interpretation of ambient air quality:

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

Observation:

The Maximum value of PM10 (62 $\mu\text{g}/\text{m}^3$), PM 2.5 (32 $\mu\text{g}/\text{m}^3$), SOx (20 $\mu\text{g}/\text{m}^3$), NOx (39 $\mu\text{g}/\text{m}^3$) is observed in different places.

Inference:

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

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

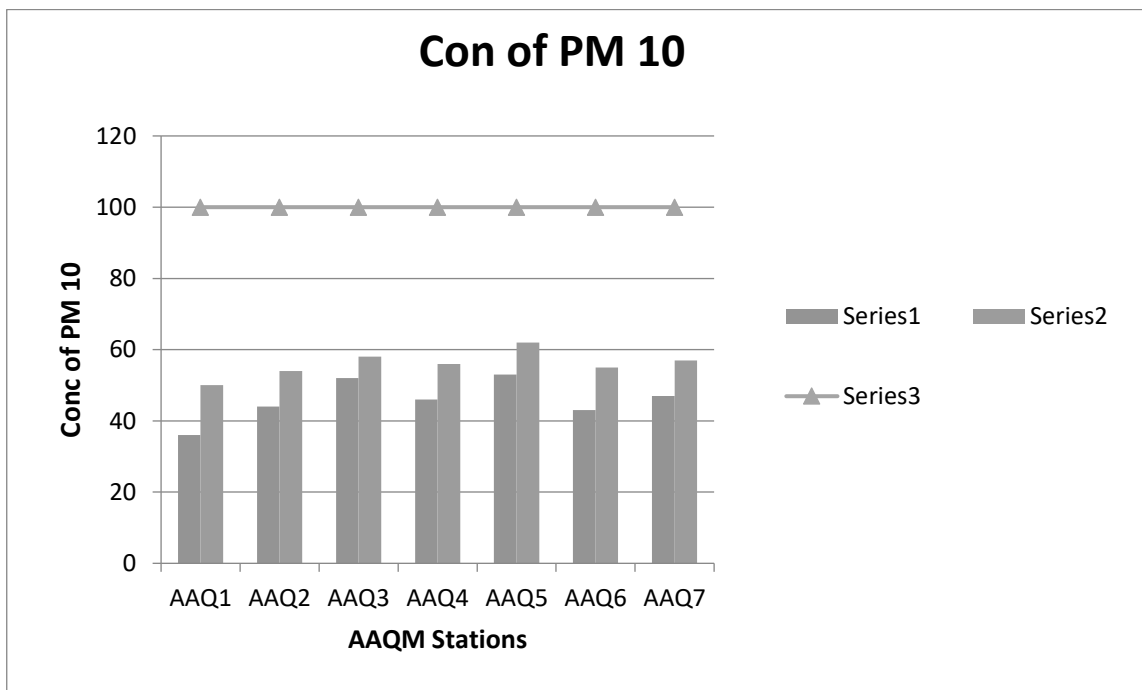


Figure 3.8 Concentration of PM10 ($\mu\text{g}/\text{m}^3$) in Study Area

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Project Proponent	Thiru K Anandavelu	
Project Location	Erailur Village, Vanur Taluk, Villupuram District	

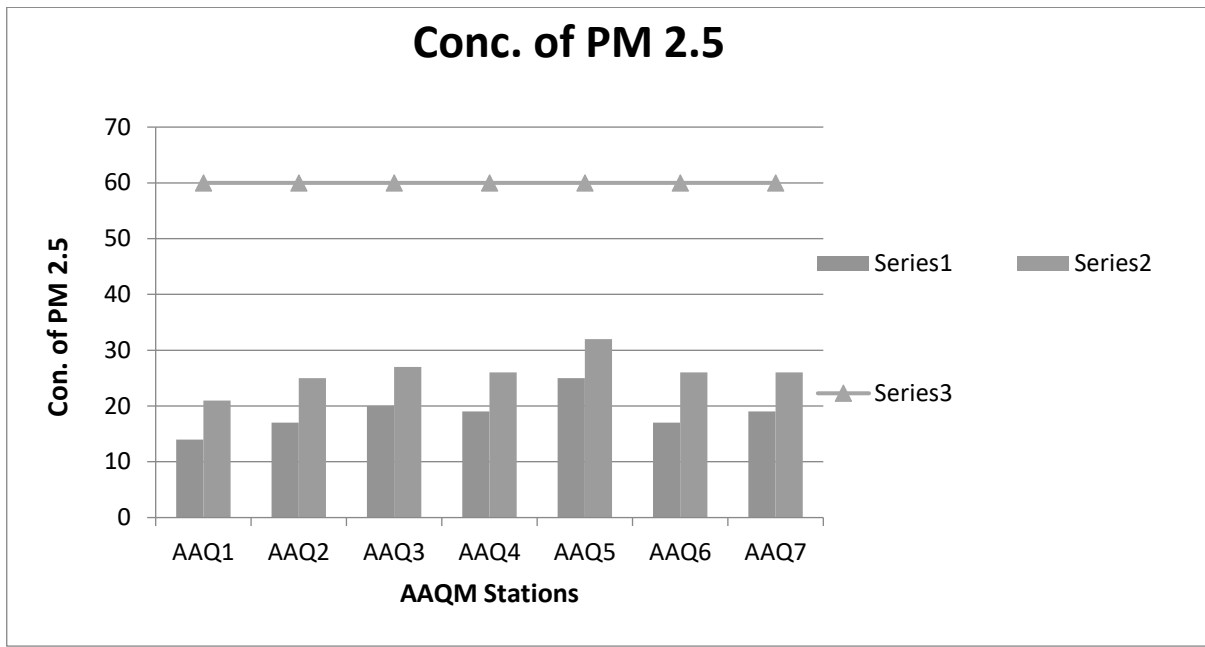


Figure 3.9 Concentration of PM2.5 (µg/m³) in Study Area

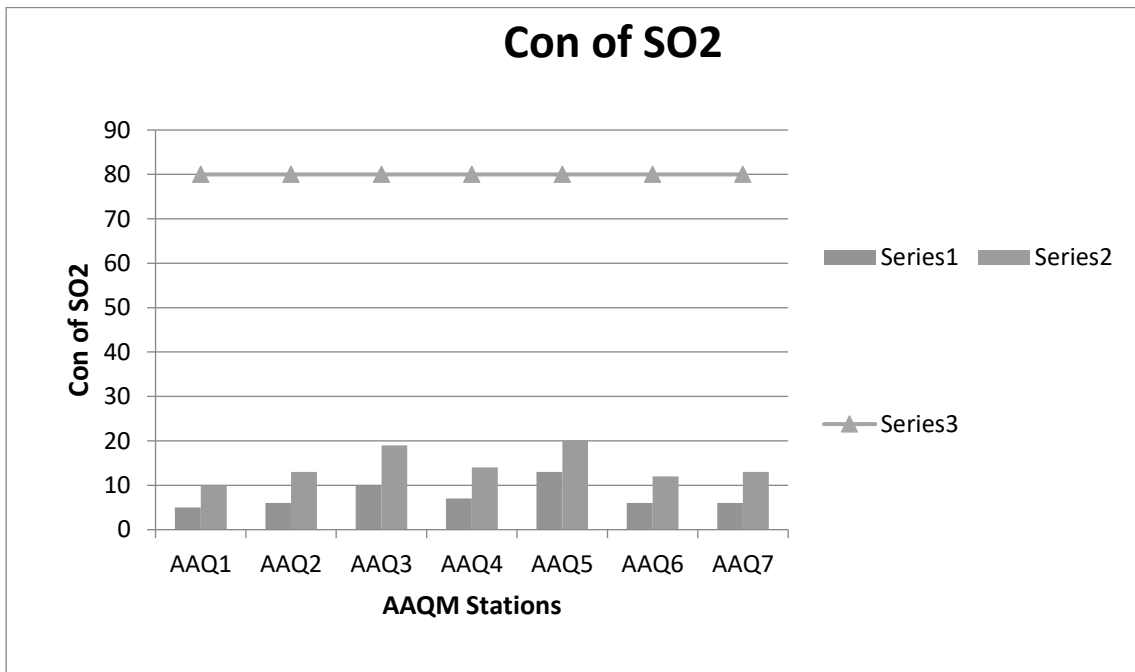


Figure 3.10 Concentration of SOx (µg/m³) in Study Area

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Project Proponent	Thiru K Anandavelu	
Project Location	Erαιyur Village, Vanur Taluk, Villupuram District	

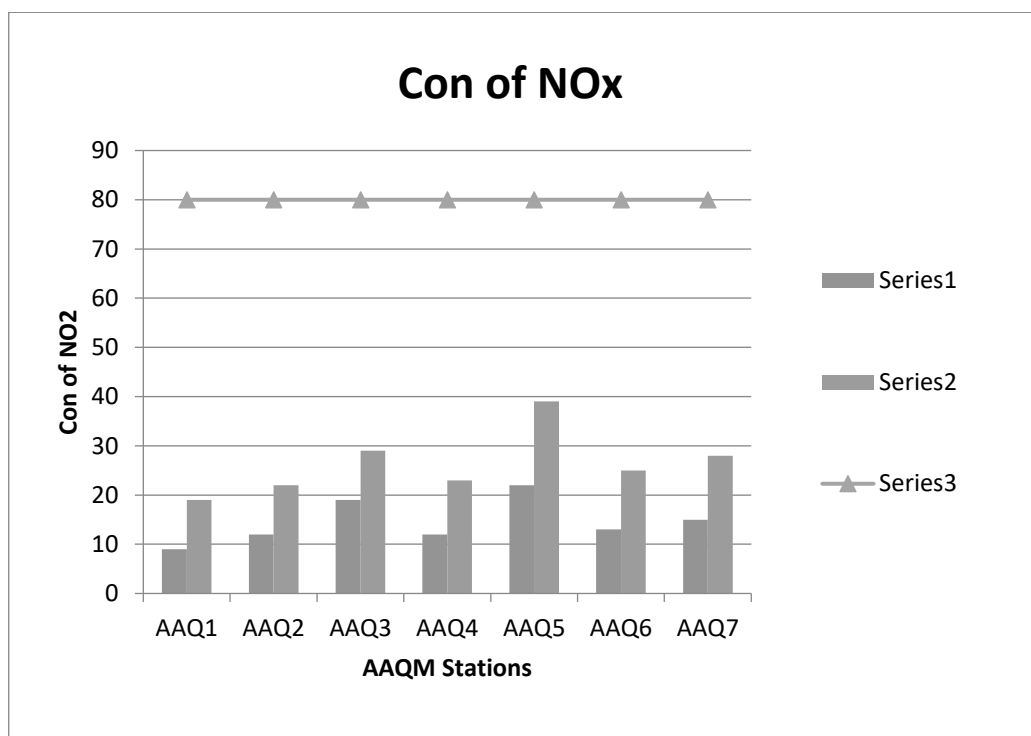


Figure 3.11 Concentration of NOx (µg/m³) in Study Area

3.5 NOISE ENVIRONMENT:

Table 3-10 Noise Analysis

<i>Environmental Parameters: Noise Analysis</i>	
Monitoring Period	May to July 2023
Design Criteria	Based on the Sensitivity of the area
Monitoring Locations	Project Site - N 1 Erαιyur Government High School – N 2 Shri Ayyanar Temple - N 3 Poncos Hr. Sec. School - N 4 Mailam Engineering College – N 5 Rahmath Masjid, Veedur – N 6 Govt. High School, Kunnam – N 7
Methodology	Noise level measurements were taken at the selected locations using noise level meter both during day and night time. Noise level measurements were taken continuously for 24 hours at hourly intervals

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Frequency of Monitoring Noise samples were collected from 5 locations - Once in a season

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

3.5.1 Day Noise Level (Leq day)

Table 3-11 Day Noise Level (Leq day)

Location	Leq day in dB(A)		
	Max	Min	Average
Project Site	55	45	50
Eraiyr Government High School	59	49	54
Shri Ayyanar Temple	62	54	58
Poncos Hr. Sec. School	60	51	56
Mailam Engineering College	62	54	58
Rahmath Masjid, Veedur	57	46	51
Govt. High School, Kunnam	61	49	55

3.5.2 Night Noise Level (Leq Night)

Table 3-12 Night Noise Level (Leq Night)

Location	Leq Night in dB(A)		
	Max	Min	Average
Project Site	46	40	43
Eraiyr Government High School	47	41	44
Shri Ayyanar Temple	51	44	48
Poncos Hr. Sec. School	49	43	46
Mailam Engineering College	53	45	49
Rahmath Masjid, Veedur	46	40	43
Govt. High School, Kunnam	48	39	43

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Erailyur Village, Vanur Taluk, Villupuram District	

Observation:

The maximum Day noise and Night noise were found to be 62 dB(A) and 53 dB(A) respectively in Shri Ayyanar Temple & Mailam Engineering College. The minimum Day Noise and Night noise were 45 dB (A) and 39 dB(A) respectively which was observed in Project Site and Government High School, Kunnam. The observed values are all well within the Standards prescribed by CPCB.

3.6 SOIL ENVIRONMENT

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

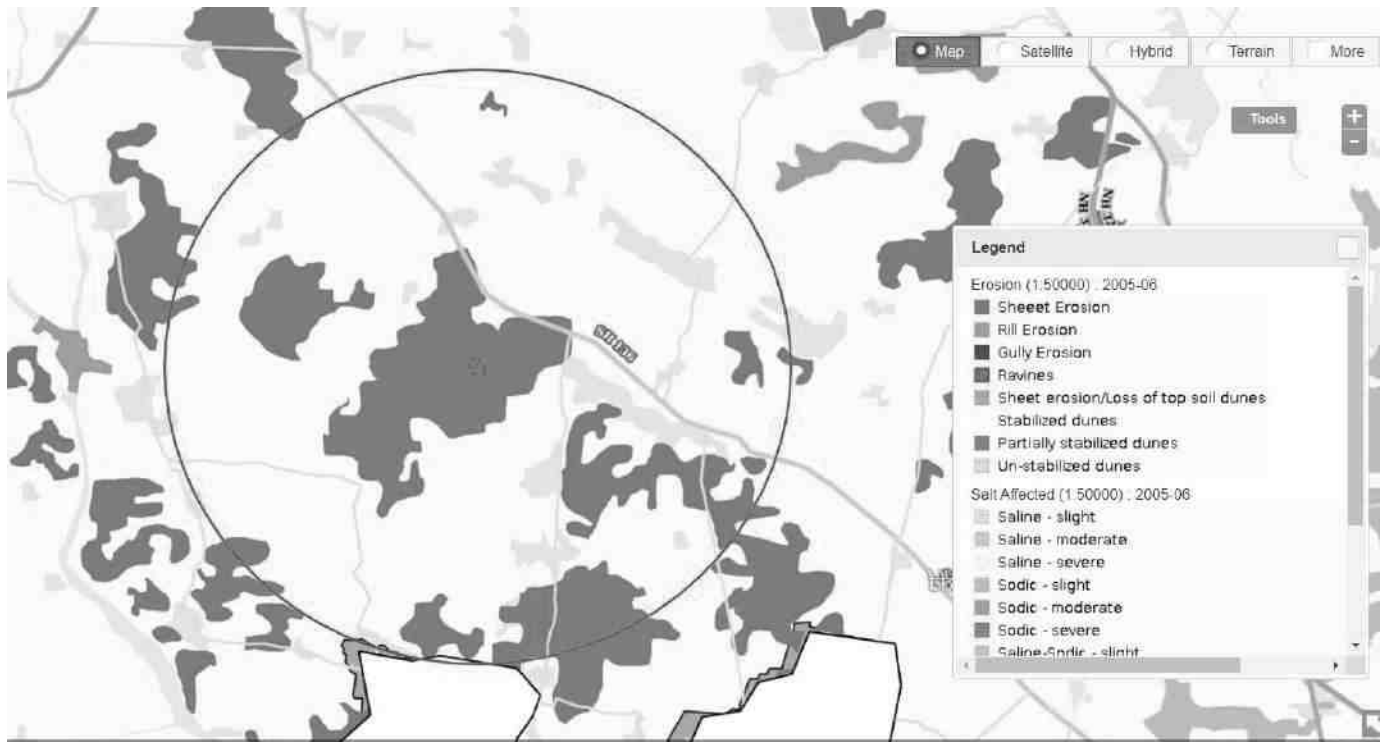


Figure 3.12 Soil Erosion pattern within 5 km radius of the project site

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Project Proponent	Thiru K Anandavelu	
Project Location	Erailyur Village, Vanur Taluk, Villupuram District	

3.6.1 *Baseline Data:*

The present study of the soil quality establishes the baseline characteristics which will help in future in identifying the incremental concentrations if any, due to the operation Phase of the proposed project.

The sampling locations have been identified with the following objectives:

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

Table 3-13 Soil Quality Analysis

Environmental Parameters: <i>Soil Quality Analysis</i>	
Monitoring Period	May to July 2023
Design Criteria	Based on the environmental settings of the study area
Monitoring Locations	Project Site - SQ 1 Erailyur Government High School – SQ 2 Poncos Hr. Sec. School – SQ 3 Government High School, Kunnam – SQ 4 Shri Ayyanar Temple - SQ 5 Rahmath Masjid, Veedur – SQ 6 Mailam Engineering College – SQ 7
Methodology	Composite soil samples using sampling augers and field capacity apparatus
Frequency of Monitoring	Soil samples were collected from 5 locations Once in a season

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

Table 3-14 Soil Quality Analysis

Parameters	Unit	Project Site SQ 1	SQ 2	SQ 3	SQ 4	SQ5	SQ6	SQ7
pH (at 25°C)	-	6.97	8.72	8.31	7.94	8.44	7.51	7.88

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<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

Specific Electrical Conductivity	mS/cm	0.07	0.11	0.59	0.2	0.19	1.08	0.29
Water Holding Capacity	ml/l	4.9	4.2	5.3	4.4	5.5	6.4	4.3
Chloride	g/cm ³	91.7	107	71.8	150	118	240	80.2
Soluble Calcium	mg/kg	86.2	85.6	103	99.7	125	291	137
Soluble Sodium	mg/kg	588	434	530	576	607	812	626
Soluble Potassium	mg/kg	156	352	270	182	506	642	570
Organic matter	%	0.5	0.14	1.05	0.71	0.13	1.6	0.18
Soluble Magnesium	mg/kg	43.7	13.56	70.1	21.5	31.3	54.8	6.35
Total Soluble Sulphates	%	90.3	39.9	89.4	78.4	33.2	930	38.6
Cation Exchange Capacity	mg/kg	9.5	14.5	13.2	12.5	11.2	15.8	13.8
Carbonate	mg/kg	Nil	5.74	10.2	Nil	7.57	15.2	Nil
Bicarbonate	mg/kg	30.7	46.7	31.9	64.4	123	185	56.2
Total Kjeldahl Nitrogen	%	0.08	0.042	0.14	0.08	0.06	0.07	0.02
Bulk Density	meq/100g	1.32	1.46	1.17	1.26	1.2	1.14	1.44
Phosphorous	meq/kg	109	102	92.5	82.5	137	99.3	93.6
Sand	%	80	66.7	70	58.8	61.9	66.7	64.7

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<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Clay	mg/k g	5.95	13.3	10	11.8	19	11.1	11.8
Silt	mg/k g	15.2	20	20	29.4	19	22.2	23.5
SAR	mg/k g	12.9	11.5	9.9	13.6	12.6	11.4	14.2
Silicon	%	0.109	0.098	0.102	0.099	0.095	0.094	0.098

3.6.1.1 Physical Properties:

Regular cultivation practices increase the bulk density of soils thus inducing compaction. This results in reduction in water percolation rate and penetration of roots through soils. The soils with low bulk density have favorable physical conditions whereas those with high bulk density exhibit poor physical conditions for agriculture crops. The bulk density of the soil in the study area ranged between 1.17 to 1.44 meq/100g which indicates favorable physical condition for plant growth. The water holding capacity was found in the range of 4.2 ml/1 to 6.4 ml/1.

3.6.1.2 Chemical Properties:

Chemical characteristics of soils include pH, exchangeable cations and fertility status in the form of NPK values and organic matter. The value of the pH ranges from 6.97 to 8.72, which it indicates majority of pH of the soil is slightly alkaline. The soil in the project site is sodic in nature, which challenges because they tend to have very poor structure which limits or prevents water infiltration and drainage. The organic matter varies from 0.13 to 1.05 %, which indicates the soil is slightly unfertile.

3.7 ECOLOGY AND BIODIVERSITY

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

- Primary field survey is carried out for the assessment of flora and fauna in the core zone

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

- Secondary data from Journals/Literature were studied and compiled to understand the species present in the buffer zone

3.7.1 *Methods available for floral analysis:*

3.7.1.1 **Plot Sampling Methods**

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

3.7.1.2 **Plot less Sampling Methods**

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

3.7.2 *Field study & Methodology adopted:*

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Erailur Village, Vanur Taluk, Villupuram District</i>	

3.7.3 Study outcome:

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

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

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

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

Table 3-16 Tree Species in the core Zone

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

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<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyur Village, Vanur Taluk, Villupuram District	

Table 3-17 Shrubs in the Core Zone

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	<i>Draft EIA Report</i>
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyur Village, Vanur Taluk, Villupuram District	

Table 3-18 Herbs & Grasses in the core zone

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IUCN Conservation status
1	Helicteresisora	Valampuri	4	2	30	0.07	0.07	1	0.79	2.15	Not assessed
2	Tridax procumbens	Vettukaayathalai	7	4	30	0.17	0.13	1.25	1.98	4.30	Not assessed
3	Heraculem spondylium	Hog Weed	19	10	30	0.67	0.33	2	7.94	10.75	Not assessed
4	Tridax procumbens	Cuminipachai	18	4	30	0.50	0.13	3.75	5.95	4.30	Not assessed
5	Senna occidentalis	Nattamsakarai	30	4	30	0.83	0.13	6.25	9.92	4.30	Not assessed
6	Plumbago zeylanica	Chittiramoolam	12	3	30	0.10	0.10	1	1.19	3.23	Not assessed
7	Scrophularia nodosa	Sarakkothini	18	7	30	0.50	0.23	2.14	5.95	7.53	Not assessed
8	Viburnum dentatum	Viburnum	7	5	30	0.17	0.17	1	1.98	5.38	Least concern
9	Cynodondactylon	Arugu	15	6	30	0.40	0.20	2	4.76	6.45	Not assessed
10	Euphorbia hirta	Amman Pacharisi	7	4	30	0.17	0.13	1.25	1.98	4.30	Not assessed
11	Sida cordifolia	Maanikham	50	4	30	1.50	0.13	11.25	17.86	4.30	Not assessed
12	Sida acuta	Malaidangi	12	3	30	0.33	0.10	3.33	3.97	3.23	Not assessed
13	Laportea canadensis	Peruganchori	28	20	30	1.00	0.67	1.5	11.90	21.51	Not assessed
14	Sporobolus fertilis	Giant Parramatta Grass	10	4	30	0.30	0.13	2.25	3.57	4.30	Not assessed
15	Tephrosia purpurea	Kavali	23	4	30	0.67	0.13	5	7.94	4.30	Not assessed

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

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

Table 3-19 Calculation of species diversity

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

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

i. Species Diversity

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyr Village, Vanur Taluk, Villupuram District	

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

H (Shannon Diversity Index) =3.02

Shrubs

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

H (Shannon Diversity Index) =2.22

Herbs

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

H (Shannon Diversity Index) =2.51

i. Species diversity calculation

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

From the above, it can be interpreted that herb community has higher diversity. While the tree community shows less diversity. It is also observed that most of the quadrates have controlled generation of plant species with older strands. Higher herb species diversity can be interpreted as a greater number of successful species and a more stable ecosystem where more

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyrur Village, Vanur Taluk, Villupuram District</i>	

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

3.7.6 *Floral study in the Buffer Zone:*

Economically important Flora of the study area

Agricultural crops: Paddy, Maize are the main crop grown. Different fruits like Banana, papaya, mangoes, guava and vegetables like brinjal, drumsticks, onion, Coriander also grown by the local people.

Medicinal species: The nearby area is also endowed with the several medicinal species which are commonly available in the shrub forest and waste lands. The common medicinal species of the region are *Asparagus racemosus* (satamulli), *Aegle marmelos* (golden apple), *Azadirachta indica* (Neem) etc.

Rare and endangered floral species: There are no rare or endangered or threatened (RET) species of in the study area. During the vegetation survey, there are no any species which are endangered or threatened under IUCN (International Union for Conservation of Nature and Natural resources) guidelines.

3.7.7 *Faunal Communities*

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

- Point Survey Method: Observations were made in each site for 15 minutes duration.

Roadside Counts: The observer traveled by motor vehicles from site to site, all sightings were recorded (this was done both in the day and night time). An index of abundance of each species was also established.

Pellet and Track Counts: All possible animal tracks and pellets were identified and recorded (South Wood, 1978).

Additionally, survey of relevant literature was also done to consolidate the list of fauna distributed in the buffer zone.

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyrur Village, Vanur Taluk, Villupuram District</i>	

Methodology Adopted:

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

Study in the core zone:

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

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

Avifauna: Since birds are considered to be the indicators for monitoring and understanding human impacts on ecological systems (Lawton, 1996) attempt was made to gather quantitative data on the avifauna by walk through survey within the entire study area and surrounding areas. From the primary survey, a total of 26 species of avifauna were identified and recorded in the study area. The diversity of avifauna from this region was found to be quite high and encouraging.

The list of fauna species found in the study area is mentioned in Table below.

Table 3-20 List of fauna species

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

Project	Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyrur Village, Vanur Taluk, Villupuram District	

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

3.8 DEMOGRAPHY AND SOCIO ECONOMICS

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

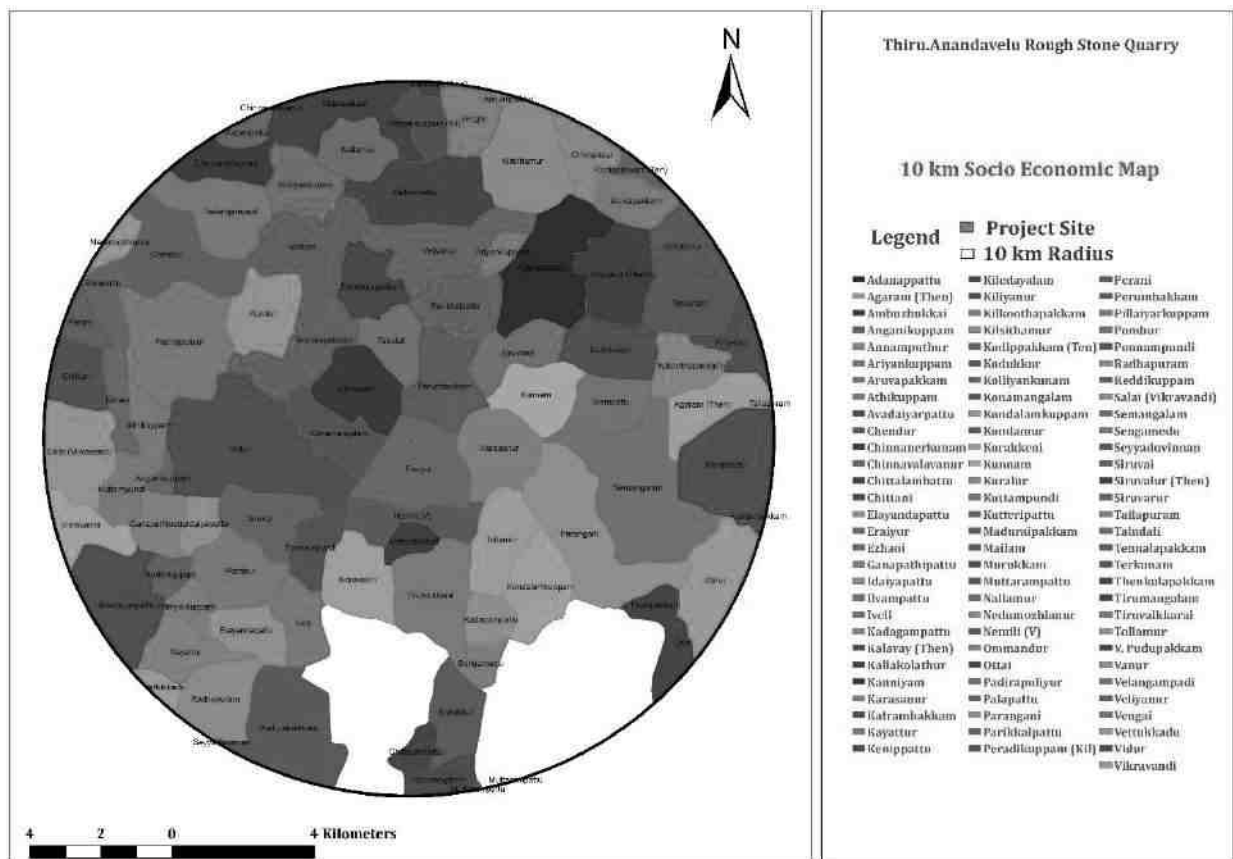


Figure 3.13 Socio Economic map surrounding the project site.

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Table 3-21: Demography Survey Study

Source: Census of India, 2011

Villages	Household	Population	Sex Ratio		Literacy Rate		SC	ST
			Male	Female	Male	Female		
Adanappattu	439	1929	998	931	790	607	662	85
Agaram (Then)	110	518	263	255	200	161	485	0
Ambuzhukkai	134	558	294	264	224	153	124	22
Anganikuppam	102	403	204	199	151	111	0	0
Annamputhur	324	1480	769	711	586	414	903	0
Ariyankuppam	121	546	279	267	215	165	44	0
Aruvapakkam	378	1641	825	816	626	441	838	0
Athikuppam	111	448	223	225	173	105	173	0
Avadaiyarpattu	435	1936	986	950	680	519	1610	172
Chendur	652	2885	1454	1431	986	725	1176	0
Chinnanerkunam	755	3230	1598	1632	1132	939	865	41
Chinnavalavanur	81	424	197	227	155	119	422	0
Chittalambattu	631	2736	1376	1360	1072	902	1060	0
Chittani	518	2149	1043	1106	737	602	560	12
Elayandapattu	294	1121	565	556	416	306	63	0
Eraiyr	740	3257	1656	1601	1085	779	950	0
Ezhaoui	145	669	332	337	246	190	301	0
Ganapathipattu	353	1462	727	735	556	408	327	0
Idaiyapattu	181	794	407	387	302	227	322	0
Ilvampattu	179	743	384	359	281	195	522	1
Iveli	348	1440	716	724	506	392	470	0
Kadagampattu	144	601	315	286	269	193	0	0
Kalavay (Then)	427	1748	895	853	667	441	661	0
Kallakolathur	307	1368	709	659	491	349	785	141

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyrur Village, Vanur Taluk, Villupuram District</i>	

Kanniyam	195	919	474	445	338	237	487	0
Karasanur	683	2862	1458	1404	1084	744	539	32
Katrambakkam	435	1887	941	946	625	469	1607	45
Kayattur	396	1564	802	762	523	353	414	70
Kenippattu	184	723	350	373	271	215	188	0
Kiledayalam	762	3455	1762	1693	1309	979	1915	20
Kiliyanur	1464	6334	3181	3153	2305	1806	3507	316
Kilkoothapakkam	300	1242	614	628	474	393	785	174
Kilsithamur	336	1669	832	837	617	489	1329	0
Kodippakkam (Ten)	401	1738	896	842	714	539	904	20
Kodukkur	588	2581	1272	1309	920	742	1533	0
Kolliyankunam	351	1577	761	816	532	470	1391	0
Konamangalam	227	907	455	452	354	278	436	1
Kondalamkuppam	96	353	175	178	144	126	97	0
Kondamur	468	1915	959	956	750	606	912	0
Korakkeni	218	906	489	417	362	232	361	0
Kunnam	401	1742	873	869	630	492	414	9
Kuralur	211	816	416	400	307	206	257	9
Kuttampundi	376	1513	777	736	570	396	294	47
Kutteripattu	788	3229	1589	1640	1270	1101	653	13
Maduraipakkam	1149	4889	2436	2453	1739	1349	1724	13
Mailam	1078	4632	2354	2278	1765	1442	666	165
Murukkam	173	787	395	392	266	213	422	24
Muttarampattu	401	1730	842	888	589	520	1300	0
Nallamur	308	1214	603	611	444	311	268	9
Nedumozhianur	1102	4549	2252	2297	1579	1165	1558	11
Nemili (V)	266	1238	627	611	471	364	544	0
Ommandur	615	2594	1308	1286	844	617	932	49
Ottai	407	1704	862	842	630	452	746	20

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Padirapuliyur	925	4202	2115	2087	1391	1175	2621	93
Palapattu	139	592	289	303	219	174	351	36
Parangani	773	3393	1684	1709	1203	1002	697	203
Parikkalpattu	248	1077	548	529	422	355	779	0
Peradikuppam (Kil)	103	483	251	232	194	153	365	0
Perani	567	2530	1289	1241	913	680	1155	11
Perumbakkam	501	2357	1199	1158	878	662	1708	0
Pillaiyarkuppam	167	712	350	362	185	141	636	63
Pombur	961	3994	2004	1990	1531	1241	1456	121
Ponnampundi	132	565	289	276	214	161	154	0
Radhapuram	780	3453	1735	1718	1273	1009	1238	0
Reddikuppam	65	213	105	108	87	73	0	0
Salai (Vikravandi)	418	1773	885	888	693	551	1103	9
Semangalam	863	3635	1859	1776	1348	983	1361	0
Sengamedu	234	1063	521	542	391	328	745	35
Seyyaduvinnan	231	930	480	450	368	243	240	0
Siruvai	454	1752	886	866	608	471	813	0
Siruvalur (Then)	369	1589	815	774	644	461	0	43
Siruvanur	518	2285	1160	1125	810	611	1479	7
Tailapuram	1101	4388	2206	2182	1696	1385	1404	16
Taludali	517	2257	1153	1104	879	664	301	14
Tennalapakkam	352	1569	810	759	623	446	1263	0
Terkunam	630	2602	1279	1323	980	774	343	71
Thenkulapakkam	219	1022	523	499	412	301	529	0
Tirumangalam	1367	5786	2899	2887	2239	1715	1178	15
Tiruvaikkarai	738	3220	1627	1593	1052	852	911	90
Tollamur	332	1419	731	688	496	330	916	31
V. Pudupakkam	596	2441	1208	1233	935	775	522	0
Vanur	1190	5161	2649	2512	2067	1638	2518	93

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Velangampadi	243	1040	502	538	329	267	495	21
Veliyanur	281	1267	647	620	452	365	711	0
Vengai	264	1346	673	673	441	381	1212	0
Vettukkadu	419	1746	892	854	721	570	442	0
Vidur	1405	5748	2861	2887	1883	1405	3122	8
Vikravandi	2735	12022	6037	5985	4868	4088	3840	145

3.9 TRAFFIC IMPACT ASSESSMENT

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



Figure 3.14: Site Connectivity

Table 3-22: No. of Vehicles per Day

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Erariyur Village, Vanur Taluk, Villupuram District</i>	

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

Table 3-23: Existing Traffic Scenario and LOS

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

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

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

4 Anticipated Environmental Impacts & Mitigation Measures

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

4.1 INTRODUCTION

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

Environmental Impacts can be group into Primary impacts & Secondary Impacts

Primary Impacts: These impacts are directly attributed by the project

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

Assessment of impacts is done for the following Environmental Parameters:

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

4.2 LAND ENVIRONMENT:

Aspect	Impact	Mitigation Measures		
<p><i>Mining of rough stone and Gravel</i></p>	<p>The proposed 2.18.0 Ha mine located in Eraiyur Village having 2,26,322 m³ of Rough stone and 16,554 m³ of Gravel respectively. The quarry operation is proposed to carry out with conventional open cast mechanized mining with 5.0 meter vertical bench and bench width of 5.0 meter. At the end of 5 years, mining lease area will be converted into ultimate pit.</p> <table border="1" style="margin: 10px auto;"> <tr> <td style="text-align: center;">EXISTING PIT DIMENSION</td> </tr> <tr> <td style="text-align: center;">Pit – 1 : 100 m (L) x 74 m (W) x 6 m (D)</td> </tr> </table> <p>The main impact of open cast mining on land-use is land degradation. The land is bound to be excavated for mining of Rough Stone and Gravel Quarry.</p> <p>Impact on soil of the study area will be minimal as there are no wastewater generated, heavy metal infusion, stack emissions.</p> <p>Impact due to transformation of terrain characteristics over the large area results in soil degradation.</p>	EXISTING PIT DIMENSION	Pit – 1 : 100 m (L) x 74 m (W) x 6 m (D)	<p>The proposed project site is not prone to any kind of soil erosion (Source: Bhuvan).</p> <p>In addition, garland drainage of 1m x 1m will be provided to avoid storm water run-off.</p> <p>It is proposed to plant 1090 No's of local tree species (Neem, Vilvam Vaagai, Pungam, Magizha maram, Eachai, etc.,) along the roads, outer periphery of the mining area which enhances the binding property of the soil.</p> <p>It is proposed to improve the affected land wherever possible for better land use, so as to support vegetation and creation of water reservoir in the ultimate pit after quarrying.</p> <p>The over burden in the form of 2.0 m Gravel in this mine area.</p> <p>The source of dust generation is majorly due to drilling, blasting, loading & unloading of the mined out mineral, the impact will be mitigated by water sprinkling regularly once in 3 hours.</p>
EXISTING PIT DIMENSION				
Pit – 1 : 100 m (L) x 74 m (W) x 6 m (D)				

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

	<p>Solid waste will be generated from the mining activity as there will be refuse also generation of domestic waste. If it is not properly managed, may cause odor and health problem to the workers.</p>	<p>The proposed mining activity is carried out in almost Plain terrain where the contour level difference is above 77 m.</p> <p>After removal of minerals, undulating portion will be created. Excavated area or ultimate pit at the end of the mine period will be converted into water reservoir. Two tier tree belts will be planted along the safety distance.</p> <p>The 100% recovery is achieved by extracting the entire mineable reserve. Hence there will be no refuse generation due to the mining activity. Apart from that, a very meagre quantity of domestic waste will be generated in the project, which will be handed over to the local body on daily basis.</p>
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4.3 WATER ENVIRONMENT:

Aspect	Impact	Mitigation Measures
<i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i>	The mining in the area may cause ground water contamination due to intersection of the water table and mine runoff.	The water table will not be intersected during mining, as the ultimate depth is limited upto 32 m below ground level, whereas the ground water table is at 65 m below ground level during summer and 60 m below ground level during

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

	<p>The ground water depletion may occur due to mining activity</p> <p>Chemicals consisting of nitrate used for blasting may pollute the surface run off.</p> <p>Improper management of Domestic wastewater in the Mine lease may create unhygienic conditions in the site thereby causing health impacts to the labours.</p>	<p>rainy seasons. The municipal wastewater will be disposed into septic tanks of 5 cum and soak pit. No chemicals consisting of toxic elements will be used for carrying out mining activity.</p> <p>The ground water table is at a depth of 60 to 65 m BGL, the mining operation will not affect the aquifer. The ultimate pit at the end of the mining operation will be used for rain water storage, the stored water will be used for green belt development and further the stored water will be used for domestic purposes (other than drinking) after proper treatment.</p> <p>Further, the run-off water will be stored in sumps and after proper treatment; water will be used in the mining operation for dust suppression.</p> <p>Provision of urinals/Latrines along with septic tank followed by soak pit arrangement will be provided in the Mine Lease area for the proper management of wastewater</p>
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<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

4.4 AIR ENVIRONMENT:

Aspect	Impact	Mitigation Measures
<p><i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i></p>	<p><i>Impacts during Operation Phase</i></p> <p>During mining operation, fugitive dust and other air pollutants like particulate matter (PM10 & PM 2.5) will be generated.</p> <p>The main source of pollutants arises due to drilling and blasting. 5 No. of Tippers will be used for loading and unloading, 1 No of Excavator (1.2 m³ bucket capacity (with rock breaker attachment), 1 No. Compressor and 3 No. Jack Hammer and 1 No. of Compressor will be used for excavation of the mineral which contributes to the generation of fugitive dust. In addition, blasting will be done using explosives leading to the generation of dust.</p>	<p><i>Mitigation Measures during Operation Phase</i></p> <p>It is proposed to plant 1090 Nos of local species (with 218 No's each year) along the haul roads, outer periphery within the lease area to prevent the impact of dust in consultation with Forest department for the plantation of trees (Neem, Magizham, Tamarind, Elandhai, Mantharai, Vilvam, etc..) in two tier to combat air pollution and with herbs (Nerium) in between the tree species.</p> <p>Planning transportation routes of the mined out mineral, so as to reach the nearest paved roads (an approach road) by shortest route connecting to SH 136.</p> <p>Alternatively, gravelled road may be constructed between mine lease area and nearest paved road connectivity. The speed of trucks plying on the haul road will be limited to</p>

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

	<p><u><i>Effect on Human</i></u></p> <ul style="list-style-type: none"> • Adverse effect on human health of working labourers and neighbouring villagers like effect on breathing and respiratory system, damage to lung tissue, influenza or asthma. • Dust generation due to loading and unloading of mineral and due to transportation can also affect the workers as well as nearby villagers. <p><u><i>Effect on Plants</i></u></p> <ul style="list-style-type: none"> • Stomatal index may be minimized due to dust deposit on leaf. 	<p>20km/hr to avoid generation of dust.</p> <p>The trucks will be covered by tarpaulin.</p> <p>Overloading will be avoided.</p> <p>Personal Protective Equipments (PPEs) like eye goggles, dust mask, leather gloves, safety shoes & boots will be provided to the workers engaged at dust generation points like excavation and loading points.</p> <p>0.5 KLD of water will be proposed for sprinkling on unpaved roads to avoid dust generation during transportation.</p>
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Air Quality Modeling:

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

- AERMOD (AERMIC Dispersion Model),

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

4.4.1 *Source Characterization*

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

The emission Sources from the proposed operation are

Point Sources:

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

1. Hydraulic excavator – 1.2 Cum Bucket Capacity (with Rock Breaker Attachment)
2. Jack Hammer 32 mm Dia
3. Tipper
4. Tractor Mounted - Compressor
5. Drilling and excavation with Accessories

Road Sources:

A road network was developed to depict the anticipated haul truck routes and truck discharge locations during the mine operations. The anticipated emissions from the road sources and corresponding anticipated impact during the monitoring period of March to May 2022 emissions were estimated. Emissions due to haul road and general plant traffic on the unpaved road network were modelled as volume sources. The model volume source parameter for the haul roads initially utilized USEPA developed emission factors for hauling trucking. The haul road sources utilized source to source spacing of 6 meters along the simulated haul roads. The initial lateral dimension of the sources were set to 3 m were used as an input to replicated a 2 truck travel adjacent for a typical mining scenario.

