

**DRAFT EIA & EMP FOR  
PROPOSED ROUGH STONE AND GRAVEL QUARRY  
CATEGORY – B1**

(Public Hearing Upgraded after Terms of Reference (ToR) as per the provisions of  
EIA Notification 2006 & amendments thereof)

**ToR Identification No. TO24B0108TN5596993N, dated 29.06.2024**

PROPOSED QUARRY LEASE DETAILS	
<b>SURVEY NOS</b>	<b>99/1, 99/3A, 100/1, 100/2 and 100/5A</b>
<b>VILLAGE</b>	<b>THOLLAMUR</b>
<b>TALUK</b>	<b>VANUR</b>
<b>DISTRICT</b>	<b>VILUPPURAM</b>
<b>EXTENT</b>	<b>2.22.5 HA</b>
<b>PROPOSED PRODUCTION QUANTITY FOR FIVE YEARS</b>	<b>ROUGH STONE - 2,06,595 m<sup>3</sup> GRAVEL - 30,428 m<sup>3</sup></b>
<b>LAND</b>	<b>PATTA LAND</b>

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

Category of the Project: B1 Cluster Mining, Total Cluster Area – 10.33.0 Ha  
Baseline Monitoring Period – March 2024 to May 2024

**APPLICANT**

**THIRU.D. GNANAGURU**

**S/o. DHANAPAL**

**NO.219/1C, IYYANAR KOVIL STREET**

**TENNAMADEVI VILLAGE, VIKKIRAVANDI TALUK**

**VILUPPURAM DISTRICT. PIN CODE– 605601**

**ORGANIZATION**

**M/s. GLOBAL MINING SOLUTIONS**

**(NABET ACCREDITED & ISO 9001 CERTIFIED CONSULTANT)**

**PLOT NO.6, SF NO. 13/2, A2, VS CITY, RC CHETTYPATTY,**

**KOTTAMETTUPATTY, OMALUR, SALEM, TAMIL NADU – 636 455**

**NABET ACCREDITATION NO – NABET/EIA/2326/IA 0110**

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**AUGUST - 2024**





## AMENDMENT PAGE

SL	Page No.	Section / Clause / Para / Line (as Applicable)	Date of Amendment	Amendment Made	Reasons of amendment	Signature of Person Authorizing Amendment
1						
2						
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## **ACKNOWLEDGEMENT**

*M/s. Global Mining Solutions, Salem is very much thankful Thiru.D.Gnanaguru, Lessee for the confidence and trust placed on the organization for carrying out Environmental Impact Assessment (EIA) study for the proposed Rough Stone and Gravel quarry over a lease extent of 2.22.5Ha & Cluster extent of 10.33.0 Ha, located at Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State and formulating the Environmental Management Plan (EMP). We also gratefully acknowledge the cooperation and assistance provided by concerned government authorities for collection of secondary information for the preparation of Draft EIA/EMP report. Our sincere thanks to the local people of Thollamur Village and the nearby villages for their whole hearted cooperation and constant involvement during the entire field study without which the study would not have been possible.*

*For: M/s. Global Mining Solutions*

  
(M. Prabu)

Managing Director



## UNDERTAKING

*In line with MoEF OM No. J – 11013/41/2006-IA.II (I) dated 5<sup>th</sup> October 2011, we hereby give our undertaking for owning the content and information in the EIA/EMP report submitted for EC of the proposed Rough Stone and Gravel quarry over a lease extent of 2.22.5 Ha, & Cluster extent of 10.33.0 Ha, located at Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State.*

*For: M/s. Global Mining Solutions*



*Name: Manikandan*

*EIA Coordinator – Mining*



## UNDERTAKING

*In Line with OM no. J-11013/41/2006-IA.II (1) dated 4th Aug 2009 and its Amendments, we hereby confirm that all Terms of Reference issued by Ministry of Environment, Forest and Climate Change vide ToR Identification No. TO24B0108TN5596993N, dated 29.06.2024 of Draft EIA/EMP report for the proposed Stone Quarry over a lease extent of 2.22.5Ha, & Cluster extent of 10.33.0 Ha, located at Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State for the production of 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> of Gravel formation from the proposed lease area and the details has been complied in the Draft EIA/EMP report is factually correct.*

*The EIA/EMP report has been prepared by M/s. Global Mining Solutions (GMS), Salem. GMS is a NABET accredited consultant for preparation of EIA/EMP report of Mining of Minerals (Opencast only) vide certificate No. NABET/EIA/2326/IA 0110, valid till 04.01.2026.*

*For: M/s. Global Mining Solutions*






*Name: Manikandan*

*EIA Coordinator – Mining*



DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

 **QUALITY COUNCIL OF INDIA**  
Creating an Ecosystem for Quality

 **National Accreditation Board for Education and Training** 

**Certificate of Accreditation**


**Global Mining Solutions**  
Plot No - 6 SF No 13/2 A2, VS City, RC Chettypatty,  
Kottamettupatty, Omalur, Salem, Tamil Nadu-636455


*The organization is accredited as **Category-B** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations, 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-opencast mining only	1	1 (a) (i)	A

*Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in IAAC minutes dated February 10, 2023, posted on the QCI-NABET website.*

*The Accreditation shall remain in force subject to continued compliance with the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/23/2724 dated March 31, 2023. The accreditation needs to be renewed before the expiry date by Global Mining Solutions, Salem following the due process of assessment.*



 **Sr. Director, NABET**  
Date: March 31, 2023

Certificate No.  
**NABET/EIA/2326/IA 0110**

Valid up to  
**January 4, 2026**

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





## Declaration by Experts

*Declaration by Experts contributing to the proposed Stone Quarry over a lease extent of 2.22.5.Ha & Cluster extent of 10.33.0 Ha, located at Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State.*

*I, hereby, certify that I was a part of the EIA team that developed the above EIA.*

*EIA Coordinator Name: M. Manikandan*

  
*Signature & Date*

*Period of involvement: March 2024 to May 2024.*

### **Contact information:**

***M/s Global Mining Solutions***


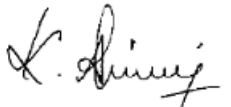

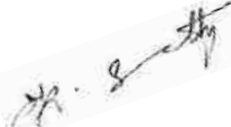



***Plot No.6, SF No. 13/2, A2, VS City, RC Chettypatty,***

***Kottamettupatty, Omalur,***

***Salem, Tamil Nadu – 636 455***



**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

<b>S. No.</b>	<b>Functional areas</b>	<b>Name of the expert/s</b>	<b>Involvement (period and task**)</b>	<b>Signature and Date</b>
1	AP	Dhanalakshmi Ramanathan	Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation measures for air pollution. <u>Period: March 2024 to May 2024.</u>	
2	WP	Abirami Kaliaperumal	Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact. <u>Period: March 2024 to May 2024</u>	
3	SHW	Ramadoss N	Assessment of waste generated from the project, suggested waste management practices. <u>Period: March 2024 to May 2024</u>	
4	SE	Sarasvathy K	Baseline SE studies. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan. <u>Period: March 2024 to May 2024</u>	
5	EB	Saravanan S	Baseline data collection of related to ecology of the area. <u>Period: March 2024 to May 2024</u>	
6	HG	Ravinthiran N	Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area. <u>Period: March 2024 to May 2024</u>	
7	AQ	Srilatha Thiruveedhula	Air quality modeling utilizing the area source model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures. <u>Period: March 2024 to May 2024</u>	

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

8	NV	Dhanalakshmi Ramanathan	<p>Ambient noise study of the area. Incremental noise generation due to quarry operation and impact of the noise due to the project.</p> <p><u>Period: March 2024 to May 2024</u></p>	R.Dhami
9	LU	Dhanalakshmi Ramanathan	<p>Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment.</p> <p><u>Period: March 2024 to May 2024</u></p>	R.Dhami
10	RH	S.V. Prashant	<p>Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker.</p> <p><u>Period: March 2024 to May 2024</u></p>	Prashant
11	SC	Shisupal Sing	<p>Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil.</p> <p><u>Period: March 2024 to May 2024</u></p>	Shisupal Singh
12	GEO	Valliappan Meyyappan	<p>Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area.</p> <p><u>Period: March 2024 to May 2024</u></p>	

## EIA CONTENT EIA CONTENT

CHAPTER NO	TITLE	PAGE NO
<b>1</b>	<b>INTRODUCTION</b>	<b>44</b>
1.1	PURPOSE OF THE REPORT	44
1.2	IDENTIFICATION OF PROJECT AND PROJECT PROPONENT	46
1.3	BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY, REGION	47
1.4	SCOPE OF THE STUDY -DETAILS OF REGULATORY SCOPING CARRIED OUT (AS PER TERMS OF REFERENCE):	48
<b>2</b>	<b>PROJECT DESCRIPTION</b>	<b>51</b>
2.1	TYPE OF PROJECT	51
2.2	NEAD FOR THE PROJECT	52
2.3	LOCATION (MAPS SHOWING GENERAL LOCATION, SPECIFIC LOCATION, PROJECT BOUNDARY & PROJECT SITE LAYOUT):	53
2.4	SIZE OR MAGNITUDE OF OPERATION (INCL.ASSOCIATED ACTIVITIES REQUIRED BY OR FOR THE PROJECT)	61
2.5	PROPOSED SCHEDULE FOR APPROVAL & IMPLEMENTATION	62
2.6	TECHNOLOGY & PROCESS DESCRIPTION	63
2.7	PROJECT DESCRIPTION INCLUDING DRAWING SHOWING PROJECT LAY OUT COMPONENTS OF PROJECT ETC., SCHEMATIC REPRESENTATION OF THE FEASIBILITY DRAWING WHICH GIVE INFORMATION IMPORTANT FOR EIA PURPOSE	68
2.8	DESCRIPTION OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT TO MEET ENVIRONMENTAL STANDARDS ENVIRONMENTAL OPERATING CONDITIONS, OR OTHER EIA REQUIREMENTS (AS REQUIRED BY THE SCOPE)	75
2.9	ASSESSMENT OF NEW & TESTED TECHNOLOGY FOR THE RISK OF TECHNOLOGICAL FAILURE	78
<b>3</b>	<b>DESCRIPTION OF THE ENVIRONMENT</b>	<b>79</b>
3.1	STUDY AREA, PERIOD COMPONENTS AND METHODOLOGY	79
3.2	ESTABLISHMENT OF BASELINE FOR VALUED ENVIRONMENTAL COMPONENTS:	82
3.3	BASE MAP OF ALL ENVIRONMENTAL COMPONENTS	84
<b>4</b>	<b>ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES</b>	<b>127</b>
4.1	DETAILS OF INVESTIGATED ENVIRONMENTAL IMPACTS DUE TO PROJECT LOCATION POSSIBLE ACCIDENTS, PROJECT DESIGN, PROJECT CONSTRUCTION, REGULAR OPERATIONS FINAL DECOMMISSIONING OR REHABILITATION OF A COMPLETE PROJECT.	128
4.2	MEASURES FOR MINIMIZING AND /OR OFFSETTING ADVERSE IMPACTS IDENTIFIED	129

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

4.3	IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF ENVIRONMENTAL COMPONENTS	135
4.4	ASSESSMENT OF SIGNIFICANCE OF IMPACTS (CRITERIA FOR DETERMINING SIGNIFICANCE, ASSIGNING SIGNIFICANCE).	147
4.5	MITIGATION MEASURES	149
<b>5</b>	<b>ANALYSIS OF ALTERNATIVES (TECHNOLOGY &amp; SITES)</b>	<b>154</b>
5.1	DESCRIPTION OF EACH ALTERNATIVE	154
5.2	SUMMARY OF ADVERSE IMPACTS OF EACH ALTERNATIVE	154
5.3	MITIGATION MEASURES PROPOSED FOR EACH ALTERNATIVE	154
5.4	SELECTION OF ALTERNATIVE	154
<b>6</b>	<b>ENVIRONMENTAL MONITORING PROGRAMME</b>	<b>155</b>
6.1	TECHNICAL ASPECTS OF THE MONITORING THE EFFECTIVENESS OF MITIGATION MEASURES (INCL MEASUREMENTS, METHODOLOGIES, FREQUENCY LOCATION DATA ANALYSIS, REPORTING SCHEDULES EMERGENCY PROCEDURES DETAILED BUDGET AND PROCUREMENT SCHEDULES)	155
<b>7</b>	<b>ADDITIONAL STUDIES</b>	<b>159</b>
7.1	PUBLIC CONSULTATION	159
7.2	RISK ASSESSMENT & MANAGEMENT	159
7.3	SOCIAL IMPACT ASSESSMENT (R & R) ACTION PLAN	161
<b>8</b>	<b>PROJECT BENEFITS</b>	<b>172</b>
8.1	IMPROVEMENTS IN THE PHYSICAL INFRASTRUCTURE	172
8.2	IMPROVEMENTS IN THE SOCIAL INFRASTRUCTURE	173
8.3	EMPLOYMENT POTENTIAL: SKILLED, SEMI-SKILLED & UN-SKILLED	173
8.4	OTHER TANGIBLE BENEFITS	173
<b>9</b>	<b>ENVIRONMENTAL COST BENEFIT ANALYSIS</b>	<b>174</b>
<b>10</b>	<b>ENVIRONMENTAL MANAGEMENT PLAN</b>	<b>175</b>
10.1	DESCRIPTION OF THE ADMINISTRATIVE ASPECTS OF ENSURING OF ENSURING THAT MITIGATIVE MEASURES ARE IMPLEMENTED AND THEIR EFFECTIVENESS MONITORED AFTER APPROVAL OF THE EIA	175
<b>11</b>	<b>SUMMARY AND CONCLUSIONS</b>	<b>182</b>
11.1	OVER ALL JUSTIFICATION FOR IMPLEMENTATION OF THE PROJECT	182
11.2	EXPLANATION OF HOW ADVERSE EFFECTS HAVE BEEN MITIGATED	186
<b>12</b>	<b>DISCLOSURE OF CONSULTANTS ENGAGED</b>	<b>200</b>

## **FIGURE LIST**

Figure No	Title	Page No
1.1	Satellite Image showing cluster quarries	45
2.1	Location Map	53
2.2	Google Image Showing Project Site	55
2.3	Surface Plan of the Project Area	56
2.4	Geology Map of Project Area	57
2.5	Topo map of the Project 10 Km Radius	59
2.6	Site Photographs	60
2.7	Water Balance Diagram	63
2.8	Regional Geology Map	67
2.9	Blasting Pattern	69
2.10	Flow Chart of the Quarry Operation	70
2.11	Conceptual Plan	74
3.1	Environmental Setting of the study area	81
3.2	Base Map showing 50m interval	84
3.2a	Satellite Map Of The Project Area (10 Km Radius)	85
3.3	Seismic Map of India	87
3.4	Wind Rose Plot during March to May 2024	88
3.5	Ambient Air Monitoring Locations	90
3.6	Ambient Air Data fom A1 - Mine Lease Area	92
3.7	Ambient Air Data from A2 - Ambuzhukkai village	92
3.8	Ambient Air Data from A3 - Kondalamkuppam Village	93
3.9	Ambient Air Data from A4 - Semangalam Village	93
3.10	Ambient Air Data from A5 - Karasanur Village	94
3.10a	Ambient Air Data from A6 - Eraiyur Village	94
3.11	Water Sampling Locations	97
3.12	Values of Few Common Parameters of the Water Analysis	100
3.13	Noise Monitoring Locations	101
3.14	Day Equivalent Values in 6 Locations	102
3.15	Soil Sampling Locations	102
3.16	Remote Sensing Satellite Image	106
3.17	Land Use/Land Cover Map of the Study Area	109
3.18	Village Map of the Study Area	113
3.19	Gender-Wise Population Distribution	116
3.20	Gender Wise Literacy Distribution	116
3.21	Occupational Structure Within Buffer Zone	117
3.22	10 Km Radius of the Drainage Map	119

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

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3.23	10 Km Radius of the Geology Map	121
3.24	10 Km Radius of the Study Area Geomorphology Map	122
3.25	10 Km Radius of the Study Area Soil Type Map	123
3.26	Non-Monsoon Water Level Map of the 10 Km Radius of the ML	124
3.27	Monsoon Water Level Map of the 10 Km Radius of the ML	125
4.1	Water Balance Diagram	133
4.2	Isopleth of GLC Prediction for PM2.5	142
4.3	Isopleth of GLC Prediction for PM10	143
4.4	Isopleth of GLC Prediction –Cumulative for PM2.5	144
4.5	Isopleth of GLC Prediction –Cumulative for PM10	145
7.1	Isopleth of GLC Prediction for PM2.5	164
7.2	Isopleth of GLC Prediction for PM10	165
7.3	Isopleth of GLC Prediction –Cumulative for PM2.5	166
7.4	Isopleth of GLC Prediction –Cumulative for PM10	167
10.1	Organization Chart	179



## TABLE LIST

Table No	Title	Page No
1.1	CLUSTER MINES DETAILS	44
1.2	PROPOSED PROJECT DETAILS	47
2.1	500M RADIUS CLUSTER MINES DETAILS	51
2.1.a	SALIENT FEATURES OF THE PROJECT	52
2.2	CO-ORDINATES OF THE PROJECT SITE	54
2.3	CURRENT LAND USE PATTERN	57
2.4	LAND USE AT MINE CLOSURE STAGE	58
2.5	STATUS OF STATUTORY CLEARANCES, PERMISSIONS, NOC, CONSENTS	61
2.6	PROPOSED SCHEDULE FOR APPROVAL	62
2.7	WATER REQUIREMENT	64
2.8	MAN POWER BREKUP	64
2.9	MACHINERIES INVOLVED IN THE PROJECT	65
2.10	MINING DETAILS	70
2.11	SUMMARY OF PRODUCTION FOR 5 YEARS	72
2.12	ULTIMATE PIT DIMENSION	73
3.1	DESCRIPTION OF THE LEASE AREA	79
3.2	RAINFALL DATA	86
3.3	DETAILS OF AMBIENT AIR QUALITY MONITORING LOCATIONS	90
3.4	RESULTS OF AIR SAMPLING ANALYSIS IN 6 LOCATIONS	91
3.5	WATER SAMPLING LOCATIONS	96
3.6	Surface Water Analysis Results	98
3.7	RESULTS OF GROUND WATER SAMPLING ANALYSIS IN 6 LOCATIONS	99
3.8	NOISE MONITORING RESULTS	101
3.9	RESULTS OF SOIL SAMPLE ANALYSIS	103
3.10	FLORA IN CORE ZONE	104
3.11	FLORA IN BUFFER ZONE	104
3.12	FAUNA IN BUFFER ZONE	105
3.13	MAJOR LAND USE UNITS OF THE STUDY AREA	111
3.14	MAJOR LAND USE UNITS OF THE STUDY AREA IN PERCENTAGE	112
3.15	VILLAGE DETAILS IN STUDY AREA	114
3.16	POPULATION PROFILE OF THE STUDY AREA	115
3.17	EDUCATIONAL INFRASTRUCTURE	117

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

3.18	MEDICAL INFRASTRUCTURE	118
3.19	OTHER INFRASTRUCTURE	118
4.1	GROUND WATER LEVEL STATUS IN VILUPURAM DISTRICT	134
4.2	IMPACTS AND MITIGATION MEASURES FOR FAUNA	135
4.3	CONCENTRATIONS OF PM2.5 AFTER PROJECT IMPLEMENTATION	146
4.3a	CLUSTER CONCENTRATIONS OF PM2.5 AFTER PROJECT IMPLEMENTATION	146
4.3b	CONCENTRATIONS OF PM10 AFTER PROJECT IMPLEMENTATION	146
4.3c	CLUSTER CONCENTRATIONS OF PM10 AFTER PROJECT IMPLEMENTATION	147
4.4	NOISE LEVELS IN MONITORING LOCATIONS	148
4.5	IMPACTS ON HUMANS DUE TO VARIOUS MINING ACTIVITIES	151
6.1	ENVIRONMENTAL MONITORING SCHEDULE	156
6.2	IMPORTANT RECORDS TO BE MAINTAINED BY PP	158
6.3	ENVIRONMENTAL MANAGEMENT PLAN BUDGET	158
7.1	HAZARDS AND PRECAUTIONARY MEASURES	160
7.2	500M RADIUS CLUSTER MINES DETAILS (AS PER 500M CERTIFICATE)	161
7.3	CONCENTRATIONS OF PM2.5 AFTER PROJECT IMPLEMENTATION	168
7.4	CLUSTER CONCENTRATIONS OF PM2.5 AFTER PROJECT IMPLEMENTATION	168
7.5	CONCENTRATIONS OF PM10 AFTER PROJECT IMPLEMENTATION	168
7.5a	Cluster Concentrations of PM10 after Project Implementation	169
7.6	IMPACT ON TRAFFIC	170
10.1	ENVIRONMENTAL MANAGEMENT PLAN	176
10.2	ENVIRONMENTAL MANAGEMENT PLAN BUDGET	181
11.1	DESCRIPTION OF THE LEASE AREA	185
11.2	DETAILS OF AMBIENT AIR QUALITY MONITORING LOCATIONS	186
11.3	RESULTS OF GROUND WATER SAMPLING ANALYSIS IN 6 LOCATIONS	188
11.4	NOISE MONITORING RESULTS	189
11.5	RESULTS OF SOIL SAMPLE ANALYSIS	189
11.6	MAJOR LAND USE UNITS OF THE STUDY AREA IN PERCENTAGE	190

### **LIST OF ANNEXURES**

<b>S. No</b>	<b>Contents</b>	<b>Annexure No</b>
1	Terms of Reference (ToR)	1
2	Precise Area Communication Letter	2
3	Approved Mining Plan with Plates	3
4	500-meter radius letter	4
5	VAO Certificate	5
6	Land Document	6
7	District Survey Report	7
8	Monitoring Report	8
9	Lab NABL Certificate	9
10	Structures located within 500m radius of the project	10
11	10km Map showing forest and sanctuaries	11
12	Affidavit	12
13	CER Letter	13

# COMPLIANCE TO TERMS OF REFERENCE

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

<b>S.No</b>	<b>ToR Points</b>	<b>Reply</b>	<b>Pg. No</b>
1.1	The Proponent shall furnish a slope stability action plan for the proposed quarry operation, during the EIA appraisal.	The slope stability action plan furnished in the chapter-7.	159
2	The PP shall carry out a comprehensive study indicating the Travelling route used for quarry operation, Crusher activity as proposed pertaining to the traffic surveys and Axle load surveys and demand forecasting for the next 10 years in the cluster area including the Traffic Volume, Identification of possible improvements in the existing alignment and bypassing congested locations with alternatives, investigation of required sub-grade and sub-soil characteristics and strength for road and embankment design and sub soil investigation, identification of sources of construction material, etc.	Complied. The Details are given in chapter 7.	159
3	The Proponent shall study about the addition of proposed quarrying operation in the existing cluster over the economic growth of the area falling within 10 km from the cluster of mines	Complied. Cluster of mines details given in chapter-1	44
4	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 with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, Schools/Colleges 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.	Complied. The Details are given as Annexure.	Complied. Enclosed as Annexure 5
2	<b>SEAC Standard Condition</b>		
2.1	<b>Terms of Reference</b>		
1	In the case of existing/operation mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:	Not applicable. This is a fresh quarry.	-

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

	<p>(i) Original pit dimension  (ii) Quantity achieved Vs EC Approved Quantity  (iii) Balance Quantity as per Mineable Reserve calculated  (iv) Mined out Depth as on date Vs EC Permitted depth  (v) Details of illegal/illicit mining  (vi) Violation in the quarry during the past working  (vii) Quantity of material mined out outside the lining lease area  (viii) Condition of Safety zone/benches  (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6m height and ultimate depth of not exceeding 50m.</p>		
2	<p>Details of habitations around the proposed mining area and latest VAO Certificate regarding the location of habitations within 300m radius from the periphery of the site.</p>	Complied.	Complied. Enclosed as Annexure 5
3	<p>The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.</p>	Complied. The Details are given as Annexure.	Complied. Enclosed as Annexure 5
4	<p>The PP shall submit a detailed hydrogeological report indicating the impact of proposed quarrying operations on the water bodies like lake, water tanks, etc are located within 1 km of the proposed quarry.</p>	The study is under progress. It will be incorporated in the final EIA & EMP.	-
5	<p>The Project Proponent shall carry out Bio-diversity study through reputed institution and the same shall be included in the EIA report.</p>	Complied. The biodiversity report of the study area to be incorporated at the time of final EIA submission.	103

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries. Tiger reserve etc. upto a radius of 25 km from the proposed site.	The DFO letter stating that the proximity distance of RF & PF to be incorporated at the time of final EIA submission.	-
7	In case of proposed lease in an existing (or old) quarry where the benches are not formed(or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic institutions-CSIR Central Institute of Mining & Fuel Research/Dhanbad, NIRM/ Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Suratkal and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	-	-
8	However, in case of the fresh/virgin quarries, the project shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30m below ground level.	It will be complied at the timing of EC appraisal.	-
9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent	Proponent undertaking agreement enclosed	-
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site	Agreed. Will be complied.	-

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	The details to be incorporated at the time of final EIA Submission.	-
12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines	Not applicable. This is a fresh quarry project.	-
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Not applicable. This is a fresh quarry project.	-
14	Quantity of minerals mined out. <ul style="list-style-type: none"> <li>• Highest production achieved in any one year.</li> <li>• Detail of approved depth of mining.</li> <li>• Actual depth of the mining achieved earlier.</li> <li>• Name of the person already mined in that leases area.</li> <li>• If EC and CTO already obtained, the copy of the same shall be submitted.</li> <li>• Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches</li> </ul>	Not applicable. This is a fresh quarry project.	-
15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Project coordinates superimposed in satellite imagery and given as Figure No – 2.1 in Chapter – 2. The geology and geomorphology map are provided in Figure No.3.23, 3.24 Chapter 3. The Soil map are provided under Figure No. 3.25, Chapter-3. The 10km Radius Index plan showing buffer zone is given in Figure No.3.1 & Figure 3.2 in Chapter – 3.	55 & 121
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	This is fresh quarry. The condition will be complied after commencement of the mining operation.	-



**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

17	The proponent shall furnish photographs of adequate fencing, greenbelt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan	There are no trees within ML area. Fencing and plantations are under process. Greenbelt / Plantation will be carried out in the safety zone to enhance the vegetative growth and aesthetic in the safety zone area. In the post mining stage, an area of 2.22.5 Ha will be under greenbelt and plantation.	-
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding, environment and the remedial measures for the same.	The geological reserves are estimated to be rough stone 6,40,500 m <sup>3</sup> and Gravel 42,700 m <sup>3</sup> .  The mineable reserves of rough stone 2,06,595 m <sup>3</sup> and Gravel 30,428 m <sup>3</sup>	47
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of 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. Please refer Fig. 10.1	179
20	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 monitoring data, it may clearly be shown whether working all intersect ground water. Necessary data and documentation in this regard may be provided.	The hydrogeological study from a reputed institute is in progress; however, the final EIA submission report will be incorporated into Chapter 7.	170

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data for all environments is collected for the summer season (March to May 2024).	81
22	The Proponent shall carry out the cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of air pollution, water pollution, & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Detailed cumulative impact study has been carried and the same is incorporated in the Chapter 4. Accordingly, a detailed Environment Management Plan is prepared considering air, water, noise and soil environment and the details are given in Chapter 7.	127 & 159
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Rain water harvesting Plan is given in chapter 4.	127
24	Land use of the study area delineating forest area, agricultural land, grazing land. Wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Satellite imagery has been used to study the lease area and the details of land use is given in Chapter 3.	106
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area distance from mine lease, its land use, R&R issues, if any, should be provided.	Not applicable. There is no generation of the OB & waste.	-
26	Proximity to Areas declared as 'Critically Polluted'(or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	No proximity to Critically polluted areas.	-

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The impact of the mining operations due to this quarry on water environment is studied and mitigation measures are proposed. Rain water harvesting plan is given Chapter 4.	127
28	Impact on local transport infrastructure due to the Project should be indicated	Since the production is very less, only few trucks of 5/10T will be used for transport. The effect of transport on local transport will be negligible.	-
29	A tree survey shall be carried out (Nos. name of species, age, diameter, etc) both within the mining lease applied area & 300m buffer zone and its management during mining activity	There are no trees within 300m buffer zone of the project area.	-
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific	Detailed mine closure plan is given in Chapter 7.	171
31	As 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, where ever possible	Accepted. It will be done.	-
32	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix – I in consultation with the DFO, State Agriculture University 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.	Green belt is proposed in an area of 0.68.0 ha. Green belt development plan provided.	129
33	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	Accepted. The photographs showing green belt will be provided once it is completed.	-

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

	proponent shall earmark the green belt area with GPS coordinates all along the boundary of the project site with at least 3 m wide and in between blocks in an organized manner		
34	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A disaster management plan is prepared and the details are given in Chapter 7.	159
35	A risk assessment and Management plan shall be prepared and included in the EIA/EMP report for the complete life of the proposed quarry or till the end of the lease period	Risk assessment and its management is given in Chapter 7.	159
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational Health Impacts of the project and preventive measures are detailed under Chapter 4.	151
37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No major impact on public health will be there since the villages are located more than 1km from the lease area. Details of CER and CSR are discussed under Chapter No. 8	-
38	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.	Socio economic study is conducted both by visits and secondary data collection.  Details are given in Chapter 3	113
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of law against the Project should be given.	No litigation is pending	-

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project is given in Chapter 8	172
41	If any quarrying operations were carried out in the proposed quarrying site for which now 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.	Not applicable. This is a fresh quarry project.	-
42	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	-	-
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the condition mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986	Agreed	-
<b>4.0 Cluster Management Committee</b>			
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	There are three quarries within a 500-metre radius. The proponent will take the initiative to form a cluster management committee once environmental clearance is obtained for this quarry as well as the other proposed quarries.	
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.,	Agreed. Will be complied.	-
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. The list of members of the committee formed will be submitted to AD/mines after obtaining Environmental Clearance.	-