The parameters considered for the hauling operation include the following,

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

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

Other fugitive particulate emission sources:

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

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

Post Project Scenario

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

Predicted maximum ground level concentrations considering micro meteorological data of May to July 2023 are superimposed on the maximum baseline concentrations obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase. The overall scenario with predicted concentrations over the maximum baseline concentrations is shown in the following table along with isopleths.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Table 4-1 Emission Factors for uncontrolled mining

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

4.5 NOISE ENVIRONMENT:

Aspect	Impact	Mitigation Measures
<i>Drilling, Blasting, Loading and unloading, Transportation of the excavated mineral.</i>	<p>Usage of Equipments (Excavator, Tipper, Jack Hammer), Machinery and trucks used for transportation will generate noise.</p> <p>Noise from the machinery can cause hypertension, high stress level, hearing loss, sleep disturbance etc due to prolonged exposure.</p> <p>Number of vehicles will be increased due to the proposed mining activity hence vehicle may collide which may result in unwanted sound and can also cause impact on human health like breathing and respiratory system, damage to lung tissue, influenza or asthma.</p>	<ul style="list-style-type: none"> • The machinery will be maintained in good running condition so that noise will be reduced to minimum possible level. • Awareness will be imparted to the workers once in six months about the permissible noise level and effect of maximum exposure to those levels. Adequate silencers will be provided in all the diesel engines of vehicles. • It will be ensured that all transportation vehicles carry a valid PUC Certificates. • Speed of trucks entering or leaving the mine will be limited to moderate speed (20km/hr) to prevent undue noise from empty vehicles. <p>The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments.</p> <ul style="list-style-type: none"> • It is proposed to plant 1090 Nos. of local species (Neem, Mandharai, Athi, Tamarind, Panai, Vilvam,etc...) to reduce the impact of

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

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

Aspect	Impacts	Mitigation Measures
Site Clearance	Loss of habitat due to site clearance which may lead to ecological disturbance.	The proposed mining lease is already a dry land hence no site clearance is required. Only few shrubs and herbs like parthenium sp., prosopis juliflora were present.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Planting of trees	Development of afforestation in the mine lease area will have a positive impact as the land was initially a barren.	10 m safety distance will be provided all along the boundary of the mine lease area and safety. Around 1.37.50 Ha of land is utilized for greenbelt development (1090 Nos – 5 years). This will attract avifauna thus enhancing the existing ecological environment.
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4.7 SOCIO ECONOMIC ENVIRONMENT:

Aspect	Impact	Mitigation Measures
Proposed implementation of Mining activity	Land acquisition for the implementation of the project may result in loss of assets, which in return will make the PAP to shift, losing their normal routine and livelihood	The proposed project is a Patta land of <i>Thiru. K. Anandavelu</i> and the land is vacant where there are no human settlement within 300m radius. Hence the project does not involve Rehabilitation and resettlement
Drilling, Blasting, Loading and Transportation of the mined out mineral	The mining activities may cause dust emission, noise pollution thereby causing disturbance to the local habitat	No human activity is envisaged near the project site. The nearest human settlement is observed in Eraiyr village which is 1.71 km, SE from site
Grazing and Rearing activities in the nearby villages	The Grazing and rearing of local animals like Sheep, Goat and cows is observed in the nearby villages, which may be affected due to the project as the movement of the vehicles may affect/injure the animals	It is proposed to use gravelled road and nearest paved road and preferred not to use unpaved roads. In addition to that, the speed of trucks will be limited to 20km/hr to avoid any accidents.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by Thiru K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Employment opportunity	The project will improve the livelihood of the local people	After the development of the proposed mine, it will improve the livelihood of local people and also provide the direct and indirect employment opportunities. The rough stone for the infrastructural development in the area will be made available from the local markets at reasonably lower price.
Corporate Environmental Responsibility	The proposed project will help in natural resource augmentation & Community resource development.	As a part of CER i.e, 5 Lakhs will be allocated. Developing sports facilities, providing hygienic toilet, R.O Water facilities to Government High School, Eraiyur.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

4.8 OTHER IMPACTS:

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiur Village, Vanur Taluk, Villupuram District</i>	

5 Analysis Of Alternatives

5.1 GENERAL

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

ToR issued by the SEIAA-TN vide Letter No. SEIAA-TN/ F. No. 9895/SEIAA/ToR-1488/2023 Dated: 16.06.2023. The study for alternative analysis involves in-depth examination of site and technology.

5.1.1 *Analysis for Alternative Sites and Mining Technology*

5.1.1.1 Alternative Site

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

5.1.1.2 Alternative Technology

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

Table 5-1: Alternative for Technology and other Parameters

S. No.	Particular	Alternative Option 1	Alternative Option 2	Remarks
1.	Technology	Opencast semi mechanized mining	Opencast mechanized mining	Opencast semi mechanized Involving drilling and blasting are preferred. Benefits: Material is hard so to make it loose and to bring it to appropriate size.
2.	Employment	Local employment.	Outsource employment	Local employment is preferred Benefits: Provides employment to local people along with financial benefits No residential building/ housing is required.
3.	Labour transportation	Public transport	Private transport	Local labours will be deployed from Eraiyr village so they will either reach mine site by bicycle or by foot. Benefits: Cost of transportation of labors will be negligible
4.	Material transportation	Public transport	Private transport	Material will be transported through trucks/trolleys on the contract basis Benefits: It will give indirect employment.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

5.	Water	Tanker supplier	Ground water/	Tanker supply will be preferred. Water will be sourced from Eraiyur village which is 1.71 km, SE from site
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<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiur Village, Vanur Taluk, Villupuram District</i>	

6 Environmental Monitoring Program

6.1 GENERAL:

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

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

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

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

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

Table 6-1: Environmental Monitoring Programme

Parameters	Sampling	Frequency	Location
Air environment – Pollutants PM 10 PM 2.5 SO ₂	5 locations	24 hourly twice a week 4 hourly. Twice a week, One non monsoon season	Project Site, Shri Ayyanar Temple, Eraiyur Government High School, Govt. High School, Kunnam, Poncoc Hr. Sec. School, Mailam

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiur Village, Vanur Taluk, Villupuram District</i>	

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru. K. Anandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

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

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K. Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyrur Village, Vanur Taluk, Villupuram District</i>	

7 Additional Studies

7.1 GENERAL

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

7.1.1 *Public Hearing:*

As the proposed mining project falls under 1(a), Category B1 – Cluster Mining (includes **Existing Quarries-** T. Vasudevan – 4.83.5 Ha, E. Jayasankar – 3.37.5 Ha

Proposed Quarries – K Anandavelu – 2.18.0 Ha

Abandoned Quarries – Nil

The Total extent of the Existing / Proposed quarries are 10.39.0 Ha

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

7.1.2 *Risk assessment:*

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K. Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.K. Anandavelu</i>	
<i>Project Location</i>	<i>Erarayur Village, Vanur Taluk, Villupuram District</i>	

7.1.3 Identification of Hazard

7.1.3.1 Blasting Pattern:

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

7.1.3.2 Drilling and Blasting:

Drilling and Blasting parameters are as follows:

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

a. Types of explosives to be used:

Slurry Class 3 explosives, type of nitro compound are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling or Primary blasting is proposed. Detonators of Class 3 and Safety fuse of Class 6 are used.

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

The quarry is situated more than 1 km from the nearby villages. Controlled blasting measures will be adopted for minimizing ground vibration and fly of rock. Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give the shattering effect in rough stone for easy excavation and to control fly of rocks.

No. of Holes = 89 Holes
Yield = 452 MT

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K. Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiur Village, Vanur Taluk, Villupuram District</i>	

Total Explosive Required = 44 Kg Slurry Explosives

Charge/Hole = 0.5 kg

Blasted at day time = 12 to 1 PM (or whenever required)

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

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

- For Mining – Excavator of 1.2 Cum Bucket capacity (with Rock Breaker attachment), Jack Hammers (30-35 mm Dia) of 1 Nos and Compressor of 1 No.
- Loading Equipment – Excavator of 1.2 Cum Bucket Capacity (with Bucket attachment)
- Transportation (includes within the mine and mine to destination) – Tipper 5 No of 15 T capacity (from quarry to needy peoples and local crushers)

a. Risk:

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

b. Mitigation measures to minimize the risk

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K. Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.K. Anandavelu</i>	
<i>Project Location</i>	<i>Erarayur Village, Vanur Taluk, Villupuram District</i>	

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

- In order to take care of above hazard/disaster, the following control measures will be adopted:
- All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations;
- Entry of unauthorized persons will be prohibited;
- Firefighting and first-aid provisions in the ECC and mining area;
- Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the workers (18 Nos.) and regular inspection for their use;
- In case of eventuality, first aid will be given by the senior safety officer in the mine area initially to the injured person. The safety officer will give notice of accident as per Rule-23 of Mines Act-1952;
- The safety officer (common for 3 mines within 500m radius) will be responsible for coordination between management district authorities/DGMS etc. Regarding general safety as per Rule-181 of MMR 1961, “No person shall negligently or willfully do anything likely to endanger life or limb in the mine, or negligently or willfully omit to do anything necessary for the safety of the mine or of the persons employed there in”. The workers will be provided with protective footwear and safety helmets;
- Cleaning of mine faces will be regularly done;
- Handling of explosives, charging and blasting will be carried out by highly skilled laborers only;
- Regular maintenance and testing of all mining equipment as per manufacturer’s guidelines;
- Suppression of dust by sprinkling water on the haulage roads;

7.1.5 *Safety Team:*

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K. Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.K. Anandavelu</i>	
<i>Project Location</i>	<i>Eraiur Village, Vanur Taluk, Villupuram District</i>	

7.1.6 *Emergency Control Centre*

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

7.2 DISASTER MANAGEMENT

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

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

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

Major objectives of this onsite – offsite emergency plan are:

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

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

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K. Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.K. Anandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

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

7.2.1 *Onsite off-site emergency Plan:*

1- Emergency on account of:

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

2- Disaster due to natural calamities like:

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

7.2.2 *Emergency Plan:*

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

7.2.3 *Emergency Control:*

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha by K. Anandavelu</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru.K. Anandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

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

7.3 NATURAL RESOURCE CONSERVATION

There are no natural resources within the premises. The conservation strategies for energy will be followed in the proposed mine lease area. The pollutants of the mine will be minimized by adopting appropriate mitigation measures as mentioned Chapter 5 to prevent the effects on nearest water bodies. No surface runoff from the project site will be let into the nearest water bodies.

7.4 RESETTLEMENT AND REHABILITATION:

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

8 Project Benefits

8.1 GENERAL

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

8.1.1 *Physical Benefits*

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

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

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

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

8.2 SOCIAL BENEFITS

The mining in the area will create rural employment. During site visit, it has been observed that the economic conditions of the villages in the study area is quite normal. After the development of the proposed mine, it will improve the livelihood of local people and also provide the indirect employment opportunities. The rough stone for the infrastructural development in the area will be made available from the local markets at reasonably lower price.

As a part of CER, i.e., 5 Lakhs will be allocated. The detailed agenda, which is to be executed has been framed. The salient features of the programmes are as follows:

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

R.O. Water Purifier for Drinking Purpose, Painting the compound walls, Classrooms and School, Environmental Science based books for Library in Tamil Language, Smart Classroom Facility, Greenbelt in and around the periphery of the school campus and Hygienic Toilet facilities to Government High School, Eraiyur which is located at 1.76 km, SE from the project site.

8.3 PROJECT COST / INVESTMENT DETAILS

1	<u>A. Fixed Asset Cost:</u>	
	1. Land Cost	: Rs. 2,87,500/-
	2. Labour Shed	: Rs. 1,50,000/-
	3. Sanitary Facility	: Rs. 1,50,000/-
	4. Refilling/Fencing cost	: Rs. 4,00,000/-
	5. Other Items	: Rs. 4,00,000/-
	Total	: Rs. 13,87,500/-
2	<u>B. Operational Cost:</u>	
	<u>Machinery cost</u>	: Rs. 25,00,000/-
3.	<u>EMP Cost</u>	: Rs. 76,11,888/-
	Total Project Cost	: Rs. 1,14,99,388/-

Total Project Cost: Rs. 1,14,99,388/- (One Crore Fourteen Lakhs Ninety Nine Thousand Three Hundred and Eighty Eight Rupees Only)

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

9 Environmental Management Plan

9.1 INTRODUCTION

This chapter comprehensively presents the Environmental Management Plan (EMP), which includes the administrative and technical setup, summary matrix of EMP, the cost involved to implement the EMP, during various Mining activities and provisions made towards the same in the cost estimates of project. This chapter describes the proposed monitoring scheme as well as inter-organizational arrangements for effective implementation of the mitigation measures.

9.2 SUBSIDENCE

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

9.3 MINE DRAINAGE

9.3.1 *Storm water Management*

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

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

9.3.2 *Drainage*

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

waste will be deposited into the nearby area. Regular checking will be carried out to find any blockage due to silting or accumulation of loose materials. The drains will also be checked for any damage in lining / stone pitching, etc.

9.3.3 *Administrative and Technical Setup*

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

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

Table 9-1: Impacts and mitigation measures

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

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

	Mitigation Measures	Provision for Implementation	Capital	Recurring
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	21800	21800
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	100000	25000
	Air Quality will be regularly monitored as per norms within ML area & Ambient Area	Yearly Compliance as per CPCB norms	0	40000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	0
	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	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	25000	0

Project	Rough stone and Gravel Quarry- 2.18.0 Ha	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyur Village, Vanur Taluk, Villupuram District	

	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	10000
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	40000	10000
Noise Environment	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Ambient Noise will be regularly monitored as per norms within ML area and near RF with necessary permission	Yearly Compliance as per CPCB Norms	0	20000
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Competent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	40000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	100000

Project	Rough stone and Gravel Quarry- 2.18.0 Ha	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyyur Village, Vanur Taluk, Villupuram District	

Water Environment	Water management	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	21800	5000
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	3000	2000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
Implementation of EC, Mining Plan & DGMS Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10000	2000
	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee)	72000	18000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	18000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	4360
	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	436000	10000
	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	109000	10000

Project	Rough stone and Gravel Quarry- 2.18.0 Ha	Draft EIA Report
Project Proponent	Thiru K Anandavelu	
Project Location	Eraiyyur Village, Vanur Taluk, Villupuram District	

	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	20000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
Green Belt Development	Green belt development - 500 trees per one hectare (200 Inside Lease Area & 300 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)	87200	13080
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	196200	19620
			127200	1147360

Year 1	Year 2	Year 3	Year 4	Year 5
2419360	1204728	1264964	1328213	1394623

Total EMP Cost: 76,11,888/- for 5 years (Rs. 76 Lakhs)

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyrur Village, Vanur Taluk, Villupuram District</i>	

10 Summary & Conclusion

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

10.1 INTRODUCTION

Thiru K Anandavelu site is a cluster of three mining project. The individual mine lease area is 2.18.0 Ha of Rough Stone and Gravel Quarry located at S.F.Nos. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District.

10.2 PROJECT OVERVIEW

Table 10-1: Project Overview

S. No.	Description	Details
1	Project Name	Existing Rough Stone and Gravel Quarry-2.18.0 ha
2	Proponent	Thiru K Anandavelu
3	Mining Lease Area Extent	2.18.0 Ha
4	Location	S.F.Nos. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District.
5	Latitude	12° 04' 20.61" N to 12° 04' 28.15" N
6	Longitude	79° 38' 39.36" E to 79° 38' 45.89" E
7	Topography	Plain topography
8	Site Elevation above MSL	77 m from MSL
9	Topo Sheet No.	57 P/12
10	Minerals of Mine	Rough Stone and Gravel Quarry
11	Proposed production of Mine	2,26,322 m ³ of Rough stone and 16,554 m ³ of Gravel

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

12	Ultimate depth of Mining	40 m below ground level
13	Method of Mining	Open cast mechanized mining
14	Water demand	2.0 KLD
15	Source of water	Water will be supplied through tankers supply
16	Man power	18 Nos.
17	Mining Lease	Precise area communication from The Assistant Director, Department of Geology and Mining, Villupuram District vide Na.Ka. En. A/Puvi (Ma) Sura / 273/ 2020 dated 20.12.2022
18	Mining Plan Approval	Mining Plan was approved by The Deputy Director, Dept. of Geology & Mining, Villupuram vide Rc No: A/G&M/273/2020 dated 14.02.2023
19	Production details	Geological reserves: 7,31,480 m ³ of Rough stone and 22,728 m ³ of Gravel Proposed year wise recoverable reserves: 2,26,322 m ³ of Rough stone and 16,554 m ³ of Gravel
20	Boundary Fencing	7.5 m barrier all along the boundary Fencing will be provided.
21	Disposal of overburden	This area is covered by 2 m Gravel. Gravel formation will be removed and hydraulic excavators are used for loading gravel into tipper from pit head to needy buyers. This will be done only after obtaining and paying necessary seigniorage fee to Government.
22	Ground water	The quarry operation is proposed up to a depth of 40 m below ground level. The water table is below 60 m to 65 m from ground level which is observed from the nearby open wells and bore wells. Hence the ground water will not

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyur Village, Vanur Taluk, Villupuram District</i>	

		be affected in any manner due to the quarrying operation during the entire lease period.
23	Habitations within 500m radius of the Project Site	There is no Habitation within 300m radius of the project site.
24	Drinking water	Water will be supplied through tankers from Perumbakkam village which is 1.28 km, North East of the area

10.3 JUSTIFICATION OF THE PROPOSED PROJECT

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

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

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Erailyur Village, Vanur Taluk, Villupuram District</i>	

Table 10-2: Anticipate Impacts & Appropriate Mitigation Measures

S. No.	Potential Impact	Mitigation Measure
1	The main impact in the air environment is dust emission during various mining activities such drilling, blasting, excavation, loading and transportation. The dust emission may affect the quality of ambient air in the and around the mine area. The increased emission may cause respiratory & Cardiovascular problems in human health	Proper mitigation measures like water sprinkling on haul roads will be adopted to control dust emissions. To control the emissions regular preventive maintenance of equipments will be carried out on contractual basis. Plantation will be carried out along approach roads & mine premises.
2	Waste water will be generated due to mining activity and from other domestic activities. These may contaminate the ground water leading to ground water. The mining activity may affect the ground water table	No waste water will be generated from the mining activity of minor minerals as the project only involves lifting of over burden from mine site. The wastewater generated from the domestic activity will be disposed off safely through the proposed septic tank. Mining will not intersect ground water table. Hence the water table will not be impacted due to the proposed project
3	Noise will be generated in the mine area during various mining activities such as blasting, drilling, excavation. During transportation of the mined out mineral, there may be noise generation due to the movement of vehicles. This may impact the	Periodical monitoring of noise will be done. No other equipments except the transportation vehicles and Excavator (as & when required) for loading will be allowed at site.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyyur Village, Vanur Taluk, Villupuram District</i>	

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

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

11 Disclosure of Consultant

11.1 INTRODUCTION

This chapter presents the details of the environmental consultants engaged, their background and the brief description of the key personnel involved in the project. Specific studies on the mining project have been carried out by engaging engineers/experts of Ecotech Labs Pvt. Ltd, Chennai. Ecotech Labs Pvt. Ltd (ETL), Chennai is NABET accredited consultancy organization. ETL is equipped with in-house, spacious laboratory, accredited by NABL (National Accreditation Board for Testing & Calibration Laboratories), Department of Science & Technology, Government of India and MoEF & CC.

11.2 ECO TECH LABS PVT. LTD – ENVIRONMENT CONSULTANT

Eco Tech Labs Pvt. Ltd is a multi-disciplinary testing and research laboratory in India. Eco Tech labs provides high quality services in environmental consultancy, engineering solution, chemical and microbiological laboratory analysis of food, water and environment (Air, Water, Soil) with highest accuracy.

The Quality policy

- We at Eco Tech Labs Pvt. Ltd. engaged in providing Environmental consulting services and we are committed to strengthen our capabilities in all areas of our operations in line with customer requirements & expectations, applicable legal requirements & stakeholders expectations.
- We are committed to establish and maintain Quality Management System (QMS) for continual improvement in processes and Services
- We are committed to provide customized solutions in realistic, time bound and cost effective to achieve highest degree of customer satisfaction and Environmental improvement.
- We shall establish, maintain & periodically review our documented management systems, objectives and performance in consultation with our employees and prevailing best practices.

<i>Project</i>	<i>Rough stone and Gravel Quarry- 2.18.0 Ha</i>	<i>Draft EIA Report</i>
<i>Project Proponent</i>	<i>Thiru K Anandavelu</i>	
<i>Project Location</i>	<i>Eraiyr Village, Vanur Taluk, Villupuram District</i>	

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

ANNEXURE-I

**STANDARD TOR CONDITIONS WITH
ADDITIONAL TOR POINTS**



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

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

3rd Floor, Panagal Maaligai,

No.1, Jeenis Road, Saidapet,

Chennai - 600 015.

Phone No. 044-24359973

Fax No.044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.9895/ToR-1488/2023 Dated:16.06.2023.

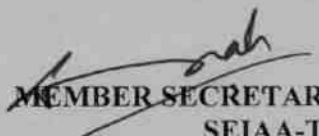
To

K.Anandavelu,
S/o. Kesavan,
No.225, Mettu Street, Eraiyur Village,
Vanur Taluk,
Villupuram District – 604 304.

Sir / Madam,

Sub: SEIAA, Tamil Nadu –Proposed Rough Stone and gravel quarry lease over an extent 2.18.0 Ha at S.F.No.76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villuppuram district, Tamil Nadu by Thiru.K.Anandavelu - under project category – “B1” and Schedule S.No.1(a) ”Mining of Minerals Projects” – **ToR issued along with Public Hearing-** preparation of EIA report – Regarding.

Ref: 1. Online proposal No. SIA/TN/MIN/421451/2023 dated.09.03.2023
2. Your application submitted for Terms of Reference dated: 14.03.2023.
3. Minutes of the 370th SEAC meeting held on 25.04.2023.
4. Minutes of the 617th SEIAA meeting held on 15.05.2023.
5. Minutes of the 630th SEIAA meeting held on 16.06.2023


MEMBER SECRETARY
SEIAA-TN

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

The proponent, Thiru.K.Anandavelu has submitted application for Terms of Reference (ToR) on 14.03.2023 in Form-I, Pre- Feasibility report for the Proposed Rough Stone and gravel quarry lease over an extent 2.18.0 Ha at S.F.No.76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Viluppuram district, Tamil Nadu.

Discussion by SEAC and the Remarks:-

The proposal was placed in this 370th meeting of SEAC held on 25.04.2023. The details of the project are available in the website (parivesh.nic.in).

The SEAC noted the following:

1. The project proponent, **Thiru.K.Anandavelu** has applied for Terms of Reference for the Proposed Rough Stone and gravel quarry lease over an extent 2.18.0 Ha at S.F.No.76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Viluppuram district, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006.
3. Earlier, EC was accorded to the proponent vide Lr.no.SEIAA-TN/F.No.2699/EC/1(a)/1702/2014 dated.19.03.2015 for quarrying in the area belonging to the Survey Nos. 76/2 & 76/3A of Eraiyur Village, Vanur Taluk, Viluppuram district for the quantity of 94,425 cu.m of rough stone, 8282 cu.m of top soil & 23,226 cu.m of weathered formation.
4. Now the proponent has submitted an application for Terms of Reference for a quantity of 2,26,322 cu.m of rough stone and 16,554 cu.m of gravel.

Based on the presentation made by the proponent, **SEAC decided to recommend the proposal for Terms of Reference (TOR) with Public Hearing subject to the following additional TORs**, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The project proponent shall submit a Certified Compliance Report for the EC dated.19.03.2015 granted by the SEIAA-TN from the IRO, MoEF & CC, Chennai.
2. 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.


MEMBER SECRETARY
SEIAA-TN

3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.
4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.
5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.
6. **In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit a conceptual 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.**
7. 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.
8. 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.
9. 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.
10. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b. Quantity of minerals mined out.
 - c. Highest production achieved in any one year


MEMBER SECRETARY
SEIAA-TN

- d. Detail of approved depth of mining.
 - e. Actual depth of the mining achieved earlier.
 - f. Name of the person already mined in that leases area.
 - g. If EC and CTO already obtained, the copy of the same shall be submitted.
 - h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
11. 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).
 12. The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,
 13. The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the prosed quarry based on the volume of rock handled & area of excavation.
 14. 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.
 15. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act' 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
 16. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
 17. 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.



MEMBER SECRETARY
SEIAA-TN

18. 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.
19. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
20. 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.
21. 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.
22. 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.
23. 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.
24. Impact on local transport infrastructure due to the Project should be indicated.
25. 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.
26. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
27. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.


MEMBER SECRETARY
SEIAA-TN



28. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
29. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
30. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
31. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-I** in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
32. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site-specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
33. A Disaster Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
34. A Risk Assessment and Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
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. 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


MEMBER SECRETARY
SEIAA-TN

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

Appendix - I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	ஏலமரம்
2	<i>Adenaanthera pavonina</i>	Manjadi	மஞ்சளம், ஆனைக்கடையறிமணி
3	<i>Albizia lebbek</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Usai	உசை
5	<i>Bauhinia purpurea</i>	Mantharai	மந்தாரை
6	<i>Bauhinia racemosa</i>	Aathu	ஆத்து
7	<i>Bauhinia tomentosa</i>	Iruvathu	இருவாத்து
8	<i>Buchanania axillaris</i>	Kattuna	காட்டுமர
9	<i>Borassus flabellifer</i>	Panai	பனை
10	<i>Butea monosperma</i>	Murukkanuram	முருக்கமரம்
11	<i>Bobax coiba</i>	Ilavu, Sevvilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Punai	புனை
13	<i>Cassia fistula</i>	Sarakondrai	சரக்கொண்டை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கொண்டை
15	<i>Chloroxylon siveetenia</i>	Purasamaram	புரசு மரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Marjallavu	கோங்கு மஞ்சளம், இலவு
17	<i>Cordia dichotoma</i>	Naruvil	நருவில்
18	<i>Crotera adansonii</i>	Mavalangum	மாலைமரம்
19	<i>Dillenia indica</i>	Uva, Uzha	உவா
20	<i>Dillenia pentagyna</i>	SiruUva, Sitruzha	சிறு உவா
21	<i>Diospyro zebenium</i>	Karungali	கருங்கலை
22	<i>Diospyro schloroxylon</i>	Vaganu	வாகை
23	<i>Ficus amplicarpa</i>	Kallitchi	கால் இச்சி
24	<i>Hibiscus tiliacou</i>	Aatrupoovaracu	ஆட்டுப்பூவரசு
25	<i>Hardwickia binata</i>	Aacha	ஆச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	ஆயில் மரம், ஆயில்
27	<i>Lamnea coromandelica</i>	Odhuan	ஒதுவம்
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottainaram	நெய் கெட்டிலை மரம்
30	<i>Limonia acidissima</i>	Vila maram	வில்லை மரம்
31	<i>Litsea glutinos</i>	Pisinpattai	கரும்பா, பிச்சிப்பாலை
32	<i>Madhuca longifolia</i>	Iluppu	இலுப்பை
33	<i>Manilkara hexandra</i>	UlakkaiPaalai	உலக்கை பிச்சை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழ்மரம்
35	<i>Mitrasyna parvifolia</i>	Kadamba	கடம்பை
36	<i>Morinda pubescens</i>	Nuna	நுனை
37	<i>Morinda citrifolia</i>	Veilai Nuna	வேளைநா நுனை
38	<i>Phoenix sylvestre</i>	Eachai	எச்சை
39	<i>Pongamia pinnat</i>	Pungani	புங்கை


MEMBER SECRETARY
SEIAA-TN

40	<i>Premna mollissima</i>	Munnai	முள்ளை
41	<i>Premna serratifolia</i>	Narumunai	நறு முள்ளை
42	<i>Premna tomentosa</i>	Malaipoovarasu	மலை பூவரசு
43	<i>Prosopis cinerona</i>	Varu maram	வள்ளி மரம்
44	<i>Pterocarpus marsupium</i>	Vengai	வேங்கை
45	<i>Pterospermum canescens</i>	Vennangu, Tada	வேண்ணாங்கு
46	<i>Pterospermum xylocarpum</i>	Polavu	பலவு
47	<i>Puthranjiva roxburghii</i>	Karipala	கறிபாலா
48	<i>Salvadora persica</i>	Ugaa Maram	ஊகா மரம்
49	<i>Sapindus emarginatus</i>	Manupungan, Soapukai	மணிப்புங்கன் சோப்புக்காய்
50	<i>Saraca asoca</i>	Asoca	சுசோகா
51	<i>Streblus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	எட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேத்தான் கொட்டை
54	<i>Syzygium cumini</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandri	தான்றி
56	<i>Terminalia arjuna</i>	Ven marudhu	வேண் மருது
57	<i>Toona ciliata</i>	Sandhana vembu	சந்தன வேம்பு
58	<i>Thespesia populnea</i>	Puvarasu	பூவரசு
59	<i>Walsura trifoliata</i>	valsura	வாலசூரா
60	<i>Wrightia tinctoria</i>	Veppalai	வேப்பாளை
61	<i>Pithecolobium dulce</i>	Kodukkapuli	கொடுக்காப்புளி

Discussion by SEIAA and the Remarks:-

The subject was placed in the 628th authority meeting held on 16.06.2023. Earlier, the proposal was placed in the 617th authority meeting held on 15.05.2023. The authority noted that the subject was appraised in the 370th SEAC meeting held on 25.04.2023. SEAC has furnished its recommendations for granting Terms of Reference with Public Hearing to the proposal.

The Authority, after detailed discussions decided to consider the proposal after obtaining the following particulars from the project proponent:

1. The project proponent shall submit a Certified Compliance Report for the EC dated.19.03.2015 granted by the SEIAA-TN from the IRO, MoEF & CC, Chennai.
2. The proponent shall furnish details on the CTE/CTO obtained from TNPCB for the quarrying operations carried out earlier.

The proponent, vide letter dated.08.06.2023 furnished a reply for the above queries/details requested in the 617th authority meeting. In this regard, the proposal is placed in this 628th Authority meeting.

The Authority after examining the reply/details furnished by the proponent, accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public

MEMBER SECRETARY
SEIAA-TN

Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the following conditions and the conditions mentioned in 'Annexure B' of this minutes.

- i) The proponent shall take appropriate measures to comply with all the non-compliance conditions mentioned in the Certified Compliance Report dated.02.06.2023 obtained from IRO of MoEF&CC for the EC issued earlier dated. 19.03.2015 and shall furnish a detailed report on the same.

Annexure 'B'

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.
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 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.
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.
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.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.


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10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.

Impact study of mining


12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & soil biological, physical land chemical features .
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.

Agriculture & Agro-Biodiversity

13. Impact on surrounding agricultural fields around the proposed mining Area.
14. Impact on soil flora & vegetation around the project site.
15. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.
16. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.

Forests

19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.


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20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.

Water Environment

23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.
24. Erosion Control measures.
25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.
28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.

Energy

31. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.

Climate Change

32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.

Mine Closure Plan

34. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.

EMP

35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.
36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.

Risk Assessment


37. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.

Disaster Management Plan

38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.

Others

39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.
40. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics


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on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

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.



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- 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


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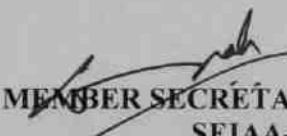
- should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board 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


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- 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.


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- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 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,


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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


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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 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


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- 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.


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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
5. The District Collector, Villupuram District.
6. Stock File.

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

COMPLIANCE OF TOR CONDITIONS

Point wise compliance of ToR points issued by SEIAA, TN vide letter No. SEIAA-TN/F. No. 9895/SEIAA/ToR-1488/2023 Dated 16.06.2023 for Mining of Minor Minerals in the Mine of “Rough stone and Gravel Quarry” Lease Over an Extent of 2.18.0 Ha at S.F.No. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur Taluk, Villupuram District, Tamilnadu State.

STANDARD TERMS OF REFERENCE

ToR Ref.	Description	Response	Page Ref. in EIA Report
1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification, 1994 came into force w.r.t. the highest production achieved prior to 1994.	<p>This is an existing mining project of Rough stone and Gravel quarry</p> <p>Precise Area Communication Letter received from The Assistant Director, Department of Geology and Mining, Villupuram vide letter Na. Ka. En. A/Puvi (Ma) Sura/273 /2020 dated 20.12.2022</p> <p>Mining Plan was approved by The Deputy Director, Geology & Mining, Villupuram vide Rc.No.A/G&M/273/2020 dated 14.02.2023</p> <p>Proposed Production of Rough Stone and Gravel for five years is proposed in the EIA/EMP in chapter no-2.</p>	<p>Chapter-2</p> <p>Table No.2.2</p> <p>Page No.37</p>

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

		Year	Rough stone (m ³)	Gravel (m ³)	
		I	33100	8900	
		II	45828	7654	
		III	51304	0	
		IV	50190	0	
		V	45900	0	
		Total	242876	16554	
2.	A copy of document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	The mine lease area of 2.18.0 hectare in Eraiyur Village for Rough stone and Gravel quarry approved by The Deputy Director, Department of Geology and Mining, Villupuram District vide letter Rc. No. A/G&M/273/2020 dated 14.02.2023	Annexure III		
3	All documents including approved mine plan, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology and should be in the name of the lessee.	All the documents i.e., Mining Plan, EIA and public hearing are compatible with each other in terms of ML area production levels, waste generation and its management and mining technology are compatible with one another. The mining plan of the project site has been submitted to The Deputy Director, Dept. of Geology & Mining, Villupuram District	Annexure-VI Chapter- II		

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

4	<p>All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/toposheet should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p>	<p>Details of coordinates of all corners of proposed mining lease area have been incorporated in mining plan and Chapter 2 of EIA/ EMP Report.</p>	<p>Chapter-2, Fig no. 2.2 Page. no. 40</p>
5	<p>Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, important water bodies, streams and rivers and soil characteristics</p>	<p>Topo map as attached in Chapter-2</p>	<p>Chapter-2, Fig no. 2.4 Page. no. 42</p>
6.	<p>Details about the land proposed for mining activities should be given with information as to whether conforms to the land use policy of the state; land diversion for mining should have approval from State land use board or the concerned authority</p>	<p>Details about the land proposed for mining activities should be given Chapter 2.</p>	<p>Chapter-2</p>
7	<p>It should be clearly stated whether the proponent company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA report with description of the prescribed operating process/procedures to bring into</p>	<p>Noted.</p>	

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	<p>focus any infringement/deviation/violation of the environmental or forest norms/ conditions?</p> <p>The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large may also be detailed in the EIA report.</p>		
8	<p>Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.</p>	<p>It is an open cast mining project. Blasting details are incorporated in chapter 2</p>	<p>Chapter-2, Page no.55</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 waste generation etc should be for the life of the mine / lease period.</p>	<p>Study area comprises of 10 km radius from the mine lease boundary. Key Plan showing core zone (ML area).</p>	<p>Chapter-2 Fig no. 2.5 Page no.43</p>

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

<p>10</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 should be indicated.</p> <p>Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p>	<p>Land Use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, National park, migratory routes of fauna, water bodies, human settlements and other ecological features has been prepared and incorporated in Chapter-2 of EIA/EMP Report.</p> <p>There is no wildlife sanctuary and national park, migratory routes of fauna in the study area.</p>	<p>Chapter-2, Table no. 2.4 Page no.45</p>
<p>11</p>	<p>Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.</p>	<p>Gravel formation will be removed and transported to the needy end user, only after obtaining permission and paying necessary seigniorage fees to the Government.</p>	<p>Chapter-2, Page no.54</p>

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

<p>12</p>	<p>A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area.</p> <p>In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.</p>	<p>Complied.</p> <p>The proposed mining lease area is not falling under forest land.</p>	
<p>13</p>	<p>Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.</p>	<p>The proposed mining lease area is not falling under forest land.</p>	

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable. There is no involvement of forest land in the project area.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	Details of flora have been discussed in Chapter-3 of the EIA/EMP Report.	Chapter-3 Pg No. 101
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly detailed mitigative measures required, should be worked out with cost implications and submitted.	There is a relatively poor sighting of animals in the core and buffer areas of the mining lease. No significant impact is anticipated	

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

<p>17</p>	<p>Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger/Elephant Reserves/ (existing as well as proposed), if any, within 10km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the State Wildlife Department/Chief Wildlife Warden under the Wildlife (Protection) Act, 1972 and copy furnished.</p>	<p>There is two wildlife sanctuaries named Oussudu Lake Bird Sanctuary and Kazhuveli Wetland Bird Sanctuary located at a distance of 14.94 kms, SE and 16.64 kms, NE from the project site.</p>	<p>Executive Summary Page No: 10</p>
<p>18</p>	<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, duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan for their conservation should be</p>	<p>Details biological study (flora & fauna) within 10 km radius of the project site have been incorporated in Chapter-3 of EIA/ EMP Report.</p> <p>No flora & fauna listed in scheduled I have been found in study area so there is no need of conservation plan. However, all care will be taken for protection of flora & fauna, if any in the lease hold area.</p>	<p>Chapter – 3 Pg No. 101</p>

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	<p>prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.</p>		
19	<p>Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.</p>	<p>The proposed mining lease area is not falling under critically polluted area.</p>	
20	<p>Similarly, for coastal projects, A CRZ map duly authenticated by one of the authorized agencies Similarly, for coastal projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would</p>	<p>There is no Coastal Zone within 15km radius of the project site.</p>	

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	<p>also need to obtain approval of the concerned Coastal Zone Management Authority)</p>		
<p>21</p>	<p>R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village located in the mine lease area will be shifted or not. The issues relating to shifting of Village including their R&R and socio-economic aspects should be discussed in the report.</p>	<p>There is no Rehabilitation and resettlement is involved. Land classified as Patta land</p>	

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

<p>22</p>	<p>One season (non-monsoon) and (Summer Season), (Post monsoon) primary baseline data on ambient air quality CPCB Notification of 2009 water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report.</p> <p>Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre- dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500m of the mine lease in the pre- dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p>	<p>Baseline data collected during Summer Season (March to May 2023) has been incorporated in EIA/EMP report.</p> <p>The key plan of monitoring station has been discussed in Chapter-3 Locations of the monitoring stations have been selected keeping in view the pre- dominant downwind direction and location of the sensitive receptors and also that they represent whole of the study area.</p>	<p>Chapter 3</p>
<p>23</p>	<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</p>	<p>Air quality modelling & Impact of Air quality will be furnished in Final EIA report</p> <p>Transportation of mineral during</p>	<p>Chapter-4</p> <p>Page No.120</p>

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	<p>movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided.</p> <p>The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing predominant wind direction may also be indicated on the map.</p>	<p>operation of mines will be done by road & SH-136 through dumpers and the impact of movement of vehicles are incorporated in EIA/EMP report.</p> <p>Air quality modelling & Impact of Air quality will be furnished in Final EIA report</p>	
24	<p>The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.</p>	<p>Total water requirement: 2.0 KLD Dust Suppression: 0.5 KLD Domestic Purpose: 1 KLD Plantation :0.5 KLD Domestic Water will be sourced from nearby village Perumbakkam which is about 1.28 Km-NE of the area.</p>	<p>Chapter-2 Page No.57</p>
25	<p>Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.</p>	<p>Not Applicable Water will be taken from nearby villages</p>	<p>Chapter-2 Page No.57</p>
26	<p>Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in</p>	<p>At the last stage of mining operation, almost complete area will be worked to restore the land to its optimum reclamation for future use as water</p>	

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	the Project, if any, should be provided.	reservoir.	
27	Impact of the project on the water quality, both surface and groundwater should be assessed and necessary safeguard measures, if any required, should be provided.	Impact of the project on the water quality & its mitigation measures has been incorporated in Chapter-4 of EIA/EMP report.	Chapter-4 Page No.115
28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	Maximum working depth: 40 m BGL The ground water table is reported as 65 m below surface ground level in nearby wells of this area. Now, the present quarry shall be proposed above the water table and hence, quarrying may not affect the ground water So mine working will not be intersecting the ground water table.	Chapter-2 Page no. 37 Table No. 2.2
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	There is no any stream crossing in the proposed quarry	Executive Summary
30	Information on site elevation, working depth,	Highest elevation: 77 m from MSL Depth: 40 m BGL	Chapter-2 Table no. 2.2

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.		Page no. 37
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant pollution	Green Belt Development plan is proved given in Chapter 2.	Chapter-2
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	Impact on local transport infrastructure due to the project has been assessed. There shall not be much impact on local transport. Traffic density from the proposed mining activity has been incorporated	Chapter-3 Page No.113

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	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	in EIA/EMP report.	
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA report.	Adequate infrastructure & other facilities shall be provided to the mine workers. Details are given in chapter-2 of EIA/EMP	Chapter-2
34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Conceptual post mining land use and Reclamation and restoration sectional plates are given in Mining Plan followed by Scheme of mining.	Mining plates Annexure VI
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project in the mining area may be detailed	Suitable measure will be adopted to minimize occupational health impacts of the project. The project shall have positive impact on local environment. Details are given in chapter-10 of EIA/EMP.	Chapter-10 Pg No. 153

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Suitable measure will be adopted to minimize occupational health impacts of the project.	Chapter-10 Pg No. 153
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.	Suitable measures has been discussed in Chapter 4	Chapter-4 Pg No. 126
38	Detailed environmental management plan to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Environment Management Plan has been described in detail in Chapter-9 of the EIA/EMP Report.	Chapter-9 Pg No. 145
39	Public hearing points raised and commitment of the project proponent on the same along with time bound action plan to implement the same should be provided and incorporated in the final EIA/EMP Report of the	Public Hearing proceedings will be furnished in Final EIA report	

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	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.	Not applicable No. litigation is pending against the project in any court.																
41	The cost of the project (capital cost and recurring cost) as well as the cost towards implementation of EMP should clearly be spelt out.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">S. No</th> <th style="text-align: center;">Description</th> <th style="text-align: center;">Cost</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Fixed Asset Cost</td> <td style="text-align: right;">13,87,500/-</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Operational /Machinery Cost</td> <td style="text-align: right;">25,00,000 /-</td> </tr> <tr> <td style="text-align: center;">3</td> <td>EMP Cost</td> <td style="text-align: right;">76,11,888/-</td> </tr> <tr> <td></td> <td style="text-align: center;">Total</td> <td style="text-align: right;">1,14,99,388/-</td> </tr> </tbody> </table>	S. No	Description	Cost	1	Fixed Asset Cost	13,87,500/-	2	Operational /Machinery Cost	25,00,000 /-	3	EMP Cost	76,11,888/-		Total	1,14,99,388/-	Chapter-8 Pg No. 144
S. No	Description	Cost																
1	Fixed Asset Cost	13,87,500/-																
2	Operational /Machinery Cost	25,00,000 /-																
3	EMP Cost	76,11,888/-																
	Total	1,14,99,388/-																
42	A Disaster Management Plan shall be prepared and included in the EIA/EMP Report.	Disaster Management and Risk Assessment has been incorporated in Chapter-7	Chapter-7 Pg No. 136															
43	Benefits of the project if the project is implemented should be spelt out. The benefits of the project shall clearly indicate environmental, social economic, employment potential etc.	Benefits of the project has incorporated	Chapter-8 Pg No. 143															
44	Besides the above, the below mentioned general points are also to be followed:																	
(a)	Executive Summary of the EIA/EMP report	Complied	Executive Summary of EIA Report															

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

			is given from page No.10-26
(b)	All documents to be properly referenced with index and continuous page numbering.	Complied	
(c)	Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.	Complied	
(d)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the project.	Complied	
(e)	Where the documents provided are in a language other than English, an English translation should be provided.	Complied	
(f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The complete questionnaire has been prepared	
(g)	While preparing the EIA report, the instructions for the proponents and instructions for the	The EIA report has been prepared and complying with the circular issued by MoEF vide O.M.	

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August 2009, which are available on the website of this Ministry, should also be followed.	No. J-11013/41/2006-IA. II(I) dated 4th August 2009.	
(h)	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation	There are no changes in prepared EIA as per submitted Form-1 & PFR	
(i)	As per the circular no. J-11011/618/2010-IA. II(I) dated 30.5.2012, report on the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project by the Regional Office of Ministry of Environment & Forests, if applicable.	Will be complied after grant environment clearance from SEIAA, Tamilnadu	

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

(j)	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections (iii) sections of mine pit and external dumps, if any clearly showing the features of the adjoining area.	All Sectional Plates of Quarry is enclosed in Mining Plan.	
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TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

Additional ToR Compliance - SEAC

S.No.	Condition	Compliance
1.	The project proponent shall submit a Certified Compliance Report for the EC dated 19.03.2015 granted by the SEIAA-TN from the IRO, MoEF & CC, Chennai	The Certified Compliance Report will be submitted during Final EIA Report.
2.	The proponent shall furnish the photographs of adequate fencing, green belt along the periphery including the replantation of existing trees and safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Complied. The photographs of fencing and green belt will be attached as per SEAC recommendation and submitted in Final EIA Report
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) 500 m shall be encountered 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 building, number of residents, their profession and income, etc.,	The enumeration study will be carried out and it will be attached in final EIA Report.
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	The hydrological report for the water bodies of 1 km will be submitted during Final EIA Report
5.	The Proponent shall carry out Bio diversity study through reputed institution and the same shall be	The Bio diversity study will be included in Final EIA Report

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	included in EIA Report.	
6.	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.	Agree to comply.
7.	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	The PP will furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent
8.	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30m from the blast site.	Noted. Agree to comply.
9.	The EIA Coordinator shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and Photographic evidence.	Complied. The photographs are attached in EIA report.

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

10.	<p>If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <ol style="list-style-type: none"> a. What was the period of the operation and stoppage of the earlier mines with the last work permit issued by the AD/DD mines? b. Quantity of minerals mines out. c. Highest production achieved in any one year. d. Details of approved depth of mining. e. Actual depth of the mining achieved earlier. f. Name of the person already mined in that leases area. g. If EC and CTO already obtained, the copy of the same shall be submitted. <p>Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</p>	<p>18.03.2020</p> <p>Approved depth of mining is 29 m Actual depth of mining is 6 m</p> <p>K. Anandavelu</p> <p>Lr. No. SEIAA-TN/F.No. 2699/EC/1(a)/1702/2014 dated 19.03.2015</p>
11.	<p>All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological feature of the study area (core and buffer zone)</p>	<p>Complied.</p> <p>All corners with coordinates of the mine lease area has attached with EIA report in chapter 2</p>
12.	<p>The Project Proponent shall carry out Drone video survey covering survey covering the cluster, green belt, fencing etc.,</p>	<p>Drone video survey will be submitted in final EIA report.</p>

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

13.	The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the proposed quarry based on the volume of rock handled & area of excavation.	Complied.
14.	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 details of Geological reserves, Mineable reserves and Yearwise production reserves are tabulated in Chapter 2. The mining methodology and impacts are follow as on prescribed norms by Government.
15.	The PP shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Complied. Manpower requirements table attached in EIA report chapter 2
16.	The PP shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface Water bodies such as rivers, tanks, canals, ponds etc., within 1km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD/TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be	Hydro geological study report will be submitted along final EIA report.

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	provided.	
17.	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The proponent has furnished the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study details attached in EIA report chapter 3
18.	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Noted. Agree to comply.
19.	Rainwater harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Noted. Agree to comply.
20.	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given	Current land use of the study area has attached in EIA report chapter 3. Operational and post operational land use will be submitted.

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

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

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	which should be site-specific.	Assistant Director, Department of Mining and Geology, Villupuram District
27.	Public hearing points raised and commitments of the PP on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF & CC accordingly.	Noted and will be complied in Final EIA report.
28.	The Public hearing advertisement shall be published in on major National daily and one most circulated vernacular daily	Noted. Agree to comply.
29	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing Tamil Language also.	Noted
30.	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	Noted. Agree to comply
31	The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with	Noted. Agree to comply

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	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.	
32	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/ botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meter wide and in between blocks in an organized manner.	The green belt plan enclosed with mining plates in Annexure VI
33	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Disaster management plan has prepared and enclosed in Chapter 7.
34	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Risk assessment and management plan has prepared and enclosed in chapter 7.
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 has prepared and incorporated in Environmental management plan.

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Suitable measure will be adopted to minimize occupational health impacts of the project.
37	The Socio-economic studies should be carried out within a 5km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	The socio-economic study has been discussed in chapter 3.
38	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given	No litigation is pending against the project in any court.
39	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.,	Benefits of the project has incorporated in EIA report chapter 8
40	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB	It is a fresh quarry. So, certified compliance report is no needed.
41	The PP shall prepare the EMP for the entire life/lease of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	Noted. Agree to comply.

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

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

S.No.	Condition	Compliance
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	Noted and Complied. All the proponents in the cluster is discussed in Chapter-2, Page number-35
2.	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	Green belt development, water sprinkling, tree plantation is discussed in chapter-2, Page number-58
3.	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Agreed to comply.
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Agreed to comply. It will be furnished in final EIA report.
5.	The committee shall deliberate on risk management plan pertaining to the cluster in a	Risk management plan is discussed in Chapter-7, page

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan	number-136
6.	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Agreed to comply. It will be furnished in final EIA report.
7.	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed to comply. It will be furnished in final EIA report.
8.	The committee shall furnish the Emergency Management plan within the cluster.	Emergency management plan is discussed in Chapter-7, page number-136
9.	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Health of workers and staff is discussed in Chapter-9 Page number-145
10.	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation and safety.	Agreed to comply. It will be furnished in final EIA report
11.	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents	Fire safety and evacuation plan is discussed in chapter-7
Impact Study of Mining		
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per	The biodiversity has been studied and discussed in chapter 3. The soil erosion map 5km

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	<p>precise area communication order issued from reputed research institutions on the following.</p> <ul style="list-style-type: none"> a) Soil health & bio-diversity b) Climate change leading to Droughts, Floods etc., c) Pollution leading to release Greenhouse gases (GHG), rise in Temperature & Livelihood of the local people. d) Possibilities of water containment and impact on aquatic ecosystem health. e) Agriculture, Forestry & Traditional practices. f) Hydrothermal/Geothermal effects due to destruction in the Environment. g) Bio-geochemical processes and its foot prints including environmental stress h) Sediment geochemistry in the surface streams 	<p>surrounding the project site has been given in chapter 3.</p> <p>The detailed study will be carried out and will be enclosed in the Draft EIA Report.</p>
Agriculture & Agro-Biodiversity		
13.	Impact on surrounding agricultural fields around the proposed mining area.	There is no agricultural fields around the proposed mining area
14.	Impact on soil flora & vegetation around the project site	Impact on soil flora & vegetation around the project site discussed in Chapter-4 page number-108
15	Details of type of vegetation no.of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Type of vegetation no.of trees & shrubs is discussed in Chapter-3 page number-100
16.	The Environmental Impact Assessment should	The biodiversity has been studied

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	and discussed in chapter 3 – Pg No. 109
17.	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted. Agree to comply.
18.	The PP shall study and furnish the impact on plantations in adjoining Patta lands, Horticulture, Agriculture and livestock.	There is no plantation surrounding 500m from project site. Hence there won't be any impact in adjoining patta lands, Horticulture, Agriculture and livestock.
Forests		
19.	The PP shall detailed study on impact of mining on Reserve forests free ranging wildlife.	There is no Reserve Forest within 1 km radius of the Project Site. Hence our project will not cause any damage to reserve forest.
20.	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The biological environment impacts, and its mitigation measures has been given in Chapter 4
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	There is no existing trees in the project site and surrounding the project site. Only thorny shrubs were present.
22.	The EIA should study impact on protected areas, Reserve forests, National parks, Corridors and Wildlife pathways, near project site.	There is no Reserve Forest within 1 km radius of the Project Site. Hence our project will not

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

		<p>cause any damage to reserve forest.</p> <p>There is no protected areas, National Parks, Corridors and Wildlife pathways near project site within 10 km radius.</p>
Water Environment		
23.	<p>Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc., within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data and documentation in this regard may be provided, covering the entire mine lease period.</p>	<p>The hydro-geological study will be conducted and submitted in final EIA report.</p>
24.	<p>Erosion Control Measures</p>	<p>Complied.</p> <p>Erosion details has been attached in Chapter 3. Greenbelt will be planted to avoid and control erosion.</p>
25.	<p>Detailed study shall be carried out regard to impact of mining around the proposed mine lease area on the nearby villages, Water-bodies/Rivers, & any ecological fragile areas.</p>	<p>The detailed study will be carried out and will be furnished in the Final EIA Report.</p>
26.	<p>The project proponent shall study impact on fish habitats and the food WEB/food chain in the water body and reservoir.</p>	<p>There is no water bodies within 1km radius, The seasonal pond located 50m south from the project site. Water gets stagnant</p>

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

		only during rainy season. Hence there won't be much impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
27.	The PP shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.	Noted and will be complied in Final EIA report.
28.	The PP shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site and archaeological sites possible landform changes visual and aesthetic impacts	Noted. Agree to comply.
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The soil erosion map 5km surrounding the project site has been given in chapter 3. The soil samples have been collected surrounding the project site and physical, chemical components and microbial components study has been carried out and the results are tabulated in chapter 3
30	The Environmental Impact Assessment should study on wetlands, water bodies, river streams, lakes and farmer sites.	The water environment impacts and its mitigation measures has been given in Chapter 4
Energy		
31	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently	Agreed to Comply.

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

	utilize the energy shall be furnished	
Climate Change		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks, and temperature reduction including control of other emission and climate mitigation activities.	Noted and will be complied in Final EIA report.
33.	The EIA should study impact on climate change, temperature rise, pollution and above soil carbon stock.	Noted and will be complied in Final EIA report.
Mine Closure Plan		
34.	Detailed mine closure plan covering the entire mine lease period as per precise area communication order issued.	Mine closure plan has been attached along with mining plates as Annexure VI.
EMP		
35	Detailed Environment Management plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Environment Management Plan has been described in detail in Chapter-10 of the Draft EIA/EMP Report.
36	The EIA should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	The EMP details has been given in Chapter 8
Risk Assessment		
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of mining.	A Risk Assessment and management Plan will be prepared and included in the final EIA/EMP Report.
Disaster Management Plan		

TOR Reply of Proposed Rough Stone and Gravel Quarry Over an Extent of 2.18.0 Ha

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

ANNEXURE-II
PRECISE AREA COMMUNICATION LETTER

ந.க.எண். அ/புவி (ம) சுர / 273/2020
நாள்: 20.12.2022

துணை இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை அலுவலகம்,
விழுப்புரம்.

குறிப்பாணை:

பொருள்: கனிமங்களும் குவாரிகளும் - விழுப்புரம் மாவட்டம், வானூர் வட்டம், எறையூர் கிராமம், புல எண்கள். 76/2(0.86.0), 76/3A (0.22.0), 76/6 (1.10.0) - ன் மொத்த பரப்பு 2.18.0 ஹெக்டேர் பட்டா நிலம் - சாதாரணகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வேண்டி திரு.K.ஆனந்தவேலு த/பெ.கேசவன், எறையூர் கிராமம், வானூர் வட்டம், விழுப்புரம் மாவட்டம் என்பவர் விண்ணப்பம் செய்தது - உரிமம் வழங்க பரிந்துரை செய்யப்பட்டது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவினை பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை:**
1. திரு.K.ஆனந்தவேலு த/பெ.கேசவன், எறையூர் கிராமம், வானூர் வட்டம், விழுப்புரம் மாவட்டம் என்பவரின் விண்ணப்ப நாள். 04.08.2020
 2. வருவாய் கோட்டாட்சியர் விழுப்புரம் அவர்களின் கடித எண். ந.க.எண். அ4/3733/2022 நாள்: 18.11.2022
 3. விழுப்புரம், புவியியல் மற்றும் சுரங்கத்துறை துணை இயக்குநர் அலுவலகம், உதவி புவியியலாளரின் புலத்தணிக்கை அறிக்கை நாள்: 09.12.2022.

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விழுப்புரம் மாவட்டம், வானூர் வட்டம், எறையூர் கிராமம், புல எண்கள். 76/2(0.86.0), 76/3A (0.22.0), 76/6 (1.10.0) - ன் மொத்த பரப்பு 2.18.0 பட்டா நிலத்தில் சாதாரண கற்கள் குவாரி செய்ய அனுமதி கோரி திரு.K.ஆனந்தவேலு த/பெ.கேசவன், எறையூர் கிராமம், வானூர் வட்டம், விழுப்புரம் மாவட்டம் என்பவர் பார்வை 1-ன் படி உரிய ஆவணங்களுடன் விண்ணப்பம் அளித்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக, எனவே விழுப்புரம் வருவாய் கோட்டாட்சியர் மற்றும், விழுப்புரம், புவியியல் மற்றும் சுரங்கத்துறை, துணை இயக்குநர் அலுவலகம், உதவி புவியியலாளர் மற்றும் தனித்துணை வட்டாட்சியர் ஆகியோர்களின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில், விழுப்புரம் மாவட்டம், வானூர் வட்டம், எறையூர் கிராமம், புன்செய் புல எண்கள். 76/2(0.86.0), 76/3A (0.22.0), 76/6 (1.10.0) - ன் மொத்த பரப்பு 2.18.0 ஹெக்டேர் பட்டா நிலத்தில் திரு.K.ஆனந்தவேலு த/பெ.கேசவன், எறையூர் கிராமம், வானூர் வட்டம், விழுப்புரம் மாவட்டம் என்பவருக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

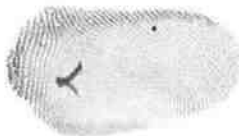
- i. விண்ணப்ப புலங்களின் அருகிலுள்ள பட்டா மற்றும் அரசு புறம்போக்கு நிலங்களுக்கு முறையே 7.5 மீட்டர் மற்றும் 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரி பணி செய்ய வேண்டும்.

- ii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை சுற்றி கம்ப வேலி அமைத்து DGPS சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்ப்பிக்க வேண்டும்.
- iii. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-41 - ன் படி தகுதி வாய்ந்த நபரால் தயாரிக்கப்பட்ட சுரங்க திட்டத்தினை 90 நாட்களுக்குள் துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, விழுப்புரம் அவர்களிடம் சமர்ப்பித்து ஒப்புதல் பெற வேண்டும்.
- iv. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-42- ன் படி மாநில சுற்றுச்சூழல் தடையில்லா சான்றை மாநில அளவிலான தாக்க மதிப்பீட்டு ஆணையத்திடமிருந்து சுற்றுச்சூழல் சான்று பெற்று சமர்ப்பிக்கப்படவேண்டும்.

எனவே, விழுப்புரம் வருவாய் கோட்டாட்சியர் மற்றும், விழுப்புரம், புவியியல் மற்றும் சுரங்கத்துறை, துணை இயக்குநர் அலுவலக, உதவி புவியியலாளர் மற்றும் தனித்துணை வட்டாட்சியர் ஆகியோர்களின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையிலும், தொடர்புடைய ஆவணங்களை பரிசீலனை செய்ததன் அடிப்படையிலும், விழுப்புரம் மாவட்டம், வானூர் வட்டம், எறையூர் கிராமம், புன்செய் புல எண். 76/2(0.86.0), 76/3A (0.22.0), 76/6 (1.10.0) - ன் மொத்த பரப்பு 2.18.0 ஹெக்டேர் பட்டா நிலத்தில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19- ன் படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 5 (ஐந்து) வருட காலத்திற்கு திரு. K. ஆனந்தவேலு த/பெ.கேசவன், எறையூர் கிராமம், வானூர் வட்டம், விழுப்புரம் மாவட்டம் என்பவருக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

அதன் அடிப்படையில், தமிழ்நாடு சிறுகனிம சலுகை விதிகள்-1959 விதி எண். 41-ன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை அங்கீகரிக்கப்பட்ட தகுதிவாய்ந்த நபர் (QP) மூலமாக கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு தயாரித்து அதனை 90 தினங்களுக்குள் துணை இயக்குநர் (புவியியல் மற்றும் சுரங்கத்துறை) அவர்களின் பரிசீலனைக்கு சமர்ப்பிக்குமாறு விண்ணப்பதாரரை கேட்டுக்கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன் படி சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே கு வாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

- i. விண்ணப்ப புலங்களின் அருகிலுள்ள பட்டா மற்றும் அரசு புறம்போக்கு நிலங்களுக்கு முறையே 7.5 மீட்டர் மற்றும் 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரி பணி செய்ய வேண்டும்.



- ii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை சுற்றி கம்பி வேலி அமைத்து DGPS சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்ப்பிக்க வேண்டும்.
- iii. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-41 - ன் படி தகுதி வாய்ந்த நபரால் தயாரிக்கப்பட்ட சுரங்க திட்டத்தினை 90 நாட்களுக்குள் துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, விழுப்புரம் அவர்களிடம் சமர்ப்பித்து ஒப்புதல் பெற வேண்டும்.
- iv. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-42- ன் படி மாநில சுற்றுச்சூழல் தடையில்லா சான்றை மாநில அளவிலான தாக்க மதிப்பீட்டு ஆணையத்திடமிருந்து சுற்றுச்சூழல் சான்று பெற்று சமர்ப்பிக்கப்படவேண்டும்.

துணை இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
விழுப்புரம்.

பெறுநர்

திரு. K. ஆனந்தவேலு
த/பெ.கேசவன்,
எறையூர் கிராமம்,
வானூர் வட்டம்,
விழுப்புரம் மாவட்டம்.

நகல்:-

1. மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.
2. இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை.

ANNEXURE-III
MINING PLAN APPROVED LETTER

From
Tmt. N.Vijayalakshmi, M.Sc.,
Deputy Director,
Dept. of Geology and Mining,
Viluppuram.

To
Thiru K.Anandavelu,
S/o. Kesavan,
No.225, Mettu Street,
Eraiur Village,
Vanur Taluk,
Viluppuram District.

Rc.No.A/G&M/273/2020 Dated 14.02.2023

Sub: Mines & Minerals - Minor Mineral - Rough stone and Gravel - Viluppuram District - Vanur Taluk - Eraiur Village - over an extent of 2.18.0 hectares of patta lands - S.F.Nos. 76/2 - 0.86.0, 76/3A - 0.22.0, 76/6 - 1.10.0 Quarry lease application preferred by Thiru K.Anandavelu, S/o. Kesavan - Precise area communicated - Submission of mining plan for approval - Approved - Regarding.

- Ref:
1. Quarry lease application dated 04.08.2020 preferred by Thiru K.Anandavelu, S/o. Kesavan, No.225, Mettu Street, Eraiur Village, Vanur Taluk, Viluppuram.
 2. Deputy Director, Geology and Mining, Viluppuram letter Rc.No.A/G&M/273/2020 Dated 20.12.2022.
 3. Mining Plan submitted by Thiru K.Anandavelu, S/o. Kesavan Dated 08.02.2023.
 4. G.O.Ms.No.79, Industries (MMC-1) Department dated 07.04.2015.
 5. G.O.(Ms).No.169, Ind. (MMC.1) Dept. dated 04.08.2020.

In response to the precise area communicated vide the reference 2nd cited, the applicant viz., K.Anandavelu, S/o. Kesavan, vide reference 3rd cited has submitted four copies of mining plan for the area applied seeking grant of quarry lease for Rough stone & Gravel over an extent of 2.18.0 hectares of patta S.F.Nos. 76/2 - 0.86.0, 76/3A - 0.22.0, 76/6 - 1.10.0 of Eraiur Village, Vanur Taluk, Viluppuram District with a request to approve the same.

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

- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to

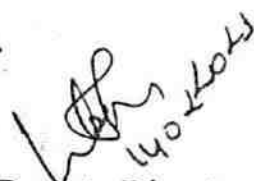


- time whether such laws are made by the Central Government, State Government or any other authority.
- (ii) This approval of the mining plan does not in any way imply the approval of the Government in terms or any other provisions of the Mines and Minerals (Development and Regulation) Amended Act, 2015, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Explosives Act, 1884 (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
 - (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
 - (iv) As per the Deputy Director, Geology and Mining, Viluppuram letter Rc.No.A/G&M/273/2020 Dated 20.12.2022 the following conditions have been incorporated in the Mining Plan.

- a. A safety distance of 7.5 meters for the adjoining patta lands, 10 meters for the Govt Punjai promboke land .

- (v) Quarrying shall be strictly done as per the approved Mining Plan.

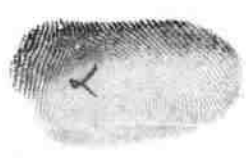
Encl: Two copies of Approved Mining Plan.


 Deputy Director ,
 Dept. of Geology and Mining,
 Viluppuram.

Copy to:

The Commissioner of Geology and Mining, Chennai-32.


 14.12.22



ANNEXURE-IV
500M Radius letter

From
Tmt. N.Vijayalakshmi, M.Sc.,
Deputy Director,
Dept. of Geology and Mining,
Viluppuram.

To
Thiru K.Anandavelu,
S/o.Kesavan,
No.225, Mettu Street,
Eraiur Village,
Vanur Taluk,
Viluppuram District.

Rc.No.A/G&M/273/2020 Dated .02.2023

Sub: Mines & Minerals – Minor Mineral – Rough stone and Gravel - Viluppuram District – Vanur Taluk – Eraiyur Village - over an extent of 2.18.0 hectares of patta lands – S.F.Nos.76/2 (0.86.0 hecets.), 76/3A (0.22.0 hecets.), 76/6 (1.10.0 hecets.) – Quarry lease application preferred by Thiru K.Anandavelu, S/o. Kesavan – Precise area communicated - Details of quarries situated within 500 meter radial distance – furnished - reg.

Ref: 1. Deputy Director, Geology and Mining, Viluppuram Letter Rc.No.A/G&M/273/2020 Dated 20.12.2022.

2. Representation from Thiru K.Anandavelu, S/o. Kesavan Dated 08.02.2023.

With reference to your letter in the reference 2nd cited, the details of existing, proposed and abandoned quarries located within 500 mts. radial distance from the periphery of the proposed Rough stone and Gravel quarry over an extent of 2.18.0 hectares of patta lands in S.F.Nos.76/2 (0.86.0 hecets.), 76/3A (0.22.0 hecets.), 76/6 (1.10.0 hecets.) of Eraiyur Village, Vanur Taluk, Villupuram District are as follows.

1. Existing quarries:

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period	Remarks
1.	T.Vasudevan, S/o. Thangavel, Eraiyur Village, Vanur Taluk, Viluppuram District.	Rough Stone	Vanur, Eraiyur	80/3 80/4 81/1 81/3 81/4 81/5 81/6 94/1A 94/2 94/3	0.28.0 0.47.0 0.48.0 0.36.0 0.36.0 0.35.0 1.18.0 0.27.0 0.29.0 <u>0.79.5</u> 4.83.5	15.02.2019 to 14.02.2024	-



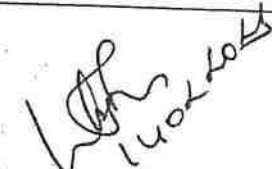
2.	E. Jayasankar, S/o. Elumalai, No.198, Vinayakar Koil Street, Eraiyyur Village, Vanur Taluk, Viluppuram District.	Rough Stone	Vanur, Eraiyyur	93/4 93/5 94/1B 94/4	1.14.0 0.21.0 0.27.0 <u>1.75.5</u> <u>3.37.5</u>	15.02.2019 to 14.02.2024	
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II. Proposed Area :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Remarks
1.	Thiru K.Anandavelu, S/o.Kesavan, No.225, Mettu Street, Eraiyyur Village, Vanur Taluk, Viluppuram District.	Rough stone & Gravel	Vanur, Eraiyyur	76/2 76/3A 76/6	0.86.0 0.22.0 <u>1.10.0</u> <u>2.18.0</u>	-

III. Abandoned quarries :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Extent (in hecets)	Remarks
NIL							


 Deputy Director,
 Geology and Mining,
 Viluppuram.


 14-2-22



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



தமிழ்நாடு தமில்நாடு TAMILNADU

K. Anandavelu
Ensigns

B: 649583

2715 (Ru 20000)


22-5-17

By
S. Srinivasan
D. No. 2700/21/2008
MADRAS, VIJAYAPUR.

(2)

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 Viluppuram (hereinafter referred to as "the Collector") seeking grant of quarrying lease for quarrying Rough Stone & Earth in the said lands and to deposit mining waste in the said lands and has lodged with the Collector and accurate map or sketch of the said lands;


Lessor




28/7/2017
District Collector,
Viluppuram.



தமிழ்நாடு மயிலநாடு TAMILNADU

K. Arundhathi
Emmyan

AR 385379

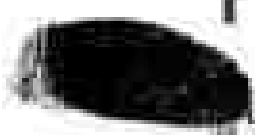
2716
AR-5-17

செ. சுவாமிநாதன்
செ.சு.சீ.எ.நா.2716/01/2008
செ.சு.சீ.எ.நா. 2716/01/2008

(3)

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 & Earth in the said lands and to deposit mining waste thereon by the registered holder.

AND WHEREAS, the registered holder has deposited with the Collector, the sum of Rs.5,000/- as Security against any loss or damage which may be incurred to 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.



Lessee

செ. சுவாமிநாதன்



செ. சுவாமிநாதன்
2716/01/2008
District Collector,
Viluppuram.



தமிழ்நாடு தமிழ்நாடு TAMILNADU

K. Arundhanee, Ensign

S: 947188

2717 / 2000
22-5-17

85
சென்னை
சென்னை சட்ட No 2786/81/2009
சென்னை, தமிழ்நாடு

(1A)

NOW THESE PRESENTS WITNESS and the registered holder do 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 his mining operations from 22-5-2017 to 12-5-2017 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.

Lease [Signature]

[Signature]
20/7/2017-1/18
District Collector,
Viluppuram.





கமலிங்காடு சமீலநாடு TAMILNADU
 1903 K. Anadavelu
 24/5/17 Eralyur

أ. ب. حسن
 A. B. Hassan
 Government, L.No 1288
 دمجنا، 2022/5

BP 081144

157

2. The registered holder shall and will on the 27th day of July 2018 next and on the 27th day of July every succeeding year during so long as he shall have carried on any such mining operations as aforesaid 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 fee on the minor minerals at the rate specified in Appendix-II to the Tamil Nadu Minor Mineral Concession Rules 1959.


 Lessor: *[Signature]*



[Signature]
 District Collector,
 Vilupattur.



கூலிபுக்காடு தமில்நாடு TAMILNADU
 1504 K. Anadavelu
 சாஸ்திர எயர்யுய

A. G. G. S.
 A. G. G. S.
 1/11/1958, L.No.1258
 2/11/1958

BP 081145



167

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 Commissioner 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 information and returns regarding all or any of the matter aforesaid as the Government shall, from time to time, require and direct.

[Redacted]
 Lessee: *[Signature]*



[Signature]
 District Collector,
 Villupuram.



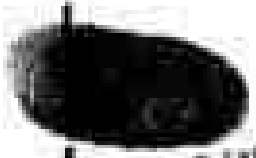
தமிழ்நாடு தமில்நாடு TAMILNADU
 1506 K AnadaveLu
 இலட்சுமிநகர் Erudiyur

சென்னை
 A. சந்திரன்
 சென்னை கி. நகர் 10008
 சென்னை, தமிழ்நாடு

BF 081146

(11)

4. The registered holder shall and will at all times allow any officer authorized by the Commissioner of Geology and Mining, TamilNadu 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 & Earth.



Union: *[Signature]*



[Signature]
 28/7/2019
 District Collector,
 Villupuram.



[Signature]



தமிழ்நாடு வமிலநாடு TAMILNADU
 1507 K. Anandavelu
 சாலை ஏராளம்

A. Anand
 A. Anand
 Government, L.No:1201
 Dated: 28/08/17

BP 081147



(8)

6. It shall be lawful for the registered holder at any time to cause mining operations under these presents provided he shall pay to Collector for and on behalf of the Government land assessment, cess and seigniorage fee 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 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 thereof 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

Lease: *[Signature]*



[Signature]
 District Collector,
 Viluppuram.

[Signature]



தமிழ்நாடு தமிழ்நாடு TAMILNADU

1508 K. Anadavelu
24/5/17 Eyalayal

A. Anand
A. Anand
Sub Registrar, L. Narthala
Sungudi, Palayam.

BP 081148



Collector shall require to be so fenced or filled in and in case the registered holder shall fail or neglect to restore any such lands 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 in any such pits or excavations at the expense of the registered holder and to apply the said sum of Rs.5,000/- 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 the balance by resort to civil court.

Lease [Signature]



[Signature]
District Collector,
Viluppuram.

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 liable for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste, unless thirty times the assessment therein 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 TamilNadu Minor Mineral Concession Rules 1958.
11. All land assessment, cess and seigniorage fee payable under these presents shall be recoverable under the provisions of the TamilNadu 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 fee 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 Government and 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 made payable thereby, the matter in issue shall be decided by the Commissioner/Director of Geology and Mining. In case the registered holder is not satisfied with the decision of the Commissioner/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 Wagers 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).

[Signature]
 Lessee:



[Signature]
 District Collector,
 Vilupputur.



9. 1959-ஆம் ஆண்டு செப்டம்பர் 19 ஆம் நாள் ஏற்பட்ட நிலைமையினால் ஏற்பட்ட பின்னடைவுகளைத் தடுப்பதற்காக அமைக்கப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
10. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
11. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
12. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
13. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
14. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
15. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
16. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
17. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
18. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
19. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.
20. உறுதி செய்யப்பட்டிருக்கிற நிலைமை அமைச்சர் மன்றம் ஆய்வு செய்து அதற்கான நடவடிக்கைகளை மேற்கொள்ள வேண்டும்.



(Handwritten Signature)
District Collector,
Viluppuram



- 21. ... (text is mostly illegible)
- 22. ... (text is mostly illegible)
- 23. ... (text is mostly illegible)
- 24. ... (text is mostly illegible)
- 25. ... (text is mostly illegible)
- 26. ... (text is mostly illegible)
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- 28. ... (text is mostly illegible)
- 29. ... (text is mostly illegible)
- 30. ... (text is mostly illegible)
- 31. ... (text is mostly illegible)
- 32. ... (text is mostly illegible)


 [Signature]




 [Signature]
 Vinnayak



1. *[Faint text describing a plot or area]*
2. *[Faint text describing a plot or area]*
3. *[Faint text describing a plot or area]*
4. *[Faint text describing a plot or area]*

SCHEDULE

Tahuk Vannur	Village Ernaiyur	S.F. No.	Extent(Hec.)	Boundaries	
	<i>[Faint handwritten notes]</i> 12/4-140 12/5-110 12/6-213	762	0.80.0	North South East West	762 767A, 763B 764 77
		767A	0.22.0	North South East West	762 763B 766 767
		Total	1.02.0		

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[Signature]
 Leiser

[Signature]
 District Collector,
 Vellore.



215
 10 FEB 78

132

IN WITNESS where of Thiru.K.Anandavelu, S/o.Kasavan, No.94, Eraiyur Village, Vannar Taluk, Viluppuram District the registered holder and Dr.L.Subramanian, I.A.S., Collector of Viluppuram District, acting for and on behalf of and by the order and direction of the Governor of TamilNadu have here unto set their hands.


 Leave [Signature]





 District Collector,
 Viluppuram.