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

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. Details of the Operation plan for cluster mining operations will be submitted once we get environmental clearance for all quarries proposed in the cluster area.	-
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.	Risk management plan for the individual quarry is given in this report. As far as cluster working condition is concerned, once the committee is formed, risk management as a cluster including inundation of clusters and the evacuation plan will be elaborated and the same will be submitted to the EIA.	-
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.	Environmental policy for the cluster will be framed by the cluster management committee and the policy will be in accordance with EPA Act, 1986 and its amendments, guidelines by MoEF&CC/SEIAA and other regulatory bodies. This policy will be displayed in the quarry.	-
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. It will be complied as mentioned in the Point No.4	-
8	The committee shall furnish the Emergency Management plan within the cluster.	Agreed. It will be complied as mentioned in the Point No.4.	-
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Agreed. It will be complied as mentioned in the Point No.4.	-
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	Agreed. It will be complied as mentioned in the Point No.4.	-
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Agreed. It will be complied as mentioned in the Point No.4.	-

**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	Complied. The details are given in Chapter 3 of the Draft EIA report.	190
b	Climate change leading to Droughts, Floods etc.	The proposed quarry is a very small-scale Opencast-Mechanized mining method and the anticipated impacts to the climate change, droughts, floods, etc. will be very marginal.	-
c	Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people	Considering that the quantum of production is less, only 1 excavator, 3 tippers will be engaged. These equipment's will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned wherein 1100 number of plants will be planted in and around the lease area.	140
d	Possibilities of water contamination and impact on aquatic ecosystem health	The total water requirement is 5.2 KLD. It will be outsourced from the nearby villages. So, no impact in the project area due to water usage. The wastewater generation in the form of runoff water during rainy season will be collected in the bottom quarry through proper drainage pattern and the collected water will be used for plantation and dust separation during dry season. However, there is no wastewater discharge from this quarry is being anticipated. So, possibilities of water contamination and impact on aquatic ecosystem health is not envisaged.	-

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

e	Agriculture, Forestry & Traditional practices	There are no forest area and traditional practices within the project area. However, there are some agricultural lands around the project site. It may be affected due to the quarry operation as such dust particles sedimentation in the agricultural land. It will be controlled at the source level by proper dust separation as such wet drilling, controlled blasting and water sprinkling on the project roads and project surrounding roads. As per Air Quality Modelling the impact of the air quality limited to 0.5km radius. So, there is no impact for the Agriculture, Forestry & Traditional practices located within 10km radius.	-
f	Hydrothermal/Geothermal effect due to destruction in the Environment	The proposed quarry operation is Opencast-Mechanized operation with drilling, blasting, excavation, loading and transportation. So, the effect of Hydrothermal/Geothermal is not envisaged.	-
g	Bio-geochemical processes and its foot prints including environmental stress	This is a simple mining operation, so bio-geochemical processes are not envisaged.	-
h	Sediment geochemistry in the surface streams	There is Sangarabarani River is located at a distance of 3.4 km in South west direction of lease area. Due to mining operation, there may be minimum impact to the said water bodies due to dust sedimentation. It will be controlled by wet drilling, water sprinkling and plantation.	-
<b>Agriculture &amp; Agro-Biodiversity</b>			
13	Impact on surrounding agricultural fields around the proposed mining Area.	Agreed. It is described in the point no. 12 (e) of this ToR Compliance Annexure-1	-
14	Impact on soil flora & vegetation around the project site.	Complied. The details are given in Chapter 3.	103
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area	Complied. The details are given in Chapter 3.	104



**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

	and. If so, transplanted 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.	Complied. The details are given in Chapter 3.	103
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The detailed action plan has been described in the EMP (Chapter 10) for the sustainable management for the project area and its surroundings.	176
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Complied. The details are given in Chapter 11.	77
<b>Forests</b>			
19	The project proponent shall detailed study on impact of mining on Reserve Forests free ranging wildlife.	Oussudu Lake Birds Sanctuary – 11.5 km (SE) and no other reserved forest located in the buffer zone. The fauna commonly found in the core and buffer zone is given in Chapter 3.	80
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	Complied. The details are given in Chapter 3.	79
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Not Applicable. This is a dry barren land.	-
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Oussudu Lake Birds Sanctuary – 11.5km (SE)and no other reserved forest located in the buffer zone. There is no, National Parks, Corridors and Wildlife pathways.	-
<b>Water Environment</b>			
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,	The hydrogeological study from a reputed institute is in progress; however, the final EIA submission report will be incorporated into Chapter 3.	170

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

	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.	There is no waste generation (OB) in this quarry has been envisaged. However, there may be erosion due to rainy season and that is limited within quarry area. The control measures are explained in Chapter 4.	130
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Waterbodies/ Rivers, & any ecological fragile areas.	Complied. The details are incorporated in Chapter 4.	132
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Not applicable.	-
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Fragmentation impact on environment may be due to drilling and blasting. The anticipated impacts and mitigation measures are discussed in Chapter 4.	150
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.	An ecological and biodiversity study has been conducted and the same is incorporated in the Chapter 4 of the Draft EIA/EMP report. However, there is no any features mentioned in this condition within the M.L area. However, the impacts anticipated with respect to the environment of the project area is very negligible and it will be minimized within the project area. The details are described in Chapter 11.	103 & 191

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Agreed.	-
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	Complied. The details are described in Chapter 3.	79
<b>Energy</b>			
31	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilize the Energy shall be furnished.	Complied. The details are described in Chapter 4.	137
<b>Climate Change</b>			
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.	Complied. The details are described in Chapter 4.	138
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	Complied. The details are described in Chapter 4.	137
<b>Mine Closure Plan</b>			
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Complied. Mine Closure Plan has been incorporated in the approved Mining Plan and the same is incorporated in the Chapter 7.	171
<b>EMP</b>			
35	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Complied. The details are described in Chapter 10.	175
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.	Complied. The details are described in Chapter 10.	175

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**Risk Assessment**

37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Complied. The details are described in Chapter 7.	160
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**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.	Complied. The details are described in Chapter 7.	159
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**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.22-65/2017-1A.11I 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. It will be complied in the Final EIA/EMP report.	-
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 on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	Nil	-

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

Standard Terms of Reference for (Mining of minerals)			
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.	Complied.	-
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for.... MTPA of mineral production based on approved project/Mining Plan for.... MTPA. Baseline data collection can be for any season (three months) except monsoon.	Anticipated Environmental Impacts and Mitigation Measures is given in Chapter 4.	130
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided.	Agreed	-
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines, and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also	Land Use Pattern of 10 km Radial Buffer Area of Project Site is given page chapter-3.	110

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.	Land Use Pattern of 10 km Radial Buffer Area of Project Site is given page chapter-3.	110
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	Drainage is given Chapter-3.	119
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be diverted	Drainage map is given Chapter-3.	120
1.8	Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.	Mineral reserves, geological status of the study area is given chapter-2.	61
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	Method of mining Details is Given Chapter-2.	68

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	Details given chapter-3	120
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channeling of the water courses, etc., approach roads, major haul roads, etc should be indicated.	Land Use Pattern of 10 km Radial Buffer Area of Project Site is given page chapter-3.	110
1.12	Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights Area under Surface Area Under Mining Rights(ha) S.N ML/Project Land use Rights(ha) (ha) Area under Both (ha) 1 Agricultural land 2 Forest Land 3 Grazing Land 4 Settlements 5 Others (specify) S.N. Details Area (ha) 1 Buildings 2 Infrastructur 3. Roads 4 Others (specify) Total	Land Use Pattern of 10 km Radial Buffer Area of Project Site is given page chapter-3.	110
1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly	Flora & fauna of 10 km Radial Buffer Area of Project Site is given page chapter-3.	104

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

	specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.		
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.	Details given under description of the environment chapter-4.	146
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.	Details given under description of the environment chapter-3.	109



**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAQMS shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided	Details given under description of the environment chapter-3.	88
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report	Details given under chapter-4.	170
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.	Socioeconomic Environment Details Given Chapter-4.	151
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.	Biological Environment Details Given Chapter-3.	103

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.	Health Details Given Chapter-4.	151
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted	The hydrogeological study from a reputed institute is in progress; however, the final EIA submission report will be incorporated into Chapter 7.	120
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.	Abstraction from the mine on the hydrogeology and groundwater regime details is given chapter-3	120
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	Land subsidence is given chapter-3	121
1.24	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.	Impact due to Water use in Mines and water balance given chapter-4.	134
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs	Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan details given chapter-4	136
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored	It will be complied as possible after investment of quarry operation.	

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

1.27	PP to evaluate the greenhouse emission gases from the mine operation and corresponding carbon absorption plan.	greenhouse emission gases details given chapter-10	175
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan given chapter-7.	159
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	Mining method, technology details given chapter-1.	68
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.	Mineral transportation details given chapter-2.	70
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.	Parking, rest areas and canteen, and effluents/pollution load details given chapter -4	127
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.	PP will provide mobile water tankers with a cost of 1.0 lakhs under EMP.	71
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out	Final Mine Closure Plan and post mining land use details given in chapter-7	171

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

	area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.		
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.	Agreed	-
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.	EMP cost details given chapter-2	61
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio-economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.	Not applicable.	-
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.	CSR details given chapter-11	199
1.38	Corporate Environment Responsibility:	CSR details given chapter-11	199
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.	Environment policy details given chapter- 10.	176
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.	Environment policy details given chapter- 10.	176

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.	-	-
1.42	d) To have proper checks and balances, the company should have a well laid down 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.	-	-
1.43	e) Environment Management Cell and its responsibilities to be clearly spell out in EIA/ EMP report	EMP cell details given Chapter-4	180
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.	Agreed	-
1.45	Status of any litigations/ court cases filed/pending on the project should be provided	Nil	
1.46	PP shall submit clarification from DFO that mine does not fall under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.	Noted	-
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.	Noted	-
1.48	Details on the Forest Clearance should be given as per the format given: Total ML Total Project Area Forest (ha) land (ha) Date of FC Extent of Forest Land Balance area for which FC is yet to be obtained Status of appl for diversion of forest land If more than one provides details of each FC	Noted	-
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report	Noted	-
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by	Noted	-

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

	the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.		
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes	Noted	-
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form	Noted	-
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)	Noted	-
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter, section	Noted	-

## CHAPTER 1

### INTRODUCTION

#### 1.1 PURPOSE OF THE REPORT

Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

Thiru.D.Gnanaguru, S/o. Dhanapal Lessee, has obtained Precise Area communication letter from the Assistant Director, Department of Geology and Mining, Viluppuram to quarry out 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> of Gravel. Over an extent of 2.22.5 Ha, located at the Survey No. S.F.Nos.99/1, 99/3A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State. Hence, this proposed quarry falls under the cluster situation due to the following proposed and abandoned quarries located within 500m radius. The details are given below.

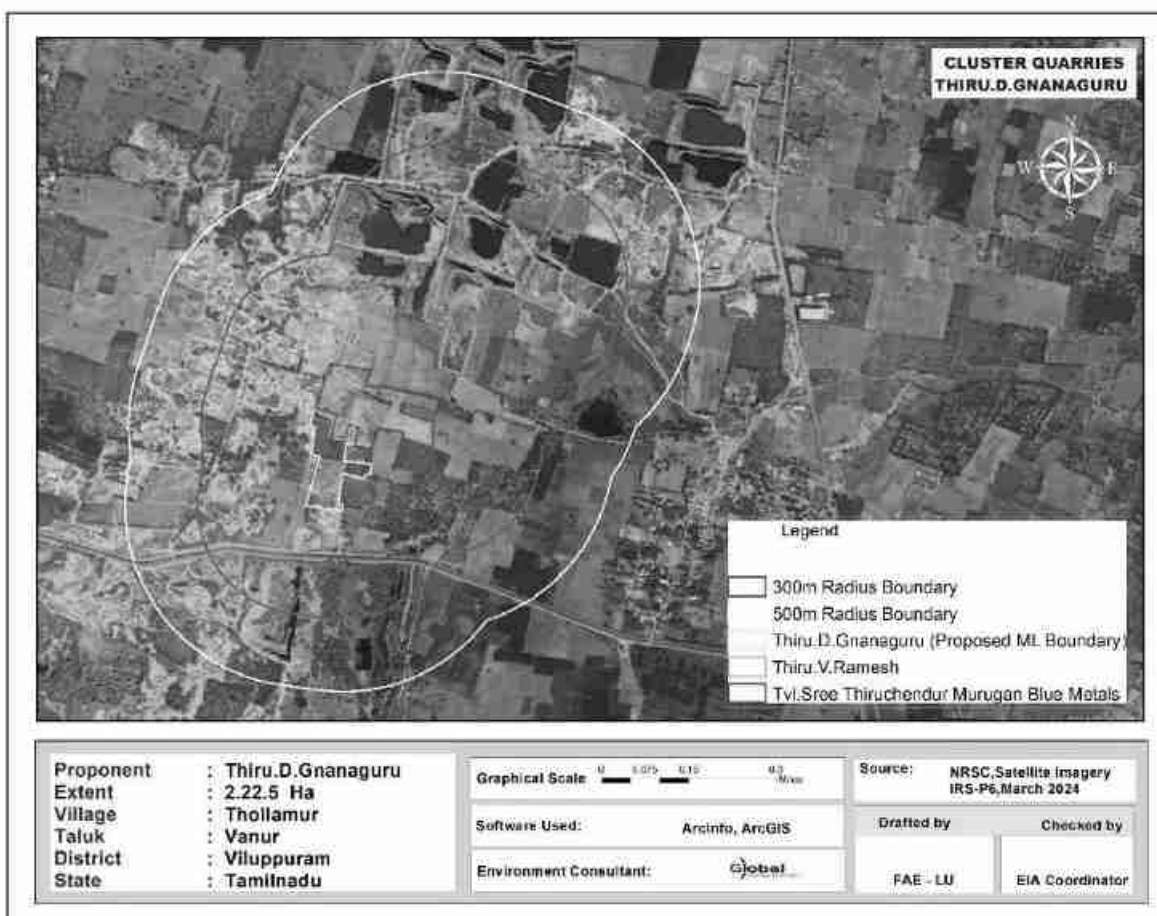
<b>Table 1.1 Cluster Mines Details</b>					
Sl. No	Name and address	Village and Taluk	S.F.No.	Extent (in Ha)	Period of lease
<b>Abandoned Quarries</b>					
1	Nil				
<b>Existing Quarries</b>					
1	Thiru.V.Ramesh, S/o.Vengatapathi, No.5, Thiyagarayar Street, HLL Colony, Pammal, Chennai - 75	Thollamur Village, Vanur Taluk,	16/11, 12, 17/1 & 18/3B	3.53.0 Ha	07.03.2022 to 06.03.2027
2	Tvl.Sree Thiruchendhur Murugan Blue Metals, Represented by its partner, Thiru.P.Subramani No.3-3/3-3, Main Road, Thoravi Village, Vikravandi Taluk, Viluppuram	Thollamur Village, Vanur Taluk	20/1, 2A, 2B, 3, 4, 6, 99/2, 3B & 6	4.57.5 Ha	04.01.2022 to 03.01.2027

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

<b>Proposed Quarry</b>					
1	Thiru.D.Gnanaguru, S/o. Dhanapal, No.219/1C, Iyyanar Kovil street, Tennamadevi Village, Vikkiravandi Taluk, Viluppuram District	Thollamur Village, Vanur Taluk	99/1, 99/3A, 100/1, 100/2 and 100/5A	2.22.5 Ha	Under Proposed Quarry

As per EIA notification, 2006 and its subsequent amendments the proposed Thiru.D.Gnanaguru, S/o. Dhanapal Rough Stone & Gravel Quarry, cluster is falls under Schedule 1(a) Mining of Minerals. It is further classified under Category B1 due to the overall extent of cluster area is 10.33.0 Ha which is >5 Ha. Satellite image of Quarries in Cluster is shown in Fig 1.1.

**Figure.1.1 Satellite Image showing cluster quarries**





The ToR for preparation of EIA/EMP was approved vide ToR Identification No. TO24B0108TN5596993N, dated 29.06.2024. This report has been prepared in line with the approved TOR for production of maximum excavation of 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> of gravel for a period of five years.

## **1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT**

The proposed project is for mining of Rough Stone and gravel (under cluster) from the S.F.Nos.99/1, 99/3A, 100/1, 100/2 and 100/5A over an extent of 2.22.5 Ha in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State. As per EIA notification, 2006 and its subsequent amendments the project comes under Schedule 1 (a) under Category B1 (Lease area >5 to 250 Ha). The proposed project details are given below.

### **(a) Proposed project details**

<b>Sl. No.</b>	<b>Description</b>	<b>Status/Remarks</b>
1.	Sector	Non-coal mining
2.	Category of the project	B1
3.	Proposed mineral	Rough Stone & Gravel quarry
4.	Type of Lease	New quarry
5.	Extent of the lease	2.22.5 Ha
6.	Proposed depth of mining	32m BGL
7.	Method of mining	Opencast method of mechanized with Drilling & Blasting.
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years
10.	Proposed production quantity for five years	Rough Stone: 2,06,595 m <sup>3</sup> Gravel: 30,428 m <sup>3</sup>

### **(b) Profile of the project proponent**

The proposed lessee Thiru.D.Gnanaguru, S/o. Dhanapal is an individual with sound experience in the identification of quarry, operation and marketing in the field of Rough Stone and gravel quarry. The proposed land is patta land, please refer Annexure no -6.

### (c) Project proponent details

Name of the proponent : Thiru.D.Gnanaguru,  
 Status of the Proponent : Individual

Address Thiru.D.Gnanaguru, S/o. Dhanapal,  
 No.219/1C, Iyyanar Kovil street,  
 Tennamadevi Village,  
 Vikkiravandi Taluk,  
 Viluppuram District

### 1.3 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY, REGION:

The proposed quarrying operation Opencast Mechanized method with 5m bench height, 5m bench width and overall bench slope is less than 47°. The quarry operation involves shallow jackhammer drilling, slurry blasting, excavation, loading and transportation.

#### 1.3.1 SIZE AND LOCATION OF THE PROJECT

##### (a) Size of the project

Table1.2 Proposed project details		
Sl. No.	Feature	Description
1	Type of land	Patta land
2	Extent of lease area	2.22.5 Ha
3	Type of lease	New quarry
4	Geological Resource	Rough Stone - 6,40,500 m <sup>3</sup> Gravel - 42,700 m <sup>3</sup>
5	Mineable Resource	Rough Stone - 2,06,595 m <sup>3</sup> Gravel - 30,428 m <sup>3</sup>
6	Proposed production quantity for five years	Rough Stone - 2,06,595 m <sup>3</sup> Gravel - 30,428 m <sup>3</sup>
6	Proposed depth of mining	32m BGL

##### Location of the project

The proposed project site is located in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State and its Latitude: 12°02'58.03"N to 12°03'06.84"N and Longitude: 79°39'57.68"E to 79°40'03.51"E. with Survey of India Topo Sheet No. 57-P/12.

### **1.3.2 IMPORTANCE OF THE PROJECT TO THE COUNTRY AND REGION**

There is an increasing demand for rough stone in India and other countries. Since the construction industry is rapidly growing now, there is an increasing demand for rough stone. Thus, this project will contribute not only to the demand of Rough Stone, but also provide employment opportunities to the nearby villages.

### **1.4 SCOPE OF THE STUDY -DETAILS OF REGULATORY SCOPING CARRIED OUT (AS PER TERMS OF REFERENCE):**

Any mining project may cause environmental impacts near the project site during its operation. The type and intensity of impacts on various components of the environment may vary depending on the nature of the project, as well as its geographical location. The net impacts of the project can be quantified through Environment Impact Assessment (EIA) studies on Physical, Biological and Socio-economic environment. The EIA studies give a basis for preparing an Environmental Management Plan (EMP) to conserve the environment of the area.

For the purpose of preparing EIA/EMP the SEIAA, Tamil Nadu has issued a Terms of Reference ToR Identification No. TO24B0108TN5596993N, dated 29.06.2024 in accordance with the provisions of EIA Notification 2006 and its subsequent amendments. This EIA study includes both Core and Buffer zone i.e., the lease area and 10km radius of the project area respectively. This EIA report prepared based on the data generated from the summer season 2024 (March 2024 to May 2024) and all individual components of environment are described in detail. An in-depth analysis of available information has been made for working out an effective Environmental Management Plan.

#### **1.4.1 PRESENT STUDY**

The Project Proponent has assigned M/s. Global Mining Solutions, Salem for conducting Environment Impact Assessment / Environmental Management Plan (EIA/EMP) for this project. The Environmental Impact Assessment and Environmental Management Plan of this cluster quarry addressing all the environmental related impacts and mitigation measures. The EMP report is based on the data generated from March 2024 to May 2024 by M/s. Shrient Analytical & Research Labs Private Limited, Chennai and the data generated by the FAE of the M/s. Global Mining Solutions, Salem. The study evaluates the prevailing baseline environmental conditions. The objectives of the present study are given below.

- ✦ To prepare the present baseline scenario through primary field monitoring and secondary data for different environmental descriptors such as air, water, noise, traffic, biodiversity, socio-economic etc.
- ✦ To identify the activities of mining that have bearing on the environment
- ✦ To Assess the impact of proposed project activity
- ✦ To suggest preventive mitigation measures
- ✦ To prepare an Environmental Management Plan (EMP) including environmental monitoring.
- ✦ To Prepare Disaster Management Plan.

#### **1.4.2 STATUS OF LITIGATIONS**

This is a fresh Rough Stone and Gravel Quarry project. There is no litigation/court case pending against this project.

##### **a. Precise Area Communication:**

The Project Proponent has obtained Precise Area Communication from the Assistant Director, Department of Geology and Mining, Viluppuram vide Rc.No. A/G&M/116/2023 dated 11.03.2024. The letter copy enclosed as **Annexure – 2**.

##### **b. Mining Plan Approval Letter:**

The project proponent has prepared mining plan under rule 19(1) 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Dept. of Geology & Mining, Viluppuram vide Rc.No. A/G&M/116/2023 dated 18.03.2024. The approval letter along with approved plan is enclosed as **Annexure – 3**.

**c. 500m radius quarry features:**

The project proponent has obtained an official letter from the Assistant Director, Department of Geology and Mining, Viluppuram vide Rc.No. A/G&M/116/2023 dated 02.04.2024. The letter copy enclosed as **Annexure – 4.**

**d. Project Proponent undertaking affidavit:**

The project proponent has issued an affidavit under in matter of Common Cause vs Union of India & Ors. The Affidavit copy is enclosed as **Annexure – 12.**

**e. Land document of the proposed lease area:**

It is patta land registered in the name of Applicant (Thiru. D.Gnanaguru) vide patta no. 1420 and 1389, the copy of the patta, Adangal and A-Register are enclosed as **Annexure-6.**

\*\*\*\*\*

## CHAPTER 2

### PROJECT DESCRIPTION

#### 2.1 TYPE OF PROJECT

The type of the project is Opencast Mechanized Mining to excavate Rough Stone and Gravel within the proposed Mine Lease area with drilling, blasting, loading and transportation. This project is located at S.F. Nos. 99/1, 99/3A, 100/1, 100/2 and 100/5A over an extent of 2.22.5 Ha in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the project comes under Schedule 1 (a) under Category B1 (Lease area >5 to 250 Ha), considering cluster situation and the total cluster area is 10.33.0 Ha. The details of mines located in the cluster area is certified by Assistant Director, Dept. of Geology & Mining, Viluppuram vide Rc.No. A/G&M/116/2023 dated 02.04.2024.

<b>Table 2.1 500m Radius Cluster Mines Details</b>					
Sl. No	Name and address	Village and Taluk	S.F.No.	Extent (in Ha)	Period of lease
<b>Abandoned Quarries</b>					
1	Nil				
<b>Existing Quarries</b>					
1	Thiru.V.Ramesh, S/o.Vengatapathi, No.5, Thiyagarayar Street, HLL Colony, Pammal, Chennai - 75	Thollamur Village, Vanur Taluk,	16/11, 12, 17/1 & 18/3B	3.53.0 Ha	07.03.2022 to 06.03.2027
2	Tvl.Sree Thiruchendhur Murugan Blue Metals, Represented by its partner, Thiru.P.Subramani No.3-3/3-3, Main Road, Thoravi Village, Vikravandi Taluk, Viluppuram	Thollamur Village, Vanur Taluk	20/1, 2A, 2B, 3, 4, 6, 99/2, 3B & 6	4.57.5 Ha	04.01.2022 to 03.01.2027

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

<b>Proposed Quarry</b>					
1	Thiru.D.Gnanaguru, S/o. Dhanapal, No.219/1C, Iyyanar Kovil street, Tennamadevi Village, Vikkiravandi Taluk, Viluppuram District	Thollamur Village, Vanur Taluk	99/1, 99/3A, 100/1, 100/2 and 100/5A	2.22.5 Ha	Under Proposed Quarry

The proposed production is 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> of Gravel by open cast mechanized mining method.

## **2.2 NEED FOR THE PROJECT**

The salient features of the proposed Rough Stone quarry of Thiru.D.Gnanaguru.

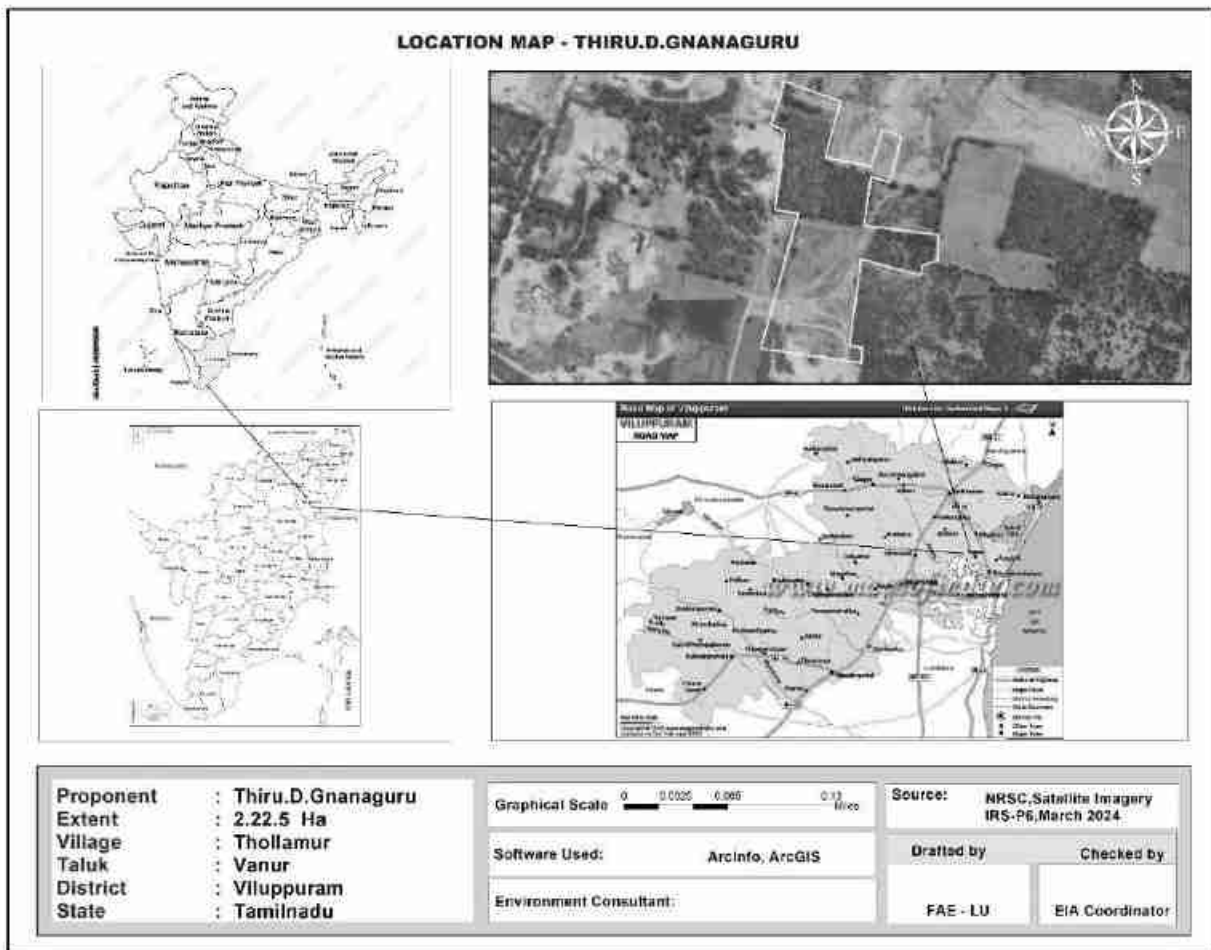
<b>Table 2.1a Salient features of the project</b>		
<b>S.No.</b>	<b>Type of Detail</b>	<b>Description</b>
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	New Project
3	Category	B1
4	Nature of mineral	Minor Mineral
5	Life of the mine	5 years
6	Production Quantity for five years	Rough Stone - 2,06,595 m <sup>3</sup> Gravel - 30,428 m <sup>3</sup>
7	Waste generation and management	Nil
8	Bench height and width	Proposed bench height & width is 5.0m respectively and number of proposed benches is 7 Nos (1+6).
9	Ultimate pit depth	32 m BGL
10	End use	The excavated Rough Stone and Gravel is used for construction industries for Government & Public sector projects besides catering domestic housing and infrastructure projects in and around the district.

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**2.3 LOCATION (MAPS SHOWING GENERAL LOCATION, SPECIFIC LOCATION, PROJECT BOUNDARY & PROJECT SITE LAYOUT):**

This project site is located in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State. The Nearest Railway line is Viluppuram – Chennai line which is about 12.8 km on North West side of the area. The National Highway (NH-32) Thindivanam – Thoothukudi is about 9.0 Km on north east side of the area. The State Highway (SH-136) Vellemedupettai – Puducheery about 1.9 Km on North east side of the area. The general location is given in Figure 2.1. Map of the project area is given in Figure 2.2.