Signed by the above named in the presence of witnesses


Signed by the above named in the presence of witnesses

1. B. KAJENDERAN S. Sivasubramanian
 No. 1, Parri Street, Annal Nagar,
 Kallar Kaman, Pudukottai


 Assistant Director,
 Geology and Mining,
 Collectorate,
 Viluppuram.

2. P. Mani S. Anandavelu
 215, Pudukottai
 Annal Nagar
 Pudukottai
 Pudukottai

2. O.S. Raju
 [Signature]
 End. [Signature]

Draft by:

 E. MURUGAIYAN,
 STATE DOCUMENT WRITER
 MARIYANAPUDURAM, VANUR T.
 LNO - ASSISTANT COMMISSIONER



பெயர் : சிவசாமி
 பிள்ளை : சிவசாமி
 வயது : 76

தொகுதி 51

சீட்டுரை

சுமார்: 6000 சதுர
 மீட்டர்: 4 சீட்டுரை 72.0



77
 COLLECTOR,
 Upputam District
 Viluppuram.

		B	
		128.0	
15	388	128.0	102.18
		128.0	24.0 14
		84.2	6.0 13
		D	
		C	
		128.0	
12	0.2	24.0	
		208.0	15.0 11
		135.0	10.0 10
		100.0	8.0 9
		3	
		(328.0)	
8	8.8	128.0	
7	3.0	128.0	
		A	
		B	
		128.0	
6	5.8	128.0	
5	4.8	128.0	
4	10.8	127.8	
3	16.0	106.2	
2	18.6	103.8	
		88.0	18.0 1
		0.7	

Assistant Director
 Geology and Mining,
 Collectorate,
 Viluppuram.

75

சிவசாமி சிவசாமி

TAHSILDAR
 VANUR



சுமார் 100 சீட்டுரை 2000 சதுர மீட்டர்

சிவசாமி
 38/12
 4.9



Presented to the Office of Subordinate Value of Value and Fee of Rs. 2000/- paid between hours of 12:00 and 1:00 PM on January 17, 2019.

1. Left Thumb




Sub Registrar
 Attention: As per the details of the document

Execution Admitted by

I have satisfied my self as to the execution of the instrument by Thiru D.L. Subramanian, I.A.S., District Collector, Villupuram District, who is exempted from Personal Administration under Section 24(1) of the Registration Act.

[Signature]

Class Admitted by

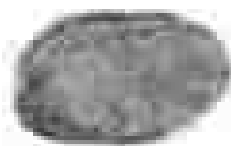
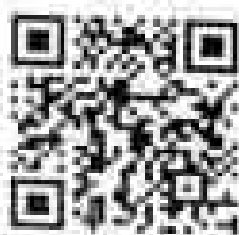
1. Left Thumb




Sub Registrar
 Attention: As per the details of the document

Identified by

[Signature] Sub Registrar *[Signature]* Sub Registrar *[Signature]* Sub Registrar





Name: Manoj

No. Appointment

4th day of August 2018

Signature

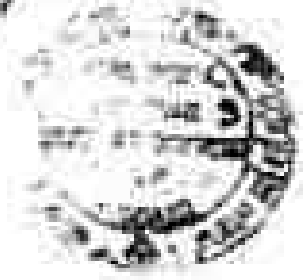
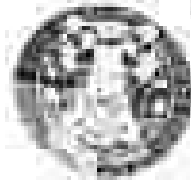
Year

Registered on No 2008 of 2017 of

SUN-REGISTRAR
KANUR

Date: 12/08/2017

Signature
Year



Sheet no. 2 of 2



GOVERNMENT OF INDIA
IDENTITY CARD
प्रधान मंत्री प्रधान
संरक्षण योजना



नाम
पिता/पति का नाम
व्यवसाय
पता

श्री. [Name]
[Address]
[City]
[State]
[Pin Code]



भारत सरकार के द्वारा जारी किया गया है।
यह कार्ड केवल केवल के लिए ही प्रयुक्त है।

यह कार्ड केवल केवल के लिए ही प्रयुक्त है।
यह कार्ड केवल केवल के लिए ही प्रयुक्त है।

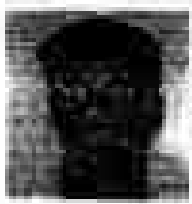
पता
श्री. [Name]
[Address]
[City]
[State]
[Pin Code]

यह कार्ड केवल केवल के लिए ही प्रयुक्त है।
यह कार्ड केवल केवल के लिए ही प्रयुक्त है।

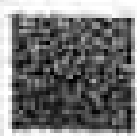
INDIA DRIVING LICENCE PC-01
[Name]
[Address]
[City]
[State]
[Pin Code]

[Name]
[Address]
[City]
[State]
[Pin Code]

[Signature]



[Name]
[Address]
[City]
[State]
[Pin Code]



[Text]

[Name]
[Address]
[City]
[State]
[Pin Code]

[Name]
[Address]
[City]
[State]
[Pin Code]

आधार - आम आदमी का आधार

Aadhaar - Aam Aadmi ka Aadhaar

[Signature]

சமீபத்தில் : 21759
 இலக்கம் : 76

சு. சமீ

பெயர்: சிவசுப்பிரமணியன்
 பகுதி: 4 பி 73-0



77
 சிவசுப்பிரமணியன்
 COLLECTOR,
 Uppuram District
 Viluppuram.

75
 Assistant Director,
 Geology and Mining,
 Collectorate,
 Viluppuram.

			B		
			138.0		
			133.2	352.16	
15	30.0		126.0		
			123.6	24.816	
			82.2	6.612	
			D		
			C		
			138.0		
12	0.0		2.0		
			26.4	15.111	
			135.0	100.010	
			100.6	6.019	
			D		
			138.0		
9	6.0		123.0		
7	3.0		123.0		
			A		
			B		
			(171.5)		
6	5.0		182.0		
5	4.0		172.4		
4	4.0		187.5		
3	16.0		106.2		
2	28.6		103.8		
			88.0	18.011	
			A		

சு. சமீ மீட்டர் லைசன்ஸ் தரப்பட்டது

சு. சமீ மீட்டர் லைசன்ஸ் தரப்பட்டது LEASE APPLIED AREA

TAHSILDAR
 VANUR



21759 பி.பி. 2000 பி.பி

சு. சமீ
 38/12
 40

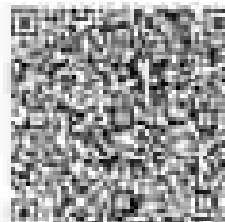


ಅ-ಪರಿಶೀಲನೆ ವಿವರಣೆ

ಜನಪದ್ಧತಿ / ವಿಜ್ಞಾನಪದ್ಧತಿ
ಖ.ಪದ್ಧತಿ / ಉತ್ತರ
ಇರಗುಡಿ / ಶಾಖಾಧಿಕಾರಿ

1. ಒಳ ವರ್ಗ	10
2. ಹಿರಿಯ ವರ್ಗ	3
3. ಮಾಧ್ಯಮ ಒಳ ಹಿರಿಯ ವರ್ಗ	16.8
4. ಪದವಿ	-
5. ಪದ / ಸಹಾಯಕ	ಸಹಾಯಕ
6. ವಿಶೇಷ ವರ್ಗ	ಪ್ರತಿಭಾ
7. ಒಟ್ಟು ಸಂಖ್ಯೆ	39
8. ಒಟ್ಟು ಮೊತ್ತ	4.20

9. ವರ್ಗ ಮಟ್ಟದ ಪ್ರಮಾಣ	3-3
10. ವರ್ಗ ಬದಲಿ	8
11. ವಿಶೇಷ (ಇ - ರೂ)	4.20
12. ಒಟ್ಟು (ರೂ) - ರೂ	8 - 84.00
13. ಒಟ್ಟು ವಿಶೇಷ (ಇ - ರೂ)	3.84
14. ಒಟ್ಟು ವರ್ಗ	888
15. ಒಟ್ಟು	-
16. ಒಟ್ಟು	1.20

ತುರಿಪು 1	
	<p>ಹೆಚ್ಚಿನ ಮಾಹಿತಿ / ಸಂಪರ್ಕಿಸಲು ಸಹಾಯಕರಿಗೆ ಈ ಲಿಂಕ್ ಅನ್ನು ಕ್ಲಿಕ್ ಮಾಡಿ ನೋಡಬಹುದು. ಇದರಲ್ಲಿ ನೀಡಿರುವ http://eservices.kn.gov.in ನಲ್ಲಿನ ವಿವರಗಳನ್ನು ನೋಡಿ ಮತ್ತು ಅದರಲ್ಲಿ ನೀಡಿರುವ ಮಾಹಿತಿಗಳನ್ನು ಅನ್ವೇಷಿಸಬಹುದು.</p>



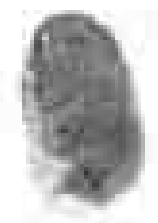


അപരിചയപ്പെടുത്തലുകൾ

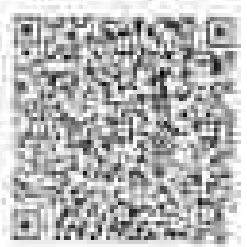
പാഠ്യപുസ്തകം / പഠനപുസ്തകം
പുസ്തകം / പഠനപുസ്തകം
വിദ്യാർത്ഥി / പഠനപുസ്തകം

1. പാഠ്യ പുസ്തകം	76
2. പാഠ്യ പുസ്തകം	34
3. പാഠ്യ പുസ്തകം പാഠ്യ പുസ്തകം	76-3
4. പാഠ്യ	7
5. പാഠ്യ / പാഠ്യ	നാട്യപുസ്തകം
6. പാഠ്യ പുസ്തകം	പാഠ്യ
7. പാഠ്യ പുസ്തകം	+
8. പാഠ്യ പുസ്തകം	+

9. പാഠ്യ പുസ്തകം പുസ്തകം	3-8
10. പാഠ്യ പുസ്തകം	8
11. പാഠ്യ (2 - പാഠ്യ)	4.30
12. പാഠ്യ (പാഠ്യ) - പാഠ്യ	8 - 22.30
13. പാഠ്യ പുസ്തകം (2 - പാഠ്യ)	8.82
14. പാഠ്യ പുസ്തകം	873
15. പാഠ്യ	+
16. പാഠ്യ	പാഠ്യപുസ്തകം



ഭാഗികം 1)



വിവരങ്ങൾ, പുസ്തകം / പഠനപുസ്തകം പുസ്തകം വിവരങ്ങൾ ക്ലിക്ക് ചെയ്തുകൊണ്ടു വെക്കുക. പുസ്തകം പുസ്തകം
<http://www.nust.edu.pk> നിലവിലുള്ള പുസ്തകം വിവരങ്ങൾ നോക്കുക. പുസ്തകം പുസ്തകം പുസ്തകം പുസ്തകം
പുസ്തകം പുസ്തകം



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

MINING PLAN

FOR

ERAYUR VILLAGE RED LIME STONE AND GRAVEL MINING LEASE

WITH PROGRESSIVE OPEN CAST & LONGHOLE PLAN

Prime- Rythuvar land/ Open Cast-Semi Mechanized mining/ Non-forest/ Caprock Class - "A2"

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	VILUPPURAM
TALUK	VANUR
VILLAGE	ERAYUR
S.E. NO'S	542, 763A & 764
EXTENT	2.00 Hectares

ADDRESS OF THE APPLICANT

Mr. K. ANANDAVELU,

No. Keerayan,

Erayer Village,

Vanur Taluk,

Viluppuram District - 604304.

PREPARED BY

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

Qualified person

GEO TECHNICAL MINING SOLUTIONS

(A NABCI Accredited & ISO Certified Company)

No. 1213 - B, Ground Floor, Nandan Complex,

Changanai, Coimbatore Post office,

Dharmapuri - 637005, Tamil Nadu

Mail: +91 9449117641, +9170107941A

E-mail: gtm@gtmsolutions.com

Website: www.gtmsolutions.com



CONTENTS

Sl. No.	Description	Page No.
	Certificate	5
	Introductory notes	10
1.0	General	13
2.0	Location and Accessibility	14
<u>PART-A</u>		
3.0	Geology and Mineral reserves	17
4.0	Mining	21
5.0	Blasting	27
6.0	Mine Drainage	29
7.0	Stacking of Mineral rejects and disposal of waste	29
8.0	Uses of Mineral	30
9.0	Others	30
10.0	Mineral processing/ beneficiations	31
<u>PART-B</u>		
11.0	Environmental Management Plan	33
12.0	Progressive quarry Closure Plan	38
13.0	Financial assurance	40
14.0	Certificates	40
15.0	Plan and sections, etc.	40
16.0	Any Other Details listed to furnish by the Applicant	40
17.0	CSO Expenditure	41



ANNEXURES

Sl. No.	Description	Annexure No.
1	Copy of previous area communication letter	I
2	Copy of previous lease particulars: a. Environmental Clearance b. Proceeding Letter c. Lease execution deed	II
3	Copy of FMB (Field Measurement book)	III
4	Copy of "A" register	IV
5	Copy of Chitta & stamp	V
6	Photo copy of the applied lease area	VI
7	Copy of explosive willing letter, agreement from explosive license holder & explosive license	VII
8	Copy of ID Proof of the authorized signatory	VIII
9	Copy of Qualified Person Certificate	IX



LIST OF PLATES

M. No.	Description	Plate No.	Scale
1	Key map	I	Not to scale
2	Location plan	IA	Not to scale
3	Toposheet map	IB	1:1,00,000
4	Satellite imagery map	IC	1:5,000
5	Environmental plan	ID	1:5,000
6	Mine lease plan	II	1:1000
7	Surface & Geological plan	III	1:1000
8	Geological sections	IIIA	Sections HOR. 1:1000 VER. 1:500
9	Year wise Development & Production plan	IV	1:1000
10	Year wise development & Production sections	IVA	Sections HOR. 1:1000 VER. 1:500
11	Mine layout plan and Land use pattern	V	1:1000
12	Conceptual plan	VI	1:1000
13	Conceptual sections	VI A	Sections HOR. 1:1000 VER. 1:500



Mr. K. Anandaretna,
Sri. Kavanan,
Erayer Village,
Vannar Taluk,
Vilupparani District - 601304



CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of rough stone and gravel quarry lease in S.O. NO. 762/2014 & 768, over an extent of 2.18 Hectares of Erayer Village, Vannar Taluk, Vilupparani District, Tamil Nadu State has been prepared by:

Dr. S. KARUPPANNAN, M.Sc., Ph.D., (Qualified person)

I request "The Deputy Director", Department of Geology and Mining, Vilupparani District to make further correspondence regarding modifications of the Mining Plan with the said Qualified Person at the following address,

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
HQP/MSL/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
(A NABET Accredited & ISO certified Company)
No. 1213-B, Ground Floor, Natesan Complex,
(Hidagam, Colloconna Post office, Dharmapuri-636705)
Ph: +91-9443947841, 7010076033
E-mail: info.gmsdp@gmail.com
Website: www.gmsdp.com

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

Place: Vilupparani, TN,
Date: 3/2/25


applicant
(K. Anandaretna)



Mr. K. Anandavelu,
S/o. Kesavan,
Erurur Village,
Vannar Taluk,
Viluppuram District - 604304.



DECLARATION

The Mining Plan in respect of bough stone and gravel quarry lease in SF No's: 762, 763A & 764, over an extent of 2.18 Hectares of Erurur Village, Vannar Taluk, Viluppuram 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: Viluppuram, TN

Date: 3/2/22

Signature of the applicant

(K. Anandavelu)



CERTIFICATE



I, Dr.S.KARUPPANNAN M.Sc.,Ph.D, Dharmapuri had the qualified person to prepare mining plan have an office at GEO TECHNICAL MINING SOLUTIONS (A NARDT accredited & ISO certified Company) No. 1/213-B, Narayan Complex, Oddapatti, Collectorate Post office, Dharmapuri-63705, Tamil Nadu.

I, Dr.S.KARUPPANNAN M.Sc.,Ph.D prepared this Mining plan in respect of rough stone and gravel quarry lease in S.F.No. 78/2, 78/3A & 78/3, over an extent of 2.48 Hect of Arroyur Village, Vannur Taluk, Villupuram District, Tamil Nadu State. The mining plan prepared under rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1958.

Place: Dharmapuri, TN

Date: 6/2/23

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

Qualified Person

GEO TECHNICAL MINING SOLUTIONS
(ISO 9001: 2015 Certified Company)
1/213-B, Ground Floor, Narayan Complex,
Collectorate Post Office
Oddapatti, Dharmapuri-63705.





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

Qualified Person

GEO TECHNICAL MINING SOLUTIONS

(A NABET Accredited & ISO certified Company)

No. 1/213-B, Ground Floor, Nandan Complex,

Oddapatti, Collectorate Post office, Dharmapuri-636 705

Ph: +91 9443977841, 7010076033

E-mail: info.gtsmsol@gmail.com;

Website: www.gtsmsol.com

CERTIFICATE

This is to certify that, the provisions of 10 Tamil Nadu Minor Minerals Commission Rules, 1979 have been observed in the Mining Plan for the grant of rough stone and gravel quarry lease in S.P.No's 792, 793A & 798, over an extent of 1.18 hectares of Estate Village, Vannur Taluk, Viluppuram District, Tamil Nadu State applied to Mr. K.ANANDAVELLI, Viluppuram, Tamil Nadu State.

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: 6/2/23

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

Qualified Person

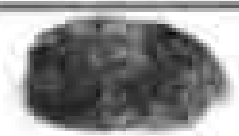
GEO TECHNICAL MINING SOLUTIONS

(ISO 9001:2015 Certified Company)

1213-B, Ground Floor, Nandan Complex,

Collectorate Post Office

Oddapatti, Dharmapuri 636705.





Dr. SKARUPPANNAN, M.Sc., Ph.D.,
 Qualified Person
GEO TECHNICAL MINING SOLUTIONS
 (A NAHET Accredited & ISO certified Company)
 No. 1/21 I-B, Ground Floor, Nandan Complex,
 Odiappatti, Collectorate Post office, Dharmapuri-636706
 Ph: +91 9443877841, 7810978611
 E-mail: info.gtmindia@gmail.com
 Website: www.gtmindia.com

CERTIFICATE

I certify that, in preparation of Mining Plan for rough stone and gravel quarry lease in S.F.No's: 76/2, 76/3A & 76/6, over an extent of 2.18 Hectares of Erariyur Village, Vannar Taluk, Viluppuram District, TamilNadu State prepared to Mr. KANANDAVELU, Viluppuram, Tamil Nadu State covers all the provisions of Mines Act, Rules, and Regulations etc made there under and whenever specific permissions 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: 6/2/23

Dr. SKARUPPANNAN, M.Sc., Ph.D.,
 Qualified Person
GEO TECHNICAL MINING SOLUTIONS
 ISO 9001: 2015 Certified Company
 1/21-B, Ground Floor, Nandan Complex,
 Collectorate Post Office
 Odiappatti, Dharmapuri-636706.



MINING PLAN

FOR ERAYUR VILLAGE HIGH STONE AND GRAVEL MINING LEASE WITH
PROGRESSIVE QUARRY CLUSURE PLAN

Pana-Ryonsari land/ Open Cast-Semi Mechanised mining- Non-Open-Captive Use - 'B2'
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.K.ANANDAYELU Su Kesavan, Erayur Village, Vamar Taluk, Viluppuram District, Tamil Nadu State and filed with application for new proposals has submitted to the Deputy Director, Department of Geology and Mining (DGM & M), Viluppuram dated 4.08.2020 had requested to grant the quarry lease for rough stone and gravel in S.F.No's. 76/2, 76/3A & 76/6, over an extent of 2.18 Hectares of Erayur Village, Vamar Taluk, Viluppuram District, Tamil Nadu State.
- b) The Pre-closure area communication letter: The Deputy Director, Department of Geology and Mining, Viluppuram has directed to the applicant Mr.K.ANANDAYELU through his pre-closure area communication letter No.No.A/G&M/273/2020 Dated: 28.11.2021 before execution of lease deed. The Applicant should submit the mining plan for approval and obtain environmental clearance from the competent authority of State Level Environment Impact Assessment Authority-Tamil Nadu (SLEIAA) per EIA notification S.O.3273(E) dated 14th September 2006 and its subsequent amendment S.O.3973(E), dated 14th August 2018. MeEP & CC office memorandum letter F.No.23-1/2019 - 1A,III (E110017) dated 13th December, 2021 for quarrying lease of rough stone and gravel at Tamil Nadu State, Viluppuram District, Vamar Taluk, Erayur Village in S.F.No's. 76/2, 76/3A & 76/6, over an extent of 2.18 Hectares has recommended as following conditions for a period of five (5) years under Rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.
 - (i) Leave a safety distance of 7.5meter and 10meter should be provide to the adjacent pana lands and government possesible lands.
 - (ii) The applicant should fence the area with barbed wire and submit the DGPS survey report before execution of lease deed.



(ii) Submit the Draft Mining Plan prepared by qualified Person mentioned in rule 41 of TNMMCR, 1959

(iv) Necessary Environmental clearance should be obtained from the SEIAA Tamilnadu as required under rule 42 of TNMMCR, 1959

(c) The previous lease particulars: The proposed lease area was previously granted in quarrying of rough stone and gravel in favor of Mr.K.Anandavelu by the District Collector, proceedings vide Re.A/G&M/977/2012, dated 28.07.2017 in S.F.No. 70/2 & 70/3A Viluppuram District, Vannar Taluk, Erurur Village, over an extent of 1.08 Hectares for a period of 5 years. The applicant got Environmental Clearance from SEIAA-TN vide Lr.No.SEIAA/TNF.No.2699/EC/166/1702/2014, dated 19.03.2015.

Now, 1st Renewal application for lease proposals has submitted to the Deputy Director, Department of Geology and Mining (DDG & M), Viluppuram dated 04.08.2020 and the Deputy Director, recommended in his previous communication letter Re.No.A/G&M/273/2020 Dated 20.12.2022 for period of five years recommended in favor of Mr.K.Anandavelu for quarrying lease rough stone and gravel of Tamil Nadu State, Viluppuram District, Vannar Taluk, Erurur Village in S.F.No. 70/2, 70/3A & 70/3, over an extent of 2.18 Hectares.

There is an 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's. III).

Existing pit Dimension				
Pit no's	Pit level	Length (m)	Width (m)	Depth(m)
I	Level-I	100	74	6

(d) Preparation and Submission of Mining Plan: The Mining Plan with progressive quarry closure plan has been prepared under rule 41 of Tamil Nadu Mines Mineral Concession Rules, 1959 for mining lease as per conditions mentioned in the previous communication letter Re.No.A/G&M/273/2020 Dated: 20.12.2022

(e) Geological resources and Mineable reserves: Geological resource is estimated as 754200m³ including the resources of safety stone, and gravel, etc. Of which, rough stone resources of about 731480m³ and gravel is 22728m³. The total mineable reserve is estimated to be 242876m³ by deducting the reserve safety stone block in benches from the total Geological resources. Of which, rough stone is about





226322m³ and gravel is 16554m³ up to a depth of 40m below the ground level (R.L. 44m-64m) (Refer Plate No. IIIA & VIA).

D) Proposed production schedule: Total proposed production of 2428700m³. Of which, rough stone is 226322m³ and gravel is 16554m³ up to a depth of 40m below the ground level (R.L. 44m-64m) for five years plan period. Average production is 485740m³ of rough stone per year. (Refer Plate No. IV A)

g) Environmental Sensitivity of the proposed lease area:-

i). Interstate boundary: No interstate boundary around 10km radius periphery of proposed 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.

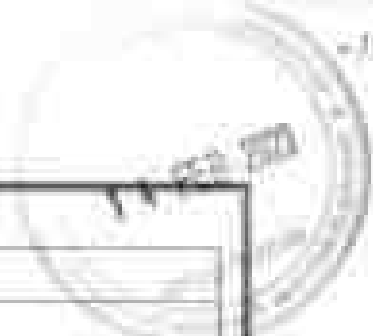
iii). Indian Reserve Forest Act, 1900: There is no reserve forest within the 10km radius periphery of proposed lease area. The nearest reserve forest is
1. Melkonda R.F - 11.12km-West

iv). CRZ Notification, 2019: There is no Sea coastal zone band 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 30 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.





1.0 GENERAL:

a.	Name of the Applicant	Mr. KANANDAVELU
	Applicant address	So. Kasuvan, Erasiye Village, Vasei Taluk,
	District	Viluppuram
	State	Tamil Nadu
	Pin code	604104
	Phone	---
	Fax	Nil
	Gram	Nil
	Taluk	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 probe area has been committed to the applicant for quarrying period of Five years.
e.	Name of the Qualified Person	Dr. S.KARUPPANNAN,M.Sc.,Ph.D.,
	Address	GEO TECHNICAL MINING SOLUTIONS (A NABIT Accredited & ISO certified Company) No. 1/211-B, Ground Floor, Natsam Cooplex, Chidambaram, Collegiate Post office. Chidambaram-636705 Web site: www.gtmind.com
	Phone	+91 9447927541, 7010075633
	Fax	Nil
	e-mail	info.gtmind@gmail.com
	Telex	Nil
	Registration Number	Nil
	Date of grant/renewal	Nil
	Valid upto	Nil
f.	Reference No. and date of current letter from the	The probe area commitment letter issued by the Deputy Director, Department





state government	Geology and Mining, Viluppuram Dist. No. No. VGM/MT/2020 20.12.2022	Date:
------------------	---	-------

2.4 LOCATION AND ACCESSIBILITY.

a. Details of the Area				Refer plate no: 1A & 1B		
District & State				Viluppuram, Tamil Nadu		
Taluk				Vattar		
Village				Enaiyur		
Khasra No./ Plot No./ Block Range/ Felling Series etc.						
Survey No.	Sub Division	Total Extent in Hect	Part No.	Village and Name of the Land Owner	Miner lease Applied S.F. No.	Miner lease Applied Area out of total area in Hect.
76	2	0.88.0	886	Mr.K. Anandavulu S/o Kesavan	762	0.88.0
76	3A	0.22.0	873		763A	0.22.0
76	4	1.10.0	877		764	1.10.0
Total Extent		2.18.0		Applied lease area total		2.18.0
Least area (hectares)				2.18 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's: 762, 763A & 764, is registered on the name of Mr.K.Anandavulu S/o Kesavan as sub patta no: 886, 873 & 877. (Ref: Annex. No.V)		
Existence of Public Road / Railway line if any nearby and approximate distance				<p>✓ Espheral quarry materials will be transported by through the road is situated on the southern side.</p> <p>✓ There is a MDR-008 is situated on the eastern side about 1.24km which is connecting Kodakkur - Perambakkam.</p> <p>✓ There is a MH-136 is situated on the northern side about 1.05km which is connecting Kuteripattu - Vase Road.</p> <p>✓ There is a NH-132 is situated on the western side about 5.0km which is connecting Kuteripattu - Viluppuram</p>		



	<p>Area: * There is No culture line land within (the radius of 5km) proximity of the applied lease area.</p>																																													
<p>Toposheet No. with latitude and longitude</p>	<p>Toposheet No. 57 P/12 Latitude: From 12° 420 01'N to 12° 420 15'N Longitude: From 79° 10' 36" E to 79° 10' 45 00" E</p>																																													
<p>Geo-Coordinates of the lease boundary:</p> <table border="1"> <thead> <tr> <th>PILLAR ID</th> <th>LATITUDE</th> <th>LONGITUDE</th> </tr> </thead> <tbody> <tr><td>1</td><td>12° 421 20'N</td><td>79° 10' 41 20" E</td></tr> <tr><td>2</td><td>12° 421 34'N</td><td>79° 10' 42 00" E</td></tr> <tr><td>3</td><td>12° 421 07'N</td><td>79° 10' 41 00" E</td></tr> <tr><td>4</td><td>12° 421 06'N</td><td>79° 10' 41 10" E</td></tr> <tr><td>5</td><td>12° 421 10'N</td><td>79° 10' 41 00" E</td></tr> <tr><td>6</td><td>12° 420 01'N</td><td>79° 10' 41 00" E</td></tr> <tr><td>7</td><td>12° 421 30'N</td><td>79° 10' 41 55" E</td></tr> <tr><td>8</td><td>12° 421 31'N</td><td>79° 10' 42 47" E</td></tr> <tr><td>9</td><td>12° 421 31'N</td><td>79° 10' 41 21" E</td></tr> <tr><td>10</td><td>12° 421 00'N</td><td>79° 10' 41 10" E</td></tr> <tr><td>11</td><td>12° 421 40'N</td><td>79° 10' 39 30" E</td></tr> <tr><td>12</td><td>12° 420 44'N</td><td>79° 10' 39 00" E</td></tr> <tr><td>13</td><td>12° 420 00'N</td><td>79° 10' 38 20" E</td></tr> <tr><td>14</td><td>12° 421 10'N</td><td>79° 10' 40 19" E</td></tr> </tbody> </table>		PILLAR ID	LATITUDE	LONGITUDE	1	12° 421 20'N	79° 10' 41 20" E	2	12° 421 34'N	79° 10' 42 00" E	3	12° 421 07'N	79° 10' 41 00" E	4	12° 421 06'N	79° 10' 41 10" E	5	12° 421 10'N	79° 10' 41 00" E	6	12° 420 01'N	79° 10' 41 00" E	7	12° 421 30'N	79° 10' 41 55" E	8	12° 421 31'N	79° 10' 42 47" E	9	12° 421 31'N	79° 10' 41 21" E	10	12° 421 00'N	79° 10' 41 10" E	11	12° 421 40'N	79° 10' 39 30" E	12	12° 420 44'N	79° 10' 39 00" E	13	12° 420 00'N	79° 10' 38 20" E	14	12° 421 10'N	79° 10' 40 19" E
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13	12° 420 00'N	79° 10' 38 20" E																																												
14	12° 421 10'N	79° 10' 40 19" E																																												
<p>Land use pattern (Forest, Agricultural, Grazing, Barren etc.)</p>	<p>It is on barren and virgin ground</p>																																													
<p>b) <i>Attach a general location and vicinity map showing area boundaries and existing and proposed access roads. 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.</i></p>	<p>Refer plots no-IX & IB</p>																																													





INFRASTRUCTURE AND COMMUNICATIONS

S.No	Description	Place	Distance	Direction
a.	Nearest post office	Nadar	5.62Km	West
b.	Nearest police station	Mallam	6.6km	North
c.	Nearest fire station	Tindivanam	16.09km	North
d.	Nearest medical facility	Pumbar	5.73Km	SW
e.	Nearest school	Kariyar	1.8Km	SE
f.	Nearest railway station	Tindivanam	17.21km	South
g.	Nearest port facility	Chennai	133.2km	South
h.	Nearest airport	Puduchery	21.8km	SE
i.	Nearest DSP office	Tindivanam	16.4km	North
j.	Nearest villages	Perambakkam	1.52km	NE
		Talshah	2.34km	South
		Enayur	2.09km	South
		Kanamangalam	1.81km	West





PART - A

3.0 GEOLOGY AND MINERAL RESERVES

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

iii.	Topography:	The proposed mine area exhibits flat topography which is an average altitude of about 47.5m AMSL. The proposed site shows the relief of 1m, the maximum elevation (44m) was observed in NW side of the site, while the minimum elevation (40m) was observed SE side of the site. The slope is towards SE side and falls in Toposheet no. 57 P/12.
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(ii) General Geology of the district:

A gross part of the district is covered by rocks belonging to Archaean age comprising the charnockite Group, the migmatite Complex, Sathyamangalam Group and the Elavum Group and affluents complex of Proterozoic age. West of Kallakurichi (Southwestern part of the district), the area comprises the Charnockite Group of rocks viz. Charnockite, pyroxene-granulite and granuliferous gabbro. West of Tirukalur (central part of the district) and east of the charnockite terrain (i.e., Kallakurichi) areas the Migmatite complex is made up of Hornblende - biotite gneiss. Pink augen gneiss and pink migmatite with younger intrusions of [Indravathi and Gingee Granites (2250 Ma) and basic dykes (Proterozoic). The migmatite complex forms the major country rock of the area covering more than sixty percent and extending towards east upto vikramasali, south of Gingee. Epidote-hornblende gneiss (Proterozoic age) occurs as small isolated outcrops. Dolerite dykes form the youngest basic intrusions traversing both charnockite as well as the migmatite equally. Overlying the Archaean are the marine fossiliferous upper-cretaceous and palaeogene formations occurring in two separate sub-basins separated by thick masses of alluvial sediments deposited by gullians and peninsular rivers. The two sub-basins are recognized as vadalachalam sub-basin and Pandichery sub-basin.





The generalised Geology of the district is as follows:

Recent and sub-recent	Soil Alluvium Laterite
Mio-Pliocene	Cuddalore sandstone with intercalations of clay, shale and pebbly bed
Lower Jurassic (Upper Gneisszone)	Slates and sandstones
Archaean	Basal dykes, pegmatites and quartz veins Gneisses Schists Charnockite rocks Granite plagioclase and pyroxene plagioclase rock (Anorthosite) Talc Rock (altered ultrabasic rock) Talc - Chlorite - Epidote Rock Sillimanite - Quartzite Magnetite Quartzite Hornblende granulites and amphibolites

(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 43.7m AMSL. The proposed site shows the relief of 1m; the maximum elevation (44m) was observed in NW side of the site, while the minimum elevation (43m) was observed SE side of the site. The slope is towards SE side. The applied lease area is existing, with covered gravel and beneath the charnockite rocks found based on existing pit nearby the lease area. Surface plan preparing the contour lines, surface locations and Geological mapped the applied lease area.

Mode of origin:

The Charnockite series originally was assumed to have developed by the fractional crystallization of silicic magma. The constituents of the rock suggest of its origin in particularly dry and high temperature conditions which is deduced to have an important bearing in explicating prehistoric crustal development of the earth.

Physiography of the rocks:

General characteristics of the rocks of this series has revealed that the rocks are in general bluish grey or drabish in colour and extremely fresh in appearance with an even grained granular structure.





Chemical composition of rocks;

The compositional characteristics of co-existing orthopyroxene, garnet and biotite have established several petrographic varieties within the Charnockites-Trochilites such as the granulites and gneisses. The mineral composition shows an increasing presence of pleochroic rhombic pyroxene. Plagioclase feldspars, alkali feldspars and quartz are the same minerals present in this series of rocks. Order of superposition of the proposed lease area.

Age	Group	Rock Formation
Recent to Sub-recent	—	Red Soil
Archaean	Charnockite Group	Charnockite

(iv) **Drainage Pattern** : No major river located within 500m radius. The drainage in the area is dendritic in nature.

(ii) *The topographic plan of the lease area prepared on a scale of 1 : 1000 or 1 : 2000 with contour interval of 1 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 : There is an existing pit was noticed by BQP with a pit level-1 is 1,100m X W 74m X 10m. The Charnockite rocks are well seen in the existing pit with covered by laterite soil over the part of lease area.

b. Surface Plan : Surface plan showing elevation contour 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) *Broadly indicate the Yearwise future programme of exploration, taking into consideration the future production programme planned in next five years as in table below :*



No lease programme proposed in this area. Its massive heterogeneous phane rock. Hence explanation proposal is not required in this mining project.

(iv) 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 two sections (longitudinal and transverse) to calculate the volume of mineral up to the depth of 40m below ground level. The three longitudinal and three transverse cross sections were assigned XY-AB & XIYI-CD as respectively. Using the cross-sectional method, total reserve is estimated to be 754200m³ including the resources of safety zone, and gravel, etc. Of which, rough stone resources of about 714000m³ and gravel is 22720m³.

The gravel is obtained about 0-2.0m (R.L. 44m -42m) and a rough stone starts from 2 to 40m (R.L. 42-04m) from 0m below the ground level. (Refer plate no's.IIIA)

GEOLOGICAL RESOURCES								
Section	Point	Length (m)	Width (m)	Depth (m)	Volume (m ³)	Rough Stone (m ³)	Gravel (m ³)	
XY-AB	I	6	21	2	252	.....	252
	II	6	25	1	150	150	.....
	III	6	26	1	156	156	.....
	IV	107	40	4	17120	17120	.....
	V	107	40	1	4280	4280	.....
	VI	107	40	1	4280	4280	.....
	VII	107	40	1	4280	4280	.....
	VIII	107	40	1	4280	4280	.....
TOTAL				18	34428	34428	264	
XIYI-CD	I	100	104	2	2080	.....	2080
	II	100	104	1	1040	1040	.....
	III	100	104	1	1040	1040	.....
	IV	100	104	1	1040	1040	.....
	V	100	104	1	1040	1040	.....
	VI	100	104	1	1040	1040	.....
	VII	100	104	1	1040	1040	.....
	VIII	100	104	1	1040	1040	.....
TOTAL				8	8320	8320	1604	
GRAND TOTAL					26	75420	71400	22720

(v) 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 242876m³ by deducting the reserve within zone block in benches from the total Geological resources up to a depth of 20m (R.L. 44-64m) below ground level. Of which, rough stone is about 226322m³ and gravel is 16554m³. 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 in vertical axis (Refer plate no. VIA).

MINEABLE RESERVE							
Section	Block	Length (m)	Width (m)	Depth (m)	Volume m ³	Rough Stone m ³	Gravel m ³
XV-AB	I	82	22	4	7488	7488	
	II	82	82	2	7548	7548	
	IV	22	82	2	3608	3608	
	V	82	82	2	13528	13528	
	VI	82	82	2	8720	8720	
	VII	42	22	2	1872	1872	
TOTAL				28	96880	96880	0
XVI-CD	I	80	80	2	12800		12800
	I	80	80	2	12800		12800
	II	80	70	2	11200		11200
	III	70	80	2	11200		11200
	IV	80	70	2	11200		11200
	V	70	80	2	11200		11200
	VI	40	70	2	5600		5600
	VII	20	70	2	2800		2800
VIII	20	20	2	800		800	
TOTAL				80	106400	129720	16554
GRAND TOTAL					242876	226322	16554

4.H MINING

<p>a. Briefly describe the existing / proposed method 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)</p>	<p>It is an existing open lease. The mining operation is open-cut, semi-mechanized method are adopted and an single shaft bore only. Under the regulation 106 of the Metalliferous Mines Regulations, 1961 in all open-cut 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.</p>
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b. Indicate quantity of development and tonnage and grade of production expected pie wise as in table below.

Total proposed production of 242876m³. Of which, rough stone is about 226322m³ and gravel = 16554m³ up to a depth of 40m below the ground level (R.L. 44-04m) from the below ground level for five years plan period. (Refer Plan No's IVA).

Year	Height (m)	Topsoil/Overburden m ³	RCM (m ³)	Subsable rough stone (cu/y) @ 100%	Rough stone rejected (m ³)	Soft grade Weathered rock (m ³)	Subsable Gravel (m ³)	Rough stone to waste ratio
First	1	-	42000	11100	-	-	8900	-
Second	1	-	53482	45828	-	-	7654	-
Third	1	-	51304	51304	-	-	-	-
Fourth	1	-	50100	50100	-	-	-	-
Fifth	1	-	45900	45900	-	-	-	-
Total	-	-	242876	226322	-	-	16554	-

c. Composite plans and Year wise sections (In case of 'A' class mines):

Not applicable. It is a 'B' class quarry lease.