**FIGURE 2.1 LOCATION MAP**





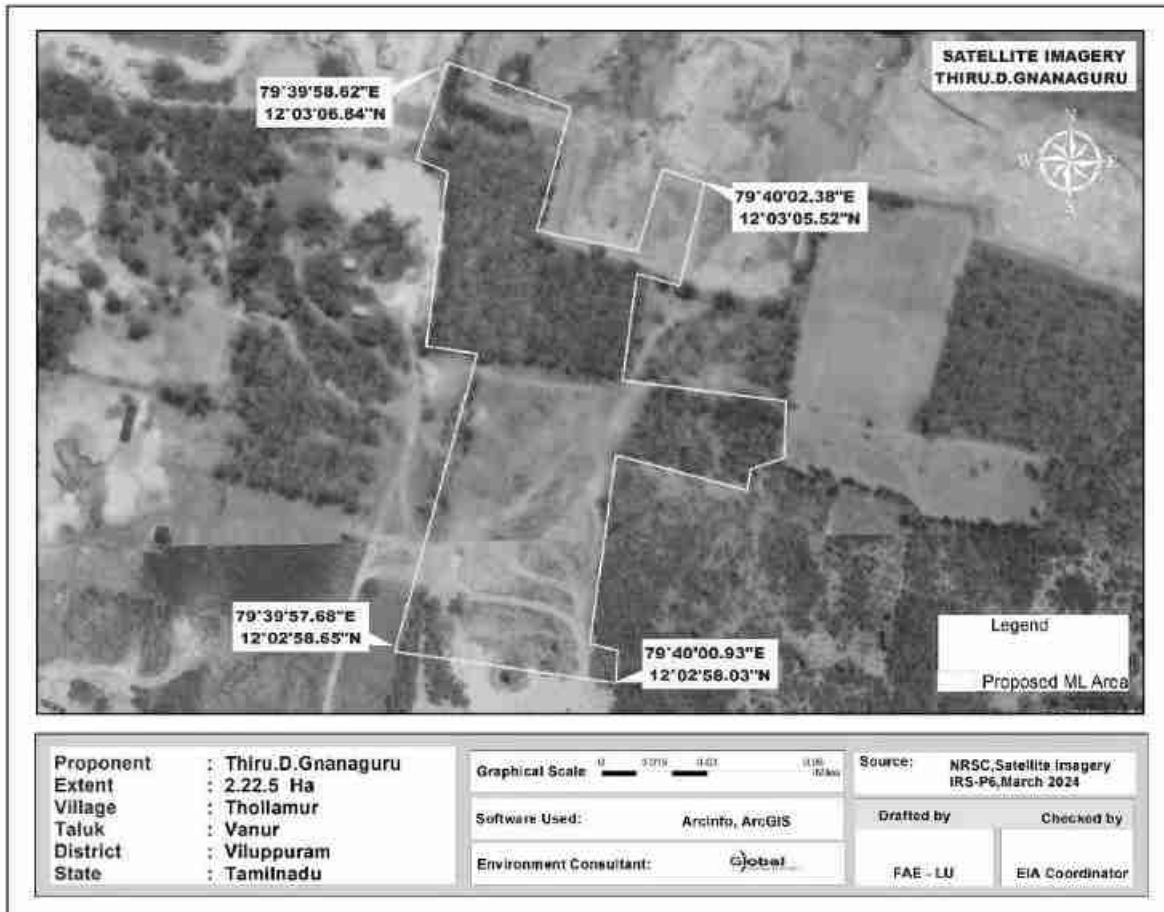
**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**Table 2.2 Co-Ordinates of the Project Site**

Corners	Co-ordinates		Distance between the corners
	Latitude	Longitude	
1	12° 02' 58.65"N	79° 39' 57.68"E	1-2 = 31.6m
2	12° 02' 59.63"N	79° 39' 58.01"E	2-3 = 113.0m
3	12° 03' 03.16"N	79° 39' 59.06"E	3-4 = 22.0m
4	12° 03' 03.30"N	79° 39' 58.35"E	4-5 = 76.4m
5	12° 03' 05.77"N	79° 39' 58.64"E	5-6 = 8.2m
6	12° 03' 05.89"N	79° 39' 58.40"E	6-7 = 30.0m
7	12° 03' 06.84"N	79° 39' 58.62"E	7-8 = 55.2m
8	12° 03' 06.21"N	79° 40' 00.32"E	8-9 = 49.2m
9	12° 03' 04.67"N	79° 39' 59.86"E	9-10 = 51.0m
10	12° 03' 04.35"N	79° 40' 01.52"E	10-11 = 42.6m
11	12° 03' 05.70"N	79° 40' 01.85"E	11-12 = 4.0m
12	12° 03' 05.67"N	79° 40' 01.98"E	12-13 = 13.0m
13	12° 03' 05.52"N	79° 40' 02.38"E	13-14 = 49.4m
14	12° 03' 03.96"N	79° 40' 01.99"E	14-15 = 16.0m
15	12° 03' 04.09"N	79° 40' 01.48"E	15-16 = 42.2m
16	12° 03' 02.76"N	79° 40' 01.13"E	16-17 = 15.6m
17	12° 03' 02.66"N	79° 40' 01.64"E	17-18 = 59.0m
18	12° 03' 02.13"N	79° 40' 03.51"E	18-19 = 28.2m
19	12° 03' 01.21"N	79° 40' 03.44"E	19-20 = 8.4m
20	12° 03' 01.18"N	79° 40' 03.16"E	20-21 = 10.4m
21	12° 03' 00.84"N	79° 40' 03.08"E	21-22 = 63.8m
22	12° 03' 01.34"N	79° 40' 01.03"E	22-23 = 85.4m
23	12° 02' 58.58"N	79° 40' 00.70"E	23-24 = 10.6m
24	12° 02' 58.50"N	79° 40' 01.04"E	24-25 = 15.0m
25	12° 02' 58.03"N	79° 40' 00.93"E	25-1 = 100.0m

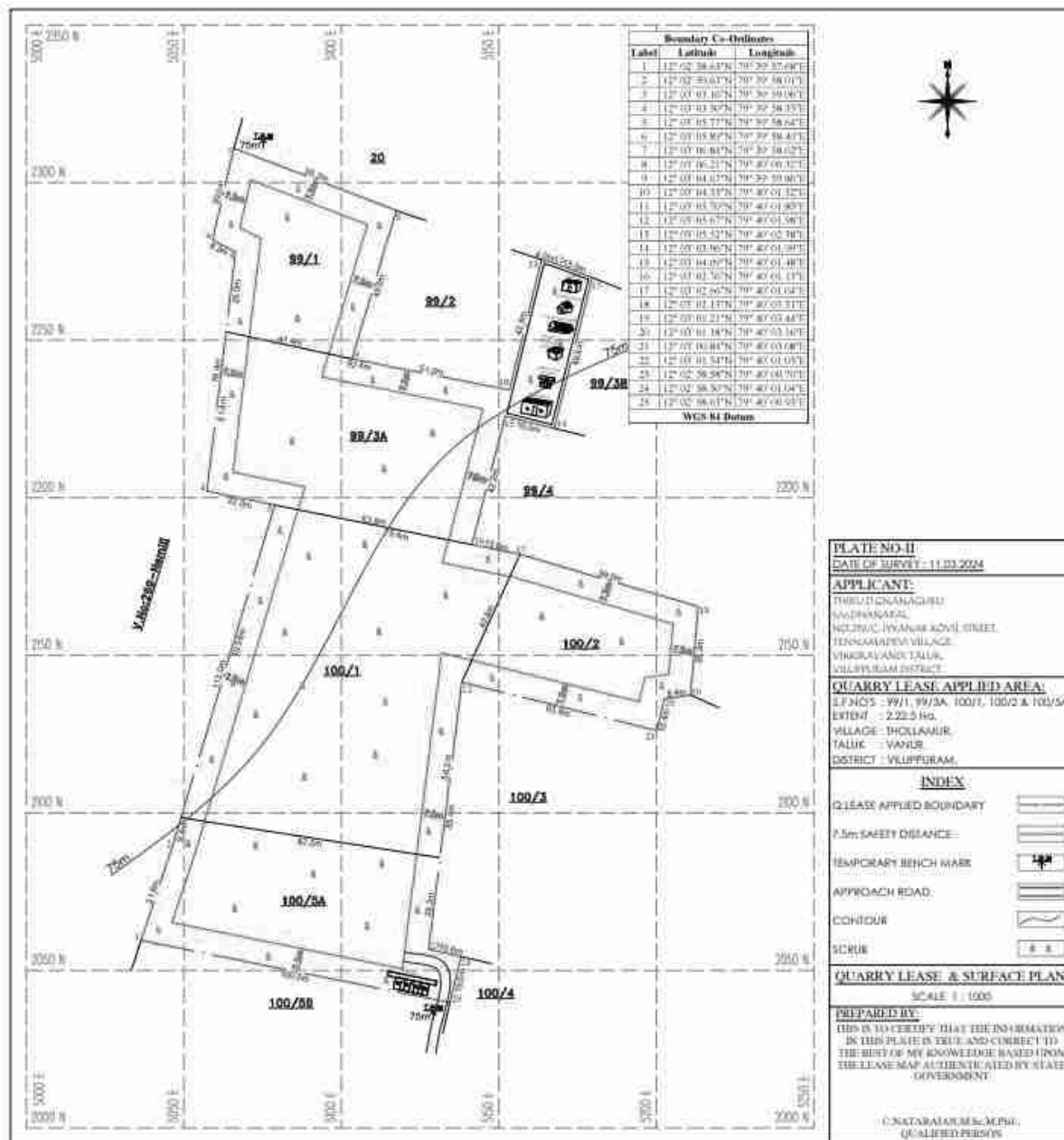
DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

**FIGURE 2.2 GOOGLE IMAGE SHOWING PROJECT SITE**



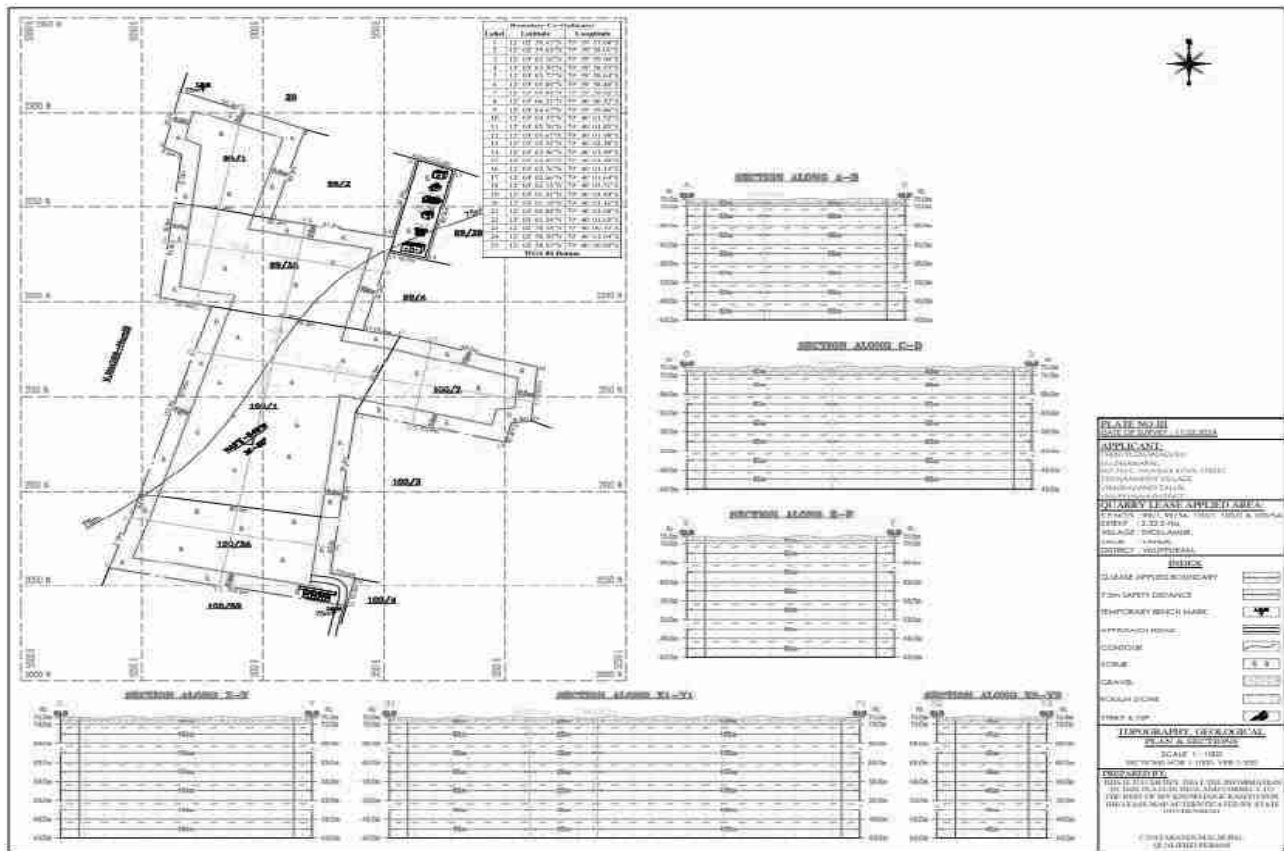
**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**FIGURE 2.3 SURFACE PLAN OF THE PROJECT AREA**



**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**FIGURE - 2.4 GEOLOGY MAP OF PROJECT AREA**



**2.3.1 PROJECT SITE LAYOUT**

The proposed Mine Lease area is patta land and the Land use pattern of the project site is given below Table 2.5.

<b>S. No.</b>	<b>Land Use</b>	<b>Present Area (Ha)</b>	<b>Area in use during the quarrying period (Ha)</b>
1	Quarrying Pit	Nil	1.51.5
2	Infrastructure	Nil	0.02.0
3	Roads	Nil	0.01.0
4	Green Belt	Nil	0.68.0
5	Unutilized	2.22.5	Nil
	<b>Total</b>	<b>2.22.5</b>	<b>2.22.5</b>

### 2.3.2 LAND USE AT MINE CLOSURE STAGE

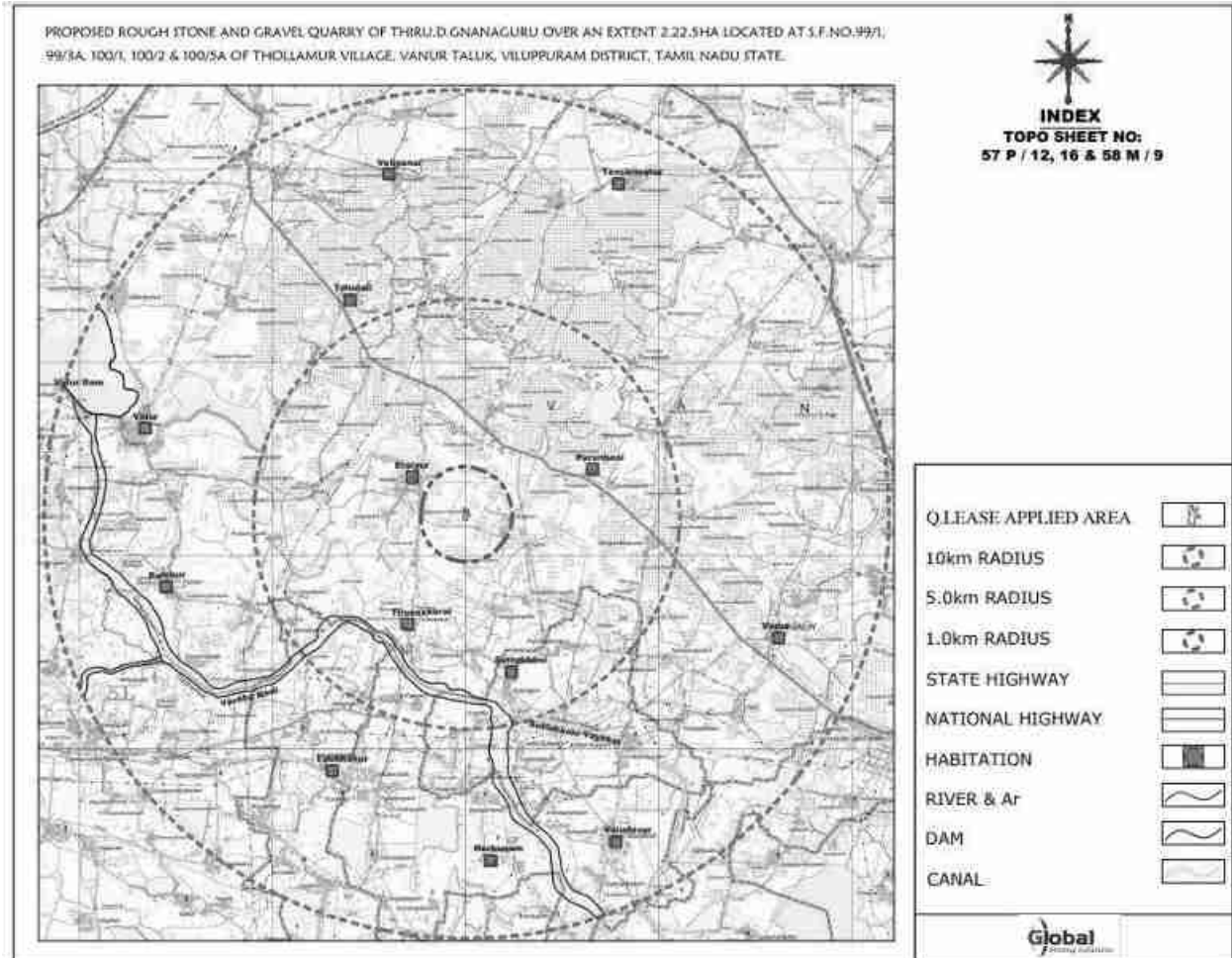
<b>S. No.</b>	<b>Land Use</b>	<b>Area in use during the quarrying period (Ha)</b>
1	Area left for water body	1.51.5
2	Green Belt	0.68.0
3	Remaining area	0.03.0
<b>Total</b>		<b>2.22.5</b>

### 2.3.3 SALIENT FEATURES OF THE LEASE AREA

<b>Sr.No</b>	<b>Salient Features</b>	<b>Description</b>
1	Nearest Roadway	<ul style="list-style-type: none"> <li>• There is an existing road from the area leads to Nemili to Thollamur village road on south side of the area.</li> <li>• The Nearest Railway line is Viluppuram – Chennai line which is about 12.8km on north west side of the area.</li> <li>• National Highway (NH-32) Thindivanam – Thoothukudi 9.0km on north west side of the area.</li> <li>• The State Highway (SH-136) Vellemedupettai – Puducheery is about 1.9 Km on North eastern side of the area.</li> </ul>
2	Nearest Village	Thollamur Village - 730m - E
3	Nearest Railway station	Perani - 13.5m – NW
4	Nearest Airport	Puducheery – 18.0km – SE

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**Figure 2.5 Topo Map showing existing site features**



**FIGURE 2.6 PROJECT SITE PHOTOGRAPHS**



**2.4 SIZE OR MAGNITUDE OF OPERATION(INCL.ASSOCIATED ACTIVITIES REQUIRED BY OR FOR THE PROJECT):**

The proposed production is rough stone 2,06,595 m<sup>3</sup> and 30,428 m<sup>3</sup> Gravel by Opencast Mechanized mining method. Available Geological Resources of Rough stone 6,40,500 m<sup>3</sup> and Gravel 42,700 m<sup>3</sup>. Cost of the project is Rs. 281.73 lakhs including land cost. Capital cost for EMP is Rs. 58.40 lakhs and recurring cost for the EMP is Rs. 26.69 Lakh/Annum.

**2.4.1 STATUS OF STATUTORY CLEARANCES, PERMISSIONS, NO OBJECTION CERTIFICATES, CONSENTS:**

The mining project will be implemented after getting all the Statutory Clearances, Permissions, No Objection Certificates, consents etc. which are required/necessary for this project under various Acts, Rules and Regulations is as given in table below:

**Table - 2.5 Status of Statutory Clearances, Permissions, NOC, Consents**

S.No	Particular	Status
1	Mining Plan Approval Status	The project proponent has prepared mining plan under rule 19(1) 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Dept. of Geology & Mining, Viluppuram vide Rc.No. A/G&M/116/2023 dated 18.03.2024.
2	Environment Clearance Status	ToR Letter Received vide file no TO24B0108TN5596993N, dated 29.06.2024.
3	Grant of Consent to Establish (CTE)	After 30 days from grant of EC (Duration as per TNPCB)
4	Grant of Consent to Operate (CTO)	After 30 days from grant of EC (Duration as per TNPCB)



## **2.5 PROPOSED SCHEDULE FOR APPROVAL & IMPLEMENTATION**

Proposed schedule for approval of the proposed mining project is given as under:

**Table - 2.6 Proposed Schedule for Approval**

S.N	Activity Description	Oct 2024	Nov 2024	Dec 2024	Jan 2025
1	Submission of Final EIA/EMP Report to SEIAA-TN				
2	Consideration for EC by SEAC				
3	Recommendation of SEAC to SEIAA				
4	Grant of EC by SEIAA				

*Proposed schedule has been prepared as per EIA Notification, 2006*

Note: Application was submitted to Parivesh Portal on 21.05.2024, ToR was granted on 29.06.2024. Baseline data Collection during Summer Season (March to May 2024). After obtaining EC from SEIAA-TN, CTE and CTO under section 21 of the Air (Prevention and Control Act) 1981 and section 25/26 Water (Prevention and Control of Pollution Act) 1974 will be obtained from Tamil Nadu State Pollution Control Board (TNPCB).

### **2.5.1 IMPLEMENTATION**

Implementation of the proposed mining project will be done in accordance with the existing Acts and Rules applicable on mining operations as well as in accordance with any Act/Rule/Guidelines issued by Central or State Government from time to time and as per Mining Plan and Progressive Mine Closure Plan approved by Assistant Director, Dept. of Geology & Mining, Viluppuram vide Rc.No. A/G&M/116/2023 dated 18.03.2024.

## **2.6 TECHNOLOGY & PROCESS DESCRIPTION**

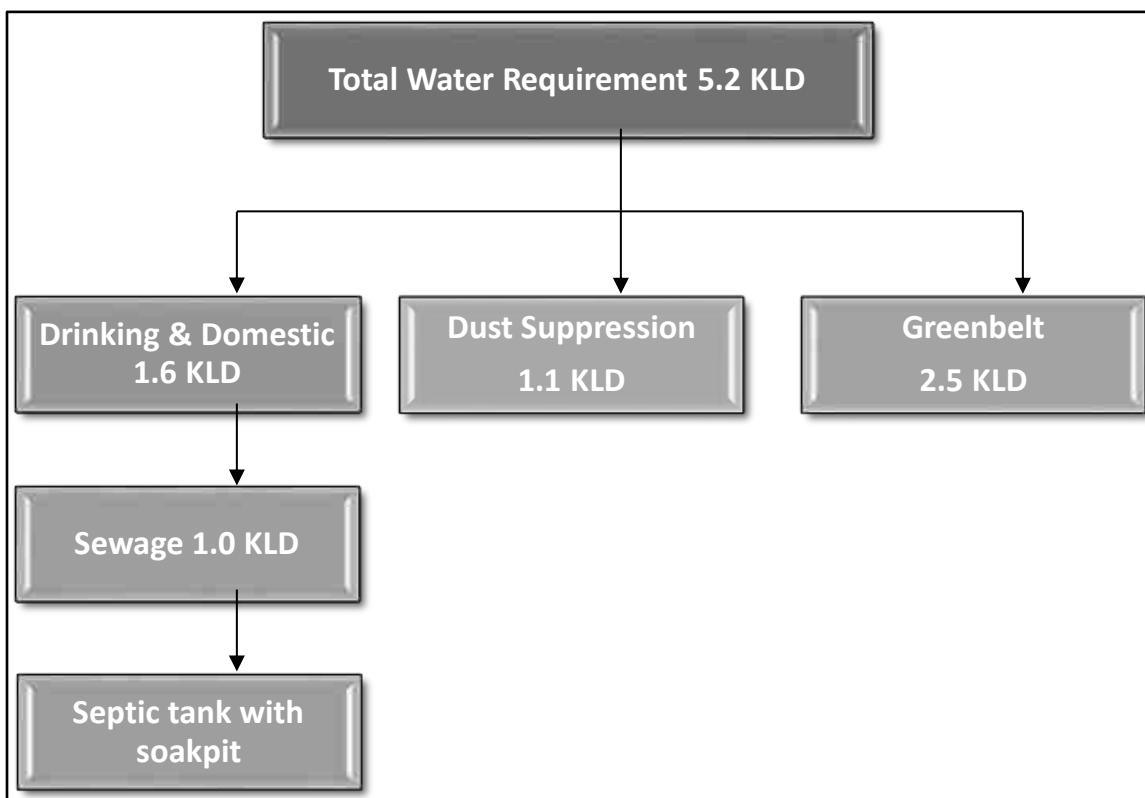
### **2.6.1 BASIC REQUIREMENTS FOR THE PROJECT**

The project requirements such as water, power, man-power, fuel, machinery with source of supply is described in the sections below.

### **2.6.2 WATER REQUIREMENTS**

In the proposed mines water will be mainly used for domestic purpose, dust suppression & plantation. Total water requirement for the project is 5.2 KLD which will be sourced from outside agencies. Negligible sewage of 1.0 KLD will be generated, for which a septic tank with soak pit will be set up. The water balance diagram is given below.

**FIG 2.7 WATER BALANCE DIAGRAM**



**Table - 2.7 Water Requirement**

S. No	Particular	Water Requirement (KLD)
1	Dust suppression	1.1
2	Drinking/Domestic	1.6
3	Greenbelt/Plantation	2.5
	Total	5.2

### **2.6.3 POWER REQUIREMENT**

Total Fuel requirement is **170.35** KL for entire life of the project. Power will be used only in the office building

### **2.6.4 MAN POWER REQUIREMENT**

Total Manpower requirement will be 25 persons which out of which 10 persons (Mines manager, Foreman, Mining Mate, etc.,) and other are drivers and workman's categories. Beside this, 15 workmen will be drivers and workmen. Preference will be given to the locals as per their eligibility.

**Table - 2.8 Man Power breakup**

S.No	Description	Employment potential
1	Mines Manager	1 No.
2	Foreman / Mate	2 Nos.
3	Operator	6 Nos.
4	Mechanic	1 No.
5	Driver	3 Nos.
6	Labours	12 Nos
	<b>Total</b>	<b>25 Nos</b>

## **2.6.5 EXTENT OF MECHANIZATION**

<b>Table 2.9 Machineries involved in the project</b>				
<b>S.No.</b>	<b>Particulars</b>	<b>capacity</b>	<b>Motive Power</b>	<b>Nos</b>
1.	Jack hammer	32mm dia	Compressed air	4
2.	Compressor	1 psi	Diesel drive	1
3.	Excavator with Bucket and Rock Breaker	0.90 m <sup>3</sup>	Diesel drive	1
4.	Tippers	5/10 Ts	Diesel drive	3

Source: Approved Mining Plan

Note: The mining equipment's of the above capacities are adequate for total material handling requirements for the proposed production of Rough stone and Gravel quarry in the ML area.

## **2.6.6 GEOLOGY AND TOPOGRAPHY**

### **Topography**

The mine lease area of 2.22.5 Ha is covered in the Survey of India Toposheet 57 P/12 and is bounded by Latitude: 12°02'58.03"N to 12°03'06.84"N and Longitude: 79°39'57.68"E to 79°40'03.51"E. No major river is found nearby the lease applied area. Water table is found at a depth of 65m. Temperature of the area is reported to be 18°C to a maximum of 42°C during summer. Rainfall of this area is about 800 mm to 900 mm during the both NE & SW monsoons.

The topo map showing the lease area of the proposed quarry is given in **Figure 2.1** and Satellite map showing proposed lease area is given in **Figure 2.2**.

The elevation of the proposed quarry is 75m (maximum) from MSL. There is no forest land in the mine lease area. The project site is dry land which is not fit for any cropping.

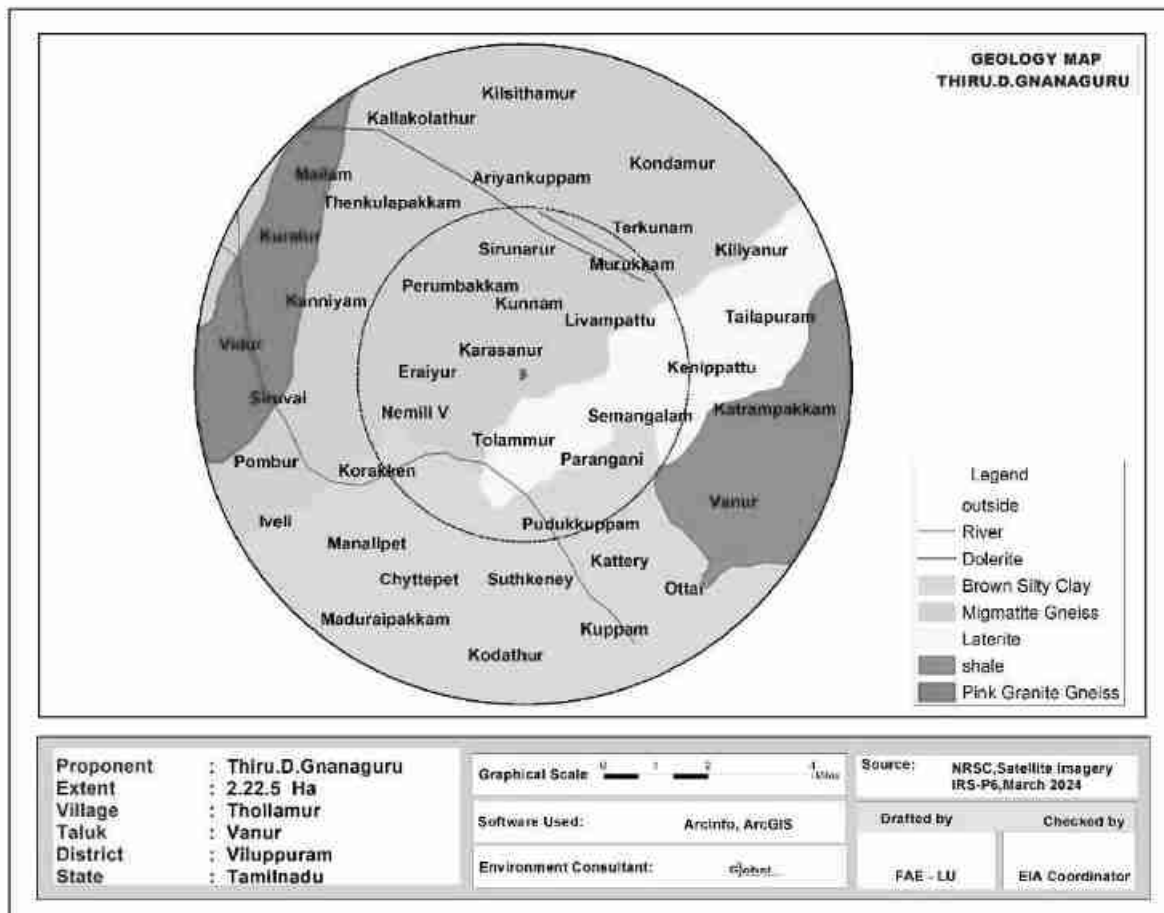
### **2.6.7 Regional Geology**

Geologically Villupuram District is mostly underlain by the Archaean crystalline and metamorphic complex. The geology of the district is complicated due to recurring tectonic and magmatic activities occurred during Pre-Cambrian period. Hornblende Biotite Gneisses are the oldest rocks of the district. It is very fissile and present widely in plains. The gneisses are highly weathered upto 30 m at some places.