YEARWISE PRODUCTIVE YEARS								
Section	Year	Month	Length (m)	Width (m)	Depth (m)	Volume in m ³	Rough Stone in m ³	Gravel in m ³
XTH-CD	1 st YEAR	I	70	40	2	5600	5600	-
		II	70	40	2	5600	5600	-
		III	70	40	2	5600	5600	-
TOTAL						16800	16800	0
EVI-CD	II nd YEAR	I	40	40	2	3200	3200	-
		II	40	40	2	3200	3200	-
		III	40	40	2	3200	3200	-
TOTAL						9600	9600	0
IV-AR	III rd YEAR	I	40	70	2	5600	5600	-
		II	40	70	2	5600	5600	-
		III	40	70	2	5600	5600	-
TOTAL						16800	16800	0
VII-CD	IV th YEAR	I	70	40	2	5600	5600	-
		II	70	40	2	5600	5600	-
		III	70	40	2	5600	5600	-
TOTAL						16800	16800	0
VIII-CD	V th YEAR	I	70	40	2	5600	5600	-
		II	70	40	2	5600	5600	-
		III	70	40	2	5600	5600	-
TOTAL						16800	16800	0



XIV- CID	VU	45	22	5	4620	4620	
	V	25	40	5	1700	1700	
	VI	40	20	5	810	810	
	VII	25	20	5	400	400	
	VIII	25	20	5	210	210	
TOTAL					4790	4790	0
GRAND TOTAL					24276	24272	1654

d. Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade material, if any, etc.

Composite plan not prepared in this proposed lease area. It is "B2" category of mine.

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:

Minutely production of rough stone = 12632m³

Yearly production of rough stone = 45264m³

Monthly production of rough stone = 3772m³

Gravel

Minutely reserves of gravel = 16554m³

Monthly production of gravel = 400m³

The regular working of the quarry and its production depends upon the demand from the market. The market is always fluctuating and flexible one. Accordingly, there is a possibility to increase or decrease the production. The year wise production, anticipated life of quarry etc., are only a tentative figure.

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:

f. Time frame of completion of mineral exploration program in leasehold area. Give brief description identified potential areas to be covered in the given time frame.

Considering the moderate depth prominence of the rough stone deposit is proved beyond the workable limits about up to a depth of 40m below ground level (R.L. 44m-40m) from the petrographic character of the charnockite rock as well as from the actual mining practice in the area and with the current trend of rough stone production.

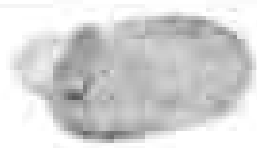


ii)	<p>Whether ultimate pit limit has been determined and demarcated on surface and geological plan:-</p> <p>The ultimate pit limit has been determined and demarcated in the conceptual plan.</p>					
ULTIMATE PIT LIMIT-(XY-AB)						
Bench	Bench R.L.	Period	Overburden/ Mineral	L (m)	W (m)	D (m)
II	R.L. 28-34m	Five years	Rough stone	92	72	4
III	R.L. 24-29m		Rough stone	82	62	5
IV	R.L. 20-24m		Rough stone	72	52	5
V	R.L. 24-19m		Rough stone	62	62	5
VI	R.L. 19-14m		Rough stone	52	52	5
VII	R.L. 14-09m		Rough stone	42	32	5
Total						29m
ULTIMATE PIT LIMIT-(XY)-CD						
Bench	Bench R.L.	Period	Overburden/ Mineral	L (m)	W (m)	D (m)
I	R.L. 44-42m	Five years	Gravel	93	89	2
I	R.L. 42-39m		Rough stone	93	89	3
II	R.L. 38-34m		Rough stone	82	78	5
III	R.L. 34-29m		Rough stone	72	69	5
IV	R.L. 29-24m		Rough stone	62	58	5
V	R.L. 24-19m		Rough stone	52	48	5
VI	R.L. 19-14m		Rough stone	42	38	5
VII	R.L. 14-09m		Rough stone	32	28	5
VIII	R.L. 09-4m		Rough stone	22	18	5
Total						40m
iii)	<p>Whether the site for disposal of waste rock or an un-salvageable material here has been examined for adequacy of land and suitability of long term use in the event of continuation of mining activity:-</p>	<p>The recovery of rough stone in this quarry is 100%. There is no waste rock will be proposed in this lease area.</p>				
iv)	<p>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:-</p>	<p>As the depth of penetration of the deposit may likely to continue for further depth, it is proposed not to backfilled the quarry pit.</p>				
v)	<p>Whether post mining land use envisaged:-</p>	<p>At the end of mining activities over the quarry pit may be utilized fish culture or</p>				





		storage of run water reservoir used for irrigation purposes.
g. Open cast Mines:		
i. Describe briefly giving salient features of the mode of working (Mechanized, Semi- Mechanized, manual)		It is an existing quarry lease. The mining operation is open-cast, semi-mechanized methods are adopted and on single shift basis only. Under the regulation 106 of the Metalliciferous Mines Regulations, 1957 in all open cast workings in hard rock, the benches and sides should be properly benchted and steeped. The bench height should not exceed ten and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.
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.		Flat 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 ore removal using Hydraulic excavator and loaded directly to the tippers. Bench height = 5m Bench width = 5m
a. Details of Topsoil/ Overburden		There is no topsoil will be removed.
b. Rough Stone waste and side burden waste		There is no waste or side burden shall be proposed.
h. Underground Mines:		Not applicable
i. Extent of mechanization: Describe briefly including the calculations for adequacy and type of machinery and 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	No.	Dia of hole (mm)	Size / Capacity	Make	Native power	H.P.
Jack Hammer	1	30 mm	Hand held	—	Diesel	—
Compressor	1	—	Air	—	Diesel	—

(2) Loading Equipment:

Type	No.	Size / Capacity	Make	Native power	H.P.
Hydraulic Excavator	1	3.5m ³	—	Diesel	—

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

Type	No.	Size / Capacity	Make	Native power	H.P.
Tipper	3	15T	—	Diesel	—

Whether the dumpers are fitted with exhaust conditioner should be indicated:
 The dumpers are not used in this quarry area, hence it's a small B2 category mine.

a. Transport from mine head to the destination	1	Tipper will be used for transport rough stone from the mine head to nearby customer.
b. Describe briefly the transport system (please specify)	1	Hydraulic excavator and tippers utilized for internal transport (scaville rough stone lumps and deliver to the customer's area.
c. Ore transported by own trucks / hired trucks	1	Hired trucks for initially production purposes
d. Main destination to which ore is transported (give to and from distance)	1	The excavated stone materials road metal will be supplied to the customers like road laying, earth filling, building construction, etc.

(c) Details of hauling / transport equipment:

Type	No.	Size / Capacity	Make	Native power	H.P.
—	—	—	—	—	—

(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) Machinery deployed	Machinery like Tractor mounted compressor attached with jack hammers is proposed to drilling and blasting. Hydraulic Excavators and other combination are adopted. (Refer Part-A-4 (ii))

5. **BLASTING:**
as 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.

Blasting pattern

The quarrying operation is proposed to carried by open cast mining in combination with conventional method using jack hammer drilling and blasting for shattering effect and broken the rough stone.

1	Diameter of the hole	12 mm
2	Spacing between hole	1.2m
3	Burden for hole	1.0m
4	Depth of each hole	1.5m
5	Output per hole = Spacing × Burden × depth $1.2 \times 1.0 \times 1.5 = 1.8 \times 2.8$	5.04MT
6	Output per hole = $1.8m^2 \times 2.8 = 5.04 MT$	5.04MT
7	Production per annum $45264m^3 \times 2.8 = 1267392MT$	1267392MT
8	Total handling per day (240 working day)	452MT
9	Nos. of holes per day $(452/5.04 = 90)$	90 holes
10	Metreage required per day $(90 \times 1.5 = 135)$	135metres
11	Charge per hole	0.5kg
12	Powder factor $(90 \times 0.5 kg = 45)$	45 kg



Staggered method of mining.



	<p>As Type of explosives used / to be used:</p> <p>Following explosives are recommended for efficient blasting with safe practice:</p> <p>Small dia. 23mm 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.</p> <p>ii) Measures proposed to minimize ground vibration due to blasting:</p> <p>The control blasting measures is being adopted for minimizing ground vibration and fly rock.</p> <p>Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give heaving effect to rough stone for easy excavation and to control fly rock.</p> <p>Delay detonators:</p> <p>Delay blasting permits to divide the shot in smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals. The major advantages of delay blasting are</p> <ul style="list-style-type: none"> ◆ Reduction of ground vibration ◆ Reduction in air blast ◆ Reduction in over break ◆ Improved fragmentation ◆ Better control of fly rock <p>Blasting program for the production per day</p> <table border="1" data-bbox="399 1232 1260 1433"> <tr> <td>No. of holes</td> <td>8Holes</td> </tr> <tr> <td>Yield</td> <td>432MT</td> </tr> <tr> <td>Total explosive required</td> <td>44kg Slurry explosives</td> </tr> <tr> <td>Charge per hole</td> <td>0.5kg</td> </tr> <tr> <td>Blasting at dry time only</td> <td>12.8g m-1 Sp.m</td> </tr> </table>	No. of holes	8Holes	Yield	432MT	Total explosive required	44kg Slurry explosives	Charge per hole	0.5kg	Blasting at dry time only	12.8g m-1 Sp.m	<p>Following explosives are recommended for efficient blasting with safe practice:</p> <p>Small dia. 23mm 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.</p> <p>ii) Measures proposed to minimize ground vibration due to blasting:</p> <p>The control blasting measures is being adopted for minimizing ground vibration and fly rock.</p> <p>Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give heaving effect to rough stone for easy excavation and to control fly rock.</p> <p>Delay detonators:</p> <p>Delay blasting permits to divide the shot in smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals. The major advantages of delay blasting are</p> <ul style="list-style-type: none"> ◆ Reduction of ground vibration ◆ Reduction in air blast ◆ Reduction in over break ◆ Improved fragmentation ◆ Better control of fly rock <p>Blasting program for the production per day</p> <table border="1" data-bbox="399 1232 1260 1433"> <tr> <td>No. of holes</td> <td>8Holes</td> </tr> <tr> <td>Yield</td> <td>432MT</td> </tr> <tr> <td>Total explosive required</td> <td>44kg Slurry explosives</td> </tr> <tr> <td>Charge per hole</td> <td>0.5kg</td> </tr> <tr> <td>Blasting at dry time only</td> <td>12.8g m-1 Sp.m</td> </tr> </table> <p>ii) Powder factor in use and overburden / waste / development handling / slope</p> <p>Powder factor is proposed as 0.5kg per hole of explosives</p> <p>ii) Whether secondary blasting is needed, if so describe it briefly</p> <p>Irrespective of the method of primary blasting employed, it may be necessary to re-blast a proportion of the rock in the quarry floor so as to reduce it to a size suitable for handling by the excavators and rock breakers, by the excavators and crushers.</p>	No. of holes	8Holes	Yield	432MT	Total explosive required	44kg Slurry explosives	Charge per hole	0.5kg	Blasting at dry time only	12.8g m-1 Sp.m
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	<p>vi) Storage of explosives (like capacity and type of explosive magazine)</p>	<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.
<p>6. MINE DRAINAGE:</p>		
	<p>Lately depth of water table based on observations from nearby wells and water bodies:</p>	<p>The ground water table is reported as of 65m in summer and 40m in rainy season from the general ground level observed in the adjacent bore well.</p>
	<p>Workings expected to be _____ m above / reach below water table by the year _____</p>	<p>Proposed mining depth is 40m below ground level. Now, the present Mining lease shall be proposed above the water table and hence, quarrying may not affect the ground water.</p>
	<p>Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged</p>	<p>The ground water may not rise immediately in this type of mining. However, the run water population 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 motorized with 7.5 H.P. Motor. The quality of water is potable and it is not contaminated with any hazardous things.</p>
<p>7. STACKING OF MINERAL RESIDUES AND DISPOSAL OF WASTE:</p>		
	<p>4. Indicate briefly the nature and quantity of top soil, overburden / waste and mineral rejects likely to be generated during the next five years:</p> <p>No separate of topsoil will be removed. There is no rough stone waste or rubble burden will be removed in this proposed lease area.</p>	
	<p>5. Land chosen for disposal of waste with proposed justification</p>	<p>There is no waste are proposed.</p>



7	<p>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 etc. to be indicated Year wise.</p>	<p>2. There is no waste or any other mineral dumps are proposed. If rough stone may be stored will be kept within the lease boundary.</p>
<p>8. USE OF MINERAL:</p>		
a	<p>Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)</p>	<p>1. The excavated stone materials will be supplied to the consumers like stone pillar, road stone, etc. For instance, aggregates are mostly used for building, roads and footpaths, etc.</p>
b	<p>Indicate physical and chemical specifications stipulated by buyers.</p>	<p>2. Basically, the materials produced at this quarry are rough stone and the same are used for building stone, road stone materials only, as there are no chemical specifications are specified. Only physical specifications are involved.</p>
c	<p>Give details in case blending of different grades of coes is being practiced or is to be practiced at the mine to meet specifications stipulated by buyers.</p>	<p>3. No blending process is involved, after blasting the rough stone will be directly loaded to the ready customer.</p>
<p>9. OTHERS:</p>		
1a)	<p>Describe briefly the following Site services</p>	<p>2. Infrastructure required for such services like office, stores, canteen, first aid station, shower larnie and bath rooms have been provided as per the Metalliferous Mines Regulations, 1961 as a welfare amenity for our quarry labours.</p>





(b) Employment potential:
 As per Mines safety under the provisions of Metalliferous Mines Regulations, 1961 and under the Mines Act, 1952, whenever the workmen are employed more than 10, it is preferred to have a qualified mining man 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 utilize for this plan period to achieve the proposed production and to comply the provisions of the DGMS mines.

1.	Highly Skilled	Head class Mines Manager	1 No
		Mine Geologist	1 No
		Blaster	1 No
2.	Semi-skilled	Driver	2 No's
		Hand Operator	1 No
3.	Unskilled	Mucker / Labourer	12 No's
Total =			18 No's

10. MINERAL PROCESSING/BENEFICIATIONS:-

(a) If processing / beneficiations of the ore or minerals mineral is planned to be conducted on site or adjacent to the extraction area, briefly describe the nature of the processing / beneficiations. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.

Excavated rough stone minerals directly will be used by the applicant in his own cruder for required size 1/2, 1/4 and 1/8 inches Jelly which are mainly used as road and building construction purpose.

The recovery of rough stone in this quarry is 100%.

(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, mass effect of such tailings, if any, with process adopted to mitigate any such effect before their disposal and dealing of excess water from the tailing dam).

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, sand for tailing dam doesn't rise. But tailing control of rain water flow during rainy season has to be done by decanting the SPM in a pit before passing the water to natural system.



(ii)	A flow sheet or schematic diagram of the processing procedure should be attached.	Not applicable.
(iii)	Specify quantity and type of chemicals to be used in the processing plant.	Not applicable.
(iv)	Specify quantity and type of chemicals to be stored on site / plant.	Not applicable.
(v)	Indicate quantity (litres per day) of water required for mining and processing and sources of supply of water. Disposal of water and extent of recycling.	Drinking is 9.2KLD, utilized water is 1.2KLD. Dust suppression is 1.5KLD and Green Belt is 1.1KLD. Minimum quantity of water 4.0KLD per day has to be maintained as per the Mines Rules, 1952. It is proposed to make an authorized water vendor for drinking water, dust suppression. The workers utilized water will be used for green belt development. The sewage water to a tune of 1.0KLD generated from the mine office toilet and mine labour toilet will be diverted to the septic tank followed by soak pit.



PART - B

ENVIRONMENTAL MANAGEMENT PLAN

2) 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 (quitting, dumping, roads, processing plant, workshop, township etc) in a tabular form. The present land use pattern is given as below.	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Sl. No.</th> <th style="text-align: center;">Land Use</th> <th style="text-align: center;">Present area (Hect.)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td style="text-align: center;">Area under mining</td> <td style="text-align: center;">0.78.50</td> </tr> <tr> <td style="text-align: center;">2.</td> <td style="text-align: center;">Infrastructures</td> <td style="text-align: center;">Nil</td> </tr> <tr> <td style="text-align: center;">3.</td> <td style="text-align: center;">Road</td> <td style="text-align: center;">Nil</td> </tr> <tr> <td style="text-align: center;">4.</td> <td style="text-align: center;">Green belt</td> <td style="text-align: center;">1.38.50</td> </tr> <tr> <td style="text-align: center;">5.</td> <td style="text-align: center;">Drainage & Settling Tank</td> <td style="text-align: center;">Nil</td> </tr> <tr> <td style="text-align: center;">6.</td> <td style="text-align: center;">Un-utilized area</td> <td style="text-align: center;">2.18.0</td> </tr> <tr> <td colspan="2" style="text-align: center;">Grand total</td> <td style="text-align: center;">2.18.0</td> </tr> </tbody> </table>	Sl. No.	Land Use	Present area (Hect.)	1.	Area under mining	0.78.50	2.	Infrastructures	Nil	3.	Road	Nil	4.	Green belt	1.38.50	5.	Drainage & Settling Tank	Nil	6.	Un-utilized area	2.18.0	Grand total		2.18.0
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11.2.	Water Regime:	Water table in this area is noticed at a depth of 65m in summer and 60m in rainy season from the general ground level and presently the quarrying of rough stone is Ultimate up to a depth of 40m bgl. Hence, it will not affect the ground water depletion of this area. It is proposed to make an authorized water sources 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																								

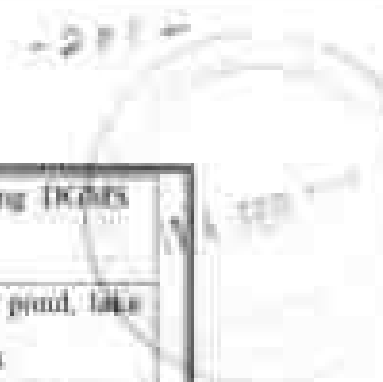


		<p>experiences, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.</p>																									
11.5	<p>Climate conditions:</p> <p>Viluppuram District climate is classified as tropical. The summers here have a good deal of rainfall, while the winters have very little. The temperatures here averages 26.6 °C 80.2 °F. The annual rainfall is 877 mm 34.5 inch.</p> <p>At an average temperature of 30.1 °C 86.2 °F, May is the hottest month of the year. December is the coldest month, with temperatures averaging 23.1 °C 73.6 °F.</p>																										
11.6	<p>Human Settlement:</p> <p>The nearest villages are found in the buffer zone with population as per 2011 census.</p> <table border="1" data-bbox="375 963 1316 1224"> <thead> <tr> <th>S.No</th> <th>Village</th> <th>Direction</th> <th>Distance in Km</th> <th>Population</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Perumbakkudi</td> <td>NE</td> <td>1.52Km</td> <td>2184</td> </tr> <tr> <td>2</td> <td>Taludali</td> <td>North</td> <td>1.54Km</td> <td>2257</td> </tr> <tr> <td>3</td> <td>Kudiyur</td> <td>South</td> <td>2.09Km</td> <td>8828</td> </tr> <tr> <td>4</td> <td>Kannurugolan</td> <td>West</td> <td>1.81km</td> <td>907</td> </tr> </tbody> </table>	S.No	Village	Direction	Distance in Km	Population	1	Perumbakkudi	NE	1.52Km	2184	2	Taludali	North	1.54Km	2257	3	Kudiyur	South	2.09Km	8828	4	Kannurugolan	West	1.81km	907	
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11.7	<p>Public buildings, places of worship and monuments.</p>	<p>No infrastructure like residential building, places of special interest like archaeological monuments, Sanctuaries, etc., are found around 10km radius.</p>																									
11.8	<p>Attach plans showing the locations of sampling stations.</p>	<p>The proposed ambient air quality, water quality ambient noise level and vibration are periodically tested for every season (6 months once) around 1km radius as per the guidance of MoEF and HIA notification-2006 and also according DGMS norms.</p>																									
11.9	<p>Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974</p>	<p>The proposed area, not fall under notified area under Water (Prevention & Control of Pollution), Act, 1974</p>																									



(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)

<p>(i)</p>	<p>Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshops, processing plant, township etc.</p> <p>Due to quarrying and exploitation of the rough stone, there will impact on the farm (i.e. change in the ground profile, pits, and dumps. The details of the land use pattern, during the mining plan period and till lease period is shown in the tabular form:</p>	<table border="1" data-bbox="379 667 1305 999"> <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>1.62.0</td> </tr> <tr> <td>2.</td> <td>Infrastructure</td> <td>0.02.0</td> </tr> <tr> <td>3.</td> <td>Roads</td> <td>0.03.0</td> </tr> <tr> <td>4.</td> <td>Green belt</td> <td>0.23.3</td> </tr> <tr> <td>5.</td> <td>Drainage & Settling tank.</td> <td>0.03.5</td> </tr> <tr> <td>6.</td> <td>Un-utilized area</td> <td>0.28.0</td> </tr> <tr> <td colspan="2">Grand Total</td> <td>2.18.0</td> </tr> </tbody> </table>	Sl. No.	Land Use	Area in use during the quarrying period (Hect.)	1.	Area under Mining	1.62.0	2.	Infrastructure	0.02.0	3.	Roads	0.03.0	4.	Green belt	0.23.3	5.	Drainage & Settling tank.	0.03.5	6.	Un-utilized area	0.28.0	Grand Total		2.18.0
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<p>(ii)</p>	<p>Air Quality</p>	<p>Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying.</p>																								
<p>(iii)</p>	<p>Water quality</p>	<p>A water sample from the open bore wells was sent to NABL approved lab to assess hardness, salinity, sulfate, Specific gravity, etc.</p>																								
<p>(iv)</p>	<p>Noise levels</p>	<p>Quarrying of rough stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.</p>																								
<p>(v)</p>	<p>Vibration levels (due to blasting)</p>	<p>No deep hole blasting envisaged. Small dia shot holes are used for breaking boulders. The maximum peak particle velocity shall be recorded using mini seismograph devices as per the guidance of MoEF and ICA</p>																								



		Notification 2008 and also covering DKMS norms.
vi)	Water regime	No major water bodies like rivers, pond, lake etc., located within a radius of 500m.
vii)	Socio-economic	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 100m 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 made:

i)	Temporary storage and utilization of topsoil	No separate of topsoil will 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 40m below the ground level (R.L.40m-04m) has been envisaged as workable depth for safe & economic mining during the lease period. Low lying areas with water logging shall be used for fish culture. No immediate proposals for closure of pit as the rough stone period still at deeper level.



122-100

iii) 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 herewith Green Belt Development:

Safety barrier, school and nearest purchaser roads has been identified to be utilized for Greenbelt appropriate native species of Neem, Pongam 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	1700	250	80%	Rs 100 Per sapling	25000/-
Second	Approach road and Neerby Village Road	-	100	80%		30000/-
Third	Schools	-	100	80%		10000/-
Total						65,000/-

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 potable 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 H2 category operation, with 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.



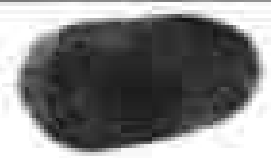
10)	Measures for protecting historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity.	No historical monuments and for rehabilitation of human settlements doesn't to be disturbed during mining activity.
11)	Socioeconomic benefits arising out of mining.	The nearest villages are will get employment benefits.

A. Monitoring schedules for different environmental components after the commencement of mining and other related activities. (for 'A' category mines only)

Not applicable. It is B2 category quarry.

12.1 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 40m below the ground level (R.L. 44m-44m). The mined-out area will be fenced on top of working bench with 51 fencing to restrict 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. Green belt development in the case of 250 area will be proposed in the quarry area. No immediate proposals for closure of pit as the rough stone permit 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 an existing quarry lease, no mitigation measures adopted.
12.4	Mine closure activity	The present mining plan is proposed to depth of 40m bgl has been envisaged as workable depth for sale & economic mining during the lease period. The mined-out area will be fenced on top of open cast working with 51 fencing. No immediate proposals for closure of pit as the rough stone permit still at deeper level.



FEB 70

12.5	Safety and security	<p>Safety measures implement to the present norms to surface opening excavations will be taken as Metalliferous Mines Regulations, 1951, it is a small open cast mining method adopted. Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs, etc have to be provided as per the circulars and amendments made for Mine labourers under the guidance of DGMS being a mechanized operation.</p>
12.6	Disaster management and Risk Assessment	<p>Open cast mining method is adopted in this quarry. If the benches are made with proposed height and width 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 medicines and bandages 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.</p>
12.7	Care and maintenance during temporary discontinuance	<p>A board of discontinuance will be changed on the main entrance of the working place. One watch man will be kept on the quarry and for security purposes also look after the survival of the plants.</p>
12.8	Economic repercussions of closure of quarry and man power entrenchments	<p>During the five years mining period the employment potential will be generated, general financial status and socio-economic conditions of approx. 14 labour will be improved.</p>

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

A	Fixed Asset Cost	
	1. Land Cost	Rs. 1,87,500/-
	2. Labour Shed	Rs. 1,50,000/-
	3. Sanitary Facility	Rs. 1,50,000/-
	4. Fencing	Rs. 4,00,000/-
	5. Other expenses (Security guard, dust bin, etc)	Rs. 4,00,000/-
	Total	Rs. 13,87,500/-
B	II. Machinery cost	Rs. 25,00,000/- (Hire Basis)
C	Total Expenditure of EMP cost (for five years)	
	1. Drinking Water Facility	Rs. 1,50,000/-
	2. Sanitary facility & Maintenance	Rs. 1,00,000/-
	3. Prevention water sprinkler	Rs. 5,00,000/-
	4. Afforestation and its maintenance	Rs. 85,000/-
	5. Safety Kits	Rs. 1,30,000/-
	6. Provision of tyre washing facility	Rs. 1,00,000/-
	7. Surface runoff management structures like gulland drain, settling pond (R-03 500ft x 150ft m x 40ft)	Rs. 1,40,000/-
	8. Blasting materials with blast mat cost	Rs. 17,00,000/-
	9. Environment monitoring	Rs. 5,00,000/-
	Total	Rs. 32,05,000/-
D	Total Project Cost (A+B+C)	Rs. 70,92,500/-

12.8 FINANCIAL ASSURANCE:

Not applicable, it is a small B2 rough stone and gravel quarry.

14.8 CERTIFICATES:

All required certificates are enclosed.

15.8 PLAN AND SECTIONS, ETC:

Plan and Sections are submitted along with mining plan.

16.8 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 and gravel 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 Deputy Director, Department of Geology and Mining, Vilaspuram vide letter Rc.No.A/G&M/273/2020 Dated: 28.12.2022.
- IV. Total proposed production 242876m³. Of which, rough stone is 226522m³ and gravel is 16354m³ up to a depth of 40m below the ground level (B.L. 44m/04m) for five years plan period.

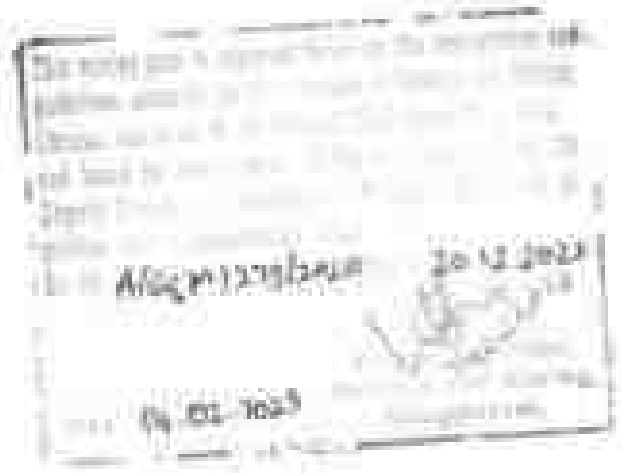


17.0 CSR Expenditure:

CSR (Corporate social responsibility) shall provide by the applicant @ 2.0% of average net profit of the company for the last three financial years to the nearby village in the Ministry has notified the amendments in section 135 of the Act as well in the CSR Rules on 22nd January 2021 in circular no. CSR-05/01/2021-CSR-MCA dated 23rd August 2021.

Place: Dharmapuri, TN
Date: 6/2/23

DES. KARUPPANNAN, M.SEL. PED.
Qualified Person
GEO TECHNICAL MINING SOLUTIONS
ISO 9001: 2015 Certified Company
1015-B, Ground Floor, Nandan Complex,
Collectorate Post Office,
Chidambaram, Dharmapuri-626705.



Handwritten notes and stamps at the bottom left, including '13/6/23' and '13/6/23'.

- ii. പ്രസിദ്ധീകരിക്കപ്പെട്ടിട്ടുള്ള പ്രസിദ്ധീകരണങ്ങൾ ഉൾപ്പെടെ എല്ലാ വിധി വേർതിരിച്ചുള്ള വിവരങ്ങൾ സംബന്ധിച്ചുള്ള വിവരങ്ങൾ പ്രസിദ്ധീകരിക്കപ്പെട്ടിട്ടുള്ളവയെക്കുറിച്ച് വിവരങ്ങൾ നൽകേണ്ടതുമാണ്.
- iii. പ്രസിദ്ധീകരിക്കപ്പെട്ടിട്ടുള്ള വിവരങ്ങൾ 1958-59-ൽ 19-ാം വർഷം മുതൽ 1960-61-ൽ 19-ാം വർഷം വരെ പ്രസിദ്ധീകരിക്കപ്പെട്ടിട്ടുള്ളവയെക്കുറിച്ച് വിവരങ്ങൾ നൽകേണ്ടതുമാണ്. പ്രസിദ്ധീകരിക്കപ്പെട്ടിട്ടുള്ളവയെക്കുറിച്ച് വിവരങ്ങൾ നൽകേണ്ടതുമാണ്.
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 പ്രസിദ്ധീകരിക്കപ്പെട്ടിട്ടുള്ള
 വിവരങ്ങൾ

കുറിപ്പ്
 1. വിവരങ്ങൾ നൽകേണ്ടതുമാണ്.
 2. വിവരങ്ങൾ നൽകേണ്ടതുമാണ്.
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- കുറിപ്പ്
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STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
ENVIRONMENTAL CLEARANCE

C. H. MALESHPILLAI, I.A.S.
MEMBER SECRETARY



1st Floor, Panchajanya
No. 1, Laxmi Road, Telangana
Operative 27
Telephone: 044 - 2429 8879

Sl. No. SEIAA-TS/No. 289/SECTION-I/PA/2024-AMRD. 18.05.2024

To
Mr. K. Anandavari,
No. 88, Pinnur Village & Post,
Vaur Taluk,
Mittur District - 504 504

Re:

- (Sub) SEIAA/PA - Proposed Rough Stone Quarrying at G.P. No. 76/2 & 76/3A, Pinnur Village, Vaur Taluk, Mittur District by Mr. K. Anandavari - Environmental Clearance - Regarding.
- (Ref) 1. Your Application for Environmental Clearance dt/ 14.05.2024
2. Minutes of the SAC meeting held on 20.05.2024 & 21.05.2024
3. Minutes of the SEIAA meeting held on 27.05.2024

1. **Precedence:-**

This has reference to your application first cited. The proposal is for obtaining environmental clearance for Rough Stone Quarrying at G.P. No. 76/2 & 76/3A, Pinnur Village, Vaur Taluk, Mittur District. The proposed mining area is situated as being in Latitude - 17°04'28" N to 17°04'34" N, Longitude 79°04'00" E to 79°04'03" E in Topo Sheet No. 517-12.

The mine lease area of this proposal is 1.08 Ha. As per the proposal, the following is the land use pattern to be adopted by the proponent.

Description	Area at the end of lease period (Ha.)
Area under quarrying	0.79.1
Infrastructure	0.01.0
Roads	0.01.0
Green Belt	0.01.0
Unutilized	0.06.0
Total	1.08.0

The proponent shall carry out mining operation only in the area under quarrying of 0.79.1 Ha. remaining area.

The total area of Pinnur/PA/Quarrying/Mineral quarry within 300 m radius exceeds 5 Ha. Hence General Condition is applicable, as per the Notification No. S.O.206(1)(2) of Ministry of Environment, Forest and Climate Change, dated 07.10.2014. Hence, the proponent has furnished a report affidavit in the form attached with the paper along the following:



MEMBER SECRETARY
[Signature]



STATE OF ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
ENVIRONMENTAL CLEARANCE

1. There are no protected areas located within the vicinity of the proposed project site.
2. There are no critically protected areas as identified by CFCB (Conserved Water Water Conservation and Control Act, 1971), are located within 10km radius of the proposed project site.
3. There are no Eco Sensitive areas as notified, are located within 10km radius of the proposed project site.
4. There are no international boundaries and International boundaries within 10km radius from the boundary of the proposed site.

The project is severely vulnerable to the conditions of the above circumstances.
In the above circumstances the project is treated as B2 category and public consultation is not required as per O.M. dated 28.12.2013 of M&S, Govt.

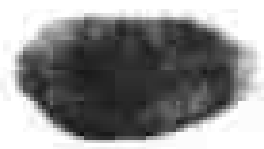
No ground level is involved. Water working will be open cast semi-mechanized mining and is proposed with a depth of 20 meters. The production would be 8000 cum of Rough Stone & 1000 cum of Top Soil & 2000 cum of weathered formation over a period of 5 years. Water requirement of 100 KLD for working purposes will be covered through water tenders and 20 KLD required for dust suppression and green belt will be sourced from existing bore hole. The proponent has submitted the mining plan approved by the Deputy Director, Geology and Mining, Maharashtra dated 06.08.2012 dated 08.08.2012. The project area communication has been approved by the District Collector, Maharashtra in order dated 28.08.2012 dated 28.08.2012. The project cost is Rs.12.20 LAKH. EMP cost is Rs.1.20 LAKH.

The proponent has furnished written assurances in the form of a stamp paper stating the following and he is responsible for its compliance:

1. The total area of all quarries located within 100 meter radius from the periphery of my quarry is 9.250 Ha.
2. No habitations are located within 100 meters radius from the periphery of my quarry.

The proposal was referred to the SEAC based on the project documents furnished and the information made before the Committee in its 121st meeting held on 20.08.2013 & 21.08.2013. The SEAC has recommended for the grant of environmental clearance for the said Rough Stone quarry project.

The proposal was placed before the SEAC in its 122nd meeting held on 17.09.2013 and has been found to grant environmental clearance to the said project subject to usual terms and conditions. Accordingly, the SEAC hereby grants environmental clearance to the said project under the provisions



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**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
(ENVIRONMENTAL CLEARANCE)**

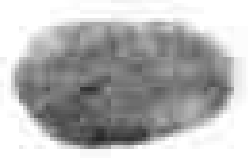
of Environment Impact Assessment Notification, 2006 subject to strict compliance of the terms and conditions as follows:-

2. Conditions to be Complied before commencing mining operations:-

- (i) The project proponent should advertise with basic details of land in two widely circulated local newspapers, one of which shall be in the vernacular language of the locality concerned, within 7 days of the receipt of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at the web site of the SLEIAA, TN at <http://www.sleiaa.tn.gov.in> and a copy of the same is being sent to the Regional Office of Ministry of Environment and Forest, Government of India located at Dehra.
- (ii) 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 each pillar shall be erected before commencement of quarrying.
- (iii) Copy of the Environmental Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat, Panchayat Union, Municipal Corporation, Urban Local Body and the local NGOs, 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.
- (iv) Provisions shall be made for the housing of construction labour nearby the site with all necessary infrastructure and facilities such as fuel for cooking, toilets, safe drinking water, etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
- (v) The proponent shall ensure that fire kit fire is available at site.
- (vi) NOC from the Standing committee of the NWI, shall be obtained, if protected areas are located within 10 km from the proposed project site.

3. Specific Conditions:-

- (i) The environmental clearance will be valid only with the mine lease period, however limited to a maximum period of 5 years from the date of issue of EC.
- (ii) 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.
- (iii) Mineral handling area shall be provided with adequate number of high efficiency dust extraction system, loading and unloading area including all the transfer points should use low efficient dust control arrangements. These should be properly maintained and operated.





STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
ENVIRONMENTAL CLEARANCE

- 37. It shall be ensured that quarrying shall not be carried out below ground water table level and companies if ground water table starts increasing within the permitted depth, then the quarrying shall be stopped.
- 38. At the end of mine closure, the Proposer shall immediately remove all the sheds put up in the quarry and all the equipment in the area at the time of closure of the operation of quarry. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
- 39. At the end of mining operations and wherever the mined out pit has to be left open or water reservoir, the Proposer shall immediately fence the entire site and access to the public is to be restricted. If the water accumulated has to be used by the nearby inhabitants, then the water has to be tested periodically for quality and only when all parameters are within the prescribed limit it could be allowed for public consumption. A sign board indicating the details of the water is to be erected for public information.
- 40. The critical parameters such as pH, EC (Fertilizer matter was also less than detection i.e., PM10 and TSP in the ambient air within the site area shall be monitored periodically. The monitored data shall be uploaded on the website of the proposal as well as displayed on a public board at the project site. The Order No. J-2011/2/2006-44 (MC) dated 27.08.2008 issued by Ministry of Environment and forests, which is available on the website of the Ministry www.environment.nic.in shall also be adhered to in regard to its compliance.
- 41. Necessary allocation of funds for implementation of the compensation plan shall be made and the funds so allocated shall be deposited in the project bank. A copy of action plan shall be submitted to the Regional Office of the Ministry of Environment and forests, Dehra.
- 42. Drilling and blasting shall be done only either by licensed explosive agent or by the proposer after obtaining required approvals from Competent Authorities.
- 43. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the Licensing Authority.
- 44. Blasting shall be carried out after announcing to the public through separate public address system to avoid any accident.
- 45. A study has to be conducted to assess the common dust parameters and blast design to keep the vibration limits less than permitted 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.
- 46. The Proposer shall take appropriate measures to ensure that the S&E shall comply with the revised AQI norms notified by MoEF, Govt of India 26.11.2018.



MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
ENVIRONMENTAL CLEARANCE



- vi. The following measures are to be implemented to reduce air pollution during transportation of material:
 - a. Roads shall be graded to mitigate the dust emission.
 - b. Water shall be sprinkled at regular interval on the main road and other access roads to suppress dust.
- vii. The following measures are to be implemented to reduce noise pollution:
 - a. Proper and regular maintenance of vehicles and other equipments.
 - b. Limiting time exposure of workers to excessive noise.
 - c. The workers employed shall be provided with protector equipment and earmuffs etc.
 - d. Speed of trucks entering or leaving the mine is to be limited to maximum speed (120 kmph) to prevent undue noise from empty trucks.
- viii. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) Amendment) Rules, 2002, in 2001-2010 issued by the MoEF, Govt of India to the prescribed levels.
- ix. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
- x. Permission from the competent authority should be obtained for disposal of ground water, if any, required for the project.
- xi. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
- xii. The following measures are to be adopted to control erosion of dumps:
 - a. Retention/ toe walls shall be provided at the foot of the dumps.
 - b. Worked out areas are to be stabilized by sowing appropriate shrub/ grass species on the slopes.
- xiii. Waste oils, used oils generated from the fill machines, mining operations, if any, shall be disposed as per the Hazardous Waste (Management, Handling, and Trans Boundary Movement) Rules, 2008 and its amendments thereof to the agencies authorized by CPCB.
- xiv. Concerning the failure to comply with any of the conditions mentioned above may result in withdrawal of min. clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- xv. Rain water harvesting to collect and utilize the surface water falling in land area should be provided.