The Charnockites are coarse grained, massive and foliated at places and their colour is bluish dark to grey. They are the second largest rock type present in the district. They are massive and less weathered than the gneisses. They exhibit 2 to 3 distinct set of joints and most of them are vertical with steep dips. Iron ore deposits associated with quartz feldspathic gneiss and garnetiferous quartz gneisses are present in some areas. These rocks are highly folded and jointed and less weathered. Quartzite and crystalline lime stones are exposed in patches in north and central parts of the district. The thickness of these bands varies from a few meters to ten meters and the length extends to few kilometres. Numerous lenses of dunite with magnesite veins of various dimension are exposed within gneiss. There are number of basic dykes present in the study area. Granites are found in some parts of the district. They are massive and jointed poorly. Thin veneer of alluvium is found along the course of the Pennaiyaru. However, alluvium of few meters thickness is found near the junction of river Vada Pennaiyaru. Several faults and shears are occurring mostly with north east-southwest trend. They are expected to influence the course of groundwater movement, its storage and developmental potentials in the district. Regional Geology map for the 10 Km radius from the proposed project site is given as **Figure 2.6.**

DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

**FIGURE 2.8 REGIONAL GEOLOGY MAP - 10 Km RADIUS FROM PROJECT AREA**



### 2.6.8 Local Geology

#### Geological Resources

The area is underlain by the wide range of metamorphic rocks of peninsular gneissic complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The geological formations found in the district are Archaean rocks like Gneisses, Granites, Charnockites basic granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite.

The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high-grade metamorphic rock. The strike of the Charnockite formation is N45°E – S45°W with dipping towards SE80°.

The general geological succession of the area is given as under.

↑	<b>AGE</b>	<b>ROCK TYPE</b>
	Recent	- Gravelly soil Unconformity
	Archaean	- Dolerite dyke Charnockite. Peninsular Gneissic complex and Calc Gneiss

**2.7 PROJECT DESCRIPTION INCLUDING DRAWING SHOWING PROJECT LAY OUT COMPONENTS OF PROJECT ETC., SCHEMATIC REPRESENTATION OF THE FEASIBILITY DRAWING WHICH GIVE INFORMATION IMPORTANT For EIA PURPOSE.**

**2.7.1 PROCESS DESCRIPTION**

**METHOD OF MINING**

Opencast mechanized method with 5.0 m height 5.0m width and overall, 47° slope of the bench. It is proposed to excavate 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> Gravel. No wastage is envisaged as the entire material available is Rough Stone and Gravel only.

**TIMING**

Mining will be done on single shift basis. Timing will be 8 hours from 8 AM to 1 Noon and 2 PM to 5 PM. Lunch time will be provided between 1 Noon and 2 PM. Timing may be variable from season to season depending upon the sunrise and sunset. Weekly one day will be declared as holiday.

**BENCH GEOMETRY**

Height (max) and Width (max) of the benches will be maintained as 5m each and overall, 47° slope of the bench.

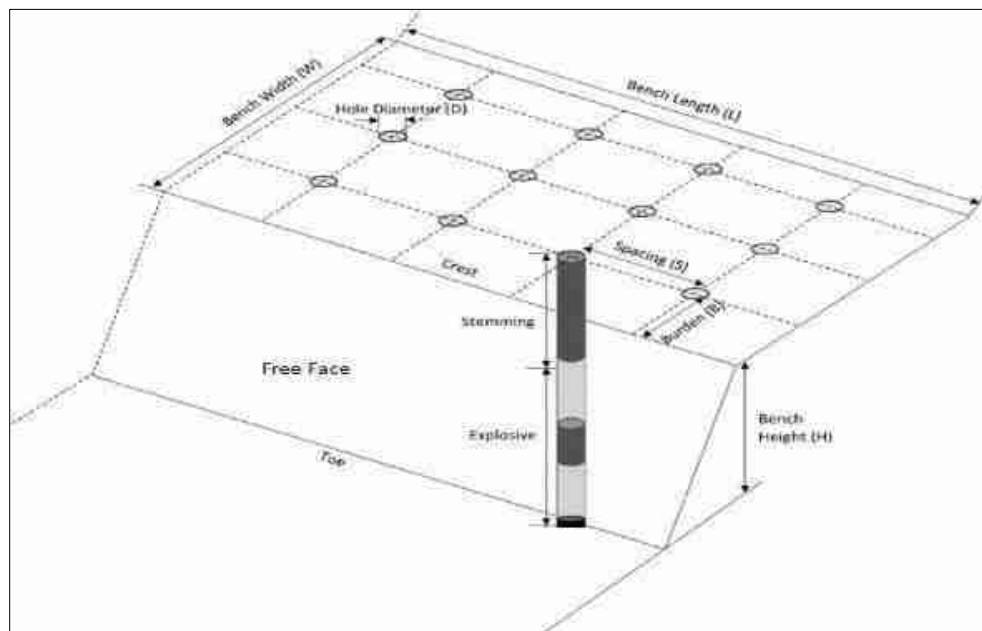
## DEVELOPMENT OF MINING FACES

The proposed mining method is Opencast Mechanized mining. Site preparation as such bush cleaning, approach road, office and sanitary facilities will be done after obtaining all the statutory clearances as such Environmental Clearance, Consent to Operate, Lease Deed, etc., Once site is ready will start the quarrying operation and it is anticipated in the month of March 2025.

## DRILLING & BLASTING

Drilling will be done upto maximum depth of 32m BGL (Drilling diameter will be 32 mm). Jackhammer will be used for drilling with water spray. Powder factor of explosives for breaking such hard rock shall be in the order of 6 Tonnes per Kg of explosives. Small dia 25mm slurry explosive is proposed to be used for shattering and heaving effect for removal of Rough Stone & Gravel. The proposed blasting pattern is given as **Figure 2.9**.

**FIGURE 2.9 BLASTING PATTERN**

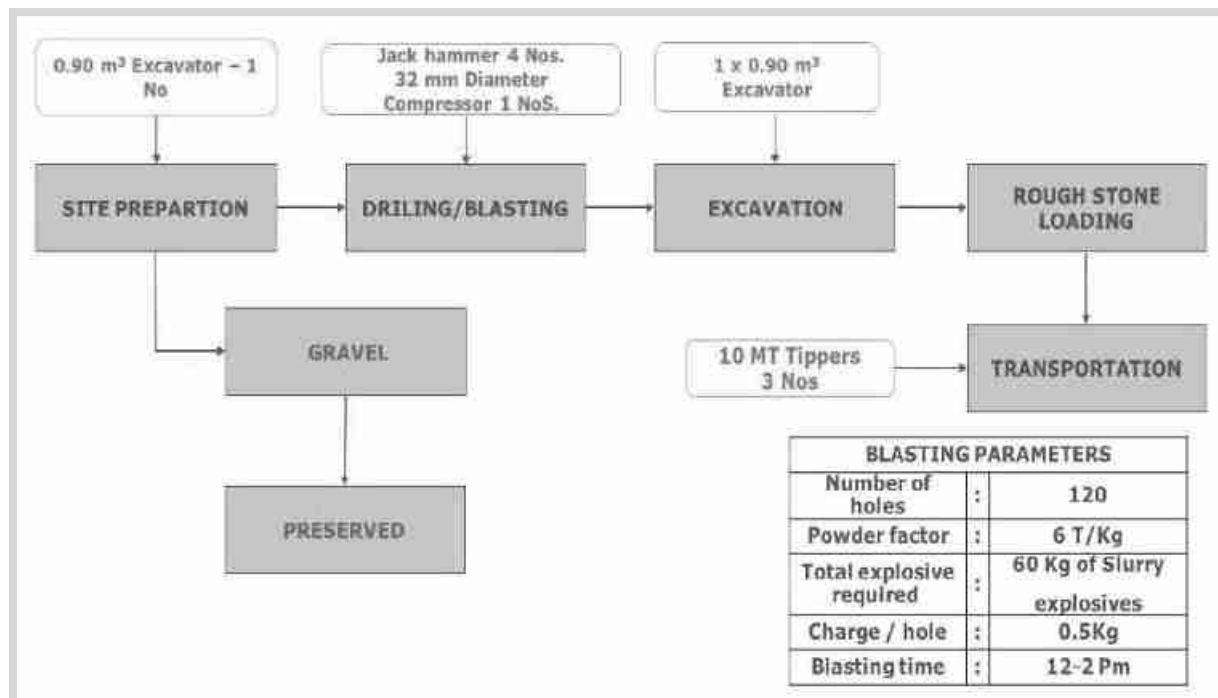




## **LOADING& TRANSPORTATION OF ROUGH STONE AND GRAVEL**

Hydraulic excavator will be used for lifting and loading of the rough stone and Gravel. This excavator in combination with Tippers (10MT) capacity of 3 nos will be used.

**FIGURE 2.10 FLOW CHART OF THE QUARRY OPERATION**



**TABLE - 2.10 MINING DETAILS**

S.No	Description	Details	Remarks
1.	Method of Mining	Opencast method of mechanized mining with 5.0 m height 5.0 m width and overall 47° slope of the bench.  Hydraulic excavator will be used for the excavation and 5/10T tippers will be used for the Hauling.	Excavator – 1 No Tippers - 3 Nos.
2.	Mineral Use	The excavated Rough Stone and Gravel, will be used for	

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		construction industries for Government & Public sector projects besides catering domestic housing and infrastructure projects in and around the district	-
3.	Proposed Depth	32m BGL	Water table in the area is around 65m BGL
4.	Proposed Production quantity	2,06,595m <sup>3</sup> of Rough Stone 30,428m <sup>3</sup> of Gravel	First Five years
5.	Safety Zone	Out of 2.22.5 Ha, 0.68.0 Ha will be maintained as safety zone during mining operation as well as at the conceptual stage of the project.	Around 1100 nos. of saplings will be planted in this safety
6.	Water requirement	5.2 KLD	Procured from the outside water vendors
7.	Energy requirement	1,70,350 liters of HSD (Entire Project Life)	All the equipment will be diesel operated. No electricity is needed for mining operation
8.	Manpower	25 Nos	
9.	Shift	General Shift	8.00 AM – 5.00 PM
10.	Project Cost	73.25 Lakhs	(Including Fixed Asset + Operational & EMP cost)
11.	EMP Cost	205.88 Lakhs	-
12.	CER Cost	As per MOEF & CC Notification CER cost is arrived for an amount of 1,46,500/- Lakhs @ 2% of the project cost. However, the project proponent has revised CER cost as 8.0 Lakhs.	The amount will be utilized for the development of nearby Government Schools.

### 2.7.2 YEAR WISE PRODUCTION & EXCAVATION DETAILS

Year wise Production of Rough stone and Gravel from the area will be upto maximum capacity. The recovery factor is up to 100% hence no waste expected to be generated. All excavated quantity is saleable. The summary of proposed development and production during the mine plan period is given in Table 2.9.

Table 2.11 Summary of production for 5 Years									
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m <sup>3</sup>	Gravel in m <sup>3</sup>	Mineable reserve of Rough stone in m <sup>3</sup>	
I	XY-AB	I	88	24	2	4224	4224		
		II	83	22	5	9130		9130	
		III	73	17	5	6205		6205	
		IV	63	12	5	3780		3780	
		V	53	7	5	1855		1855	
	X1Y1-AB	I	50	50	2	5000	5000		
		II	48	48	5	11520		11520	
		III	43	43	5	9245		9245	
	<b>Total</b>							<b>9224</b>	<b>41735</b>
	II	X1Y1-CD	I	28	52	2	2912	2912	
II			28	50	5	7000		7000	
III			28	45	5	6300		6300	
X2Y2-CD		I	29	74	2	4292	4292		
		II	24	72	5	8640		8640	
		III	14	67	5	4690		4690	
X1Y1-EF		I	25	70	2	3500	3500		
		II	25	65	5	8125		8125	
		III	25	55	5	6875		6875	
<b>Total</b>							<b>10704</b>	<b>41630</b>	
III	X1Y1-EF	I	75	70	2	10500	10500		
		II	73	65	5	23725		23725	
		III	63	55	5	17325		17325	
	<b>Total</b>							<b>10500</b>	<b>41050</b>
IV	X1Y1-EF	III	5	55	5	1375		1375	
		IV	88	45	5	19800		19800	
	X1Y1-CD	IV	28	40	5	5600		5600	
		V	11	30	5	1650		1650	
		IV	38	38	5	7220		7220	

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	X1Y1-AB	V	33	33	5	5445		5445
	<b>Total</b>							<b>41090</b>
V	X1Y1-CD	V	17	30	5	2550		2550
		VI	28	20	5	2800		2800
	X1Y1-EF	V	83	35	5	14525		14525
		VI	78	25	5	9750		9750
		VII	73	15	5	5475		5475
	X1Y1-AB	VI	28	28	5	3920		3920
		VII	23	18	5	2070		2070
		<b>Total</b>						
<b>Grand Total</b>							<b>30428</b>	<b>206595</b>

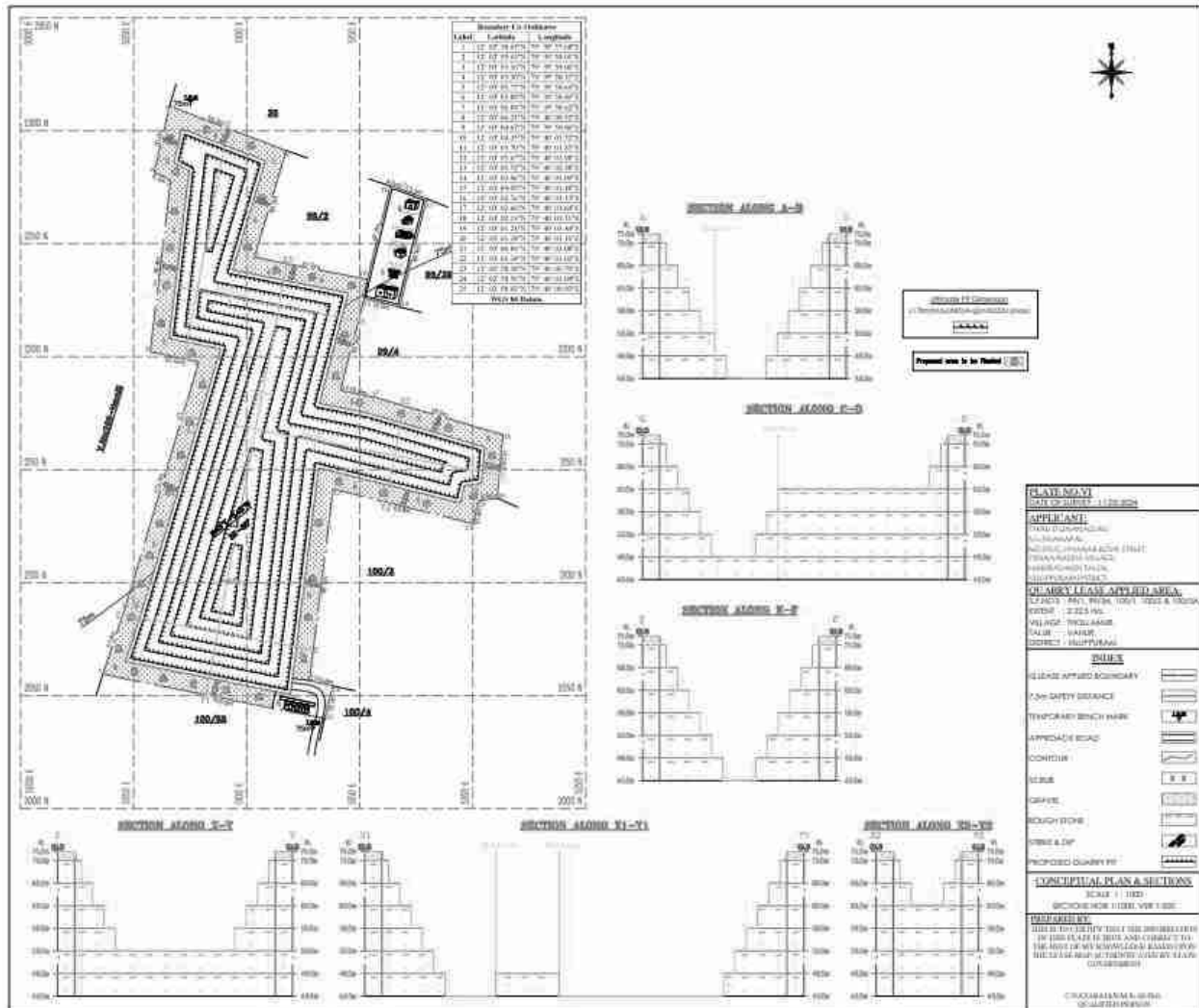
### 2.7.3 CONCEPTUAL PERIOD

During conceptual stage the mined-out area will be converted into water reservoir and safety zone as well as upper benches will be used for plantation at the conceptual period. It will also serve the purpose as socio economic and corporate social responsibility of the lessee by way of supplying water for irrigation purpose or at will of the local people. This will help in ground water recharging as well. The conceptual plan and section of mine lease area is given in Figure 2.11. Ultimate extent and size of the quarry at the conceptual stage is given below as Table 2.10 and Land Use pattern is given as Table 2.11. The conceptual plan is given as Figure 2.11.

<b>TABLE 2.12 Ultimate Pit Dimension</b>			
Pit No.	Length (max) (m)	Width (Avg) (m)	Depth (max) (m)
I	178	85	32m BGL

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**FIGURE 2.11 CONCEPTUAL PLAN**



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## **2.8 DESCRIPTION OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT TO MEET ENVIRONMENTAL STANDARDS ENVIRONMENTAL OPERATING CONDITIONS, OR OTHER EIA REQUIREMENTS (AS REQUIRED BY THE SCOPE)**

The mitigation measures given in this section are for management of the emissions (particulate or gaseous), Noise pollution, wastewater & surface run-off generated from the mining operations to meet the environmental standards and environmental operating conditions are as follows:

### **2.8.1 AIR QUALITY MANAGEMENT**

#### **Drilling**

Drilling machines are proposed to be equipped with wet drilling arrangements and cyclone dust collectors.

#### **Blasting**

- Controlled blasting is proposed to be adopted and optimum use of explosive energy will help in reducing the air pollution.
- Secondary blasting will be avoided.
- Rock breakers are proposed to be used for breaking over sized boulders in order to reduce the dust generation.
- Use of good quality of explosives having proper oxygen balance with regular monitoring.
- Ensuring proper stemming after charging of explosives. Proper stemming material will help in minimizing dust throw thereby lowering the spread of dust particles in ambient air pollution.
- Water spray on blasted muck pile before dozing/loading to control dust generation.

### **Loading & Transportation**

- Water spray on haulage roads, access roads, operating benches and proper maintenance of haul roads.
- Development of green belt/plantation around mine boundary, roads and other places will be carried out to control the air pollution.
- Proper maintenance of the HEMMs & transportation vehicles will be done.
- Vehicular emissions will be kept under norms.
- Personal Protective Equipment like dust masks will be provided to all employees. ➤ Regular air quality monitoring will be carried out.
- Compliance of conditions laid by MoEF&CC and TNPCB to minimize environmental impacts

### **2.8.2 NOISE MANAGEMENT**

#### **Drilling**

- Drilling with sharp drill bits to achieve optimum drilling performance and to reduce noise generation at source will be adopted.
- Personal protective equipments i.e. earplug in drilling & in high noise area shall be used.

#### **Blasting**

- As blasting will be done in accordance with standards prescribed by DGMS for controlled blasting; therefore, ground vibrations will not affect the structures in the vicinity of mine area.
- Explosives charge per hole and per delay will be maintained as per DGMS guidelines.
- Blasting will be carried out by use of non-electric detonators (NONEL) system and the impacts of noise generated due to blasting are momentary.
- Vibrations and noise generated by blasting will be monitored regularly

### **Transportation**

- Adequate silencers in HEMMs will be provided to reduce generation of noise.
- Proper and regular maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- All HEMMs will be equipped with acoustic a/c closed cabins for operators.
- The workers employed at HEMMs will be provided with protective equipment, earmuffs and earplugs as protective measures from the high noise level generated at the mine site and wherever required.
- Development of green belt & plantation around the mining activity and other areas, will be carried out.
- Regular monitoring of noise will be carried out.

### **2.8.3 WATER MANAGEMENT**

#### **Waste Water**

Septic Tanks and soak pits will be provided for the disposal of effluent generated from mine office.

#### **Surface Run-off**

- Garland drains are proposed to be constructed around the temporary overburden soil dump to channelize the runoff water from dumps and also around the active pit to restrict rainy water from entering in to the working pit.
- Rain water falling directly into the mine pits will be stored and used for plantation & dust suppression.
- Regular monitoring of water quality will be carried out

### **GREENBELT/ PLANTATION**

The mine lease area is devoid of major plantation. Shrubs and bushes are majorly found within the lease area. The proponent has planned to develop green belt in an area of 0.68.0SSS Ha. Trees like Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc., will be planted around the mine lease area. A total of 1100 trees are planned to be planted. Spacing will be 3m x 3m.



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**2.9 ASSESSMENT OF NEW & TESTED TECHNOLOGY FOR THE RISK OF TECHNOLOGICAL FAILURE:**

From the nature and extent of the deposit, the reserves and the quality have been proved with adequate degree of reliability. Considering the type of mineralization, opencast mechanized method is the most feasible method for mining in the proposed mine lease. It is also a matter of fact that the mining machineries are upgrading with time and therefore the project proponent would act fast to adopt more advanced equipment and automation for safe and environment friendly mining technology in the years to come.

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## **CHAPTER 3**

### **DESCRIPTION OF THE ENVIRONMENT**

#### **3.1. STUDY AREA, PERIOD COMPONENTS AND METHODOLOGY**

The project area is located in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State over an extent of 2.22.5 Ha, the project area is considered as Core zone and the area in the surrounding 10km radius is considered as Buffer Zone. The baseline environmental monitoring was conducted by Shrient Analytical & Research Labs Private Limited, Chennai it is an NABL and MOEF recognized laboratory for various components of environment, viz. Air, Noise, Water, Land was carried out during Summer Season i.e. March 2024 to May 2024 in the study area covering 10 km radial distance from the rough stone and Gravel mine. Other environmental data on flora and fauna, land-use pattern, forest etc. were also generated through field surveys and secondary information collected from different State Govt. departments. Sampling methods and analysis. Socio-economic survey was conducted, through interaction with the people, sarpanch and medical officers by floating questionnaires and collection of information are supported by census data for demographic structures, amenities, and infrastructure availability within the study area. Baseline values for various environmental components are discussed in this Chapter.

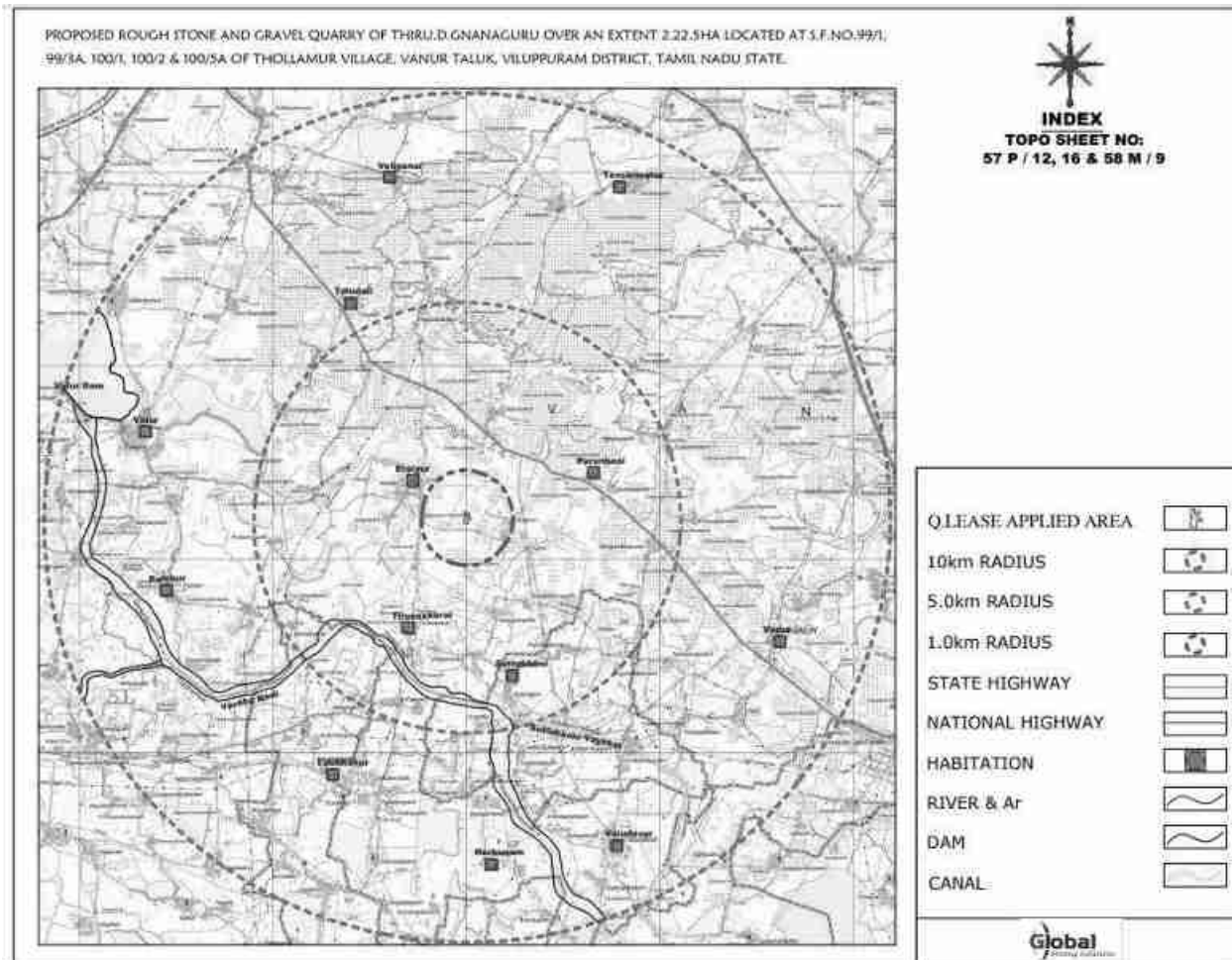
#### **ENVIRONMENTAL SETTING OF THE STUDY AREA**

<b>Table 3.1 Description of the lease area</b>				
<b>S.No.</b>	<b>Areas</b>	<b>Distance from project site</b>		
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil within 15km radius		
2	Areas which are important or sensitive for ecological reasons			
A	Wetlands, water courses or other water bodies,	Water bodies	Distance	Direction
		Canal	120m	S
		Thollamur Eri 1	160m	S
		Thollamur Eri 2	415m	NE

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		Odai	280m	NE
		Sangarabaran i river	3.4km	SW
		Suttukanni Vaykkal	4.7km	SE
		Vidur Dam	8.2km	NW
B	Coastal zone, biospheres,	Nil within 10km radius		
C	Mountains, forests	Nil within 10km Radius Oussudu Lake Birds Sanctuary - 11.5km (SE)		
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within 15km radius		
4	Inland, coastal, marine or underground waters	Nil within 15km radius		
5	State, National boundaries	Nil within 15km radius		
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nil within 15km radius		
7	Defense installations	Nil within 15km radius		
8	Densely populated or built-up area	Thollamur Village (730m - E)		
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Thollamur Village (730m - E)		
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Nil		
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	Nil		
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No. The area is not prone to earthquakes, floods, etc.		

**FIG 3.1 ENVIRONMENTAL SETTING OF THE STUDY AREA**



### **STUDY PERIOD**

The relevant information and data (both primary and secondary) were collected in core as well as buffer zone (10 km distance from the mine boundary) during Summer Season (March., to May., 2024) in accordance with the guidelines for preparation of EIA studies in order to assess the impact of the mine site within the 10 Km study area on existing physical, biological and social environment.

### **3.2 ESTABLISHMENT OF BASELINE FOR VALUED ENVIRONMENTAL COMPONENTS:**

Information on the following components/parameters were collected to understand the existing scenario of the core and buffer area:

- ✚ Meteorological environment
- ✚ Air environment
- ✚ Water environment
- ✚ Noise environment
- ✚ Soil environment
- ✚ Biological environment
- ✚ Land use
- ✚ Socio economic environment
- ✚ Hydrogeology

#### **BASELINE DATA COLLECTION**

Baseline environment data on various components of the environment in the study area were collected during Summer Season (March., to May., 2024) to assess the present scenario of the area. Details are given in the table given below.