MEMBER SECRETARY

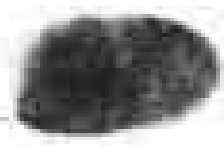


STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
ENVIRONMENTAL CLEARANCE

- xxxiii. All 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 pit dug on the surface within the lease area and into the overflow after allowing settling of silt to be let into the nearby waterways. The pit has to be of sufficient dimensions to catch all the silt water being removed out during the season. The pit has to be cleared of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
- xxxiv. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to his activity, the hydrogeological 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, it is observed that the groundwater table is getting disturbed due to his mining activity, necessary corrective measures shall be carried out. District Collecting/ Mining officer shall ensure this.
- xxxv. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
- xxxvi. It shall be ensured that the total extent of leased quarry located within 500 meter radius from the periphery of the quarry is not exceeding 25 hectares.
- xxxvii. It shall be ensured that there is no settlement is located within 500 meter radius from the periphery of the quarry use.
- xxxviii. Ground water quality monitoring schedule prescribed once in 1 month.
- xxxix. Transportation of the quarried materials shall not cause any hindrance to the village people/Existing village road.
- xl. Effluents shall be dumped out via leaching tank only.
- xli. Earthen bunds and contour wire fencing around the pits with green belt all along the boundary shall be developed and maintained.

4. General Conditions:

- i. The project proponent shall obtain consent in Form 1A and Consent to Operate from the Tamil Nadu Pollution Control Board and effectively implement all the conditions stipulated therein.
- ii. No change in mining technology and mode of mining should be made without prior approval of the Ministry of Environment & Forests.
- iii. No change in the overall plan including orientation, quantum of mineral should be made.
- iv. The project proponent shall ensure that the plan of mining is in conformity with the mine lease conditions and the rules prescribed in this regard, clearly showing the top and side of the mine lease, i.e. the distance from the bridges, structures adjacent private land, streams, well etc.



MEMBER SECRETARY



STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
ENVIRONMENTAL CLEARANCE

- i. The project proponent shall ensure that wherever employment of labour attracts the benefit of the provision insurance fund shall be strictly followed.
- ii. The project proponent shall ensure that child labour is not employed in the project as per the laws of India.
- iii. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area and the approach road as per the project affidavit conditions.
- iv. The proponent shall maintain the village road through which transportation of material is carried out at his own cost. The roads shall be strengthened to the extent required.
- v. Quarrying should avoid rather than deepen the biodiversity as a criterion of their intervention in the ecology of their area of activity.
- vi. EC is given only on the factual records, documents and the commitment furnished in non-judicial stamp paper by the Proposer/contractor particularly in respect of:
 - a. Serial distance of the nearest village is as mentioned in the proposal from the mining site boundary.
 - b. An structure is located within 500 m from the quarry site boundary.
 - c. 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 personal protective measures such as masks, gloves, overalls.
 - d. 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.
 - e. The Regional Office of the Ministry located at Chennai shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the office (i) of the Regional Office by furnishing the requisite data / information / restoring reports.
 - f. The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data both in hard copies as well as by e-mail to the Ministry of Environment and Forests, its Regional Office Chennai, the respective Zonal Office of Central Pollution Control Board, ICMA, TN and the State Pollution Control Board. The proponent shall update the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall intimated/submit to the Regional Office of the Ministry of Environment and Forests, Chennai, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board.



STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
ENVIRONMENTAL CLEARANCE

213



- vi. The environmental statement for each financial year ending 31st March in form as is stipulated to be submitted by the project proponent to the concerned State Advisor Centre Board as prescribed under the Environment Protection Rules, 1986, as amended subsequently shall also be put in the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the Regional Office of the Ministry of Environment and Forests, Chennai by e-mail.
- vii. Fresh mining area will be strictly demarcated at site by officials of Mining / Revenue Department prior to mining operations for all projects under consideration. Such site plan, duly verified by competent authority shall be submitted to Environment Department.
- viii. All necessary statutory clearances shall be obtained before start of mining operations.
- ix. Mining shall be limited to 7 AM to 5 PM only. The loading shall not be done during night hours.
- x. Waste water, if any, shall be properly collected and treated so as to conform to the standards prescribed by MoEF/DPCC.
- xi. No wildlife habitat will be damaged.
- xii. Environmental clearance is subject to obtaining clearance under the Wildlife Protection Act, 1972 from the competent authority, if applicable.
- xiii. Parking of vehicles should not be made in public places.
- xiv. Transportation of materials shall be done by covering the trucks / trailers with tarpaulin or other suitable mechanism so that no spillage / environmental issues takes place. No overloading of trucks shall be allowed.
- xv. Any change in mining area, of numbers, crushing capacity, addition with change in process and or mining technology, modernisation and scope of working shall again require prior Environmental Clearance as per provisions of EIA Notification, 2006 (as amended from time to time).
- xvi. The Environmental Clearance does not absolve the applicant/proponent of his obligation/commitment to obtain other statutory and administrative clearances from other statutory and administrative authorities.
- xvii. 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 scrutinizing the project on merits and be taking decisions independently of the Environmental Clearance.
- xviii. The SEEA, TE (IA) shall strictly enforce the above conditions or stipulate any further condition in the interests of environment protection.



MINISTER
[Signature]



STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
ENVIRONMENTAL CLEARANCE

- xxvii. The SEAA, TN may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, if, at any stage of the validity of the environmental clearance, if it is found or if it comes to the knowledge of this SEAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
- xxviii. Failure to comply with any of the conditions mentioned above may result in withdrawal of the clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
- xxix. 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, 2002 framed under MMDR Act 1987 National Commission for protection of Civil Right Rules, 2008 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.
- xxx. All pre-construction Authority approval where ever necessary shall be obtained before commencing the quarrying operation.
- xxxi. Any other conditions stipulated by other lawmaking/government authorities shall be complied.
- xxxii. If the periphery of any other quarry (sand, scoulds, rough stone, granite etc.) is located within 500 mts. from the periphery of this site and if the total extent of both the existing quarry and the quarry now cleared for Environmental Clearance exceeds 25 ha. of mining area, then this Environmental Clearance is not valid, since the activity shall become Category "B1" project under the EIA Notification, 2006.
- xxxiii. In the event of the above condition is applicable, then the proponent concerned, is to file a fresh application under EIA Notification, 2006, seeking Environmental Clearance in respect of the cluster. (A cluster of mines is defined wherein more than one mining site is located within 500 mts., from the periphery of another nearby mining site and the total area of these mining sites exceeds 25 ha. Then a EIA study report along with Public Consultation are necessitated).
- xxxiv. At all times the project proponent shall take care of the needs of a nearby Government school by providing essential amenities.



SECRETARY

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
ENVIRONMENTAL CLEARANCE



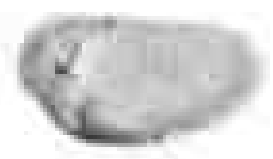
Copy of report against the environmental clearance shall be with the National Green Tribunal, Chennai preferred within a period of 30 days as prescribed under Section 30 of the National Green Tribunal Act, 2010.



Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Secretary, Department of Environment and Forests, Government of Tamil Nadu, Tamil Nadu.
3. The Secretary, Department of Mines and Geology, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (G) 34, REFC Building, 1st & 2nd floor, Cathedral Garden Road, Nungambakam, Chennai - 34.
5. The Chairman, Central Pollution Control Board, Pasayathi Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Sale, Sankar, Chennai-22.
7. The District Collector, Villupuram District.
8. The Controller of Geology and Mines, Chennai-22.
9. The Director, Ministry of Environment & Forests, Pasayathi Bhawan, New Delhi.
10. None.

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39



MEMBER SECRETARY



171

- 3. തൃശ്ശൂർ ജില്ലയിലെ ചുട്ടപ്പാലം തുറമുഖം ഉൾപ്പെടെ വിവിധ ചുട്ടപ്പാലങ്ങളിൽ അതിർത്തികൾ ഉണ്ടാക്കി, ചുട്ടപ്പാലം തുറമുഖം ഉൾപ്പെടെ വിവിധ ചുട്ടപ്പാലങ്ങളിൽ തുറമുഖം ഉണ്ടാക്കി.
- 4. തൃശ്ശൂർ ജില്ലയിലെ പാലക്കാട് തുറമുഖം ഉൾപ്പെടെ വിവിധ ചുട്ടപ്പാലങ്ങളിൽ തുറമുഖം ഉണ്ടാക്കി.
- 5. തൃശ്ശൂർ ജില്ലയിലെ പാലക്കാട് തുറമുഖം ഉൾപ്പെടെ വിവിധ ചുട്ടപ്പാലങ്ങളിൽ തുറമുഖം ഉണ്ടാക്കി.
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- 7. തൃശ്ശൂർ ജില്ലയിലെ പാലക്കാട് തുറമുഖം ഉൾപ്പെടെ വിവിധ ചുട്ടപ്പാലങ്ങളിൽ തുറമുഖം ഉണ്ടാക്കി.
- 8. തൃശ്ശൂർ ജില്ലയിലെ പാലക്കാട് തുറമുഖം ഉൾപ്പെടെ വിവിധ ചുട്ടപ്പാലങ്ങളിൽ തുറമുഖം ഉണ്ടാക്കി.
- 9. തൃശ്ശൂർ ജില്ലയിലെ പാലക്കാട് തുറമുഖം ഉൾപ്പെടെ വിവിധ ചുട്ടപ്പാലങ്ങളിൽ തുറമുഖം ഉണ്ടാക്കി.

സംഗ്രഹം : തൃശ്ശൂർ ജില്ലയിലെ ചുട്ടപ്പാലങ്ങളിൽ

എം / കെ.കെ.എസ്
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തൃശ്ശൂർ

// (പി.കെ.എസ്) //

എം / കെ.കെ.എസ്
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തൃശ്ശൂർ

തൃശ്ശൂർ ജില്ലയിലെ, പാലക്കാട് തുറമുഖം തുറമുഖം,
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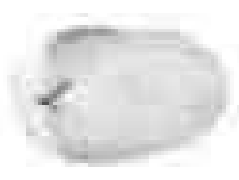
- 24. පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සහ පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සේවා කොමිෂන් පිළිබඳව පරීක්ෂණයක් සිදු කිරීමේ බලය.
- 25. පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සේවා කොමිෂන් පිළිබඳව පරීක්ෂණයක් සිදු කිරීමේ බලය.
- 26. පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සේවා කොමිෂන් පිළිබඳව පරීක්ෂණයක් සිදු කිරීමේ බලය.
- 27. පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සේවා කොමිෂන් පිළිබඳව පරීක්ෂණයක් සිදු කිරීමේ බලය.
- 28. පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සේවා කොමිෂන් පිළිබඳව පරීක්ෂණයක් සිදු කිරීමේ බලය.
- 29. පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සේවා කොමිෂන් පිළිබඳව පරීක්ෂණයක් සිදු කිරීමේ බලය.
- 30. පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සේවා කොමිෂන් පිළිබඳව පරීක්ෂණයක් සිදු කිරීමේ බලය.
- 31. පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සේවා කොමිෂන් පිළිබඳව පරීක්ෂණයක් සිදු කිරීමේ බලය.
- 32. පාර්ලිමේන්තුවේ සාමාජිකයන්ගේ සේවා කොමිෂන් පිළිබඳව පරීක්ෂණයක් සිදු කිරීමේ බලය.

ඉන් - (සාමාජිකයන්)
 මහා මහල,
 කොළඹ.

අ.ප.ම.ව.

ඉ. ප්‍රසාද්
 මහා මහල,
 කොළඹ.

ඉ. ප්‍රසාද්





தமிழ்நாடு தபிசுநாடு TAMILNADU

K. Anandavelu
Ensigns

B: 649583

2715 (Ru 20000)


22-5-17

By
K. Anandavelu
D. No. 2700/21/2008
Kottayam, Kerala.

(2)

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 Viluppuram (hereinafter referred to as "the Collector") seeking grant of quarrying lease for quarrying Rough Stone & Earth in the said lands and to deposit mining waste in the said lands and has lodged with the Collector and accurate map or sketch of the said lands;


Lessee




District Collector,
Viluppuram.

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 5000

Rs. 5000

पाँच हजार रुपये

FIVE THOUSAND RUPEES

தமிழ்நாடு தமிழ்நாடு TAMILNADU

K. Arundhanee, Ensign

S: 947188

2717 / 2000
22-5-17

85
சென்னை
சென்னை சட்டம் No 2786/31/2009
சென்னை, தமிழ்நாடு

(1A)

NOW THESE PRESENTS WITNESS and the registered holder do 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 his mining operations from 22-5-2017 to 12-5-2017 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.

Lease [Signature]

[Signature]
20/7/2017-1/12
District Collector,
Viluppuram.





தமிழ்நாடு சமீலநாடு TAMILNADU
1903 K. Anadavelu
24/5/17 Eralyur

A. Balaji
A. Balaji
A. Balaji

BP 081144

157

2. The registered holder shall and will on the 27th day of July 2018 next and on the 27th day of July every succeeding year during so long as he shall have carried on any such mining operations as aforesaid 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 fee on the minor minerals at the rate specified in Appendix-II to the Tamil Nadu Minor Mineral Concession Rules 1959.

Leasee:  *A. Anand*

Sub Registrar Office
Document
24/5/2017
Page 5 / Total 19
Page
VANDU

A. Balaji
District Collector,
Vilupattur.



கூலிபுக்காடு தமில்நாடு TAMILNADU
 1504 K. Anadavelu
 24/5/17 ஏலியு

A. Ganesan
 1st Floor, No. 12/28
 Anna Salai, Chennai.

BP 081145



167

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 Commissioner 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 information and returns regarding all or any of the matter aforesaid as the Government shall, from time to time, require and direct.

Lessee: [Redacted] ^{1st} [Signature]



Amirul
 District Collector,
 Villupuram.



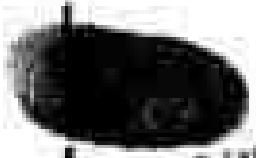
தமிழ்நாடு தமில்நாடு TAMILNADU
 1506 K AnadaveLu
 இலட்சுமிநகர் Erudiyur

சென்னை
 A. சந்திரன்
 சென்னை கி. நகர் 10008
 சென்னை, தமிழ்நாடு

BF 081146

(11)

4. The registered holder shall and will at all times allow any officer authorized by the Commissioner of Geology and Mining, TamilNadu 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 & Earth.



Union: *[Signature]*



[Signature]
 28/7/2017
 District Collector,
 Villupuram.



[Signature]



தமிழ்நாடு வமிலநாடு TAMILNADU
 1507 K. Anandavelu
 சாலை ஏராளம்

A. Anand
 A. Anand
 Government, L.No:1201
 Dated: 28/08/17

BP 081147



(8)

6. It shall be lawful for the registered holder at any time to cause mining operations under these presents provided he shall pay to Collector for and on behalf of the Government land assessment, cess and seigniorage fee 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 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 thereof 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

Lease: *[Signature]*



[Signature]
 28/8/2017
 District Collector,
 Villupuram.

[Signature]
 (No. 101/17/17)



தமிழ்நாடு தமிழ்நாடு TAMILNADU

1508 K. Anadavelu
24/5/17 Eyalayal

A. Anand
A. Anand
Sub Registrar, L. Narthala
Sungudi, Palayamkottai

BP 081148



Collector shall require to be so fenced or filled in and in case the registered holder shall fail or neglect to restore any such lands 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 in any such pits or excavations at the expense of the registered holder and to apply the said sum of Rs.5,000/- 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 the balance by resort to civil court.

Lease [Signature]



[Signature]
District Collector,
Viluppuram.

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 liable for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste, unless thirty times the assessment therein 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 TamilNadu Minor Mineral Concession Rules 1958.
11. All land assessment, cess and seigniorage fee payable under these presents shall be recoverable under the provisions of the TamilNadu 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 fee 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 Government and 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 made payable thereby, the matter in issue shall be decided by the Commissioner/Director of Geology and Mining. In case the registered holder is not satisfied with the decision of the Commissioner/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 Wagers 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).


 Leasee: *(Signature)*




(Signature)
 District Collector,
 Viluppiam.



- 21. ... (text is very faint and difficult to read)
- 22. ... (text is very faint and difficult to read)
- 23. ... (text is very faint and difficult to read)
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- 31. ... (text is very faint and difficult to read)
- 32. ... (text is very faint and difficult to read)


 [Signature]




 [Signature]
 District Collector,
 Vijayapur



1. All the boundaries of S.F. No. 752 of village Erumayur, Taluk Vanur, District Villupuram, are hereby surveyed and the boundaries are shown in the attached map.
2. The boundaries of S.F. No. 752A of village Erumayur, Taluk Vanur, District Villupuram, are hereby surveyed and the boundaries are shown in the attached map.
3. The boundaries of S.F. No. 752 of village Erumayur, Taluk Vanur, District Villupuram, are hereby surveyed and the boundaries are shown in the attached map.
4. The boundaries of S.F. No. 752A of village Erumayur, Taluk Vanur, District Villupuram, are hereby surveyed and the boundaries are shown in the attached map.

SCHEDULE

Taluk Vanur	Village Erumayur	S.F. No.	Extent(Hec.)	Boundaries	
	all the S.F. No. 752 S.F. No. 752A S.F. No. 752	752	0.85.0	North South East West	752 752A, 752B 754 77
	all the S.F. No. 752A S.F. No. 752B S.F. No. 752C	752A	0.22.0	North South East West	752 752B 756 757
		Total	1.07.0		


 [Signature]
 Leiser


 District Collector,
 Villupuram.



215
 10 FEB 78

132

IN WITNESS where of Thiru.K.Anandavelu, S/o.Kasavan, No.94, Eraiyur Village, Vannar Taluk, Viluppuram District the registered holder and Dr.L.Subramanian, I.A.S., Collector of Viluppuram District, acting for and on behalf of and by the order and direction of the Governor of TamilNadu have here unto set their hands.


 Name [Signature]





 District Collector,
 Viluppuram.

Signed by the above named in the presence of witnesses


Signed by the above named in the presence of witnesses

1. B. KAJENDERAN S. Sivasubramanian
 No. 1, Parri Street, Annadurai Nagar,
 Kallar Kaman, Pudukottai


 Assistant Director,
 Geology and Mining,
 Collectorate,
 Viluppuram.

2. P. [Signature] S. Anandavelu
 215, [Signature]
 [Signature]
 [Signature]

2. [Signature]
 [Signature]
 [Signature]

Draft by:

E. MURUGAIYAN
 STATE DOCUMENT WRITER
 MARIYANAPUDURAM, VANHURU T.
 LNO - ARDUR ONEDUR



பெயர் : சாத்திரி
 இடம் : 76

பக்கம் 51

சு. இ. பதிவு

சு. இ. பதிவு
 பக்கம் 4 இல் 72-0



77
 COLLECTOR,
 Upputam District
 Viluppuram.

		B	
		123-4	123-4
15	388	123-4	21-0 14
		84-2	6-0 13
		D	
		C	
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		135-0	10-0 10
		100-0	8-0 9
		3	
		(350-4)	
8	8-8	123-0	
7	3-0	123-0	
		A	
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		123-4	
6	5-8	123-0	
5	4-0	123-0	
4	10-0	127-8	
3	16-0	106-2	
2	186	103-8	
		88-0	18-0 1
		0-0	

Assistant Director
 Geology and Mining,
 Collectorate,
 Viluppuram.

75

சாத்திரி சாத்திரி சாத்திரி

TAHSILDAR
 VANUR



சாத்திரி சாத்திரி சாத்திரி

சாத்திரி சாத்திரி சாத்திரி



Presented to the Office of Sub-Registrar, Office of Value and Tax of No. 3028, First Floor, Sector 10, Gurgaon and _____ at _____ by _____

1. Left Thumb




Sub-Registrar
 Additional As per the records of the document

Execution Admitted by

I have satisfied my self as to the execution of the instrument by Thiru Di.L.Subramanian, I.A.S, District Collector, Villupuram District, who is exempted from Personal Administration under Section 24(r) of the Registration Act.

[Signature]

Class Admitted by

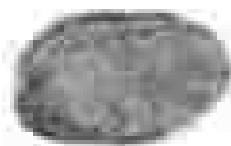
1. Left Thumb




Sub-Registrar
 Additional As per the records of the document

Identified by

[Signature] Name: Subramanian DOB: 15/08/1952 Profession: Sub-Registrar





Name: [illegible]

No. Appointment

4th day of August 2017

Signature: [illegible]

Year

Registered on No 2000 of 2017 of

SUN-REGISTRAR
VANUE

Date: [illegible]

Signature: [illegible]



Sheet no. 2 of 2



GOVERNMENT OF INDIA
IDENTITY CARD
प्रधान मंत्री प्रधान
संरक्षण योजना



Name / नाम
Sex / लिंग
Date of Birth / जन्म तिथि
Place of Birth / जन्म स्थान
Date of Issue / जारी तिथि
Date of Validity / वैधता तिथि
Signature / हस्ताक्षर



Issued under the National Security Order
No. 100 - Year 2011 Security Certificate

Issued under the National Security Order
No. 100 - Year 2011 Security Certificate

Date / तिथि
Place / स्थान
Signature / हस्ताक्षर



This Card may be used for all Government Schemes
under different Government Offices.
This card is the golden ticket to all Government
services and other social facilities.



Address / पता
Occupation / व्यवसाय
Religion / धर्म
Caste / जाति
Sex / लिंग



INDIA DRIVING LICENCE PC-01
Name / नाम
Address / पता
Licence No. / लाइसेंस नं.
Valid Till / वैधता तिथि

INDIA DRIVING LICENCE PC-01
Name / नाम
Address / पता
Licence No. / लाइसेंस नं.
Valid Till / वैधता तिथि

B. Kumar

Portrait photo
Name / नाम
Address / पता
Aadhaar No. / आडर नं.

Portrait photo
Name / नाम
Address / पता
Aadhaar No. / आडर नं.

Aadhaar - Aam Aadmi ka Aadhaar

Aadhaar - Aam Aadmi ka Aadhaar

B. Kumar

சமீபத்தில் : 21759
 இலக்கம் : 76

சுமார்

சுமார் : 11.75
 மீட்டர் : 4 மீ 73.0



77
 சமீபத்தில்
 COLLECTOR,
 Upপুরam District
 Viluppuram.

		B		
		13.87.0		
		133.2	352.14	
15	30.0	123.4		
		123.4	24.814	
		85.2	6.613	
		D		
		C		
		13.87.0		
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		100.6	80.9	
		D		
		13.87.0		
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3	16.0	106.2		
2	2.84	103.8		
		85.0	18.01	
		A		

Assistant Director,
 Geology and Mining,
 Collectorate,
 Viluppuram.

சமீபத்தில் மீட்டர் பரீட்சை செய்து

சமீபத்தில் மீட்டர் பரீட்சை செய்து LEASE APPLIED AREA

TAHSILDAR
 VANUR



சமீபத்தில் மீட்டர் பரீட்சை செய்து

சமீபத்தில்
 38/12
 11.75

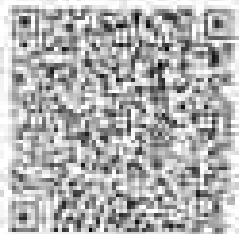


தமிழ்நாடு சாஹித்ய அகாடமி

தமிழ்நாடு சாஹித்ய அகாடமி
சாலை / சாஹித்ய அகாடமி
திருச்செங்கல்பட்டி / திருச்செங்கல்பட்டி

1. சாலை வரை	75	9. மலர் விலைகள் (செலவு)	3 - 5
2. சாலைக்குள் வரை	34	10. மலர் கட்டு	8
3. சாலைக்குள் இருக்கும் வரை	76-3	11. சிமென்ட் (10 - 100)	4.20
4. சாலை	8	12. மரக்கட்டைகள் - 100	8 - 12.00
5. சாலை / சாலைக்குள்	110.00	13. சிமென்ட் (10 - 100)	4.20
6. சாலைக்குள் வரை	4.00	14. மரக்கட்டை	8.75
7. மரக்கட்டைகள்	8	15. மரக்கட்டை	8
8. மரக்கட்டை	8	16. மரக்கட்டை	8.00

குறிப்புகள்:

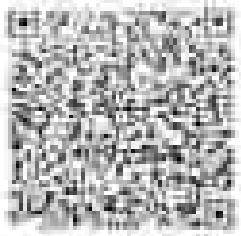


மேல்கண்ட அளவு / அளவுகள் சாலை கட்டுவதற்கான மட்டும் குறிப்பிடப்பட்டுள்ளன. மேலும் சாலை
<http://www.tnscad.ac.in> இல் மேலும் குறிப்பிடப்பட்டுள்ளன. மேலும் சாலை கட்டுவதற்கான மட்டும் குறிப்பிடப்பட்டுள்ளன.





The National Council of Educational Research and Training (NCERT) is a non-profit organization that is responsible for the development and dissemination of educational materials in India. It was established in 1962 and is headquartered in New Delhi. NCERT's primary focus is on the school education system, and it provides a wide range of services, including the development of textbooks, research, and the organization of seminars and conferences.



in Hindi

अनुसंधान प्रतिष्ठान

दिल्ली

(48) 1100-1100000
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अनुसंधान प्रतिष्ठान
 दिल्ली
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अनुसंधान प्रतिष्ठान



ಕರ್ನಾಟಕ ಸರ್ಕಾರ
ಸರ್ಕಾರೀ ಕಾರ್ಯ
ಪ್ರತಿ ಹುದ್ದೆಯ ಅಭ್ಯರ್ಥಿಯರ ಪಟ್ಟಿ - 2024



ಅಭ್ಯರ್ಥಿಯ ಹೆಸರು:

ಅಭ್ಯರ್ಥನ ಸಂಖ್ಯೆ:

ಅಭ್ಯರ್ಥನ ವಿಳಾಸ (ಅವಶ್ಯಕ):

ತಾ.ಸಂ. ಸಂಖ್ಯೆ: 488

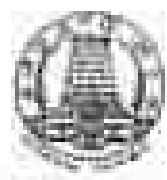
ಅಭ್ಯರ್ಥನರ ವಿವರ

ಕ್ರ.ಸಂ.	ಹುದ್ದೆ	ಅಭ್ಯರ್ಥಿ		ಅಭ್ಯರ್ಥಿ		ಅಭ್ಯರ್ಥಿ		ಅಭ್ಯರ್ಥನ ಸಂಖ್ಯೆ
		ಹೆಸರು	ವಯಸ್ಸು	ಹೆಸರು	ವಯಸ್ಸು	ಹೆಸರು	ವಯಸ್ಸು	
		ಹೆಸರು	ವಯಸ್ಸು	ಹೆಸರು	ವಯಸ್ಸು	ಹೆಸರು	ವಯಸ್ಸು	
		ಹೆಸರು	ವಯಸ್ಸು	ಹೆಸರು	ವಯಸ್ಸು	ಹೆಸರು	ವಯಸ್ಸು	
01	1	ಹೆಸರು	200	-	-	-	-	01/2024
02	2	ಹೆಸರು	200	-	-	-	-	02/2024
		ಹೆಸರು	200					

ಟಿಪ್ಪಣಿ:

	<p>1. ಅಭ್ಯರ್ಥಿಗಳು ಸರ್ಕಾರದ ಅಧಿಕಾರದ ಅಡಿಯಲ್ಲಿ ಕಾರ್ಯನಿರ್ವಹಿಸುತ್ತಿದ್ದು, ಸರ್ಕಾರದ ಅಧಿಕಾರದ ಅಡಿಯಲ್ಲಿ ಕಾರ್ಯನಿರ್ವಹಿಸುವುದು ಕಡ್ಡಾಯವಾಗಿದೆ.</p>
	<p>2. ಅಭ್ಯರ್ಥಿಗಳು ಸರ್ಕಾರದ ಅಧಿಕಾರದ ಅಡಿಯಲ್ಲಿ ಕಾರ್ಯನಿರ್ವಹಿಸುವುದು ಕಡ್ಡಾಯವಾಗಿದೆ.</p>
	<p>3. ಅಭ್ಯರ್ಥಿಗಳು ಸರ್ಕಾರದ ಅಧಿಕಾರದ ಅಡಿಯಲ್ಲಿ ಕಾರ್ಯನಿರ್ವಹಿಸುವುದು ಕಡ್ಡಾಯವಾಗಿದೆ.</p>





ಕರ್ನಾಟಕ ಸರ್ಕಾರ
ಕರ್ನಾಟಕ ರಾಜ್ಯ

ಶಿಕ್ಷಣ ಮತ್ತು ಅಭಿವೃದ್ಧಿ ಇಲಾಖೆ, ಬೆಂಗಳೂರು



ಅಧಿಕಾರಿ ಹುದ್ದೆ: ವಿಜಯಪುರ
ಅಧಿಕಾರಿ ಹುದ್ದೆ: ವಿಜಯಪುರ

ಅಧಿಕಾರಿ ಹುದ್ದೆ: ವಿಜಯಪುರ
ಅಧಿಕಾರಿ ಹುದ್ದೆ: ವಿಜಯಪುರ

ಅಧಿಕಾರಿ ಹುದ್ದೆ: ವಿಜಯಪುರ

ಕ್ರ. ಸಂ.	ನಾಮ	ಜನನ		ಶಿಕ್ಷಣ		ಪರಿಣಾಮ		ಟಿಪ್ಪಣಿ
		ದಿನ	ಸ್ಥಳ	ಶಿಕ್ಷಣ	ಶಿಕ್ಷಣ	ದಿನ	ಸ್ಥಳ	
1
2

ಟಿಪ್ಪಣಿ:

1. ಅಧಿಕಾರಿ ಹುದ್ದೆ: ವಿಜಯಪುರ

2. ಅಧಿಕಾರಿ ಹುದ್ದೆ: ವಿಜಯಪುರ

3. ಅಧಿಕಾರಿ ಹುದ್ದೆ: ವಿಜಯಪುರ



PHOTOCOPY OF THE APPLIED LEASE AREA

Site photos in respect of rough stone and gravel quarry lease in S.F.No's 782, 783A, & 786 over an extent of 2.11.0 hectares of Enayur Village, Vannar Taluk, Vilupparam District, Tamil Nadu State in belonging to Mr. K. Anandavelu.





संख्यीय फ़ैर न्यायिक

बीस रुपये

Rs.20

₹.20

TWENTY RUPEES

INDIA

INDIA NON JUDICIAL

தமிழ்நாடு தமில்நாடு TAMIL NADU 31/1/2023 15AC 350635

J. Manikandan G. Srinivasan

சென்னை

To:

M/S. K.Aranthavelu,
1st Karanam,
Enayur(V), Vanur(TK),
Villupuram(DT), Tamilnadu.

Ref: Your letter dated

Sub: Regarding blasting work using Explosives in your proposed quarry.

Sr,

We are having Explosives License in Form 22 Holding License No.E/SC/TN/22/A50(E70532) Situated in Puthamangalam village, Ulundurpet Taluk, Villupuram District. Our office functions at Address Karanam Enayur, Alamar Road, Elavanesar Kottal, Ulundurpet TK, Villupuram DT. We are enacting Two Explosives van for Transporting detonators and class 3 separately for our Magazine to our work site and well experienced and licensed blasters and shot fiers for safe blasting work since 10 years without any/ward incident. We are willing to undertake work on contract basis at your Quarry M/S Aranthavelu Blue Metals situated in Enayur (V), Vanur(TK), Villupuram (DT), SF NO: 76/2 (0.86.0), 76/3A (0.22.0), 76/6 (1.10.0) over an Extent of 2.18.0 Hectares of patta lands.

Enclosure

Kanishkumar

Explosives Magazine License copy

KANISHK EXPLASIVES
[Signature]



आयुक्त विभाग
DEANS DELIMITATION

भारत सरकार
GOVT. OF INDIA

सर्वे वीर शेर-का
National Award Number Card

CLIPBOARD

सर्वे वीर शेर-का
National Award Number Card

सर्वे वीर शेर-का
National Award Number Card



आयुक्त विभाग
DEANS DELIMITATION

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Reg. No. 100001001
Col. Code 813 / 100

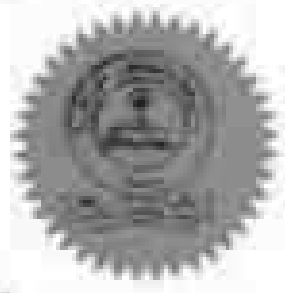
62450



அறிவியல் படிப்பு
FACULTY OF SCIENCE

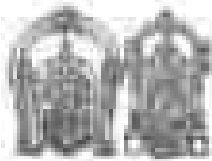
பெரியார் பல்கலைக்கழக ஆட்சிக்குழு 2005 ஆம் ஆண்டு ஏப்ரல் மாதம்
 நடந்த பயன்பாட்டு புவியியலியல் தேர்வில்
 S கருப்பண்ணன்
 தனிச்சிறப்பின் முதல் வகுப்பில் தேர்ச்சி பெற்றார் என்று தனது
 தேர்வுணர்வுகள் சான்றளித்தபடி அறிவியல் துறைத் தலைவர்
 ஊழலம் M.L. தமது அங்கீகரிக்கப்பட்ட பல்கலைக்கழக துணைவேளையின் வழங்கியிருப்பது

The Syndicate of the Periyar University hereby certifies that
KARUPPANNAN S *has been*
admitted to the **DEGREE OF MASTER OF SCIENCE in**
APPLIED GEOLOGY
he/she having been certified by duly appointed Examiners to be qualified
to receive the same and was placed in the **FIRST CLASS WITH DISTINCTION**
at the Examination held in **APR-2005**



Given under the seal of this university

[Handwritten signature]
[Handwritten signature]



BALAJI MINES

Proprietor: S. SANTHARAMAN,
PURETY LINE STONE SUPPLIER.

S/88, CHINNAGOLLAPATTI, KANKANKURICHI PO, SALEM-636 008. Tamil Nadu.



Mines: Devur Malai Village, Sullimalai Taluk, KARUR Dt. (Via) Karur in February.

Date: [5-07-2010]

EXPERIENCE CERTIFICATE

I, ESANTHARAMAN being the Managing Director of BALAJI MINES do hereby certify that Thiru. S.KARUPPANNAN, son of T.SUNDARAM (Whose signature is appended) worked as a Geologist in Balaji Mine, Devur malai village, Sullimalai Taluk, Karur District, from 01.06.2005 to 10.10.2010. During his term of work aforesaid, he has obtained practical experience as detailed overhead. The duties connected with his work have involved his continuous attendance at the mine, and have been efficiently performed by him.

I believe him to be of good character and a fit and proper person to be examined for Certificate of Competency.


(Signature with date and official Seal)

TIN No: 33852702141
CST No: 704829 / 7-4-99
BALAJI MINES
S/88, Chinnagollapatti,
Kankankurichi (PO), SALEM-8.


(Signature of Candidate)



K.P.RAMAS
Cell: 94432 94375

K.P.LAKSHMAYAS
Cell: 94432 94375
94348-544211

SRI RAMAJAYAM GRANITES

221, Kallivayal Mani Road, Opp. E.S. Office, MATHUR - 625 203.
email: sramajayamgranites@gmail.com



Date: 18.12.2011

EXPERIENCE CERTIFICATE

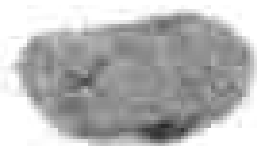
This is to certify that Mr. Karuppanan Sendarani has been worked as a "Senior Geologist" in our company from 11th October 2010 to 11th October 2011. During this period, he has been involved in the Quality Control for Granite block extraction from quarry. Involvement of his work is highly appreciated and have been efficiently worked in our company. The duties connected with his work have been continuous attendance at the quarry.

I wish him all the best in all his future endeavors.

For SRI RAMAJAYAM GRANITES
K.P. Lakshmayas
Proprietor
18/12/2011

Witnessed/
Signature

DEPUTY DIRECTOR
DEPARTMENT OF GEOLOGY AND MINING
DHARMAPURI



GOLDEN ARROW CO. LTD

GOLDEN ARROW CO. LTD
P.O. Box 188 Muscat - Sultan
Tel: 24778100
Fax: 24778100



شركة النجم الذهبية المحدودة

الرقم التجاري: 10000000000000000000
مركز: 188 ب.ص. - مسقط
هاتف: 24778100
فاكس: 24778100



Date: October 13th 2013

CERTIFICATION
TO WHOM IT MAY CONCERN

This is to certify that **Mr. KARUPPANNAN SUNDARAM (PASS PORT NO: G0050390)** has been working in Golden Arrow Co. Ltd. As a Senior Geologist from 14th October 2011 to 13th October 2013.

In this period he was done in the following disciplines:

1. Exploration of gold and associate metals
2. Detail Geological Mapping
3. Geochemical sampling
4. Trenching
5. Core-Drilling sampling and analysis
6. Feasibility report, quarterly report and annual report preparation
7. Design the mine plan

During this period we found him enthusiastic and having strong knowledge in earth science field. Based on which we are confident that he can take up challenging tasks, in this field successfully.

We wish him all best in all his future endeavors.

[Faint signature]

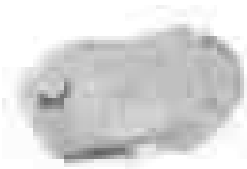
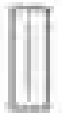

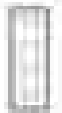





PLATE NO. 1

APPLICANT:
 M. K. ANANDASWAMY,
 MUKESHWAN,
 NO. 22, MOORTHY STREET,
 BRAHMEER VILLAGE,
 VANER TALUK,
 VELLOPPURAM DISTRICT

LEASABLE AREA:
 S/NO - 76/2, 76/3A & 76/6
 EXTENT - 2.18 HECT
 VILLAGE - BRAHMEER
 TALUK - VANER
 DISTRICT - VELLOPPURAM

INDEX

-  MINI LEASE AREA
-  APPROACH ROAD
-  CART ROAD
-  VILLAGE ROAD
-  SIDE ROAD
-  UTILITY ROAD

KEY MAP

NOT TO SCALE

Prepared by:

I DO HEREBY CERTIFY THAT THE PLAN
 HAS BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

[Signature]

D. S. KANNAN, M.S., Ph.D.,
 QUALIFIED ARCHT.



12°42'15"N

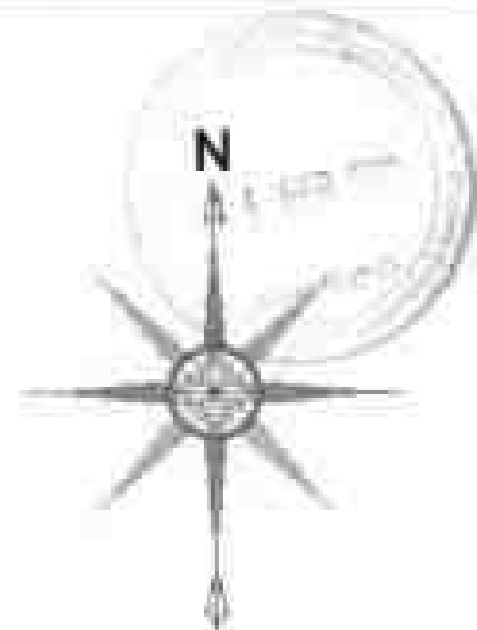


PLATE NO-1A

APPLICANT
 M.K. ANANDAVILU
 SHOCKERAVAN,
 NO.221, MITTU STREET,
 ERAYUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT

LEASED AREA:
 S.P. NO. : 762, 763A & 764
 EXTENT : 1.18 ACRES
 VILLAGE : ERAYUR
 TALUK : VANUR
 DISTRICT : VILUPPURAM

INDEX

LEASE AREA : ●
 TOPO SHEET NO : S-1111
 LATITUDE : 12°42'08.15"N to 12°42'15"N
 LONGITUDE : 78°38'39.36"E to 78°38'45.80"E

LOCATION PLAN
 NOT TO SCALE

Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE
 HAS BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

G. S. KARUPPANNAR, M.Sc., Ph.D.
 QUALIFIED PERSON

17°42'15"N

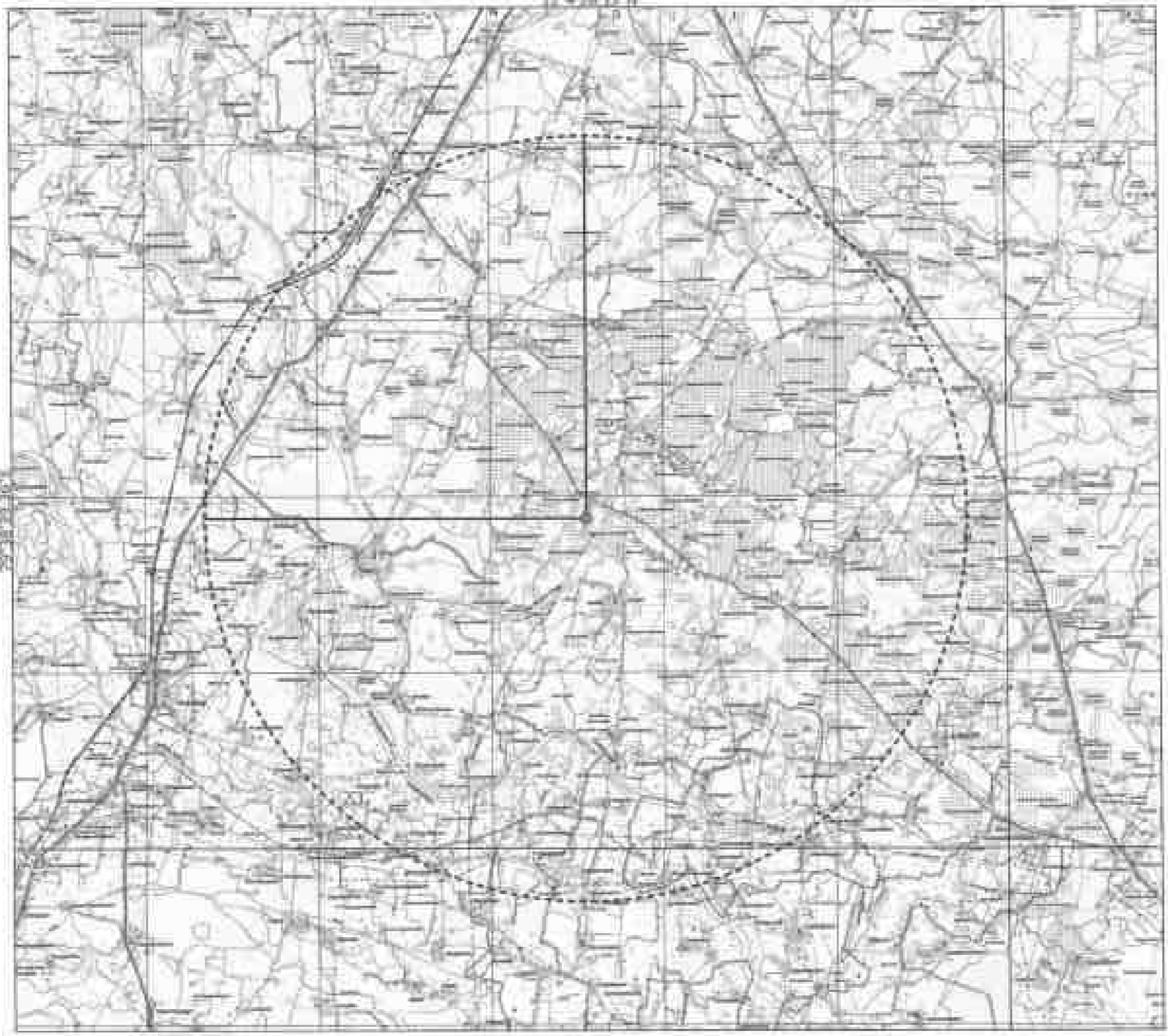


PLATE NO-1B

APPLICANT
M.K. ANANDAVILLU,
56 KENAVAN,
No 235, METTU STREET,
ERAYUR VILLAGE,
VANUR TALUK,
VILUPPURAM DISTRICT.

LEASE APPLIED AREA
S.NO - 762, 763A & 766
EXTENT - 3.18 HECT
VILLAGE - ERAYUR
TALUK - VANUR
DISTRICT - VILUPPURAM

TOPO SHEET NO - 37-511
LATITUDE - 17° 42' 06.1" N to 17° 42' 15" N
LONGITUDE - 79° 18' 35.30" E to 79° 18' 45.30" E

MINE LEASE AREA 
HEM RADIUS 

COORDINATE VALUES	
Top Left	17° 42' 06.1" N, 79° 18' 35.30" E
Top Right	17° 42' 06.1" N, 79° 18' 45.30" E
Bottom Left	17° 42' 15" N, 79° 18' 35.30" E
Bottom Right	17° 42' 15" N, 79° 18' 45.30" E

TOPOSHEET MAP
 SCALE - 1:10,000

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.
QUALIFIED PERSON

12°42'15.7N



12°42'15.7N

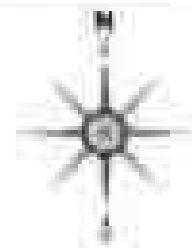


PLATE NO-1C

APPLICANT:
 M. K. ANANDAVILLU,
 60, KESAVAN,
 No.225, MITTU STREET,
 ERAIVUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT.

LEASE APPLIED AREA:
 S.L. NO. : 762, 763A & 765
 EXTENT : 2.18 HECT
 VILLAGE : ERAIVUR
 TALUK : VANUR
 DISTRICT : VILUPPURAM

INDEX

MINI LEASE AREA	
APPROACH ROAD	
CART ROAD	
VILLAGE ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
EXISTING QUARRYS PIT	

TOPO SHEET NO : T7-P13
 LATITUDE : 12° 42' 01" N to 12° 42' 15" N
 LONGITUDE : 79° 18' 24.30" E to 79° 18' 45.60" E

SATELLITE IMAGERY MAP
 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. KARUPPANNAM, M.Sc., Ph.D.
 QUALIFIED PERSON

OCTOBER TO DECEMBER

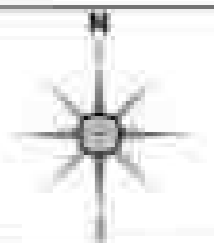


PLATE NO-ID

APPLICANT:
M.K. ANANDAVELU,
S.K. KESAVAN,
No. 315, MITTU STREET,
ERAIYUR VILLAGE,
VANUR TALUK,
VELUPPULAM DISTRICT.

LEASE APPLIED AREA:
EP NO : 76/2, 76/3A & 76/8
EXTENT : 2.1488 HECT
VILLAGE : ERAIYUR
TALUK : VANUR
DISTRICT : VELUPPULAM

INDEX

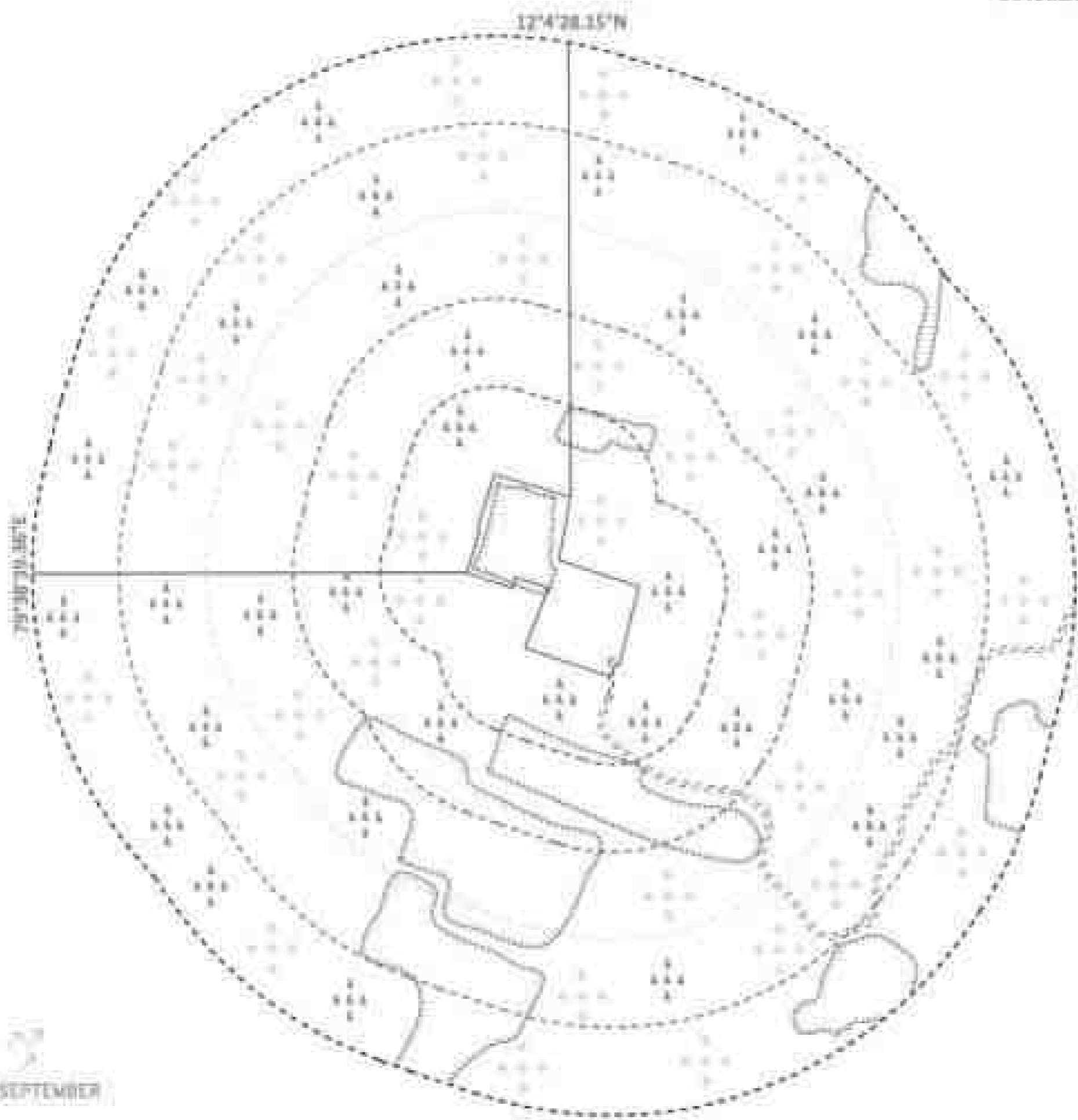
MINE LEASE AREA	
APPROACH ROAD	
CACT ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
WIND DIRECTION	
EXISTING QUARRY PIT	
SHRUBS & TREES	
WIND DIRECTION	

TOPIC SHEET NO : 17/151
LATITUDE : 12° 42' 01" N to 12° 42' 15" N
LONGITUDE : 79° 38' 31.36" E to 79° 38' 45.81" E

ENVIRONMENTAL PLAN
Scale - 1:5000

Prepared By:
I DO HEREBY CERTIFY THAT THE PLAN HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE.

DR. S. KARUPANNAM, B.Sc., Ph.D.
QUALIFIED PERSON



JULY TO SEPTEMBER



PLATE NO-II

APPLICANT:
M.K. ANANDAVELU,
SHAKHAVAN,
NAGES METTU STREET,
ERAIYUR VILLAGE,
VANUR TALUK,
VELUPPURAM DISTRICT.

LEASE APPLIED AREA:
S.F.No: 762, 763A & 765
EXTENT: 2.10 ACRES
VILLAGE: ERAIYUR
TALUK: VANUR
DISTRICT: VELUPPURAM

SERIAL NO.	LATITUDE	LONGITUDE
1	12° 41' 20" N	79° 54' 30" E
2	12° 42' 00" N	79° 54' 30" E
3	12° 41' 30" N	79° 54' 30" E
4	12° 41' 30" N	79° 54' 30" E
5	12° 42' 10" N	79° 54' 30" E
6	12° 40' 00" N	79° 54' 30" E
7	12° 41' 30" N	79° 54' 30" E
8	12° 42' 10" N	79° 54' 30" E
9	12° 40' 30" N	79° 54' 30" E
10	12° 42' 00" N	79° 54' 30" E
11	12° 42' 00" N	79° 54' 30" E
12	12° 42' 00" N	79° 54' 30" E
13	12° 42' 00" N	79° 54' 30" E
14	12° 42' 10" N	79° 54' 30" E

INDEX

- MINE LEASE BOUNDARY
- SAFETY BOUNDARY
- APPROACH ROAD
- BOUNDARY PILLAR STONES

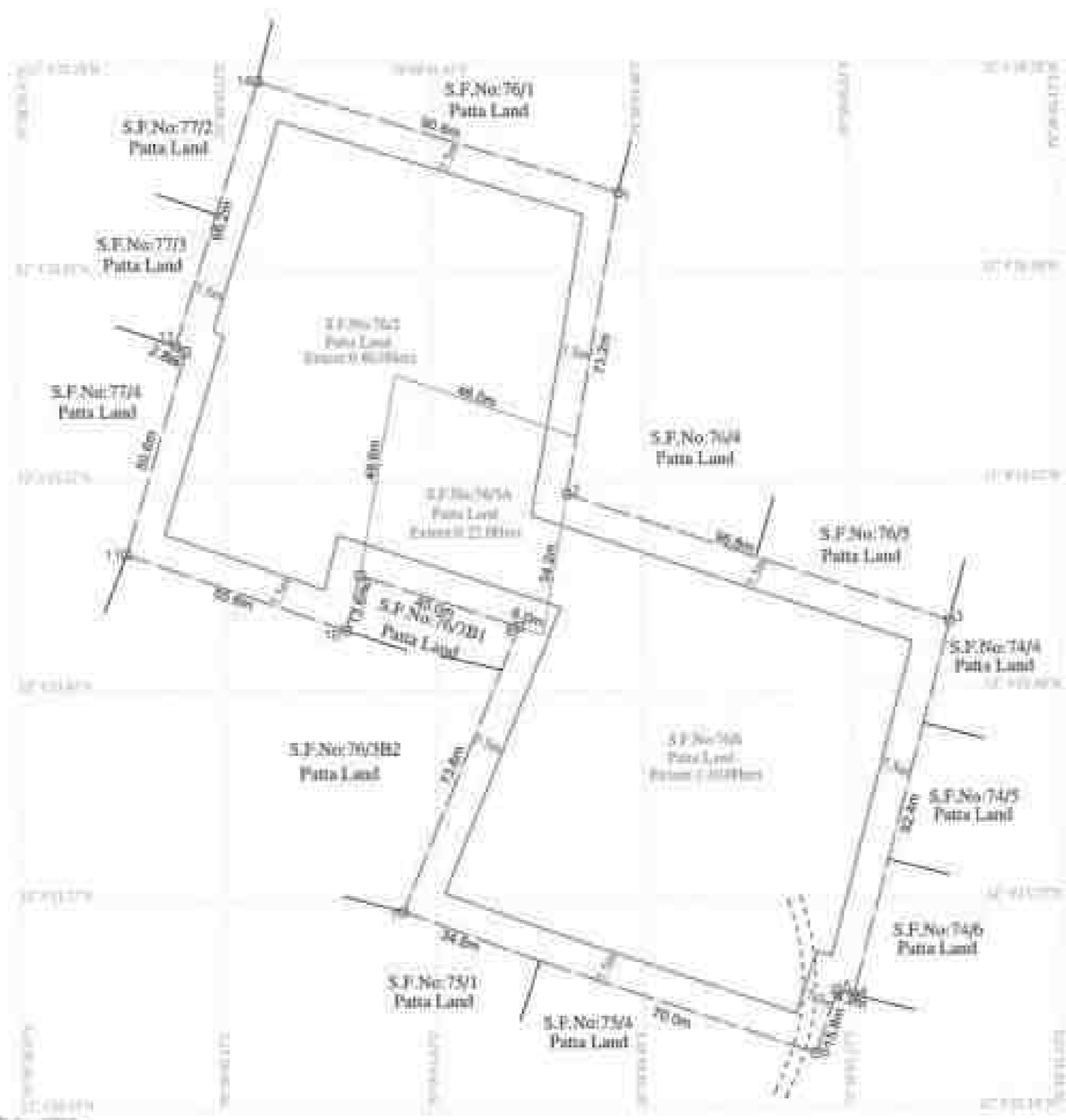
MINE LEASE PLAN

SCALE 1:100

Prepared By:

I DO HEREBY CERTIFY THAT THE PLAN HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

Dr. S. KARUPPANNAN, B.Sc., Ph.D.
QUALIFIED PERSON



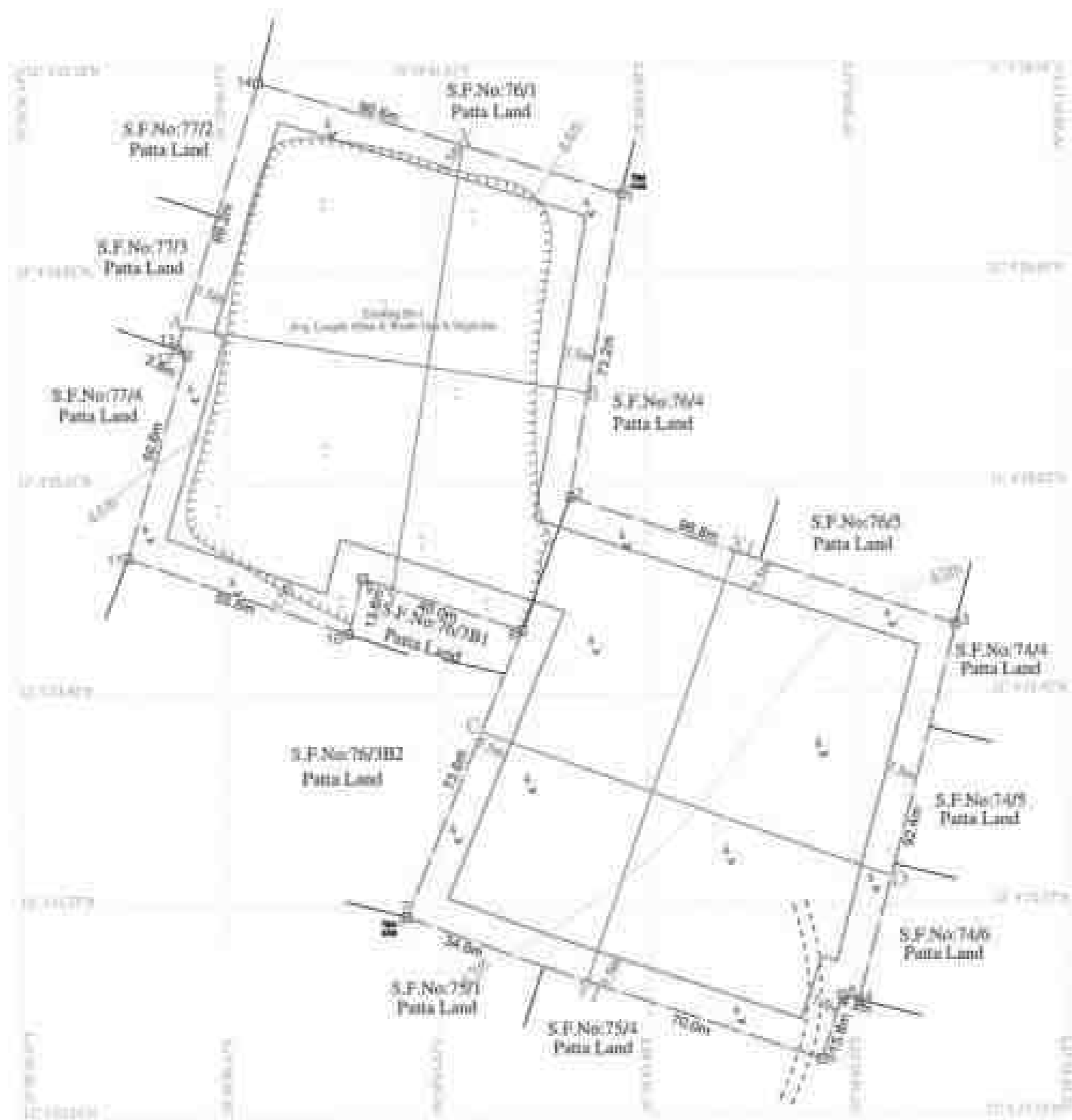


PLATE NO-III

APPLICANT:
 M.C. ANANTAVELU,
 SO. KESAVAN,
 No.223, METTU STREET,
 ERAYUR VILLAGE,
 VANUR TALUK,
 VELUPPURAM DISTRICT.

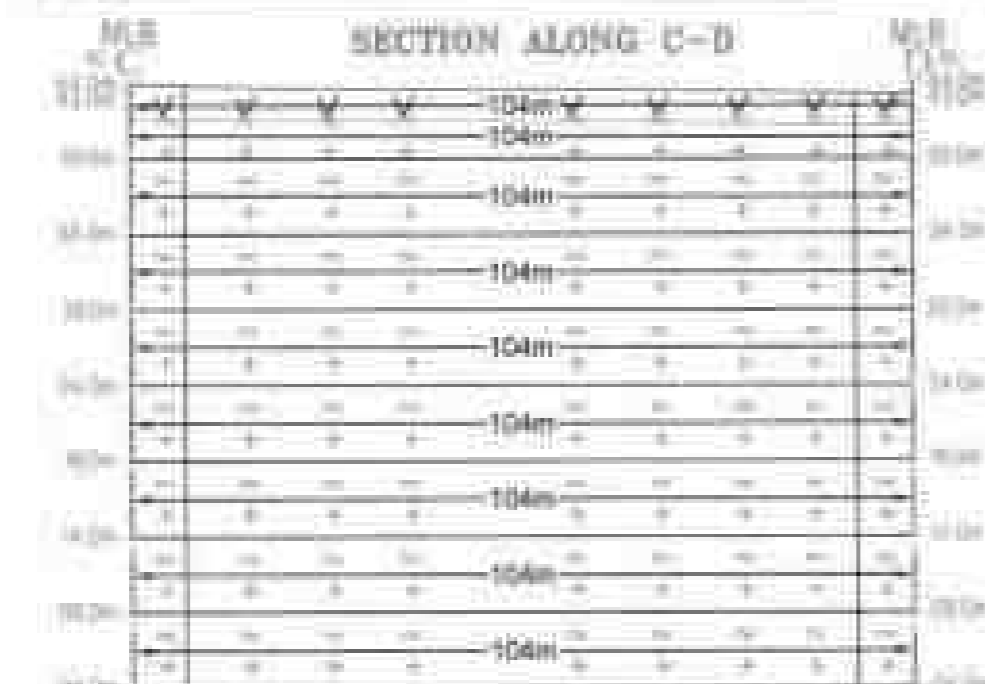
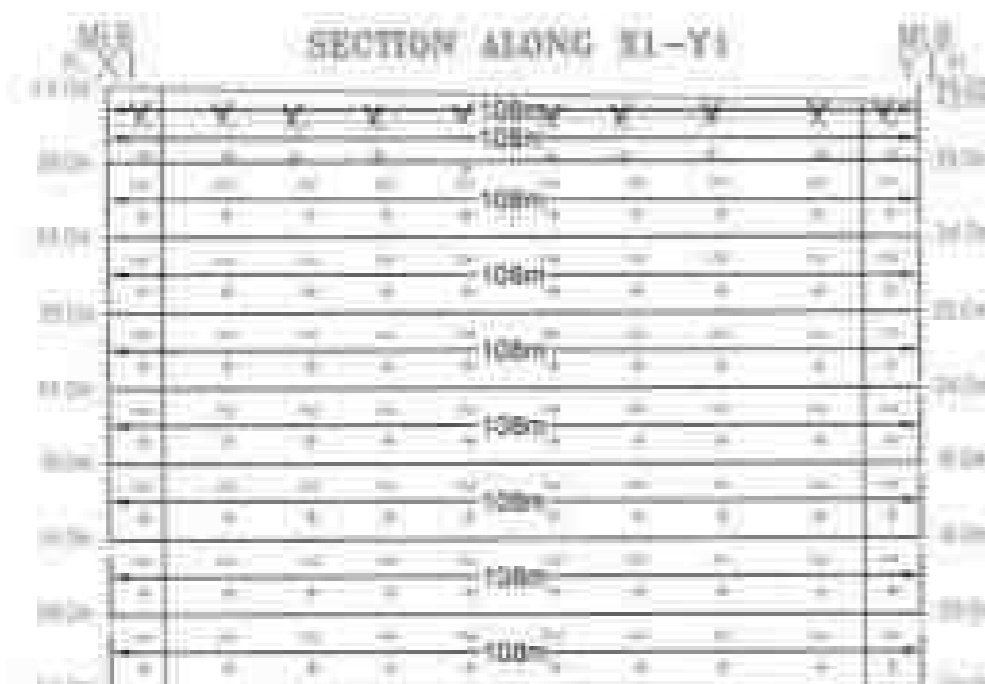
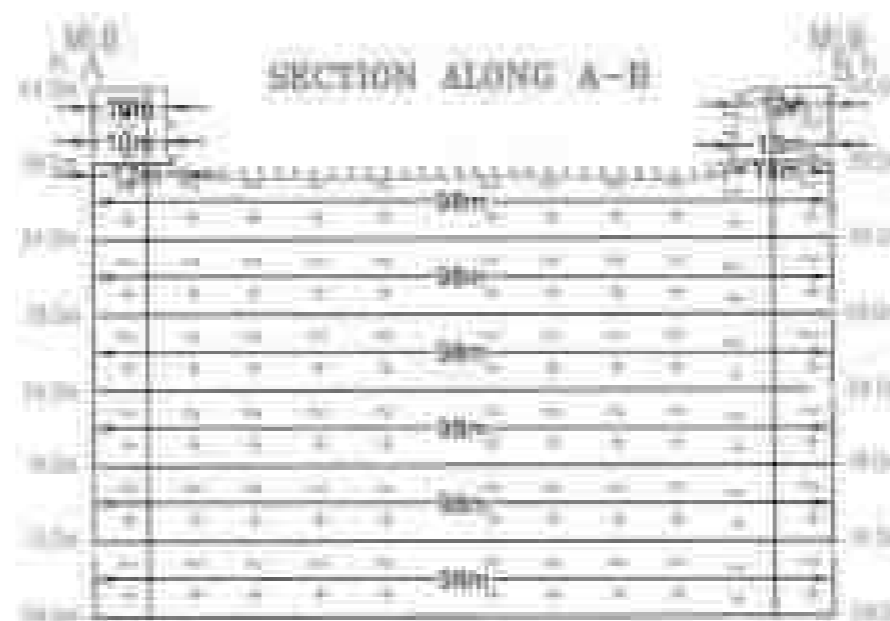
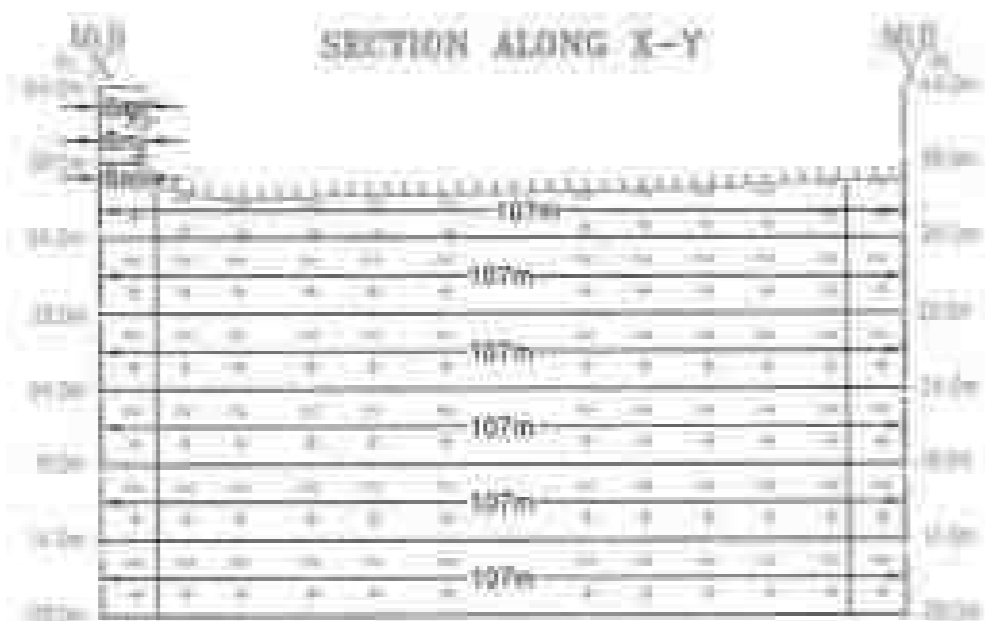
LEASE APPLIED AREA:
 S.F. NO. : 762, 763A & 766
 EXTENT : 2.1808 CT
 VILLAGE : ERAYUR
 TALUK : VANUR
 DISTRICT : VELUPPURAM

INDEX	
MINI LEASE AREA	
SAFETY DISTANCE	
APPROACH ROAD	
TEMPORARY BENCHMARK	
CONTOUR LINE	
SCRUBS	
EXISTING PIT	
GRAVEL	
ROUGH STONE	
BOUNDARY PILLAR	

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

D. LAKSHMINARAYANA MURTHY, P.H.D.
 QUALIFIED PERSON



GEOLOGICAL RESOURCES:							
Section	Block	Length (m)	Width (m)	Depth (m)	Volume in M ³	Trough Stone in M ³	Gravel in M ³
XY-AB	I	0	32	3	304	---	364
	I	5	32	3	414	414	---
	II	0	26	1	136	136	---
	II	107	98	4	41944	41944	---
	III	107	98	5	52430	52430	---
	IV	107	98	5	52430	52430	---
	V	107	98	5	52430	52430	---
XI-YI-CD	I	108	104	2	22464	---	22464
	I	108	104	3	33696	33696	---
	II	108	104	5	56160	56160	---
	III	108	104	5	56160	56160	---
	IV	108	104	5	56160	56160	---
	V	108	104	5	56160	56160	---
	VI	108	104	5	56160	56160	---
TOTAL			38	304928	304664	364	
TOTAL				40	449280	426816	22464
GRAND TOTAL					754208	731480	22728

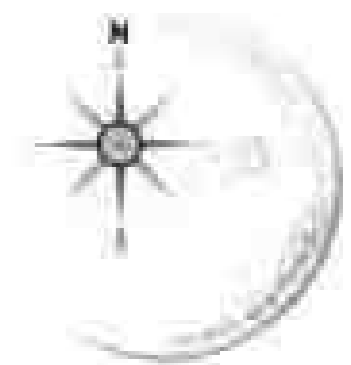


PLATE NO-III

APPLICANT:
 M.K. ANANDAVELU,
 S. KISSAVAN,
 No. 215, METTU STREET,
 ERAYYUR VILLAGE,
 VANUR TALUK,
 VELOPPURAM DISTRICT.

LEASE APPLIED AREA:
 S.F. NO. 761, 761A & 766
 EXTENT 1.80 HECT
 VILLAGE: ERAYYUR
 TALUK: VANUR
 DISTRICT: VELOPPURAM

INDEX

- MINE LEAD AREA
- SAFETY DISTANCE
- CRITICUMPS
- GRAVEL
- ROCK STRONG

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

 G. S. KARUPPANNALUR, P.E.
 QUALIFIED PERSON

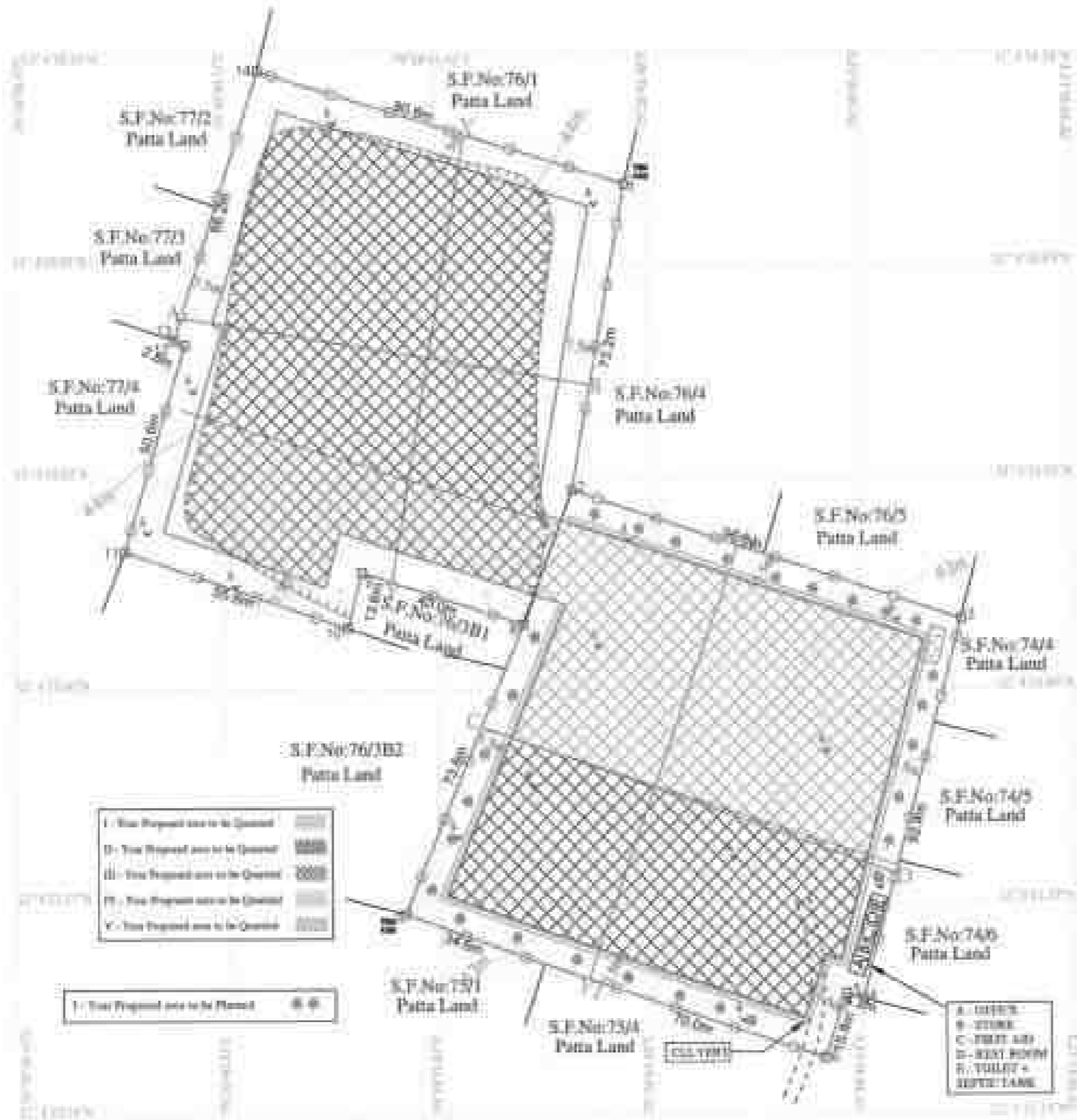


PLATE NO-IV

APPLICANT:
**M.E. ANANDAVELU,
 MAGESAVAN,
 No.225, METTU STREET,
 ERAYUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT.**

LEASE APPLIED AREA:
 S.F.No : 76/2, 76/3A & 76/6
 EXTENT : 2.18 ACRE
 VILLAGE : ERAYUR
 TALUK : VANUR
 DISTRICT : VILUPPURAM

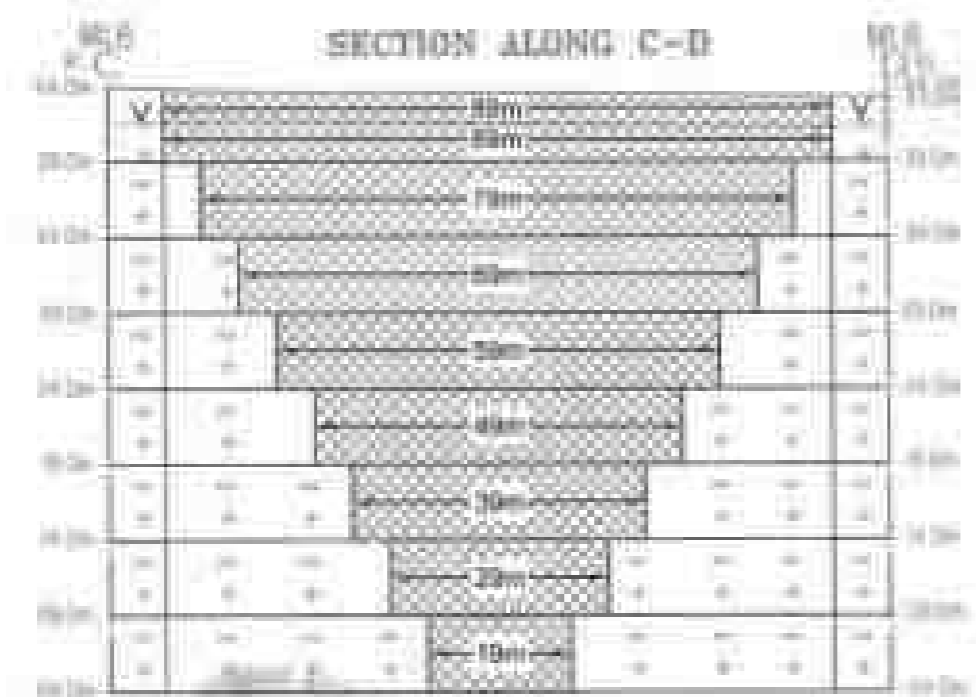
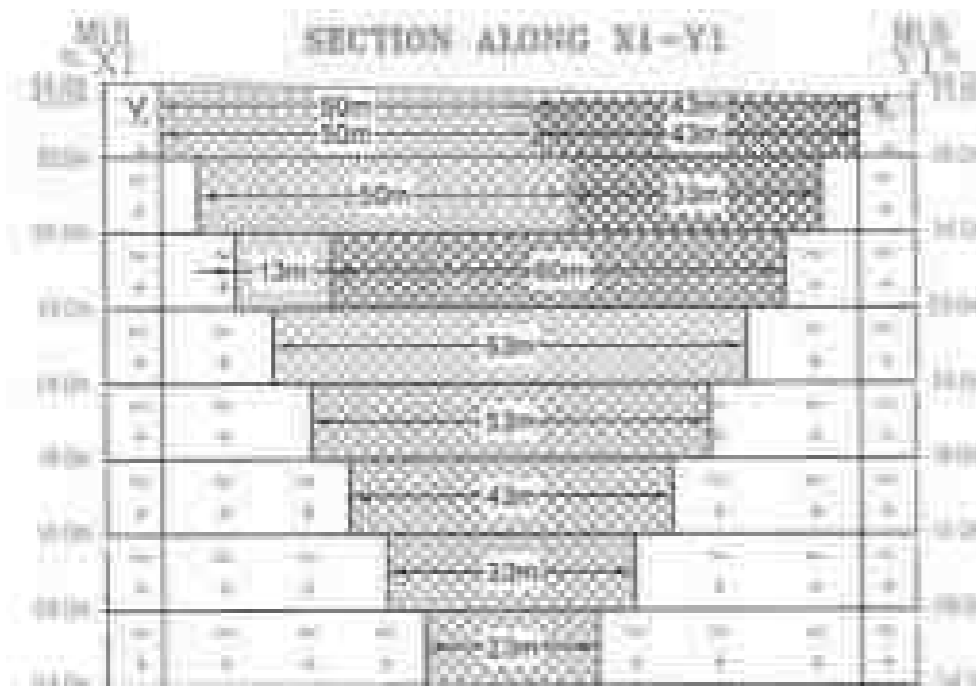
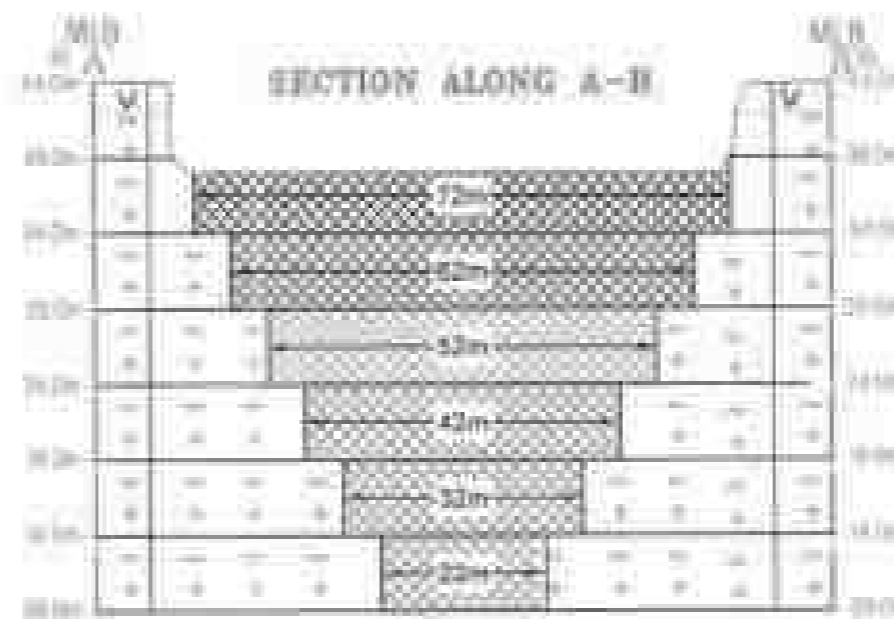
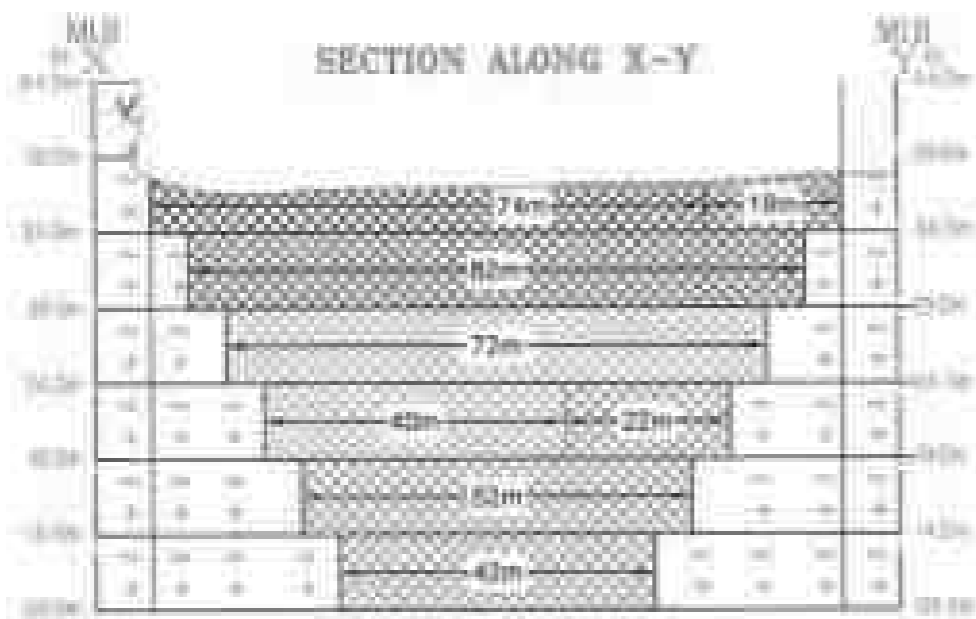
INDEX

MINE LEASE AREA	
SANITY DISTANCE	
APPROACH ROAD	
TEMPORARY BENCH MARK	
CONTOUR LINE	
SCRUBS	
EXISTING PIT	
GRAVEL	
ROUGH STONE	
BOUNDARY PILLAR	
SETTLING TANK & DRAINAGE	
FENCING	

**YEARWISE DEVELOPMENTAL
 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

**D. S. KARUPPANNAM, B.E., P.E.D.
 QUALIFIED PERSON**



- I / Year Proposed area to be Quarried
- II / Year Proposed area to be Quarried 8800
- III / Year Proposed area to be Quarried
- IV / Year Proposed area to be Quarried 7700
- V / Year Proposed area to be Quarried 8800

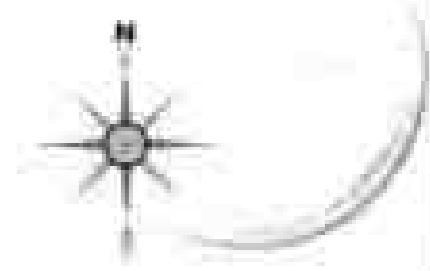


PLATE NO-IVA
APPLICANT
 M.K. ANANDAVILLU,
 SA. SENAVAN,
 No.225, METTU STREET,
 ERAYUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT.