Baseline data collection During Post Monsoon Season (March., to May., 2024)

Sr.No	Environment al Component	Primary data		
		Parameters	Frequency	Monitoring/ Sampling locations
1	Land	Agriculture, Habitation, Industry, Stony waste/ Quarries, Forest area, Plantation/ Vegetation, Open scrub, Water bodies etc.	Once in a Season	10 km radius study area
2	Meteorology	Temperature, Relative Humidity, Wind Speed, Wind Direction.	Hourly	1
3	Air	PM10, PM2.5, SO2, NO2, CO & PAH	twice a week (24 hourly)	6
4	Noise	Equivalent noise levels in Leq in dB (A)	Once in a season (day & night time)	6

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5	Water	Parameters as per IS 10500 - 2012	Once in a season	
A	Surface Water	Parameters as per IS 10500 - 2012	Once in a season	2
B	Ground Water	Parameters As per IS 2720/USDA	Once in a season	6
6	Soil	Parameters As per IS 2720/USDA	Once in a season	6
7	Biological Environment	Flora and Fauna	Once in a season	Study Area
8	Socio-Economic Environment	Socio-Economic Environment	Once in a season	Study Area

**INSTRUMENTS USED FOR ENVIRONMENTAL BASELINE DATA COLLECTION**

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

- Respirable Dust Sampler with attachment for gaseous Pollutants, Envirotech APM 460.
- Fine Particulate Matter (FPS) Sampler APM 550
- Sound Level Meter Model Envirotech SLM - 100
- Digital D.O. Meter Model - 831 E (CPCB Kit)
- Weather Monitoring Station Model Enviro WM 271
- Water Level Indicator and
- Global Positioning System (GPS) Apart from collecting samples of air, water, noise and soil from representative sampling points given in proceeding sections, the data on land use, vegetation and agricultural crops were also collected by the field team through interaction with a large number of local inhabitants of the study area and different Government departments/agencies. This provided an excellent opportunity to the members of the field team for obtaining clear scenario of the existing environment of the study area.

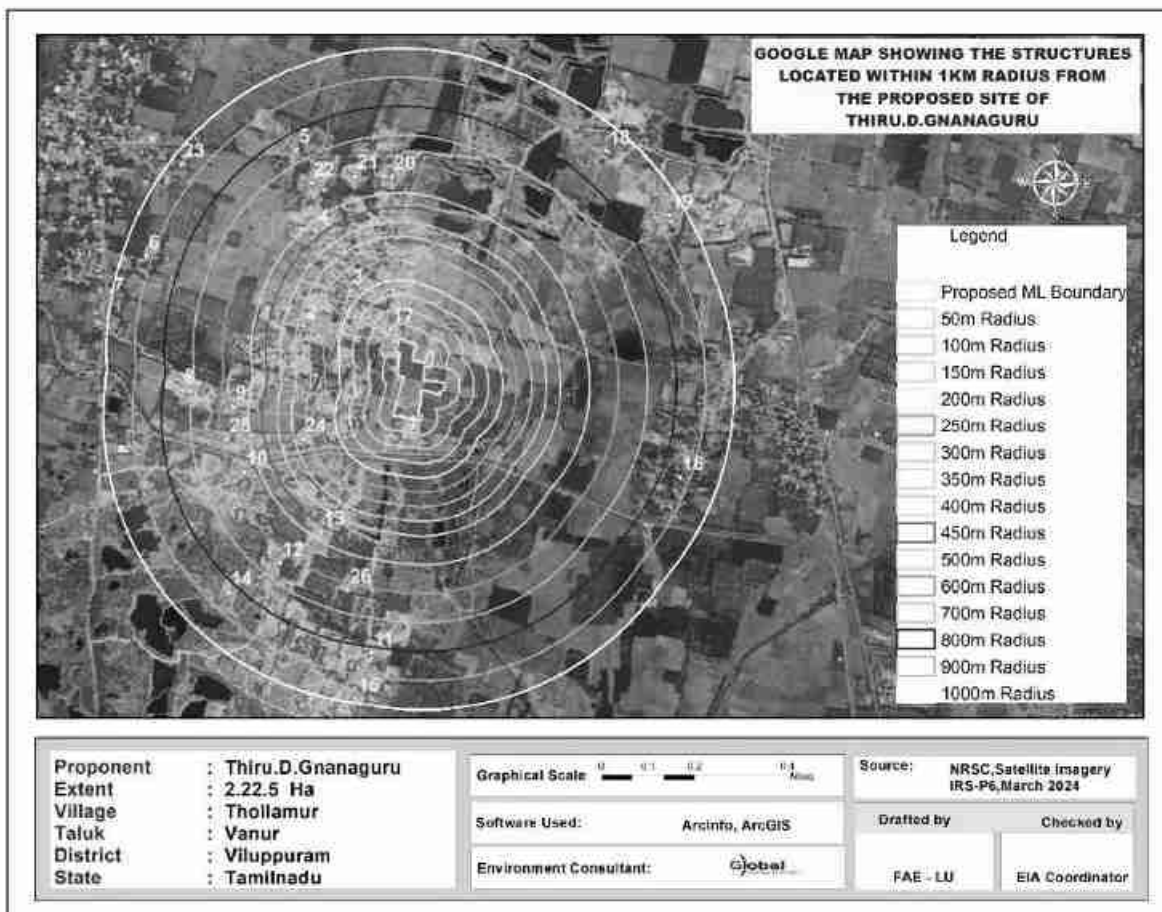
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### **3.3. BASE MAP OF ALL ENVIRONMENTAL COMPONENTS**

#### **ENUMERATION OF THE STRUCTURES LOCATED WITHIN 1.0 KM RADIUS FROM THE PROPOSED QUARRY SITE**

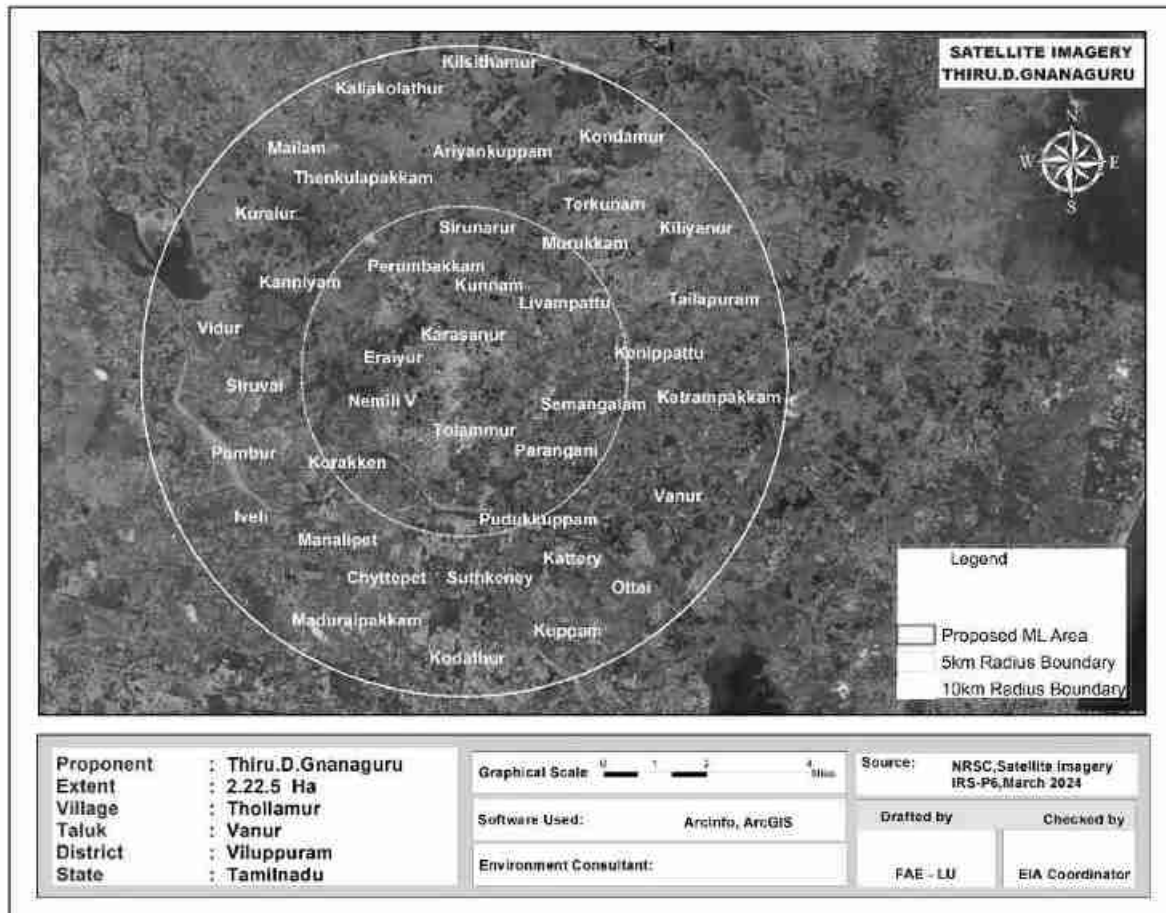
A site survey has been conducted to identify and list structures located within a 1 Km radius from the proposed Quarry and are detailed below. There are permanent structures within a 1 km radius from the project site. The PP has obtained a letter from Village Administrative Office (VAO), thollamur stating that there are no structures situated within 1 Km radius.

**FIG 3.2 BASE MAP SHOWING 50M INTERVAL FOR 1KM RADIUS FROM THE LEASE AREA**



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**FIGURE - 3.2a SATELLITE MAP OF THE PROJECT AREA (10 KM RADIUS)**



### 3.3.1 METEOROLOGICAL ENVIRONMENT

Meteorological conditions prevailing in the buffer zone is given below

#### Climate

The climate of Viluppuram District is tropical. The period from the weather is pleasant during the period from November to January. The normal temperature varies between 18°C to a maximum of 42°C during summer, whereas the hottest climate experiences from March to May with mercury reaching 38.5°C at the highest.



## Rainfall

Viluppuram district generally experiences hot and humid climate conditions. The district receives rain under the influence of both southwest and northeast monsoons. Most of the precipitation occurs in the form of cyclonic storm caused due to depressions in Bay of Bengal chiefly during NE monsoon period. The SW monsoon is highly erratic and summer rains are negligible. Rainfall of this area is about 800 mm to 900 mm during the both NE & SW monsoons. The excess rainfall is 192% (Source: Mausam.imd.gov.in)

Rainfall received from 2017 to 2021 is given below.

Table 3.2 Rainfall data					
Actual Rainfall in mm					Normal rainfall in mm
2017	2018	2019	2020	2021	
1231.8	750.3	1022.6	1077	1521.2	980

## Relative Humidity

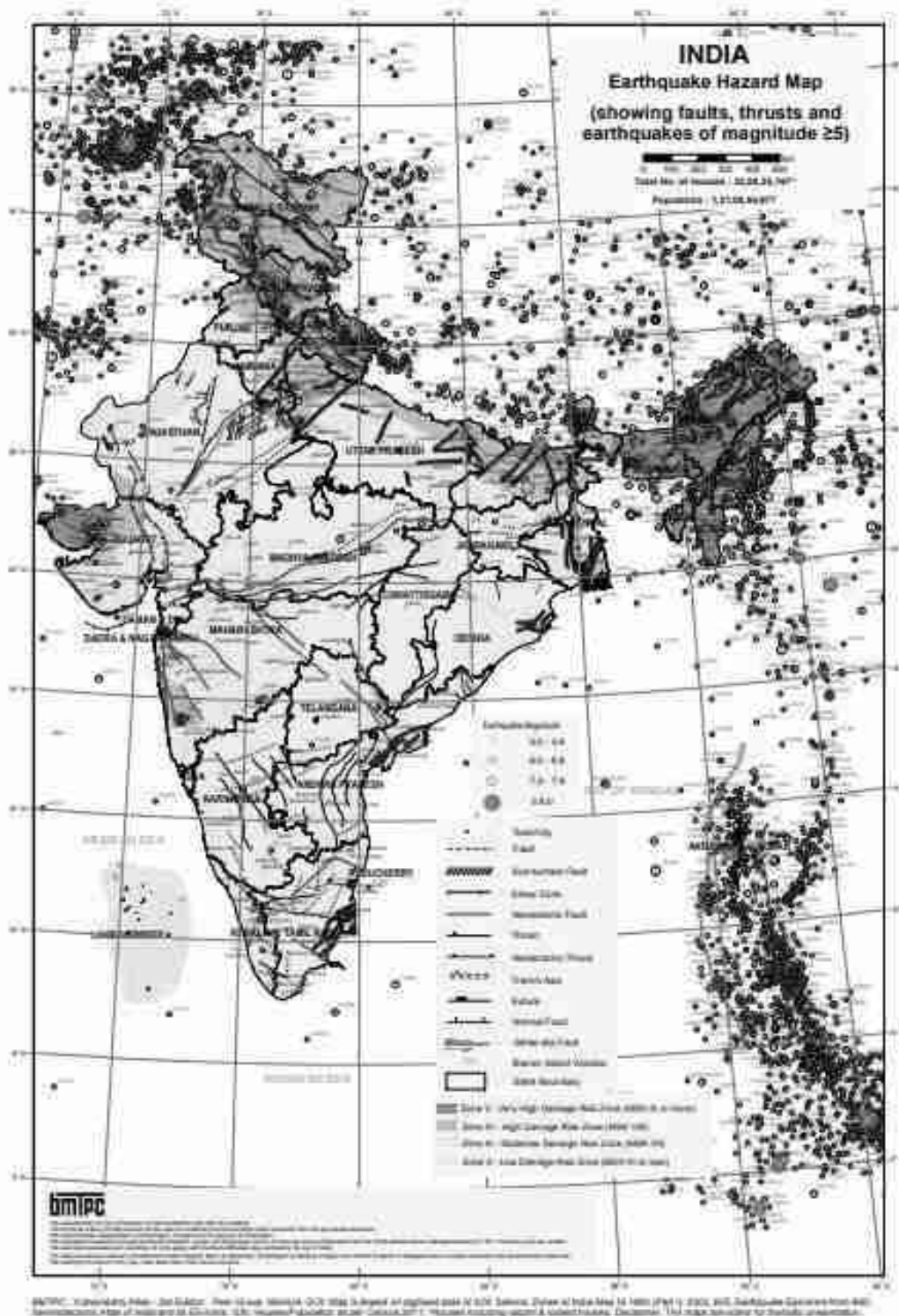
The relative humidity, in general around the year is between 55 and 65% in most parts of the district, except during the north-east monsoon season when it is over 65%. However, the coastal areas will be comparatively more humid.

## Seismic information

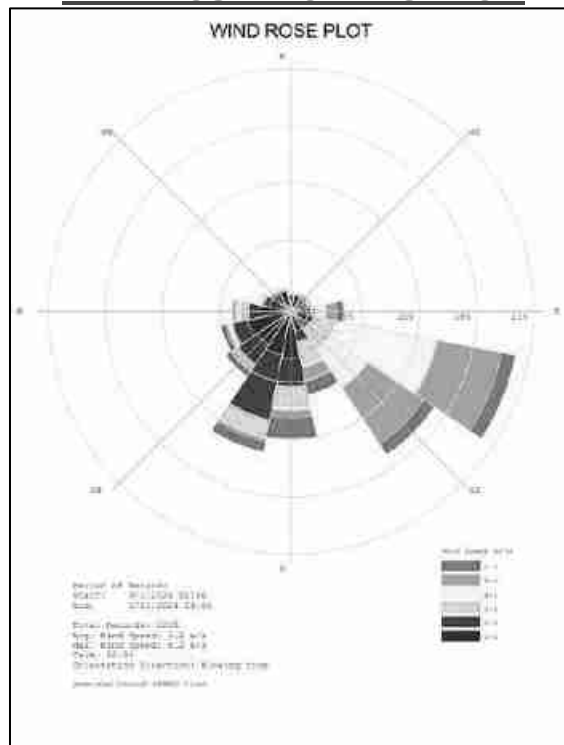
The study area falls in Zone II, which comes under the least active zone. The seismic map of India is given as Fig 3.3.

DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

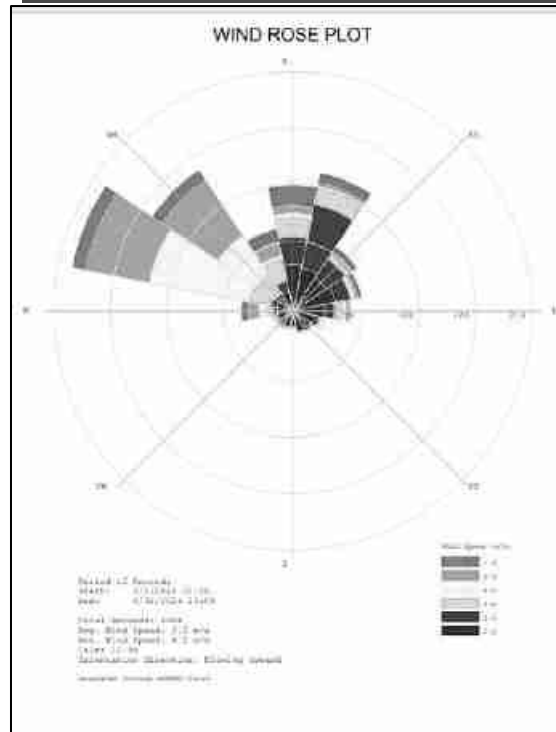
**FIG 3.3 SEISMIC MAP OF INDIA**



**FIG 3.4 WIND ROSE PLOT DURING MARCH TO MAY 2024**  
**WINDROSE FLOWING FROM**



**WINDROSE FLOWING TOWARDS**



### **Meteorological data of the project area**

The meteorological data collected in the study area from March 2024 to May 2024 which includes Temperature, Wind speed, Wind direction and Relative humidity. The predominant wind blows from West. The temperature of the area is reported to be 26.8°C and 35.7°C during summer.

### **3.3.2 AMBIENT AIR MONITORING DATA**

Ambient traffic monitoring has been carried out in 6 locations. One in the core zone and remaining five locations in the buffer zone areas. Monitoring locations have been chosen such that the measurement represents the overall air condition prevailing in the area. The study area represents mostly rural environment with stone mining quarries & crushers.

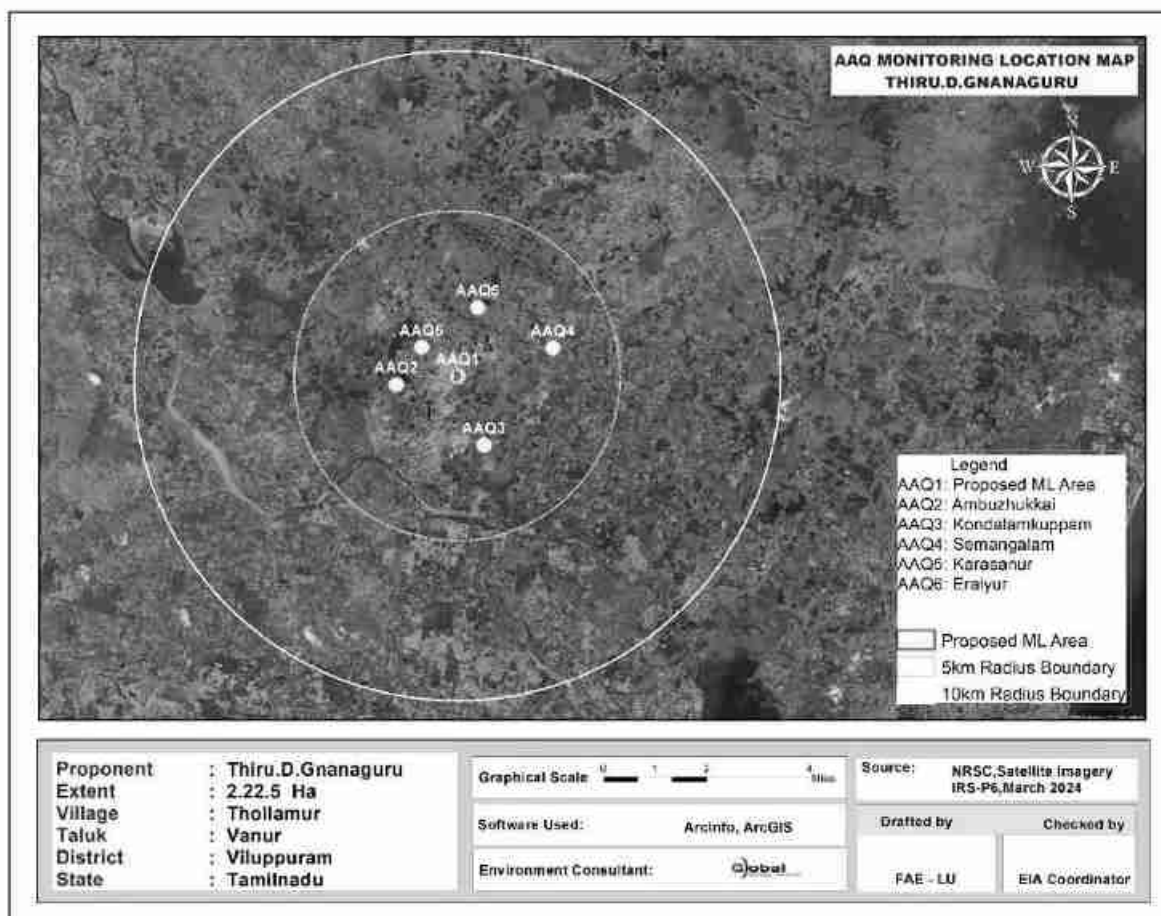
The regional climatologically data, was used as a guideline to know the predominant wind direction during study period. The locations were identified keeping in view predominant wind directions prevailing during study period, sensitive receptors, human settlements, and mining activities around.

The levels of Respirable Particulate Matter (PM10), Fine Particulates (PM2.5), Sulphur Dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>) were monitored for establishing the baseline status. PM10 were sampled with the help of Respirable Dust Samplers on filter papers and SO<sub>2</sub> & NO<sub>x</sub> were absorbed in the respective absorption media in the impingers attached to RD samplers and analyzed Spectro-photometrically. PM2.5 was monitored with the help of Fine Particulate Samplers. The monitoring locations for ambient air study are given in Table – 3.3 and Figure 3.5 below.

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Table 3.3: Details Of Ambient Air Quality Monitoring Locations				
S. No.	Station Code	Locations	Distance & Direction	Coordinates
1	AAQ 1	Project site	Core Zone	12°03'02.35"N 79°40'00.51"E
2	AAQ 2	Ambuzhukkai	1.82km, W	12°02'54.75"N 79°38'57.35"E
3	AAQ 3	Kondalamkuppam	2.19km, S	12°01'52.68"N 79°40'25.48"E
4	AAQ 4	Semangalam	3.03km, NE	12°03'28.93"N 79°41'38.76"E
5	AAQ 5	Karasanur	2.10 Km, N	12°04'11.23"N 79°40'22.86"E
6	AAQ6	Eraiyr	1.29 Km, NW	12°03'32.24"N 79°39'23.34"E

**FIG 3.5 AMBIENT AIR MONITORING LOCATIONS**



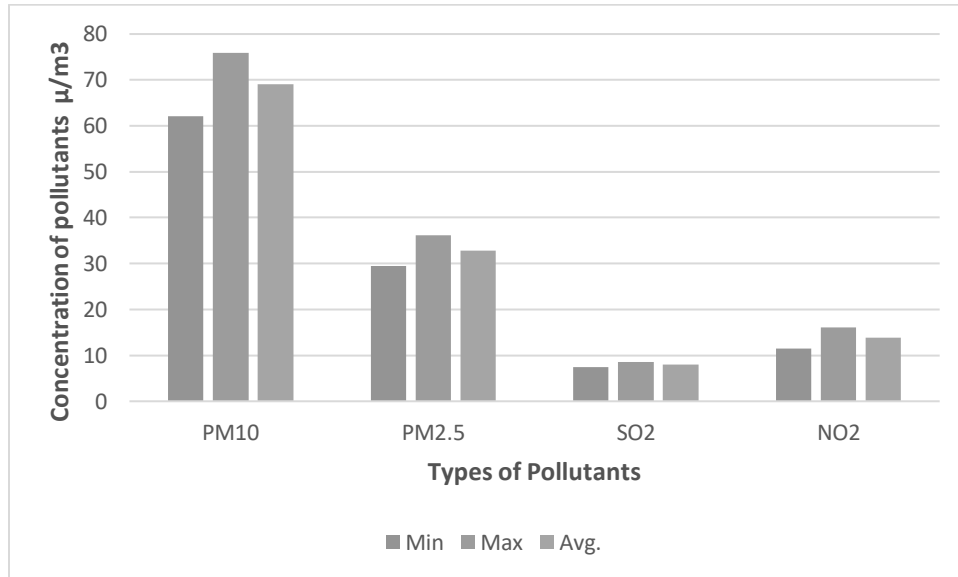
The concentrations of various air pollutants at the 6 locations are given below. For all the components in the table, the unit are in  $\mu\text{g}/\text{m}^3$ .

**Table.3.4 Results of Air sampling Analysis in 6 locations**

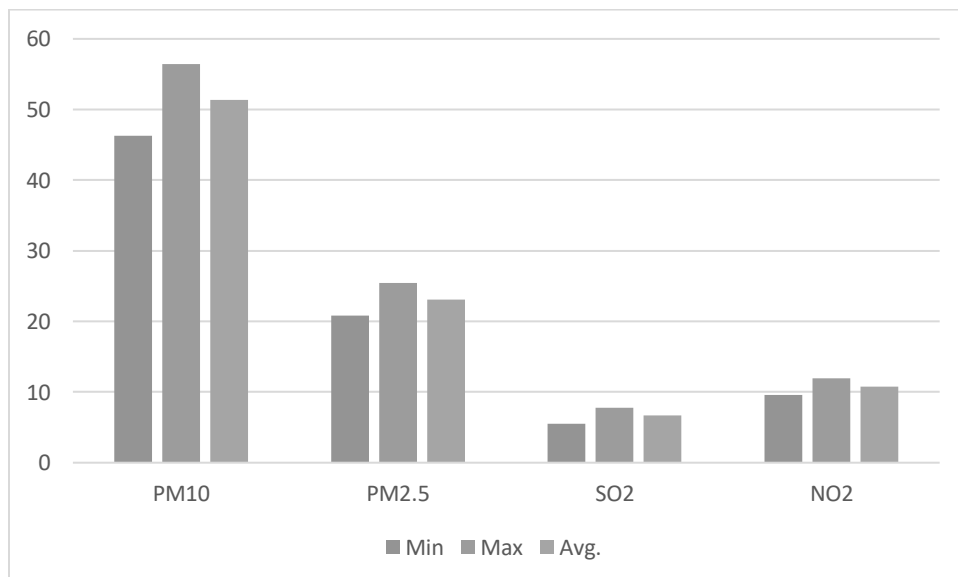
Station ID	Min	Max	Avg.
<b>Particulate matter PM<sub>-2.5</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	32.0	38.7	35.35
AAQ-2	24.53	30.1	27.32
AAQ-3	22.42	28.48	25.45
AAQ-4	21.57	26.93	24.25
AAQ-5	21.6	27.0	24.3
AAQ-6	20.8	25.4	23.1
<b>CPCB NAAQS 2009 for PM<sub>2.5</sub> - 60 µg/m<sup>3</sup></b>			
<b>Particulate matter PM<sub>-10</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	67.5	81.3	74.4
AAQ-2	52.2	64.1	58.15
AAQ-3	56.7	60.6	58.65
AAQ-4	45.9	57.3	51.06
AAQ-5	55.1	46.9	51.00
AAQ-6	46.3	56.4	51.35
<b>CPCB NAAQS 2009 for PM<sub>10</sub> - 100 µg/m<sup>3</sup></b>			
<b>Sulphur Di-oxide as SO<sub>2</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	8.4	9.8	9.10
AAQ-2	6.7	8.3	7.50
AAQ-3	8.2	9.9	9.05
AAQ-4	7.6	10.1	8.85
AAQ-5	7.9	10.4	9.15
AAQ-6	5.5	7.8	6.65
<b>CPCB NAAQS 2009 for SO<sub>2</sub> - 80 µg/m<sup>3</sup></b>			
<b>Oxide of Nitrogen as NO<sub>2</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	13.2	17.8	15.50
AAQ-2	10.1	12.1	11.10
AAQ-3	9.7	12.6	11.15
AAQ-4	9.7	12.6	11.15
AAQ-5	8.4	11.3	9.85
AAQ-6	9.6	11.9	10.75
<b>CPCB NAAQS 2009 for NO<sub>2</sub> - 80 µg/m<sup>3</sup></b>			

The results are summarized in graph and given as below Fig. 3.5

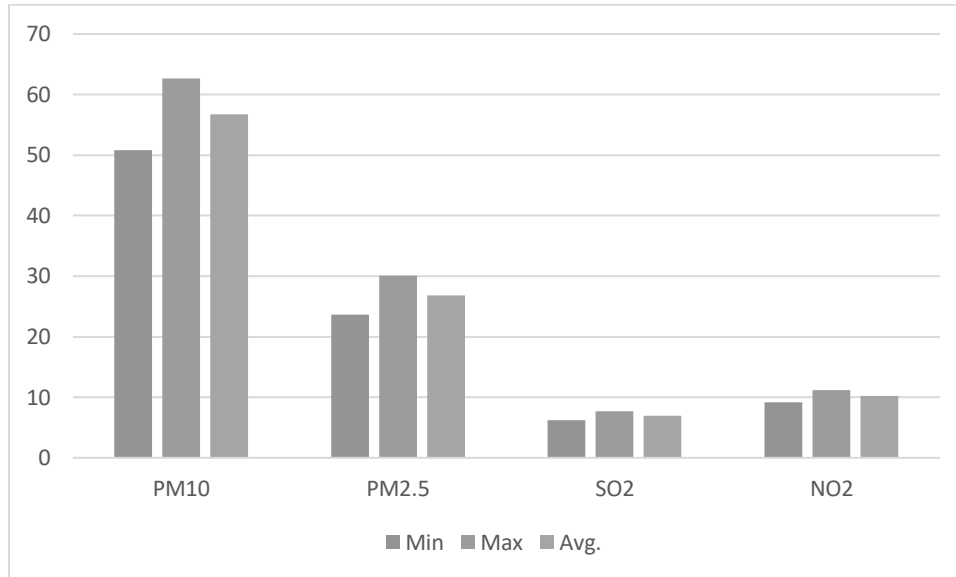
**FIG 3.6 AMBIENT AIR QUALITY DATA A1 - MINE LEASE AREA**



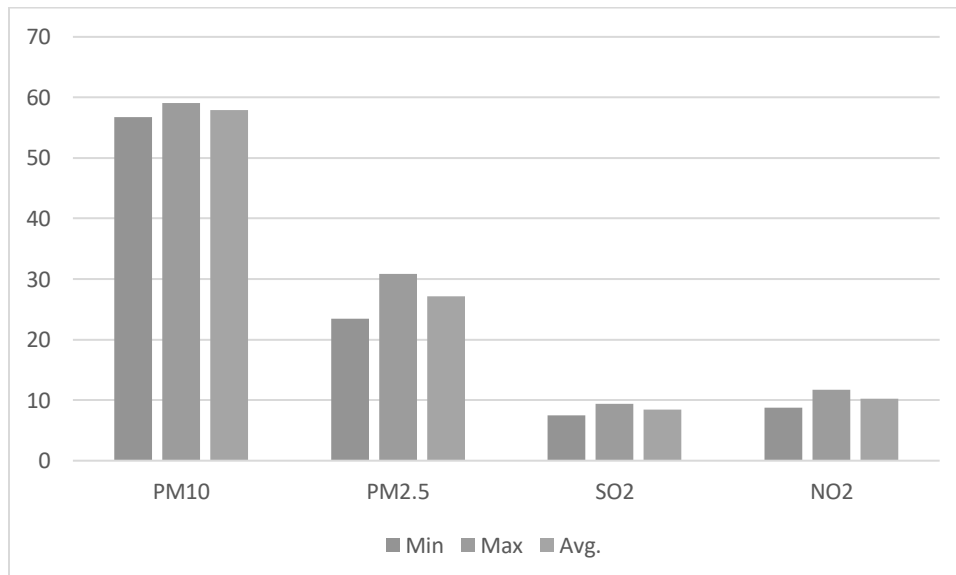
**FIG 3.7 AMBIENT AIR QUALITY DATA A2 - AMBUZHUKKAI VILLAGE**



**FIG 3.8 AMBIENT AIR QUALITY DATA A3 - KONDALAMKUPPAM VILLAGE**

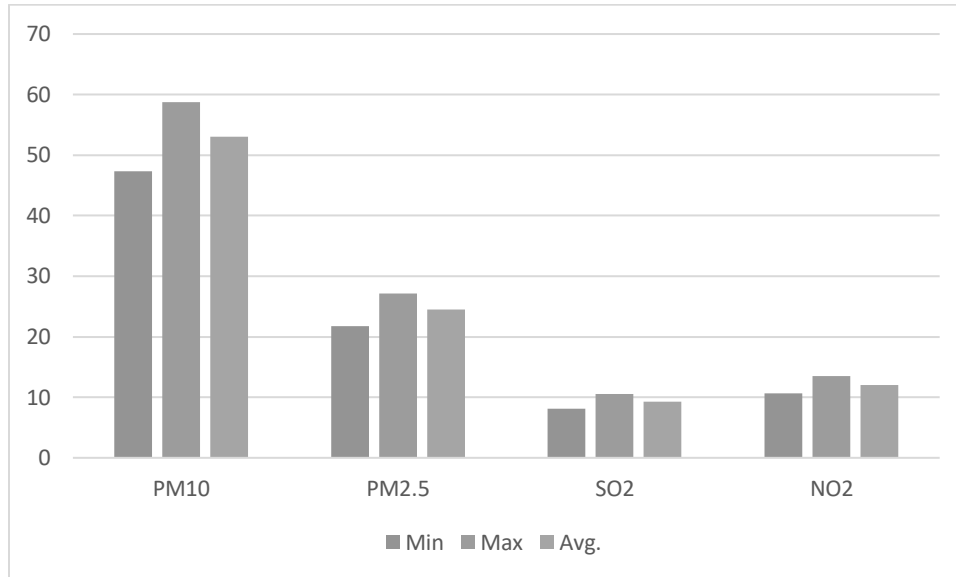


**FIG 3.9 AAQ DATA A4 - SEMANGALAM VILLAGE**

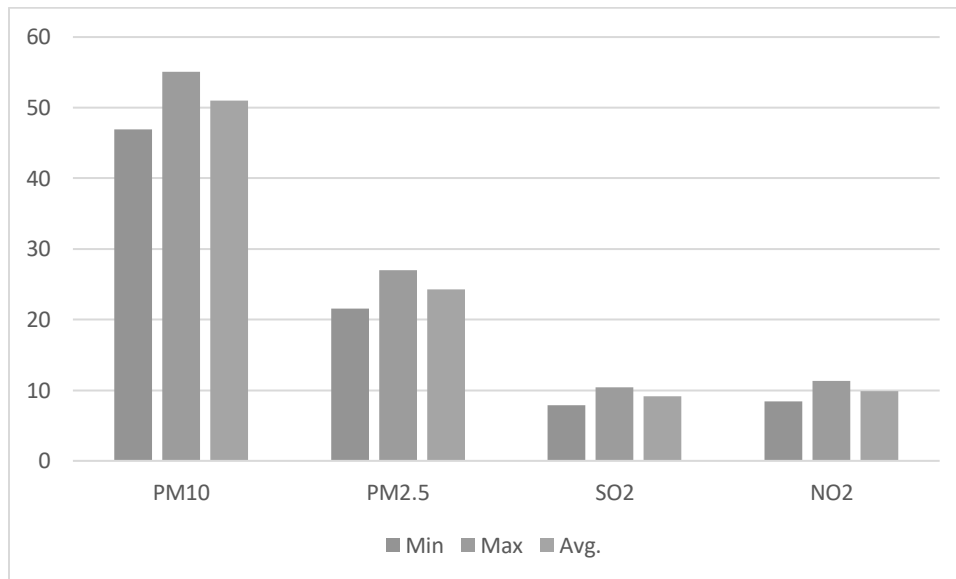




**FIG 3.10 AMBIENT AIR QUALITY DATA A5 - KARASANUR VILLAGE**



**FIG 3.10a AMBIENT AIR QUALITY DATA A6 - ERAIYUR VILLAGE**



From the above results, it is observed that the ambient air quality with respect to PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>2</sub> at all the monitoring locations was within the permissible limits specified by CPCB.

### 3.3.3 WATER ENVIRONMENT

Assessment of baseline data on water environment includes:

- Identification of water resources
- Collection of water samples
- Analyzing water samples collected for physico-chemical parameters as per standards.

#### **Surface Water**

There is Sangarabarani River is located at a distance of 3.4 km in South direction of lease area. The rainfall over the area is moderate, the rainwater storage in open wells, trenches is in practice over the area and the stored water acts as source of freshwater. The prevailing status of surface water quality has been assessed during the study period. Surface water quality locations and results are provided in Table 3-14 and Figure 3.11.

#### **Ground Water**

The rainfall is the main source for the availability of water both in surface and sub-surface. The quantum of rainfall varies every year depending upon the monsoon. However, the extraction of surface and sub-surface water is increasing year by year. It leads to environmental impact on the water sources like depletion of water level, deterioration of water quality. It makes the demand for the quantification of available water and also its quality for various purposes like agriculture, industries, drinking and domestic purposes. Total six (06) ground water monitoring locations were identified for assessment in different villages around the project site based on the usage of sub surface water by the settlements/ villages in the study area. The groundwater results are compared with the acceptable and permissible water quality standards as per IS: 10500 (2012) for drinking water. Groundwater quality monitoring locations and results are given in Table 3.5 and Figure 3.11.

### Sampling Locations

Two (2) surface water samples and six (6) ground water samples were collected from the study area and were analysed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on water bodies. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012. The water sampling locations are given in Table 3.5 and shown as Figure 3.11.

The monitoring locations were selected based on:

- Location of the major water bodies
- Location of project site,
- Likely areas that can represent baseline conditions

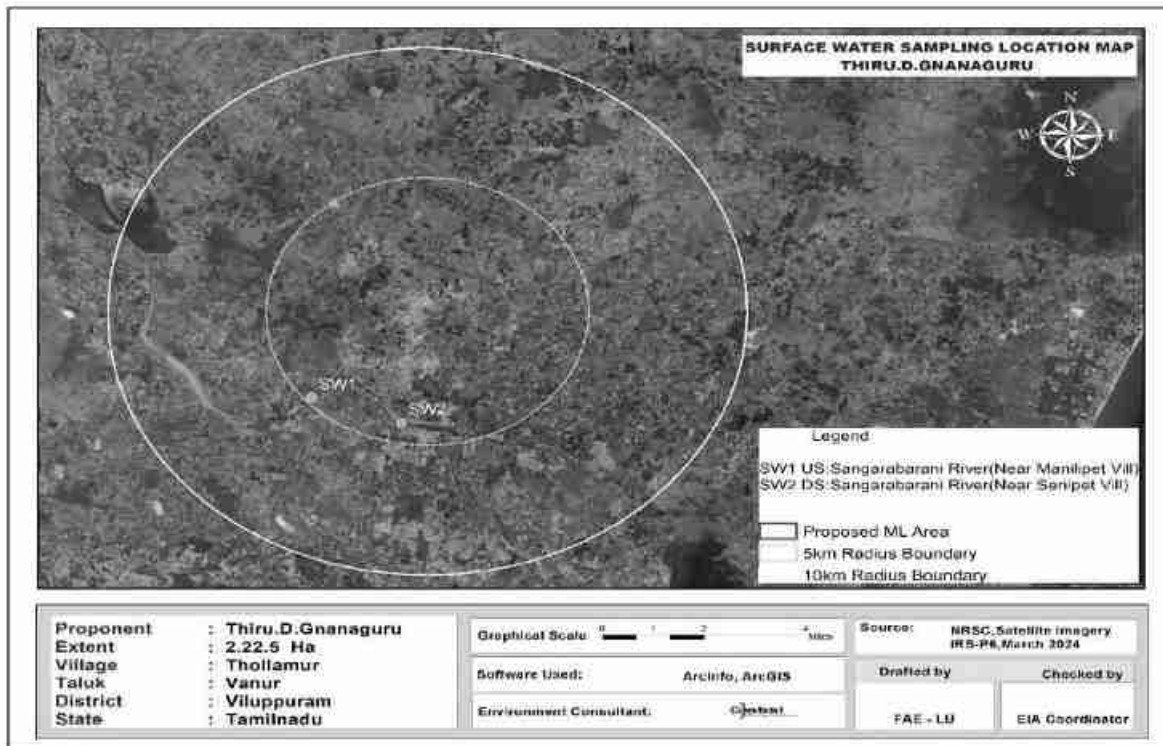
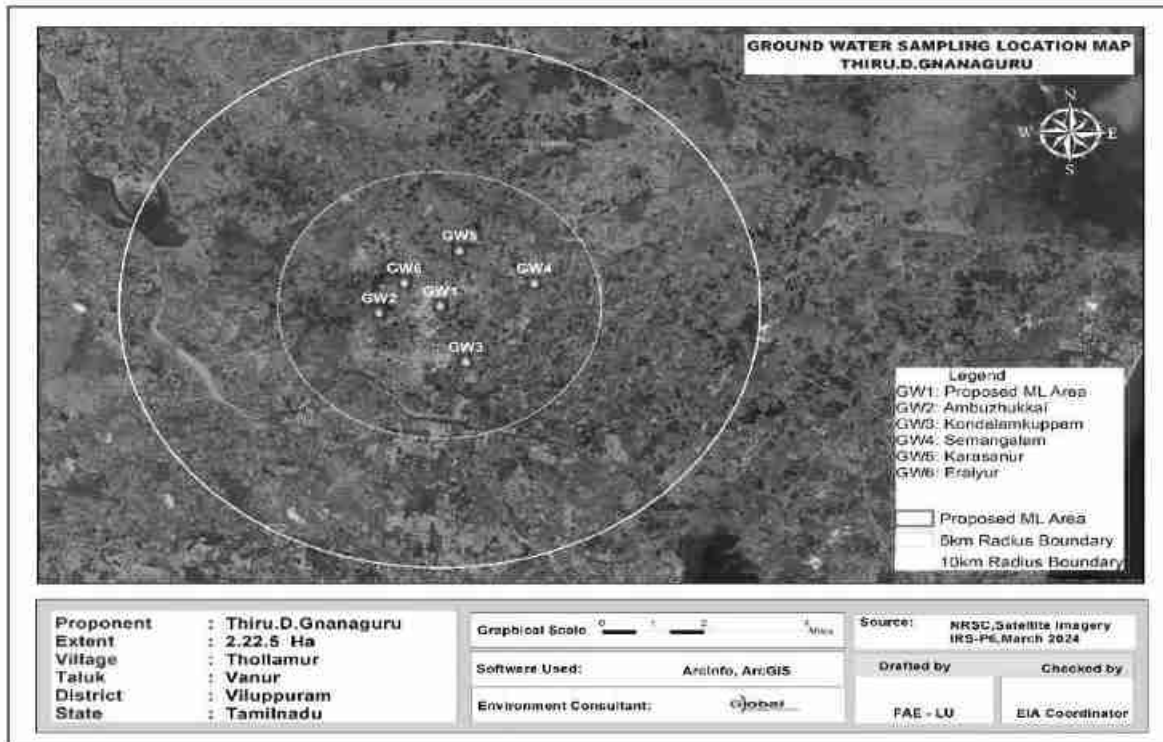
Water bodies nearby

**Table 3.5 Water Sampling Locations**

S.NO	Location Code	Monitoring Locations	Latitude and longitude
<b>Surface Water</b>			
1	SW1	Sangarabarani River (Up-stream)	12°01'08.19"N 79°37'43.04"E
2	SW2	Sangarabarani River (Downstream)	12°00'46.62"N 79°39'29.87"E
<b>Ground Water</b>			
1	GW1	Project site	12°03'02.35"N 79°40'00.51"E
2	GW2	Ambuzhukkai	12°02'54.75"N 79°38'57.35"E
3	GW3	Kondalamkuppam	12°01'52.68"N 79°40'25.48"E
4	GW4	Semangalam	12°03'28.93"N 79°41'38.76"E
5	GW5	Karasanur	12°04'11.23"N 79°40'22.86"E
6	GW6	Eraiur	12°03'32.24"N 79°39'23.34"E

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**FIG 3.11 GROUND & SURFACE WATER SAMPLING LOCATIONS**



**Table 3.6 Surface Water Analysis Results**

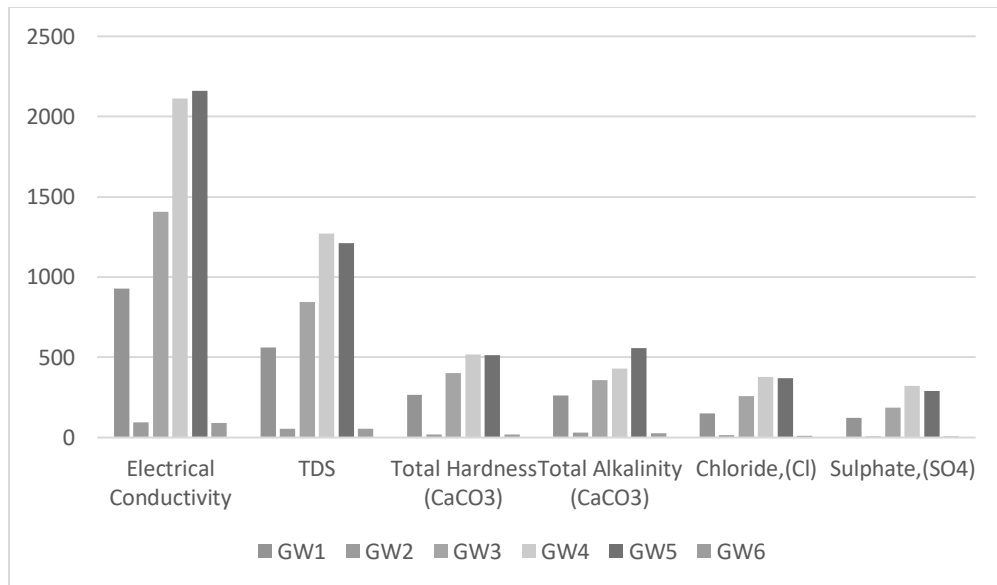
Sr.No	Parameter	Unit	SW1	SW2	Surface water standards (IS 2296 Class-A)
1	Odour	-	Agreeable	Agreeable	-
2	Turbidity	NTU	<1.0	<1.0	1
3	pH at 25 °C	-	7.53	6.99	6.5-8.5
4	Electrical Conductivity	µs/cm	1012	129.5	-
5	Total Dissolved Solids	mg/l	610	76.0	500
6	Total hardness as CaCO <sub>3</sub>	mg/l	261	27.7	-
7	Calcium as Ca	mg/l	42.8	4.75	300
8	Magnesium as Mg	mg/l	37.1	3.80	-
9	Calcium as CaCO <sub>3</sub>	mg/l	101	11.9	-
10	Magnesium as CaCO <sub>3</sub>	mg/l	154	15.8	-
11	Total alkalinity as CaCO <sub>3</sub>	mg/l	263	36.4	-
12	Chloride as Cl <sup>-</sup>	mg/l	183	16.1	-
13	Free Residual chlorine as Cl <sup>-</sup>	mg/l	BDL (D.L - 0.2)	BDL (D.L - 0.2)	250
14	Sulphates as SO <sub>4</sub> <sup>2-</sup>	mg/l	120	15.2	400
15	Iron as Fe	mg/l	0.12	0.09	1.0
16	Nitrate as NO <sub>3</sub>	mg/l	3.42	1.56	20
17	Fluoride as F	mg/l	0.36	0.14	1.5
18	Manganese as Mn	mg/l	BDL (D.L - 0.05)	BDL (D.L - 0.05)	0.5
19	COD	mg/l	BDL (D.L - 2.0)	BDL (D.L - 2.0)	
20	BOD	mg/l	BDL (D.L - 4.0)	BDL (D.L - 4.0)	
21	TSS	mg/l	BDL (D.L - 2.0)	BDL (D.L - 2.0)	
22	DO	mg/l	6.1	6.3	

The samples were analyzed by Shrient Analytical & Research Labs Private Limited; Chennai and the results are summarized below.

Table 3.7 Results of Ground Water sampling Analysis in 6 locations							Specification/ Limit (As per IS:10500: 2012 )	
	W1	W2	W3	W4	W5	W6	Desirable	Permissible
Odour	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	Agreeable	AGREEABLE	Agreeable	Agreeable
Turbidity	<1	<1	<1	<1	<1	<1	Agreeable	Agreeable
pH at 25 °C	6.76	6.72	6.96	7.19	7.06	6.84	6.5 - 8.5	No Relaxation
Electrical Conductivity	1648	1320	1782	696.1	1027	2499	1	5
Total Dissolved Solids	990	792	1070	420	616	1498	500	2000
Total hardness as CaCO3	452	516	476	165	402	491	1	15
Calcium as Ca	80.4	95.6	116.4	39.4	67.2	110.4	200	600
Magnesium as Mg	60.2	66.5	44.4	16.0	56.2	51.6	200	600
Calcium as CaCO3	201	239	291	98.5	168	276	75	200
Magnesium as CaCO3	251	277	185	66.5	234	215		
Total alkalinity as CaCO3	438	434	526	180	374	366		
Chloride as Cl-	245	212	314	145	170	598	250	1000
Free Residual chlorine as Cl-	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	30	100
Sulphates as SO42-	190	107	239	75.6	83.2	360	45	No Relaxation
Iron as Fe	0.05	0.03	0.05	0.08	0.04	0.09	200	400
Nitrate as NO3	2.44	2.36	3.7	1.52	2.4	4.32	1	No Relaxation
Fluoride as F	0.44	0.49	0.59	0.32	0.36	0.52	0.1	0.3
Manganese as Mn	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL(D.L-0.05)	Not Specified	Not Specified

Some of the common parameters including EC, TDS, Total Hardness, Total Alkalinity, Chlorides and Sulphates in the 6 locations were plotted and the graph is provided below.

**FIG 3.12 VALUES OF FEW COMMON PARAMETERS IN WATER ANALYSIS**



All the values were found to be within the permissible limits.

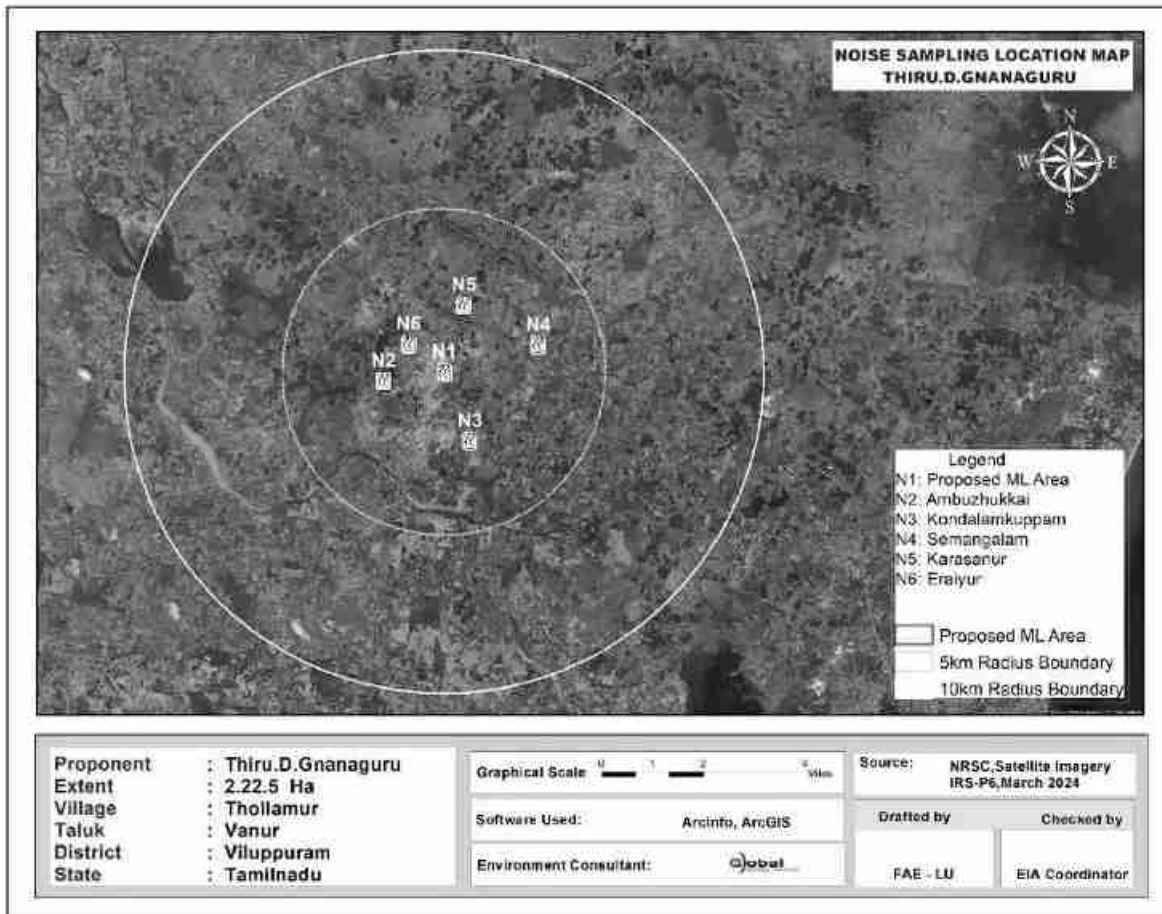
### 3.3.4 NOISE MONITORING

Noise level monitoring was calculated using a noise level meter by NABL Accredited lab and the results are summarized below.

The noise monitoring locations are given in Fig 3.12

DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

**FIG 3.13 NOISE MONITORING LOCATIONS**



The results are given in Table below.

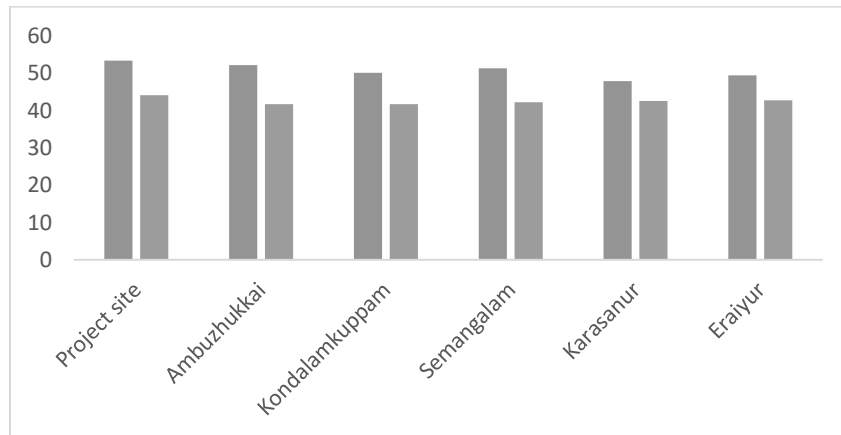
Table 3.8 Noise monitoring results					
S. No	Location	Day equivalent	Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	Project site	52.9	43.6	75	70
2	Ambuzhukkai	51.6	41.2		
3	Kondalamkuppam	49.6	41.2		
4	Semangalam	50.8	41.8		
5	Karasanur	47.3	49.3		
6	Eraiyur	52.1	41.7		

The results are plotted as below.



**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**FIG 3.14 DAY AND NIGHT EQUIVALENT VALUES IN 6 LOCATIONS**

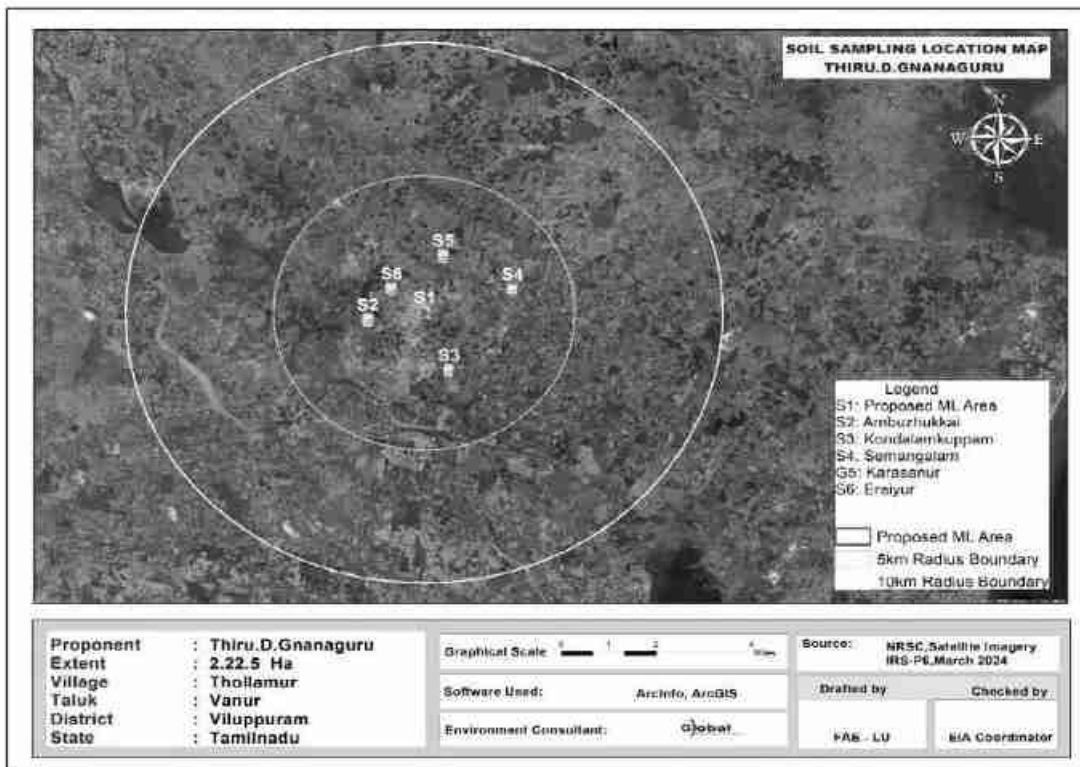


All the values are found to be within CPCB norms.

**3.3.5 SOIL SAMPLING ANALYSIS**

Soil samples have been collected from the mine lease area and 5 other locations from Ambuzhukkai, Karasanur, Eraiyur, Kondalamkuppam and Semangalam Villages. The locations are shown in figure below.

**FIG 3.15 SOIL SAMPLING LOCATIONS**



The results are summarized in the table below.

S.No	Parameter	Unit	S1	S2	S3	S4	S5	S6
			Results	Results	Results	Results	Results	Results
1	pH at 25 °C	-	8.16	7.76	7.47	5.78	6.75	6.97
2	Electrical Conductivity	µmhos/cm	192	220	286	192	90.67	391.7
3	Dry matter content	%	86.78	90.43	89.55	97.65	92.23	80.77
4	Water Content	%	13.22	9.57	10.45	2.35	7.77	19.23
5	Organic Matter	%	0.62	0.91	0.45	0.71	0.55	0.54
6	Soil texture	-	SILTY CLAY	SILTY CLAY	CLAY	SILTY CLAY	SILTY CLAY	SILTY CLAY
7	Grain Size Distribution	%	3.08	4.76	5.16	4.22	5.71	2.86
	i. Sand							
8	ii. Silt	%	40.55	47.92	36.78	42.93	43.49	57.45
9	iii. Clay	%	56.37	47.32	58.06	52.85	50.80	39.69
10	Phosphorous as p	mg/kg	0.45	0.49	0.91	0.58	0.79	0.67
11	Sodium as Na	mg/kg	1026	608	794	610	1009	825
12	Potassium as K	mg/kg	535	238	390	340	652	339
13	Nitrogen and Nitrogenous Compounds	mg/kg	212	346	286	402	168	270
14	Total Soluble Sulphate	%	BDL(D.L.O .02)	BDL(D.L.O .02)	BDL(D.L.O .02)	BDL(D.L.O .02)	BDL(D.L.O .02)	BDL(D.L.O .02)
15	Porosity	%	22.2	20.9	31.8	29	30.6	23.4
16	Water Holding Capacity	Inches/foot	3.6	3.3	3.5	3.1	3.9	3.6

### 3.3.6 BIOLOGICAL ENVIRONMENT

The biological study of the area has been conducted in order to understand the ecological status of the existing flora and fauna to generate baseline information and evaluate the probable impacts on the biological environment. The details are given below.