LEASE APPLIED AREA
 LE NO. 76/2, 76/1A & 766
 EXTENT 1.18 ORBIT
 VILLAGE ERAYUR
 TALUK VANUR
 DISTRICT VILUPPURAM.

INDEX

MINI LEASE AREA	
SAFETY DISTANCE	
EXISTING PIT	
GRAVEL	
ROUGH STONE	
ULTIMATE BENCH	

YEARWISE PRODUCTIONS FIVE YEARS								
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Rough Stone in M ³	Gravel in M ³
XIYI-CD	I-YEAR	I	70	88	2	9900	---	9900
		II	30	88	3	13200	13200	---
		III	30	78	3	19700	19700	---
TOTAL						42800	33100	9900
XIYI-CD	II-YEAR	I	43	88	3	7654	---	7654
		II	42	81	3	11481	11481	---
		III	33	78	3	13035	13035	---
XY-AB		II	74	72	4	21712	21712	---
TOTAL						32482	46828	7654
XI-AB	III-YEAR	II	18	72	4	5184	5184	---
		III	42	63	3	29430	29430	---
		III	50	88	3	30700	30700	---
TOTAL						81304	81304	0
XIYI-CD	IV-YEAR	III	33	69	5	4485	4485	---
		IV	63	59	5	18385	18385	---
		IV	72	32	3	18720	18720	---
XY-AB		V	48	42	3	6400	6400	---
TOTAL						32190	32190	0
XY-AB	V-YEAR	V	32	42	3	4620	4620	---
		VI	30	33	3	6300	6300	---
		VI	42	22	3	4620	4620	---
XIYI-CD	V-YEAR	V	32	49	3	12945	12945	---
		VI	43	39	3	6385	6385	---
		VI	33	25	3	4785	4785	---
XY-AB		VIII	33	18	3	3180	3180	---
TOTAL						49900	49900	0
GRAND TOTAL						242878	228322	18894

YEARWISE PRODUCTION SECTION
 SECTION FROM I - 1000 & VER I - 500

Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

 D. S. KARUPPANNAM, B.Sc., P.O.,
 QUALIFIED PERSON

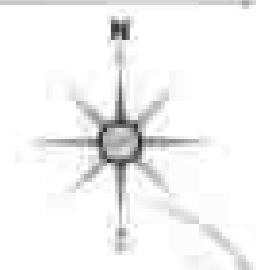
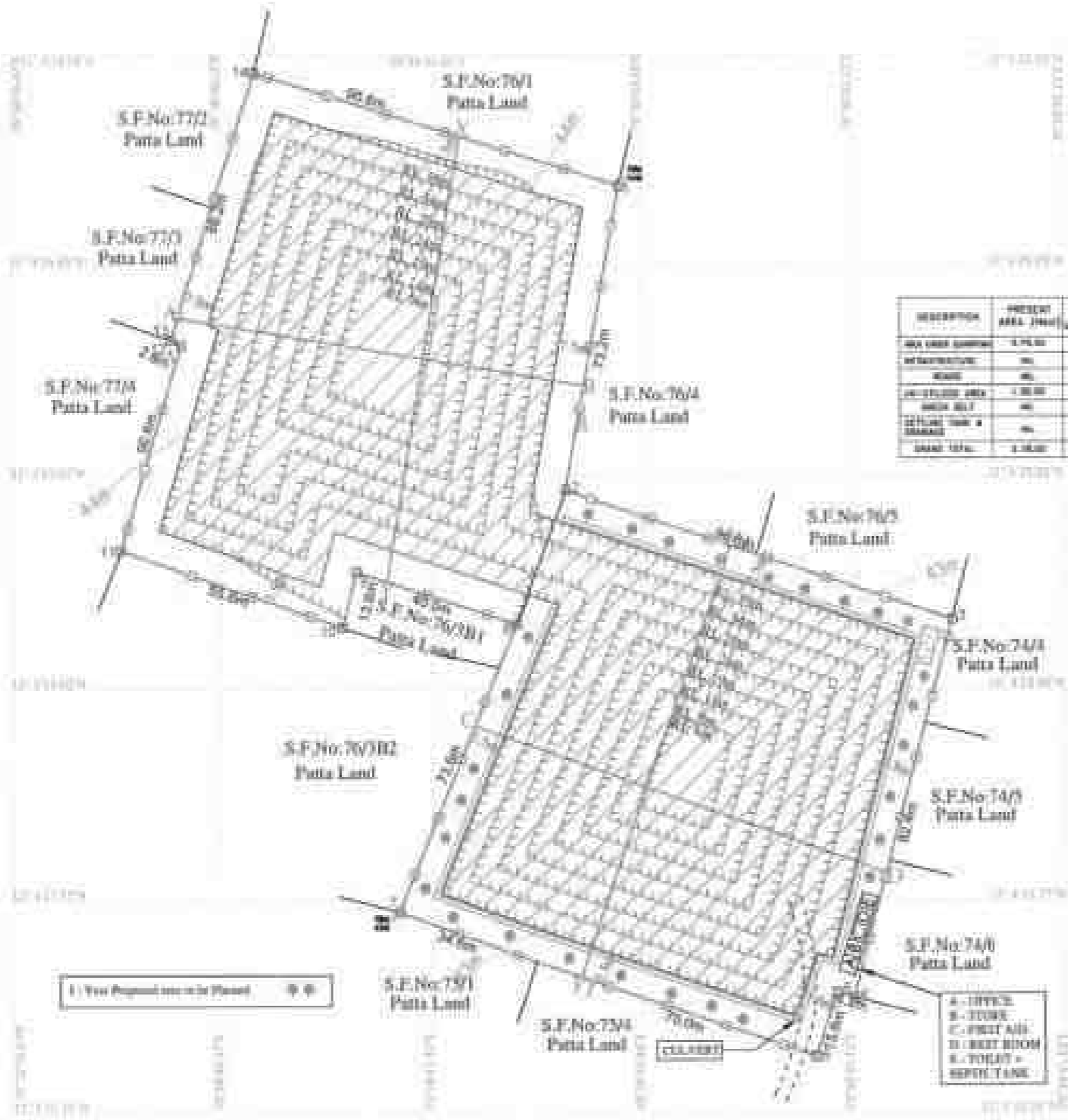


PLATE NO.V

APPLICANT:
 M.K. ANANDAVELU,
 SO. KESAVAN,
 NO.23, METTU STREET,
 ERAYUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT

LEASE APPLIED AREA:
 S.F. NO. 76/2, 76/1A & 76/6
 EXTENT 2.18 HECT
 VILLAGE ERAYUR
 TALUK VANUR
 DISTRICT VILUPPURAM

DESCRIPTION	PRESENT AREA (HECT)	AREA TO BE TAKEN UP (HECT)	REMARKS
AREA UNDER SURVEY	2.1800	2.1800	
RESERVATION	Nil	2.1800	
WATER	Nil	0.0000	
PROTECTED AREA	1.0000	1.0000	
WATER BILT	Nil	0.0000	
SETTLING TANK & DRAINAGE	Nil	0.0000	
GRAND TOTAL	2.1800	2.1800	



INDEX

- MINE LEASE AREA
- LAPITY DISTANCE
- APPROACH ROAD
- TEMPORARY BENCH MARK
- CONTOUR LINE
- SCRUBS
- EXISTING PIT
- GRAVEL
- ROUGH STONE
- BOUNDARY PILLAR
- SETTLING TANK & DRAINAGE
- FENCING
- PROPOSED BENCH

MINE LAYOUT PLAN AND
 LAND USE PATTERN
 SCALE 1:100

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
 HAS BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

D.S. KARUPPANNAM, M.S., P.C.S.
 QUALIFIED PERSON

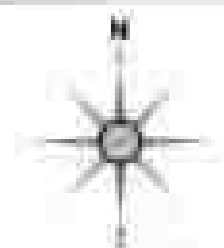


PLATE NO-VI

APPLICANT:
 M.K. ANANTAVELU,
 SO. KESAVAN,
 No.225, MEITU STREET,
 ERAYUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT

LEASE APPLIED AREA:
 S.F. NO. 762, 763A & 763
 EXTENT 2.15 HECT
 VILLAGE ERAYUR
 TALUK VANUR
 DISTRICT VILUPPURAM

INDEX

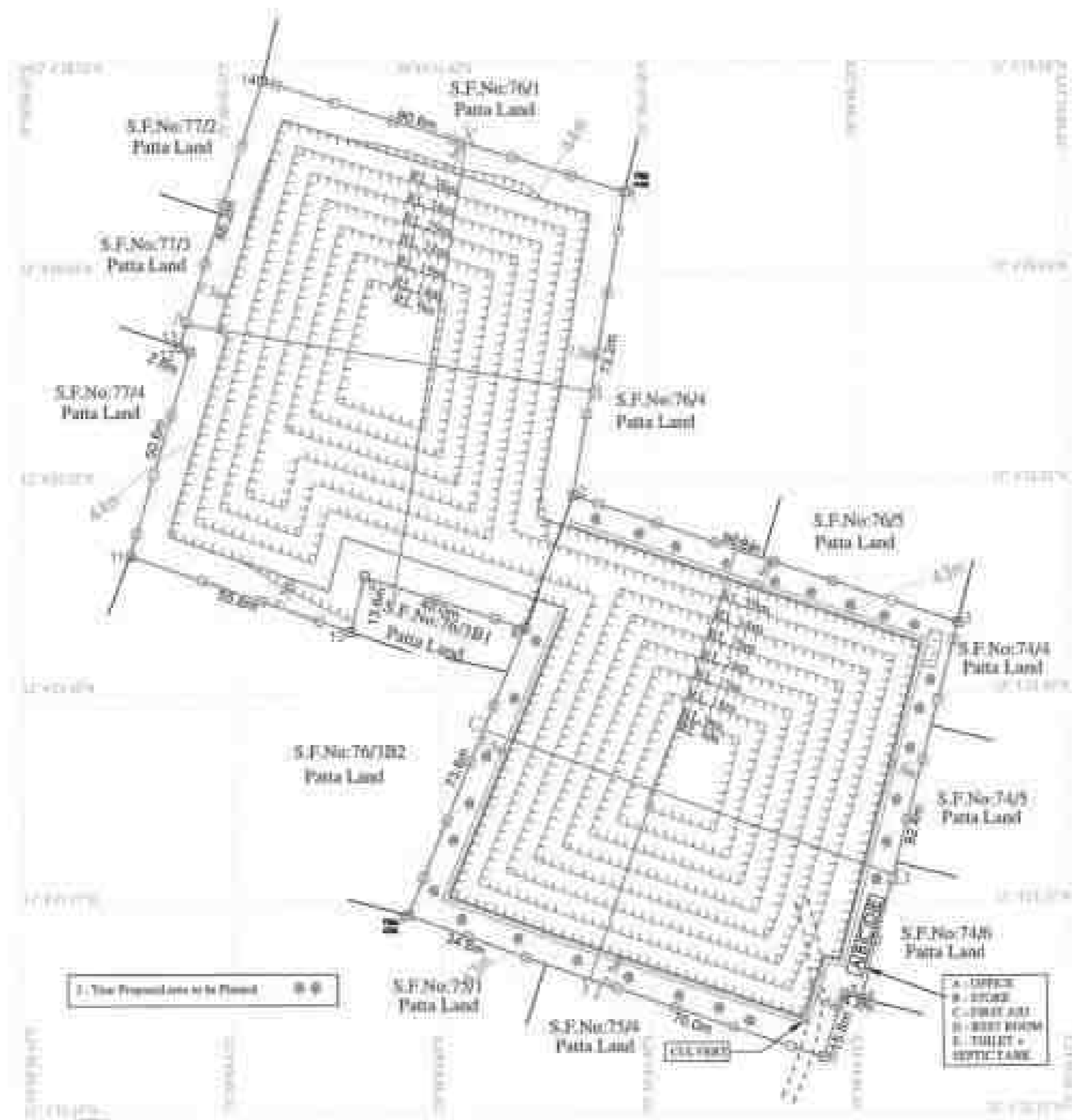
MINI LEASE AREA	
SAFETY DISTANCE	
APPROACH ROAD	
TEMPORARY BENCH MARK	
CONTOUR LINE	
SCRUBS	
EXTENDING PIT	
GRAVEL	
ROUGH STONE	
BOUNDARY PILLAR	
SETTLING TANK DRAINAGE	
FENCING	
PROPOSED BENCH	

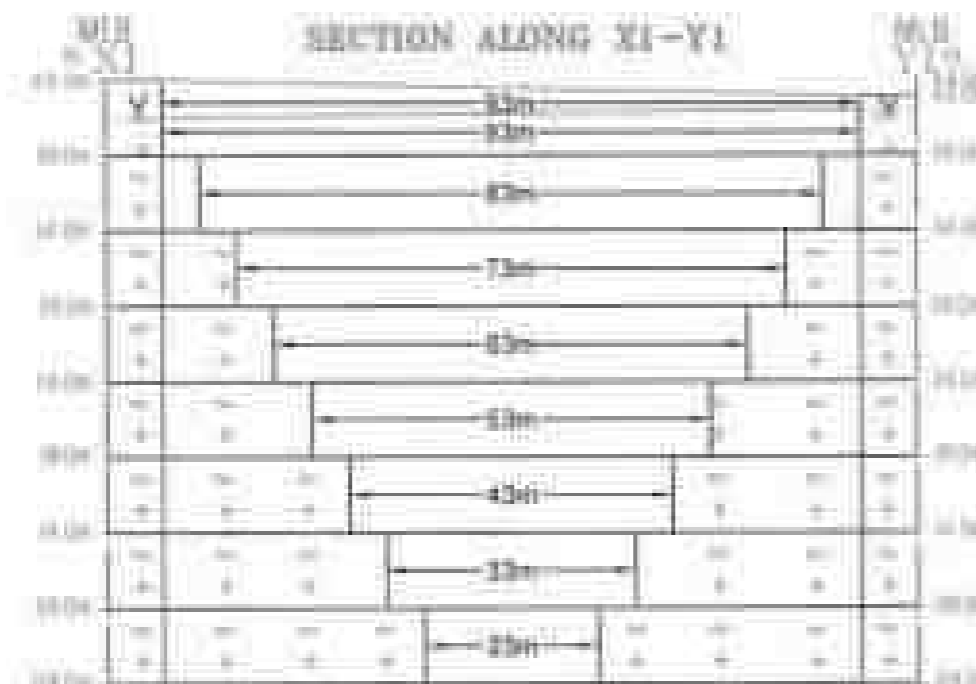
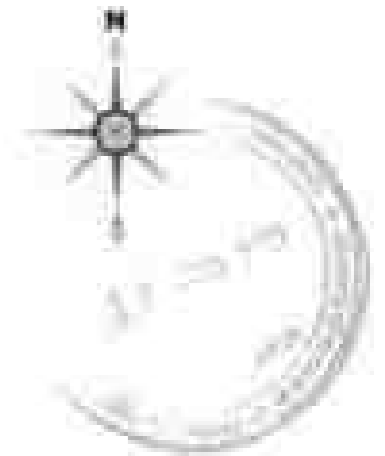
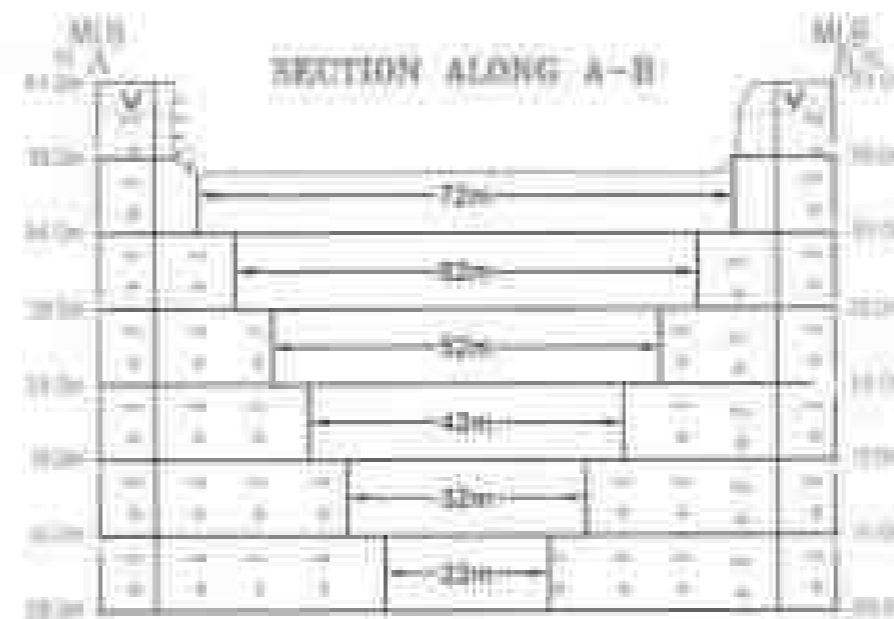
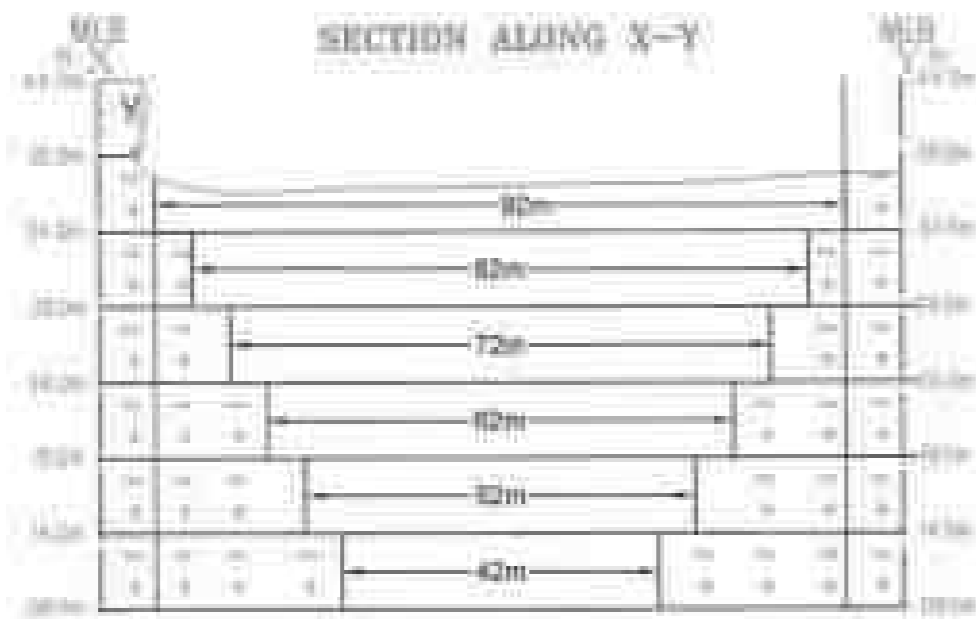
**CONCEPTUAL PLAN
 SCALE 1:1000**

Prepared By:

I DO HEREBY CERTIFY THAT THE PLAN
 HAS BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

D. S. KARUPPANNAN, M.Sc., Ph.D.
 QUALIFIED PERSON





MINEABLE RESERVES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Rough Stone in M ³	Gravel in M ³
XY-AB	II	92	72	4	26496	26496	---
	III	82	62	5	25420	25420	---
	IV	72	52	5	18720	18720	---
	V	62	42	5	13020	13020	---
	VI	52	32	5	8320	8320	---
	VII	42	22	5	4620	4620	---
	TOTAL				29	96596	96596	0
XIYI-CD	I	93	89	2	16584	---	16584
	I	83	89	3	24831	24831	---
	II	73	79	5	32785	32785	---
	III	63	69	5	25185	25185	---
	IV	53	59	5	18585	18585	---
	V	43	49	5	12985	12985	---
	VI	33	39	5	8385	8385	---
	VII	23	29	5	4785	4785	---
TOTAL				40	146280	129726	16584
GRAND TOTAL					242876	226322	16584

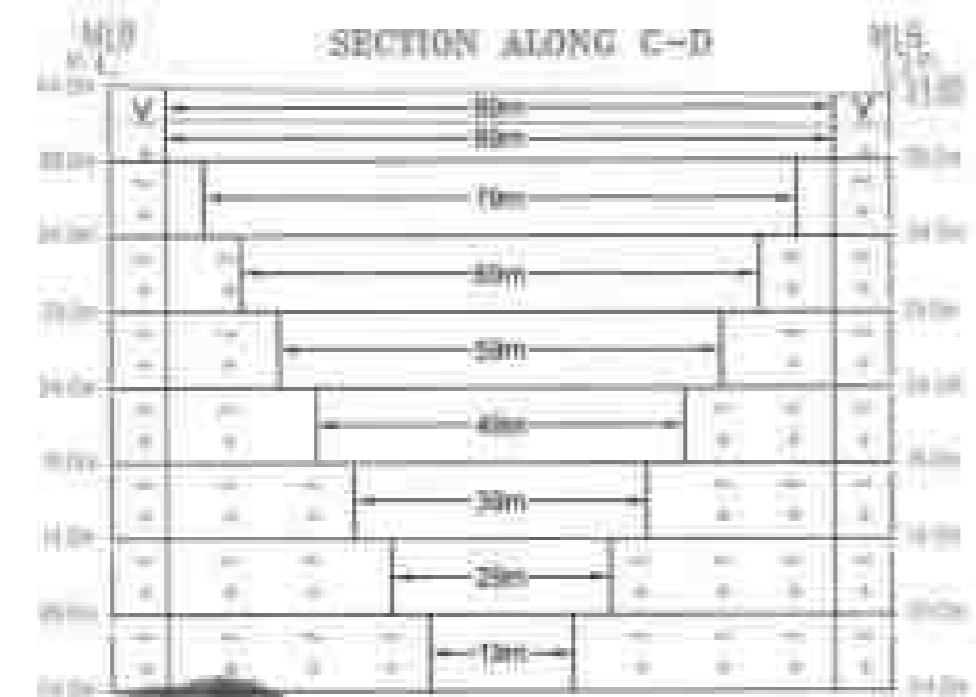


PLATE NO-VIA

APPLICANT:
 M. K. ANANDAVELU,
 No. 225, METTU STREET,
 GRAYUR VILLAGE,
 VANUR TALUK,
 VILUPPURAM DISTRICT.

LEASE APPLIED AREA
 S.F. NO. 75/2, 76/2A & 76/8
 EXTENT 2.18 HECT
 VILLAGE GRAYUR
 TALUK VANUR
 DISTRICT VILUPPURAM

INDEX

- MINI LEASE AREA
- SAFETY DISTANCE
- ESCROW PIT
- GRAVEL
- ROADWAY
- ULTIMATE BENCH

CONCEPTUAL SECTIONS
 SECTION HOW 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

D. LAKSHMINATHAN, M.Sc., P.D.
 QUALIFIED PERSON


ANNEXURE-VII
VAO CERTIFICATE

சிறப்பீழை.

அமைச்சர் கிராமத்தை சேர்ந்த திரு. சேகரன் குமா
 திரு. சிவசுந்தரன் குமா என்பவர்கள் மேற்கண்ட சிவசுந்தரன்
 கிராமத்தை விட்டு வந்தார். கிராமத்தை அமைச்சர்
 கிராம அமைச்சுக்குட்பட்ட டீர்ஸ்: 76/2 - 0.86.0
 76/3A - 0.22.0 மற்றும் 76/6 - 1.10.0 டீர்ஸ்
 கொண்ட டீர்ஸ் கிராமத்தை உள்ளது. மேலும்
 டீர்ஸ் அமைச்சு சுமார் 300 டீர்ஸ் கிராமத்தில் டீர்ஸ்
 சேர்ந்த, சிவசுந்தரன், சிவசுந்தரன்; சிவசுந்தரன், மதுரை
 டீர்ஸ், உயர்மதி சேர்ந்த கிராம சிவசுந்தரன் குமா
 கிராம அமைச்சு கிராம சிவசுந்தரன் குமா.

F. J. [Signature]
 Village Administrative Officer
 No: 51, Eraiyur,
 Karaikal




 Village Administration, 2008 Dec.
 No: 51/83/2008
 22/12/08 TK

ANNEXURE-VIII BLASTING AGREEMENT

संख्यीय फ़ैर न्यायिक

बीस रुपये

₹.20

Rs.20

TWENTY RUPEES

INDIA

INDIA NON JUDICIAL

தமிழ்நாடு தமில்நாடு TAMIL NADU 31/1/2023 15AC 350635

J. Manikandan G. Srinivasan

செயலாளர்

To:

M/S. Ananthavelu,
1st Karanam,
Draiyar(V), Vanur(TK),
Vilupuram(DT), Tamilnadu.

Ref: Your letter dated

Sub: Regarding blasting work using Explosives in your proposed quarry.

Sr,

We are having Explosives License in Form 22 Holding License No.E/SC/TN/22/A50(E70532) Situated in Puthamangalam village, Ulundurpet Taluk, Vilupuram District. Our office functions at Address Karanam Explosives, Alamar Road, Elavanesar Kottal, Ulundurpet TK, Vilupuram DT. We are enacting Two Explosives van for Transporting detonators and class 3 separately for our Magazine to our work site and well experienced and licensed blasters and shot fiers for safe blasting work since 10 years without untoward incident. We are willing to undertake work on contract basis at your Quarry M/S Ananthavelu Blue Metals situated in Draiyar (V), Vanur(TK), Vilupuram (DT), SF NO: 76/2 (0.86.0), 76/3A (0.22.0), 76/6 (1.10.0) over an Extent of 2.18.0 Hectares of patta lands.

Enclosure

J Manikandan

Explosives Magazine License copy

KANNAN EXPLOSIVES
J Manikandan





Application for the position of [Job Title] at [Company Name]. I am writing to express my interest in the position and to highlight my qualifications and experience.



Dear Sir/Madam,

I am pleased to apply for the position of [Job Title] at [Company Name]. I have been following [Company Name] for some time and am impressed by the company's reputation and the opportunities it offers. My background in [Field] and my experience in [Role] make me a strong candidate for this position.

- I have a B.Tech degree in [Field] from [University Name] and have worked for [Company Name] for [Duration].
- During my tenure at [Company Name], I was responsible for [Key Responsibilities] and achieved [Key Achievements].
- I am a self-starter and a team player, and I believe my skills and experience make me a valuable asset to your organization.
- I am confident that I can contribute to the success of [Company Name] and I am looking forward to the opportunity to work with you.
- I have attached my resume and other relevant documents for your review.
- I am available for an interview at any time and would be happy to discuss my qualifications further.
- Thank you for considering my application. I look forward to hearing from you.

[Signature]

[Name], [Address], [City], [State], [Pin Code]

Yours faithfully,

[Name], [Address], [City], [State], [Pin Code]

[Additional information or contact details]

आयुक्त विभाग
DEPARTMENT

भारत सरकार
GOVT. OF INDIA

सर्वे वीर शेर-का
National Award Scheme

CLIPART

सर्वे वीर शेर-का
National Award Scheme

सर्वे वीर शेर-का
National Award Scheme



आयुक्त विभाग
DEPARTMENT

भारत सरकार
GOVT. OF INDIA

सर्वे वीर शेर-का
National Award Scheme

सर्वे वीर शेर-का
National Award Scheme

सर्वे वीर शेर-का
National Award Scheme



**ANNEXURE-IX AFFIDAVIT AND CER
DETAILS**



தமிழ்நாடு தமில்நாடு TAMILNADU

₹ 100/-

CP 984337

Anandavelu
Viluppuram

20.02.2023

K.C. வேலாயுதம்
மு.வி. L.No: 4564/B1/2007,
கம்பைநல்லூர்
காரியங்கலம்-(Tk), தருமபுரி-(Dt).

AFFIDAVIT TO SEIAA-TAMILNADU

I **K.Anandavelu** S/o. Kesavan, aged about 68 years, residing at No.225, Eraiyr Village, Vanur Taluk, Viluppuram District, Tamil Nadu State-604304, solemnly declare and sincerely affirm that, I had applied for getting Prior Environment Clearance to SEIAA-Tamil Nadu for rough stone and gravel quarry in Patta land at S.F.No's. 76/2, 76/3A & 76/6, over an extent of 2.18.0hectares of Eraiyr Village, Vanur Taluk, Viluppuram District, Tamil Nadu State.



1

Handwritten signature and date: 22/2/2023

Cell: 94432 8682.
K. VIJAYAN B.Com.,B.L.,
Advocate & Notary, Roll No.:694/89
21, P.R.Sundaram Iyer Street,
Opp. to Senthilkumar Textiles.
GHARMAPURI - 636 701

SIGNED BEFORE ME

1. I solemnly declare and sincerely affirm that within 10km radius of the quarry site none of the followed is situated.
- There are no protected areas notified under the wild life (Protection) Act, 1972 around 10km radius.
 - No Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act 1974.
 - No Eco-Sensitive areas as notified around 10km radius.
 - The Puducherry state boundary is situated about 4.84kms away on the Southern side from the lease boundary.
 - There is no coastal zone found around 10km radius and this project site doesn't attract CRZ Notification, 2019.
2. I will do the following Corporate Environment Responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	Project Cost (Rs. In Lakh)	CER Cost (Rs in Lakh)
Provision of bore well facilities, Wall mounted urinals for boys, Indian toilet for girls, Bio septic tank, Incineration at Govt. Higher Secondary School, Thazhuthali Village.	70.93 lakhs	5.0lakhs
Total Cost Allocation	70.93 lakhs	5.0lakhs

3. Details of quarry located within 500m radius from the periphery our proposed lease area.

i) Existing Quarry:

Sl. No	Name of the address of the lease /Permit holder	Name of the Mineral	Village & Taluk	S.F. No	Extent (Hect.)	Lease period	Remarks
1.	T.Vasudevan, S/o. Thangavel, Eraiur Village, Vanur Taluk, Villupuram District.	Rough Stone	Eriyur & Vanur	80/3, 80/4, 81/1 81/3 81/4 81/5 81/6	0.28.0 0.47.0 0.48.0 0.36.0 0.36.0 0.35.0 1.18.0	15.02.2019 to 14.02.2024	-

SIGNED BEFORE ME



Call: 94432 86820
K. VIJAYAN B.Com., B.L.,
Advocate & Notary, Roll No.: 694/89
21, P.R.Sundaram Iyer Street,
Opp. to Senthilkumar Textiles.

				94/1A 94/2 94/3	0.27.0 0.29.0 <u>0.79.5</u> 4.83.5		
2.	E.Jayasankar, S/o. Elumalai, No.198, Vinayakar Koil Street, Eraiur Village, Vanur Taluk, Viluppuram District	Rough Stone	Eriyur & Vanur	93/4 93/5 94/1B 94/4	1.14.0 0.21.0 0.27.0 1.75.5 <u>3.37.5</u>	15.02.2019 to 14.02.2024	-
				Total	8.21.0		

ii) Proposed quarry:


Sl. No	Name of the lessee/ Permit holder	Name of the Mineral	Village & Taluk	S.F. No	Extent (Hect.)	Remarks
1.	Thiru K.Anandavelu, S/o. Kesavan, No.225, Mettu Street, Eraiur Village, Vanur Taluk, Viluppuram District.	Rough Stone & Gravel	Eriyur & Vanur	76/2 76/3A 76/6	0.86.0 0.22.0 1.10.0 ----- 2.18.0 -----	-
				Total	2.18.0	

iii) Abandoned quarries:

Sl. No	Name of the address of the lease	Village & Taluk	S.F. No	Extent (in Hect.)	Lease period	Remarks
----Nil----						

4. There will not be hindrance or disturbance to the people living no enrooted / nearby our quarry site while transporting the mineral our material and due to quarrying activities.
5. There is no approved habitation within 300m radius from the periphery of our proposed lease area.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the laborers working in our proposed lease area.


 Anandavelu
 351
 SIGNED BEFORE ME


 K. VIJAYAN B.Com., B.L.,
 Advocate & Notary, Roll No.: 694/89
 21, P.R.Sundaram Iyer Street,
 Opp. to Senthilkumar Textiles,
 DHARMAPURI - 636 701.

- 8. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for transportation of rough stone and gravel.
- 9. I will not engage any child labor in our quarry site and I aware that engaging child labor is punishable under the law.
- 10. All types of safety / protective equipment will be provided to all the laborers working in our proposed lease area.
- 11. No permanent structures, temples etc., are located within 500m radius from the periphery of our proposed lease area.

I ensure to do all the social and Environment commitment as mentioned in the Mining plan to the best of our knowledge.

Deponent

 (K. ANANDAVELU) *LT Anandavelu*



K. Vijayan
 94432 86820
 K. VIJAYAN B.Com., B.L.,
 Advocats & Notary, Roll No.: 694/89
 21, P.R. Sundaram Iyer Street,
 Opp. to Senthilkumar Textiles,
 DHARMAPURI - 636 701.


 4
 SIGNED BEFORE ME

ANNEXURE 10
NABET CERTIFICATE



National Accreditation Board for Education and Training



Certificate of Accreditation

Eco Tech Labs Pvt Ltd.,

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

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

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

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

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

NABET

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

Certificate No.
NABET/EIA/2124/SA 0147

Valid up to
Sep. 15, 2023

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





QCI/NABET/ENV/ACO/23/2877

September 15, 2023

To,

Eco Tech Labs Pvt Ltd.,
48, 2nd main road, Ram Nagar South Extn,
Pallikaranai, Chennai-600100, Tamil Nadu
(**Kind Attention:** Mr. A Dhamodharan)

Sub.: Extension of Validity of Accreditation till December 14, 2023– regarding
Ref.: 1. Certificate no. NABET/EIA/2124/SA 0147
2. Request e-mail dated September 11, 2023

Dear Sir,

This has reference to the Accreditation of your organization under the QCI-NABET EIA Scheme and your request email dated May 15, 2023. It is to inform your good self that the validity of **Eco Tech Labs Pvt Ltd.**, is hereby extended till **December 14, 2023**, or the completion of the accreditation process, whichever is earlier.

2. The above extension is subject to the submission of required documents/information concerning your existing application, timely submission/closure of NC/Obs (if any), and applicable fee (pending if any) during the application process.
3. You are requested not to use this letter after the expiry of the above-stated date.

With best regards.

(A K Jha)
Senior Director
QCI-NABET