#### Flora in the study area

Field survey is done. For measuring the extent of flora present in the study area, the area is divided into 4 quadrants. The flora population in each quadrant is summed up for the total population in the study area. Also, data from the State Forest department is used.

### Core Zone

During the field visit, it is observed that there are no national parks / Sanctuaries / forests in the 10km buffer area. The study area is devoid of any major plantations.

S.No.	Scientific name	Vernacular/English name	Type of flora
1	Calotropis gigantea	Erukku	Shrubs
2	Cassia auriculata	Aavarai	
3	Achyranthes aspera	Nayuruvi	

### Buffer zone

Only common trees, shrubs, bushes, etc. are found. The list is given below.

S.No.	Scientific name	Vernacular/English name	Type of flora
1	Azadirachta indica	Neem	Trees
2	Carica papaya	Papaya	
3	Mangifera indica	Mango	
4	Acacia leucophloea	Velamaram	
5	Acacia nilotica	Karu- velamaram	
6	Moringa oleifera	Murungai	
7	Tamarindus indica	Puli	
8	Tectona grandis	Theku	
9	Manilkara zapota	Sappota	
10	Musa paradisiaca	Valzhlai	
11	Borassus flabelliformis	Panna-maram	
12	Ficus benghalensis	Alamaram	
13	Ficus religiosa	Arasamaram	
14	Phyllanthus emblica	Nelli	
15	Calotropis gigantea	Yerukku	Shrubs
16	Cassia auriculata	Aavarai	
17	Ricinus communis	Aamanakku	
18	Tecoma stans	Arali	
19	Aloe vera	Kathalai	Herbs
20	Catharanthus roseus	Nithyakalyani	
21	Acalypha indica	Kuppaimeni	Climbers
22	Coccinia grandis	Kovai	
23	Cissus quadrangularis	Pirandai	
24	Jasminum angustifolium	malli	
25	Ziziphus oenoplia	Ilandai	
26	Cymbopogon	Kanam	Grasses
27	Cyperus rotundus	Kora grass	
28	Cynodon dactylon	Arugu	

### Fauna in the study area

There is no specific Fauna found within ML area. The buffer zone Fauna in the area is studied by direct observation method. Secondary data collected from Forest department and the same is used in this report. People in the nearby locality were also consulted. The commonly found fauna in the area are given below.

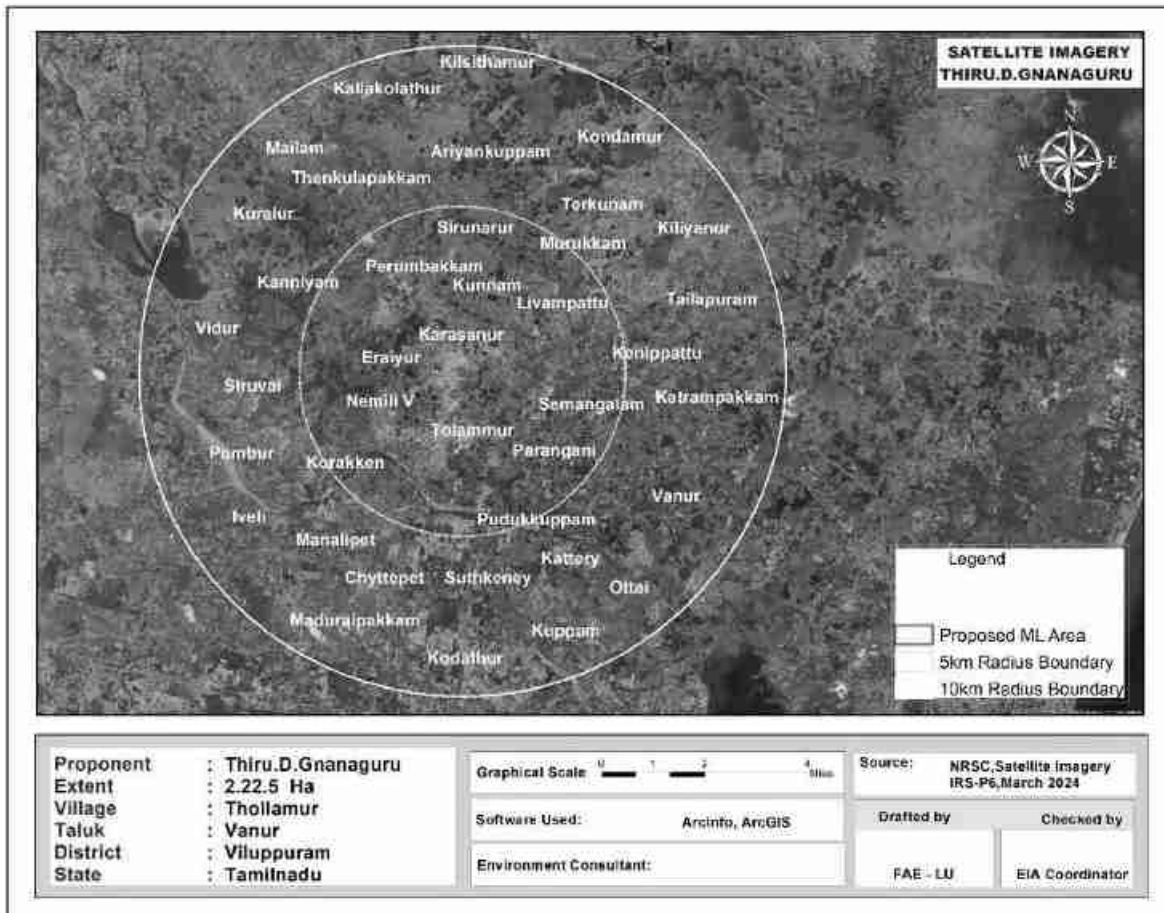
<b>Table 3.12 Fauna in buffer zone</b>				
<b>S.No.</b>	<b>Scientific name</b>	<b>Common name</b>	<b>Type of fauna</b>	<b>Schedule to which the species belong</b>
1	Canis familiaris	Common dog	Mammals	IV
2	Felis catus domesticus	Domestic cat		IV
3	Golunda ellioti	Indian bush rat		IV
4	Funambus palmarum	Squirrel		IV
5	Lepus nigricollis	Indian hare		IV
6	Bos indicus	Domestic cow		IV
7	Common Crow	Corvus splendens	Birds	V
8	House Sparrow	Passer domesticus		IV
9	Common Myna	Acridotheres tristis		IV
10	Streptopelia chinensis	Pigeon		IV
11	Calotes versicolor	Lizard	Amphibia	IV
12	Ptyas mucosa	Snake		IV
13	Rana hexadactyla	Frog		IV

### 3.3.7 LAND USE

#### Remote Sensing Satellite Data Used for the Study

For Land-use and land cover study, sensing satellite data of Geo EYE has been used as per Figure No. 1. A land use map showing 10 Km radial distance. The geographical coordinates of the project are Latitude 12°02'58.03"N to 12°03'06.84"N and Longitude 79°39'57.68"E to 79°40'03.51"E.

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**



**Figure No. 3.16: Remote Sensing Satellite Image**

Selection of remote sensing satellite image (RSI) is on the availability of cloud free data and interpretability of predominant landuse and land cover (LULC) category. The examination of satellite data showed that the region is always covered by clouds with lesser percentage during summer due to cluster habitation. But rained crops are cultivated during southwest monsoon and hence a data acquired during first onset of precipitation is preferred so as to delineate crop and fallow land parcels of agricultural category. Delineation of scrub land is also possible since land with scrub could be easily distinguished from crop vegetation and separated. This may be an arduous task during monsoon since the entire area would be witnessed with sudden sprout of lush natural vegetation, mostly *prosopis*, with first onset of precipitation.

### **Methodology Adopted for the Land Use Study**

Present study involves micro level analysis of landuse pattern showing 10 km radius and changes in landuse pattern using satellite data. This necessitates a careful analysis of satellite data adopting a well-defined methodology.

To cater the requirement, a preliminary assessment of terrain using digital analysis helping to infer relationship between terrain and landuse has been carried out. Such an approach provides lucid understanding of landuse units and enhances the knowledge on the landuse pattern assisting in impact assessment.

The knowledge base thus generated is used to delineate various landuse units while carrying out interpretation of the satellite image. The derived landuse information is transformed into a GIS based spatial database using geo-referencing techniques. Besides, a limited but well focused field investigation also carried out and coordinates of significant landuse units using handheld GPS (Global Positioning System) are gathered to be used as control points for geo-referencing. Interpreted landuse units are verified in the field to carryout necessary corrections wherever is required before preparing final landuse map.

Using the image elements such as color, tone, texture, size, shape and associated elements various landuse units are delineated following the categorization and nomenclature adopted for the national level landuse classification system as recommended by National Remote Sensing Centre (NRSC), Department of Space, Government of India. Some of the landuse units that are identified in the study area are listed in **Table No. 1** given below.

#### **Field Verification:**

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

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

**Table No.3.13: Major Land use Units of the Study Area**

Sr. No.	1 <sup>st</sup> level classification	2 <sup>nd</sup> level classification
1	Built-Up Or Habitation	Residential
		Commercial / Industrial
2	Agriculture	Crop / Fallow Land
		Plantation
3	Water Bodies	Reservoir / Lake / Pond
		River
4	Vegetation Cover	Scrub
		Open Vegetation
		Close Vegetation
		Mangroves
5	Waste Land	Open Without Scrub
		Open With Scrub
6	Others	Mudflow
		Salt Pan
		Brick Manufacturing

**Land Use Pattern of 10 km Radial Buffer Area of Project Site**

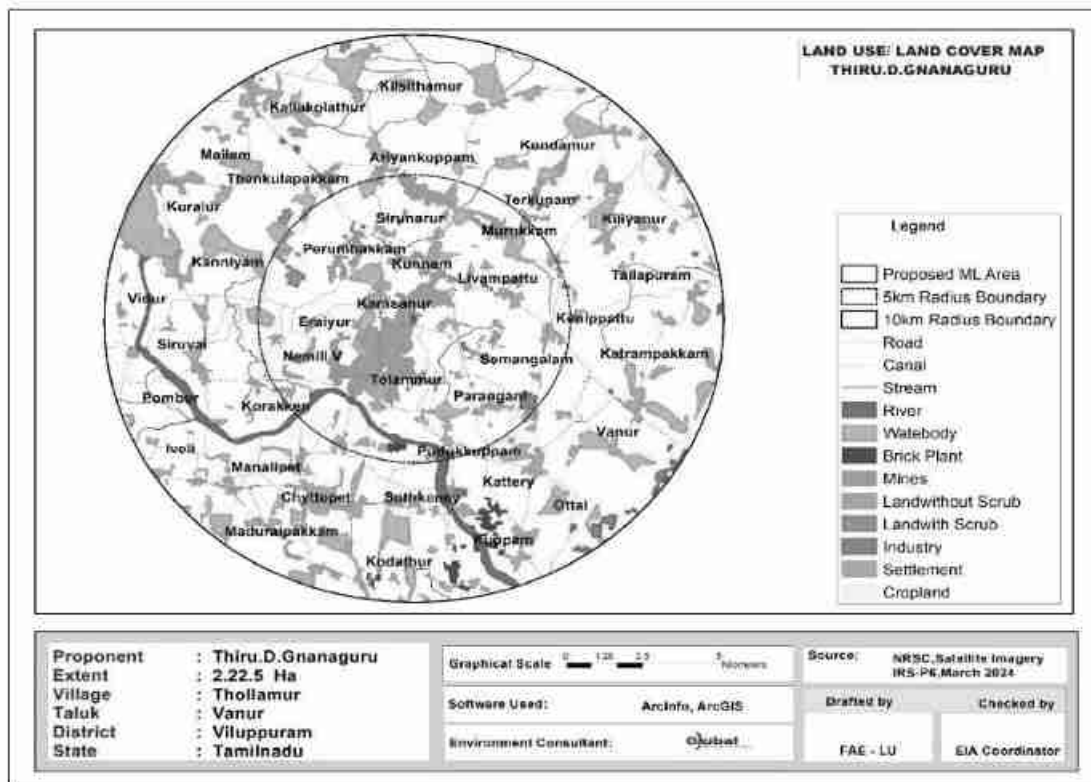
The existing land use pattern and land cover distribution of the whole acquired block, have been studied from the satellite imagery and subsequent ground checking during the field surveys.

It mainly comprises of agricultural land with bi-annual crops of Kharif (Kharif: Jowar, Bajra, Cotton, etc. Season: July to October) and Rabi (Rabi: Wheat, Rai etc. Season: December to March). The presence of the agricultural land is followed by few dense settlements Thollamur village natural or man-made pond etc. The shortage of rainfall, availability of ground water at deeper level and other climatic condition do not support good agricultural productivity inspite of having enough land. There is no demarcated forest land within the study area, however, some scattered forest is found throughout the 10 km radius, especially along the periphery of the villages.

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

The general landuse pattern of the core and buffer may be broadly classified into four major types – Buildup or habitation, Agriculture, Water Bodies, Waste land and Other categories. Under buildup or habitation category covered villages, town and infrastructure. Under agriculture category considered crop land/fallow land and plantation. Under the water body categories Reservoir/ lake, pond, River and stream. Under wasteland category considered landwith scrub and land without scrub is interpreted. Lastly other category’s covered Mines area and forest are interpreted under this category. These categories are delineated from the selected satellite image using image elements such as color, tone, texture, size, shape and associated elements. The delineated landuse units are transformed into a spatial database in GIS environment. Estimated for area and representation of each category in the study area. The total area of LULC in the study area is calculated as 320 sq. km and spatial distribution of various LULC categories within buffer area are discussed below. The 5km and 10km radius landuse map is shown above. The details are given below.

**FIG 3.17 LAND USE/LAND COVER MAP OF THE STUDY AREA**





Land Use / Land Cover Classification classified into first level classification and second level classification and major land use/land cover classes were demarcated in the study area following Level II classification. A thematic map of 1:50,000 scale was generated incorporating these classified categories considering the area of the project.

### **Built-up / Settlements**

Settlements in the study area are generally small to medium size in stature and area scattered. Vanur is the relatively larger settlements observed at the north part of the study area.

Interpretation of settlement from the satellite image is based upon the image elements such as color, tone, texture and association. It is delineated by their typical red color. Association with linear features such as roads reaffirmed the presence of delineation of settlements. The spatial extent of settlement is estimated as 25.76 sq. km representing 8.05 % of the study area and Industrial + Commercial area covers 2.02 sq. km with 0.63%.

### **Agricultural Land**

Under the broad category of agriculture crop land, fallow land and plantation is delineated. Cultivation is mostly dependent upon river water for irrigational activities are good. River, Ponds and tanks in each village act as rainwater storage units and do support domestic requirement and even cultivation to some extent. Because of these conditions, minimal water requiring crops such as corn, sunflower, oil seeds, grams, millets and coriander are cultivated. Cultivation is the most predominant crop cultivated and even if it failed their stalks are used as fodder for cattle.

Crop and Fallow land are interpreted using their image elements such as light to green, smooth to medium tone, they are the second most predominant landuse category delineated in the buffer area. As explained earlier, cultivation mostly depends upon river, canal and rainfall and majority of the land parcels are tilled and ready for cultivation with even a scanty Canal. Hence, cropland is the predominant category estimated at 238.13 Sq.km representing 74.42 % of the buffer area.

### **Wasteland**

The last category of the landuse units in the study area is "Wasteland" which denotes land parcels that could not be utilized for cultivation even after conservation measures – such as land with scrub, land without scrub area.

Next to agricultural area, natural vegetation such as land with scrub forms the predominant LULC category of the buffer area. Land with scrub is sparse and delineated as patches scattered in all the parts of the buffer area. The spatial pattern of scrub suggests it is closely associated with water courses. This category occupies land with scrub an area of 1.5 sq.km representing 0.47 % of the total core and buffer area.

Land without scrub, on the other hand is interpreted using brown to white color, medium tone and medium texture and is generally restricted around land covered with scrub and fallow land. They occur as small patches and very minimal area covering 2.35 sq.km representing 0.73 % of the buffer area.

### **Water bodies**

Many Streams small and big water bodies are seen in the study area distributed all over the study area. They support the domestic water requirements and for cattle. At some places, they may also use for irrigation purpose and are very limited. Few dry stream courses are also seen in the study area. In the satellite image, water bodies are interpreted by their light blue to greyish blue color, smooth tone and smooth texture.

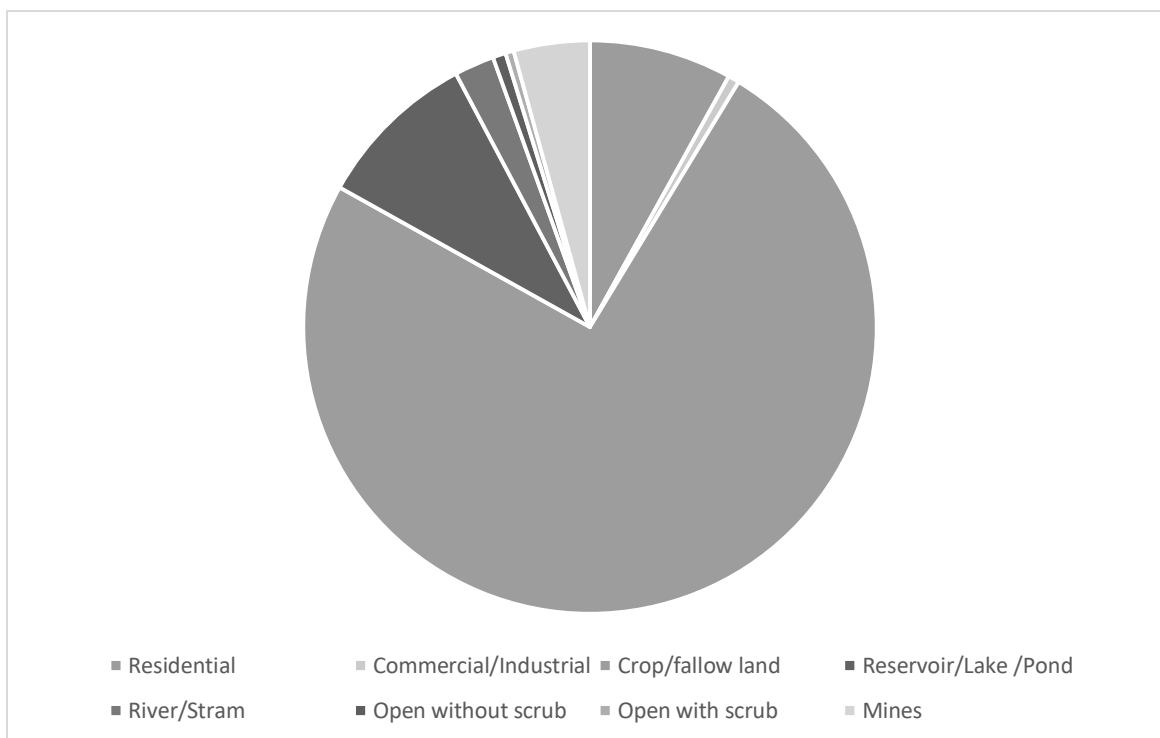
Most of the water bodies retain water for a shorter period after precipitation due to the soil constraint and hence go dry soon. Spatial extent of rivers, stream and water bodies is estimated at 36.5 sq.km and 11.40 %.

### **Mining area**

Mining area seen in the study area distributed all over the study area. Major domestic income from mining business. Spatial extent of mining is estimated at 13.74 sq.km 4.29 %.

**Table No. 3.14: Major Land Use Units of the Study Area in Percentage**

S. No	1st Level Classification	Area in (sq.km)	Percentage (%)	2nd Level Classification	Area in (sq.km)	Percentage (%)
1	Built-up or habitation	27.78	8.68	Residential	25.76	8.05
				Commercial/Industrial	2.02	0.63
2	Agriculture	238.13	74.42	Crop/fallow land	238.13	74.42
3	Water bodies	36.5	11.40	Reservoir/Lake /Pond	29.3	9.16
				River/Stram	7.2	2.25
4	Waste Land	3.85	1.20	Open without scrub	2.35	0.73
				Open with scrub	1.5	0.47
5	Mines	13.74	4.29	Mines	13.74	4.29
<b>Total</b>		<b>320</b>	<b>100</b>		<b>320</b>	<b>100</b>



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**3.3.8 SOCIOECONOMIC ENVIRONMENT**

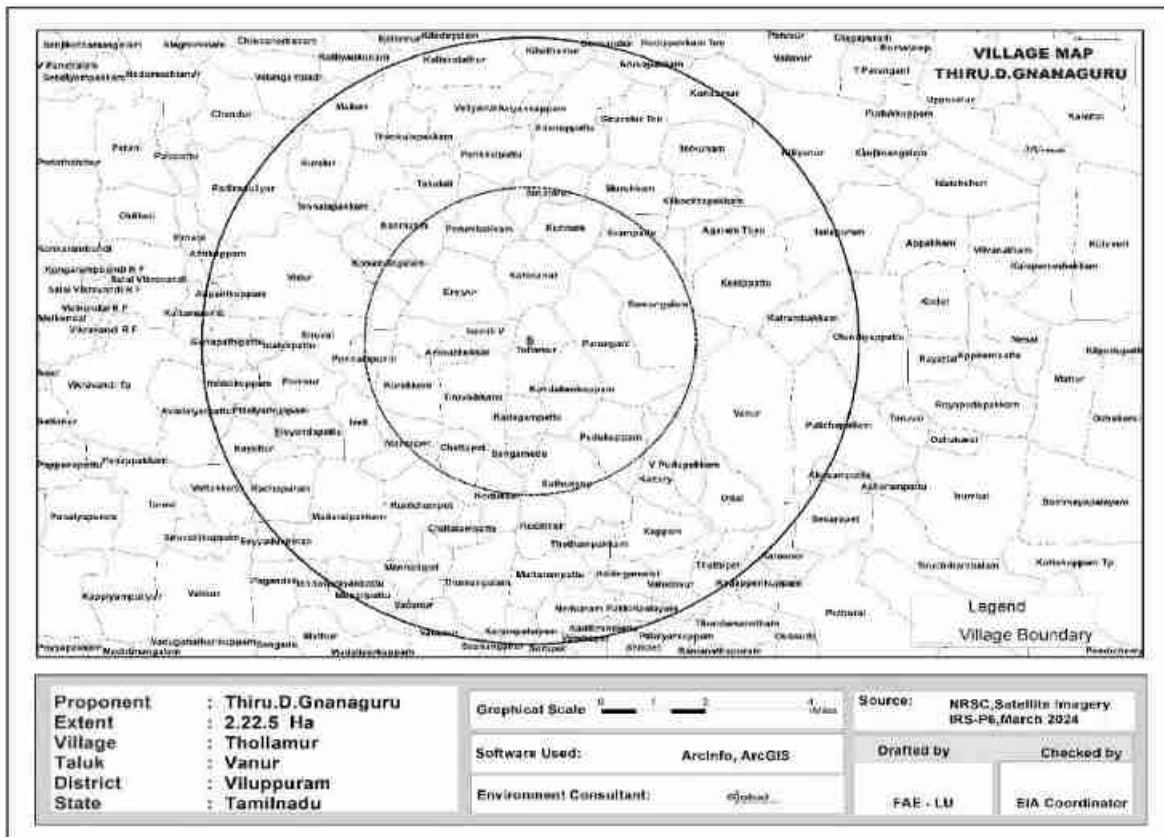
The socio-economic environment of the study area is studied by conducting primary sites through site visits and conducting sample surveys. The secondary data obtained from Census 2011 is also used. The following data area collected from secondary data:

- Demographic pattern.
- Health pattern
- Occupational structure.

**DETAILS OF VILLAGES**

The profile of the villages located in the study area is given in Fig 3.18 below.

**FIG 3.18 VILLAGE MAP OF THE STUDY AREA**



### DETAILS OF VILLAGES

The project is located in Vanur Taluk, Villupuram District. The total population is 136544 which comprise of 68658 males and 67886 females. There are 36 rural villages and one urban area in the study area. List of villages are given below.

<b>Table 3.15 Village details in study area</b>					
<b>S.No.</b>	<b>Village/Town Name</b>	<b>Radius</b>	<b>Taluk Name</b>	<b>District Name</b>	
1	Murukkam	1-5km	Vanur	Villupuram	
2	Sirunarur				
3	Perumbakkam				
4	Kilkoothapakkam				
5	Kunnam				
6	Semangalam				
7	Karasanur				
8	Kenippattu				
9	Eraiyur				
10	Parangani				
11	Tollamur				
12	Nemili (V)				
13	Kondalamkuppam				
14	Tiruvaikkarai				
15	Kanniyam				Tindivanam
16	Vidur				
17	Aruvapakkam	6-10km	Vanur		
18	Kondamur				
19	Adanappattu				
20	Kiliyanur				
21	Siruvalur (Ten)				
22	Parikkalpattu				
23	Katrambakkam				
24	Olundiyappattu				
25	Siruvai				
26	Idaiyapattu				
27	Ponnampundi				
28	Vanur				
29	Korakkeni				
30	V. Pudupakkam				
31	Elayandapattu				
32	Sengamedu				
33	Kilsithamur				
34	Kolliyankunam				
35	Kallakolathur				
36	Mailam				Tindivanam
37	Ariyankuppam				
38	Thenkulapakkam				
39	Kuralur				
40	Padirapuliyur				

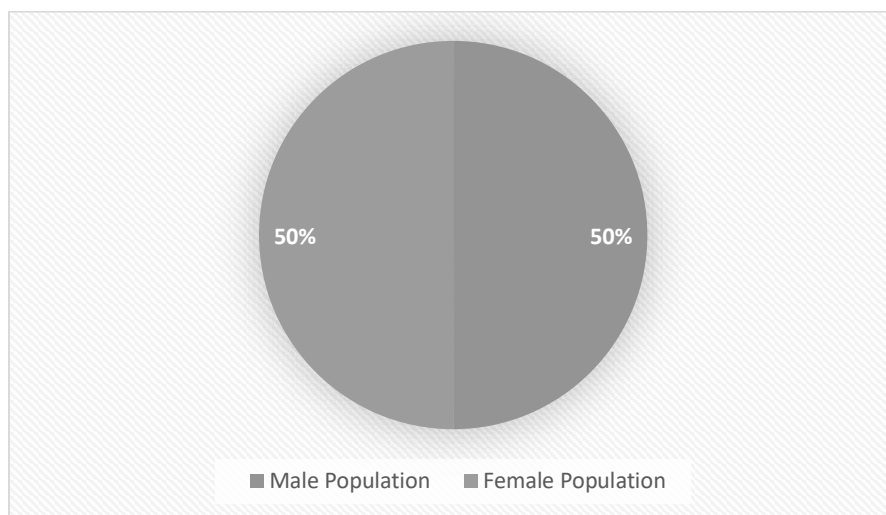
**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

41	Tennalapakkam		Vikravandi	
42	Taludali			
43	Anganikuppam			
44	Ganapathipattu			
45	Veliyanur			
46	Reddikuppam			
47	Pillaiyarkuppam			
48	Kayattur			
49	Kodukkur			
50	Radhapuram			
51	Maduraipakkam		Villianur	Pondicherry
52	Kunichempet			
53	Manalipet			
54	Chettypet			
55	Mannadipet			
56	Kuppam			
57	Kodathur			
58	Suthukeny			
59	Pudukuppam			
60	Thethampakkam			

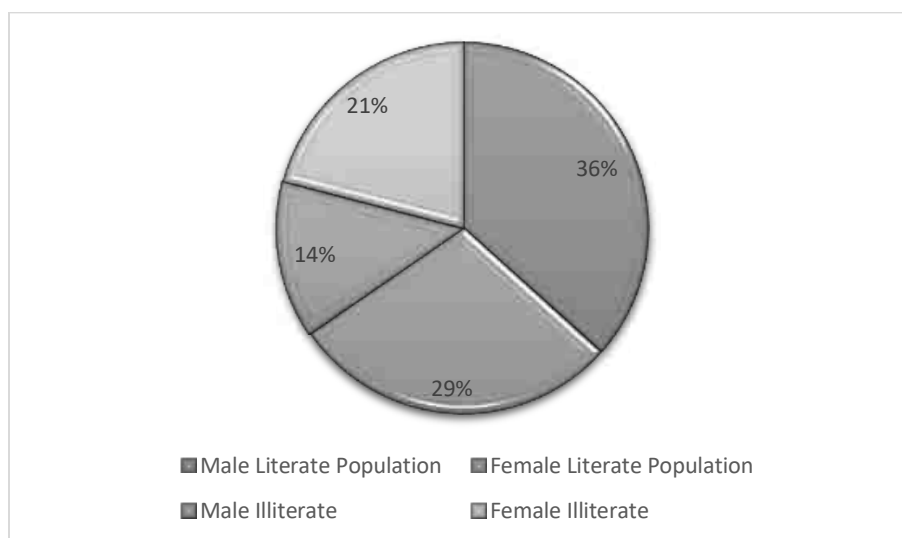
<b>Table 3.16 Population profile of the study area</b>		
<b>Particulars</b>	<b>No of Population</b>	<b>Percentage (%)</b>
<b>A. Population break-up by Gender</b>		
Male Population	68658	50
Female Population	67886	50
Total	136544	100
<b>B. Population break-up by Caste</b>		
Scheduled Caste	27410	60.15
Scheduled Tribes	26997	20.07
Others	82137	19.77
Total	136544	100
<b>C. Literacy Level</b>		
Male Literate Population	50003	37
Female Literate Population	39305	29
Male Illiterate	18655	14
Female Illiterate	28581	21
Total	136544	100
<b>D. Occupational structure</b>		
Main workers	50054	-
Marginal workers	15898	-
Total Workers	65952	48
Total non-workers	70592	52
<b>Total</b>	<b>136544</b>	<b>100</b>

The above table shows that the male and female population ratios are almost equal. Among the total population 20.07 % belong to Scheduled Tribes, 60.15 % are Scheduled Caste and the balance 19.77 % people belong to other castes. Among the total population 66 % of the people are literate. Among the total population, 14 % are literate males and 21 % are literate females. This shows that the male literates are higher than the female literates. The results are plotted in figures below.

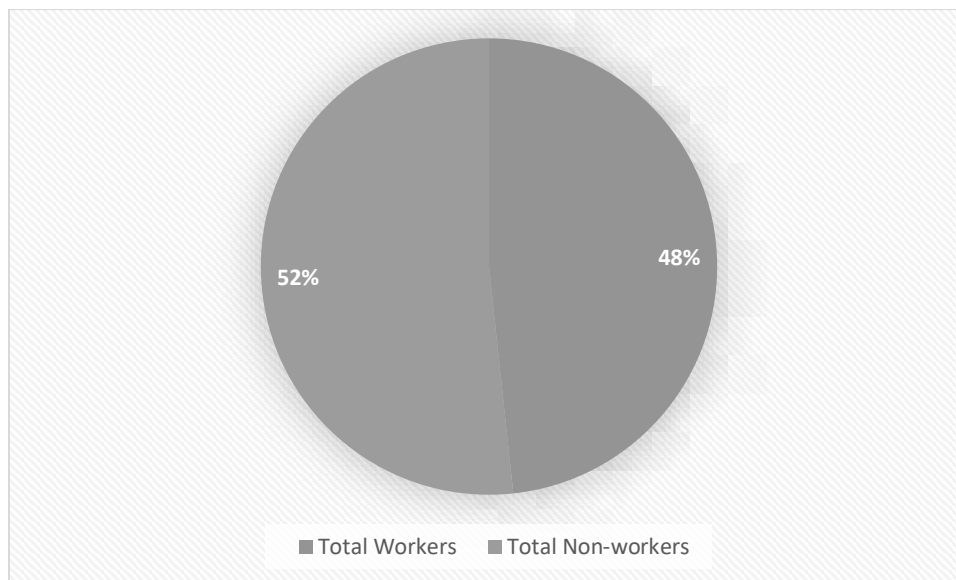
**FIG 3.19 GENDER-WISE POPULATION DISTRIBUTION**



**FIG 3.20 GENDER WISE LITERACY DISTRIBUTION**



**FIG 3.21 OCCUPATIONAL STRUCTURE WITHIN BUFFER ZONE**



### Infrastructure facilities in the study area

#### Education

Table 3.17 Educational infrastructure		
S. No.	Particulars	Available in village (Nos)
1	Govt. Primary School	Vanur - 23
2	Govt. Middle School	21
3	Govt. Secondary School	15
4	Govt. Senior Secondary School	12
5	Govt. Arts and Science Degree College	31
6	Govt. Engineering College	0
7	Govt. Medicine College	0
8	Govt. Management Institute	0
9	Govt. Polytechnic	0
10	Govt. Vocational Training School/ITI	0

In the study area, there are totally 23 Primary Schools functioning in these 21 urban area. Among them 22 villages have 7 primary school, 23 villages have 6 primary schools & 15 villages have more than 9 primary school.



## Healthcare

In the study area, the following facilities are available.

<b>Table 3.18 Medical Infrastructure</b>		
<b>S.No.</b>	<b>Particulars</b>	<b>Available in village (Nos)</b>
1	Community Health Centre	8
2	Primary Health Centre	4
3	Primary Health Sub Centre	17
4	Maternity And Child Welfare Centre	14
5	TB Clinic	6
6	Hospital Allopathic	0

## Other Infrastructure

The other infrastructure facilities available are given below.

<b>Table 3.19 Other Infrastructure</b>		
<b>S.No.</b>	<b>Particulars</b>	<b>Available in village</b>
1	Tap Water-Treated	30
2	Covered Well	10
3	Hand Pump	13
4	Tube Wells/Borehole	11
5	Post office	5
6	Public bus services	21
7	Commercial Bank	9
8	Cooperative bank	14

## Sample Survey

The expert visited 5 villages in the study area namely Ambuzhukkai, Karasanur, Eraiyur, Kondalamkuppam and Semangalam villages. Discussions were held with the people from nearby locality to study the social and economic conditions prevailing in the area. The expert also visited nearby hospitals, primary health centres and Thollamur. The following observations were made.

Primary schools are available in many villages. For hospital facilities, people in the locality have to go to hospital in Thollamur which is about 730m from the lease area. Major schools with higher secondary and senior secondary schools are located in Thollamur. The major Thollamur Union located in the area is Villupuram. Facilities like petrol pump stations, ATM facility are available in Thollamur.

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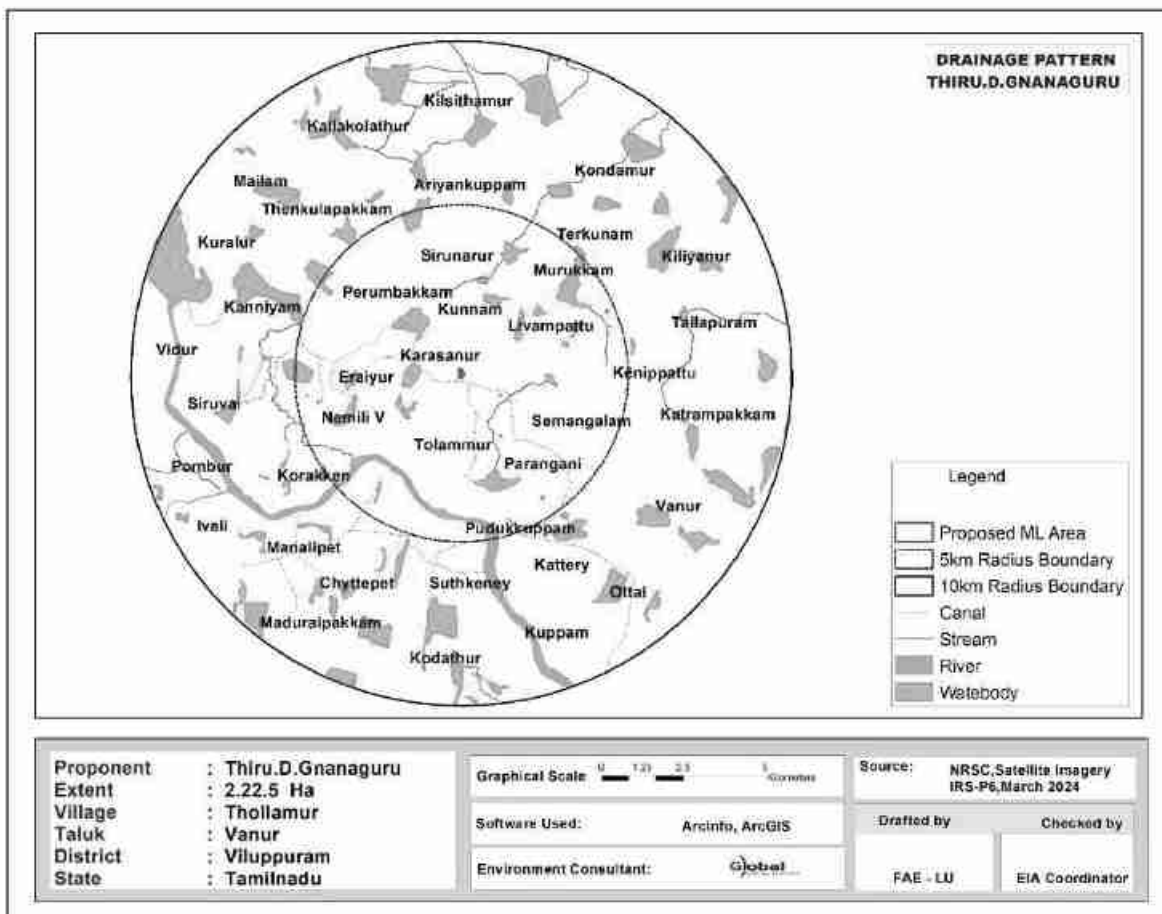
### 3.3.9 HYDROGEOLOGY OF THE STUDY AREA

Since there is Sangarabarani River is located at a distance of 3.4 km in South west direction of lease area. the hydrological and hydrogeological pattern of the study area is studied in detail using satellite imagery.

#### HYDROGEOLOGICAL STUDY

To assess the hydrogeological condition of the surrounding proposed mine lease area. The study area is located in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State is considered to understand the nature of the general hydrogeological conditions of the surrounding proposed mine lease area.

**FIGURE 3. 22 10 KILOMETER RADIUS OF THE DRAINAGE MAP**



### **PHYSIOGRAPHY AND DRAINAGE**

**Physiography:** The area applied for quarry lease exhibits almost plain topography covered by rough stone and Gravel formation. The massive Charnockite formation is clearly visible right from the surface and gentle towards Southwestern side of the area, the altitude of the area is above 75 m (maximum) from MSL.

**Drainage:** The drainage pattern study reveals that from the proposed mine lease area with around 1 Km radius and 10 Km study observed in Figure 3.22. There is Sangarabarani River is located at a distance of 3.4 km in South west direction of lease area.

### **GEOLOGY, GEOMORPHOLOGY AND SOIL**

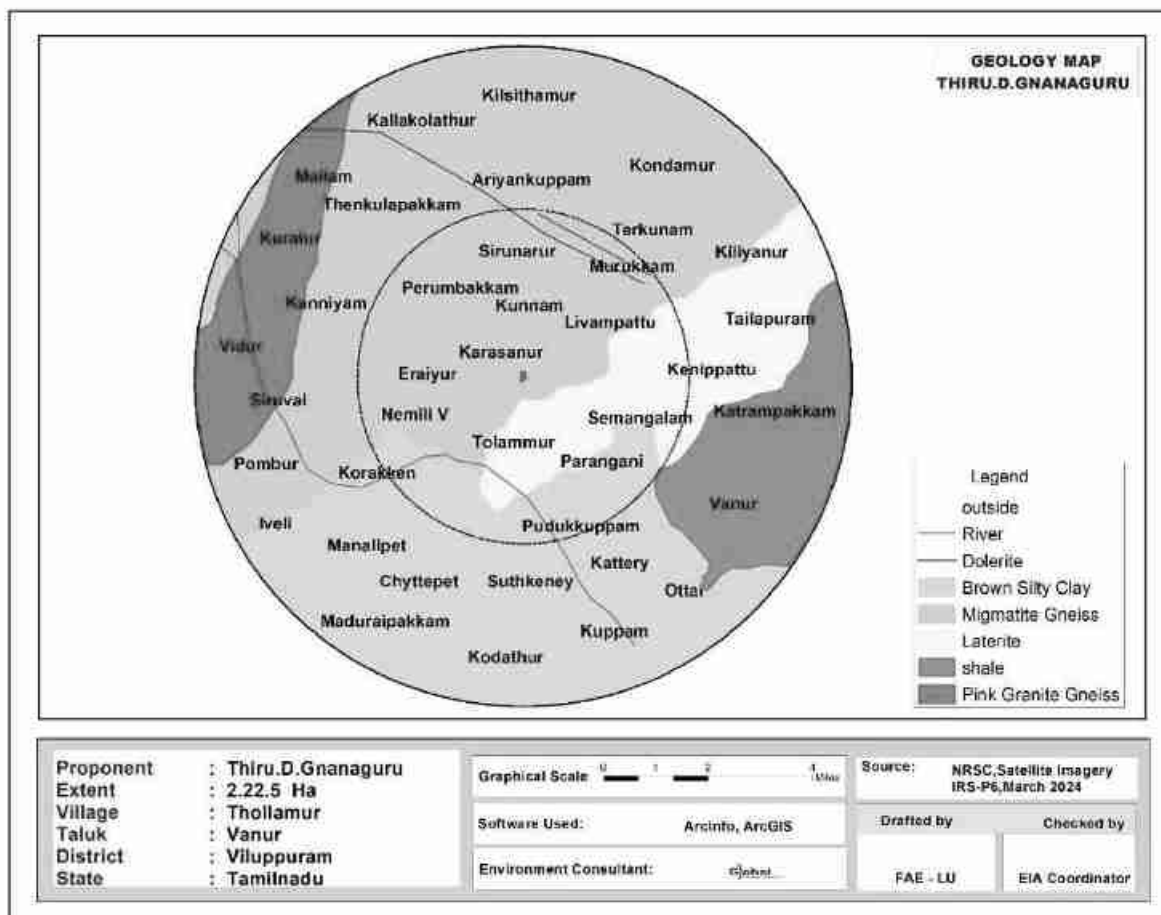
#### **Geology:**

The Core and 10 Km buffered zone geological features (Figure 3.23) shows that the Villupuram District is mostly underlain by the Archaean crystalline and metamorphic complex. The geology of the district is complicated due to recurring tectonic and magmatic activities occurred during Pre-Cambrian period. Hornblende Biotite Gneisses are the oldest rocks in four taluks of the district. It is very fissile and present widely in plains. The gneisses are highly weathered upto 30 m at some places.

The Charnockites are coarse grained, massive and foliated at places and their colour is bluish dark to grey. They are the second largest rock type present in the district. They are massive and less weathered than the gneisses. They exhibit 2 to 3 distinct set of joints and most of them are vertical with steep dips. Iron ore deposits associated with quartz feldspathic gneiss and garnetiferous quartz gneisses are present in some areas. These rocks are highly folded and jointed and less weathered. Quartzite and crystalline lime stones are exposed in patches in north and central parts of the district. The thickness of these bands varies from a few metres to ten metres and the length extends to few kilometres. Numerous lenses of dunite with magnesite veins of various dimension are exposed within gneiss. There are number of basic dykes present in the study area. Granites are found in some parts of the district. They are massive and jointed poorly. Thin veneer of alluvium is found along the course of the Vada Pennaiyar. However, alluvium of few meters thickness is found near the junction of river Vada Pennaiyar. Several faults and shears are occurring mostly with north east-southwest trend. They are expected to influence the course of groundwater movement, its storage and developmental potentials in the district.

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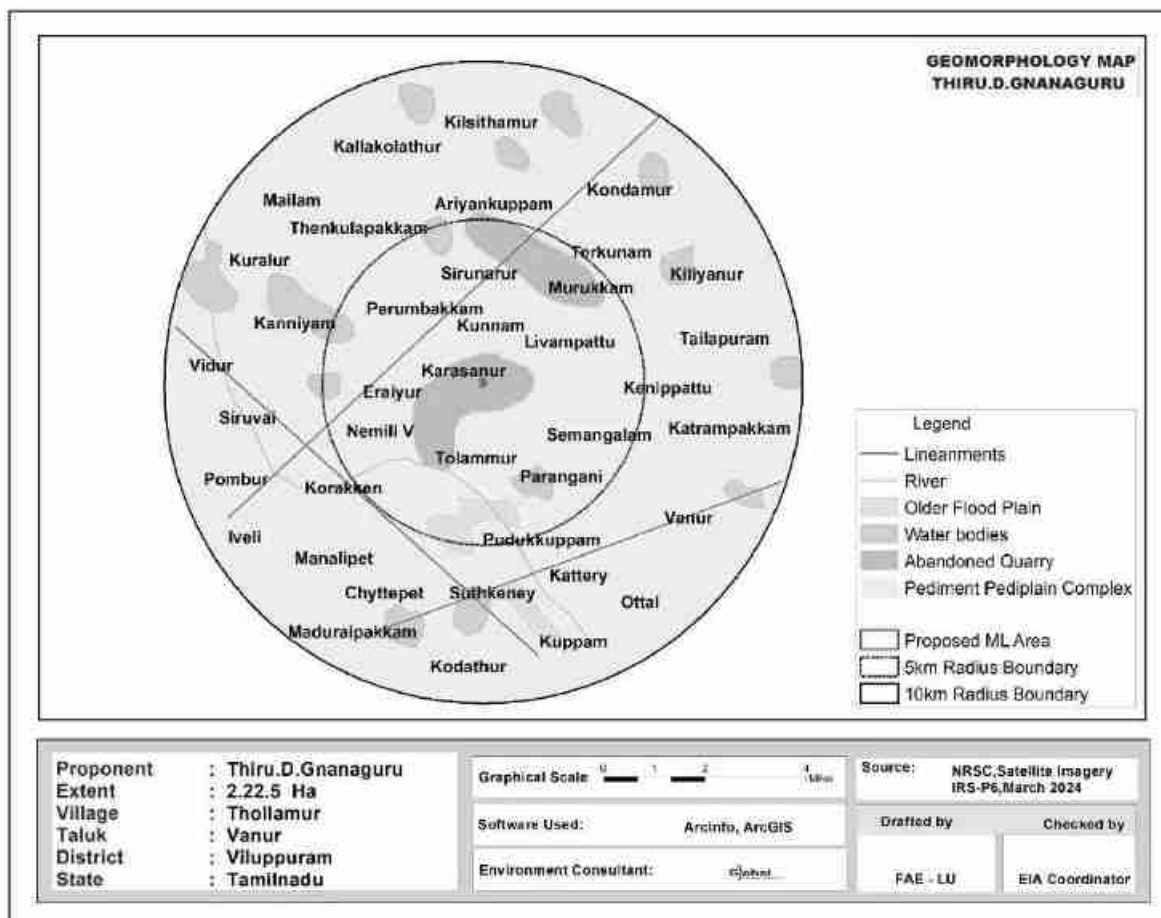
**FIGURE 3. 23 10 KILOMETER RADIUS OF THE GEOLOGY MAP**



**Geomorphology:** The Core and 10 Km buffered zone geomorphological features (Figure 3.24) shows that the district is pediment pediplain complex, younger and older flood plain, older deltaic plain along with low and moderately dissected denudation hills and valleys. The older deltaic plain and older flood plain occurs at southern parts of the district near Villupuram, where younger coastal plain occurs at NE part of the district near Alumur. The low and moderately dissected denudational hills and valleys are present at west of Gangee and Odiyattur. The numerous lineaments are mostly tending in NE-SW direction while few are tending in NW-SE direction.

DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

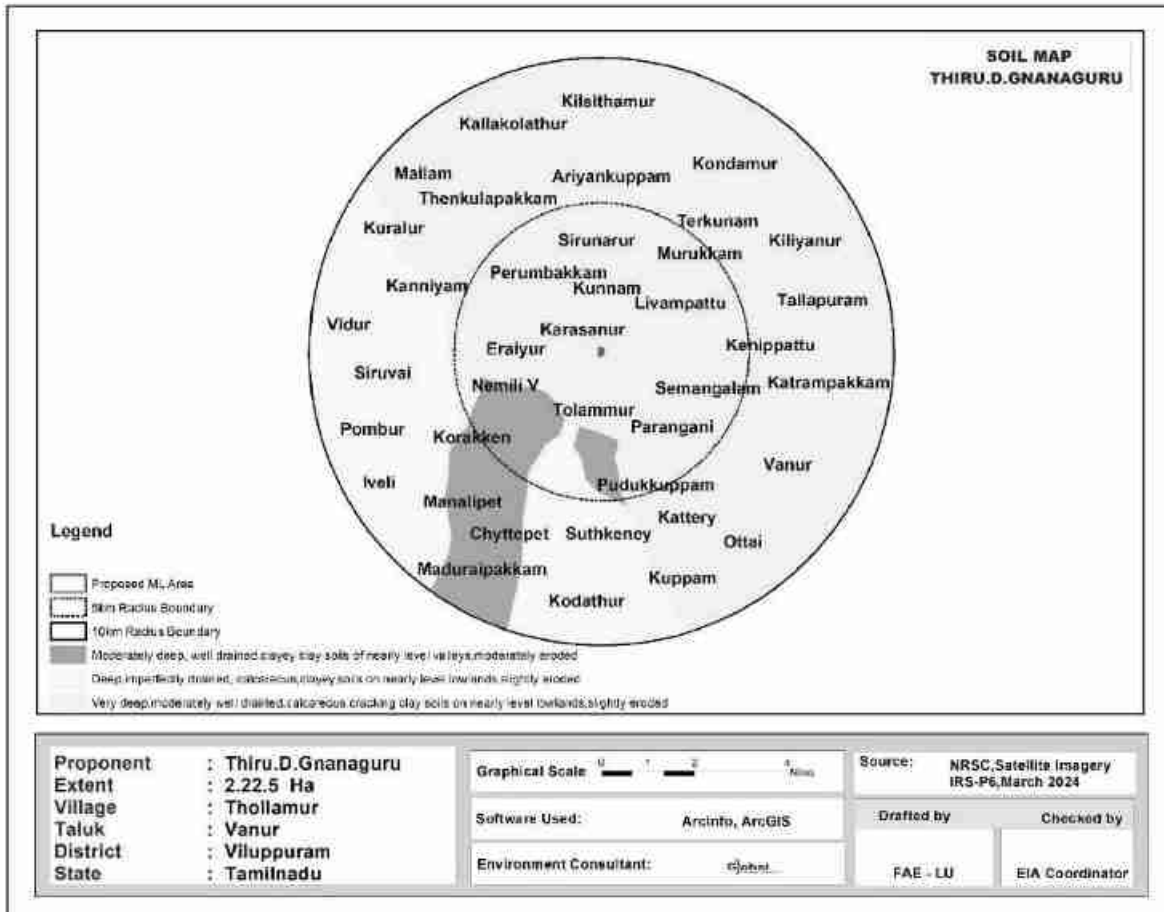
**FIGURE 3. 24 10 KM RADIUS OF THE STUDY AREA GEOMORPHOLOGY MAP**



**Soil:** The soil types in the study area are very deep, moderately well drained, calcareous clay soil develops over lowlands (Figure 3.25.). Study area mostly Calcareous black soil, Red loamy soil, clayey soil and Calcareous clayey soil (Figure 3.23.). Calcareous black soil (177.25 sq.km) was distributed over the study area. Red loamy soil is found in north, east, west and central part of the study area (108.43 sq.km). Clayey soil is found in north-western part of the study area (34.93 sq.km).

DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

**FIGURE 3.25 10 KM RADIUS OF THE STUDY AREA SOIL TYPE MAP**

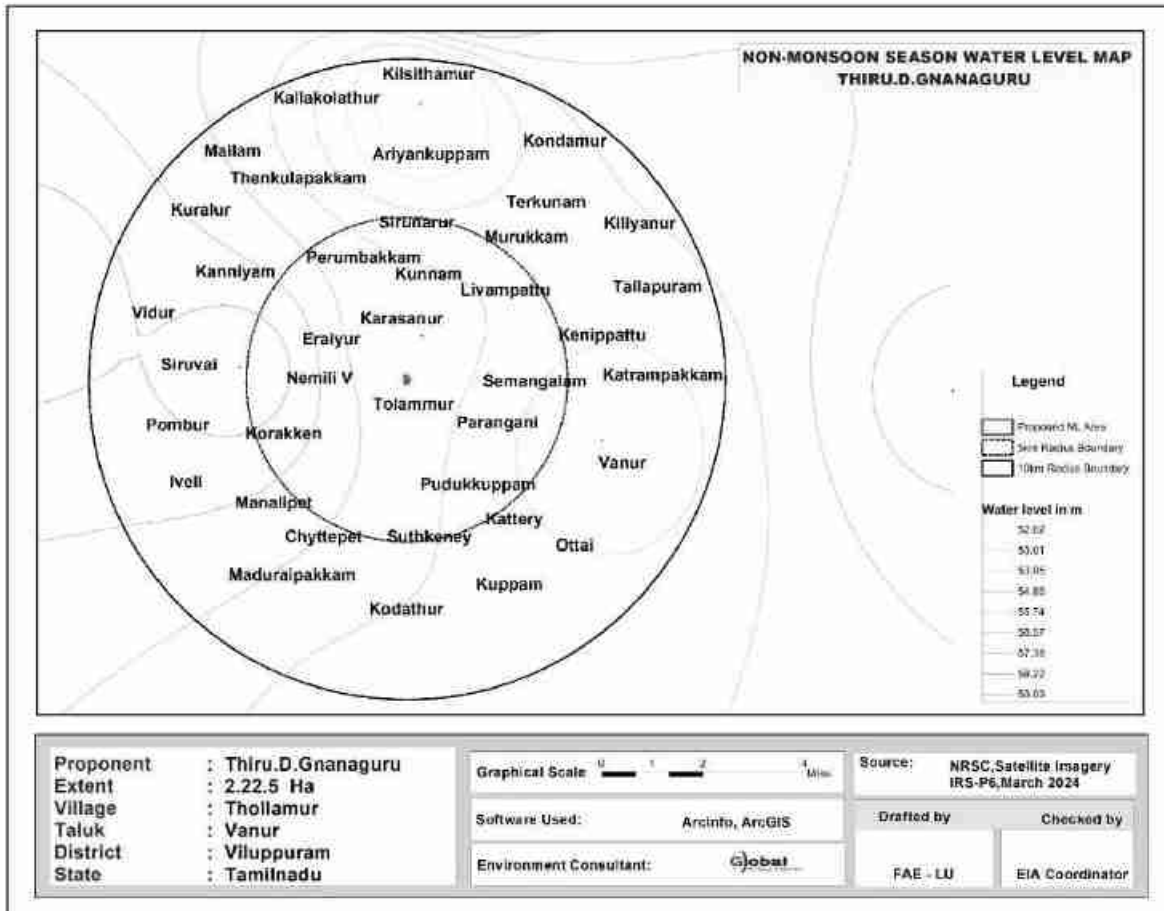


**BELOW GROUND LEVEL (BGL)**

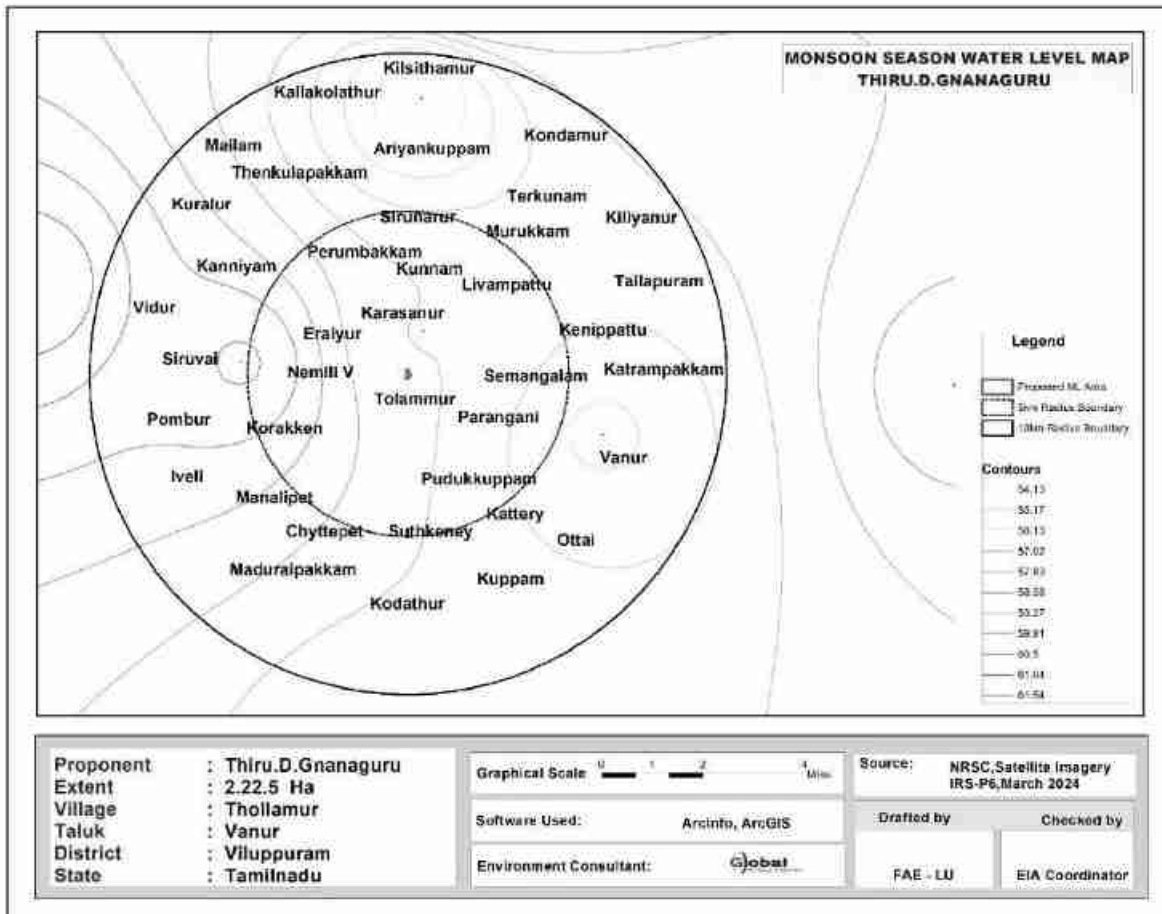
Figure 3.26 & 3.27 shows the Non-Monsoon and Monsoon water level map of the study area.

DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

**FIGURE 3.26 NON-MONSOON WATER LEVEL MAP OF THE STUDY AREA**



**FIGURE 3.27 MONSOON WATER LEVEL MAP OF THE STUDY AREA**



### FIELD INVESTIGATION

The temporary seasonal streams water flow from center to outer most area. There is Sangarabarani River is located at a distance of 3.4 km in South west direction of lease area. The water is temporarily found only during the rainy season.

In this representation in the two seasons, the water level substantially gets fall-down in the non-monsoon season, because of the rainfall impact and it extended up to the Monsoon season. Some of the wells water level is shallow depth in both seasons. These dug wells are located nearby water bodies. So, clearly shows that surface water is impact in these wells.



The shallow depth of groundwater level in the monsoon season. It is interesting to note that the water level is increased because of heavy rainfall during the southwest and northeast monsoon. The groundwater table level is substantially increased in the monsoon season.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The study has revealed that potential fractures are encountered at deeper levels. The water in the wells are available mainly monsoon and it reduces during non-monsoon demanding the groundwater. Bore wells are deep and it reflects that the yield is only better at deeper water levels.

Rain water collected in the tanks in the region acts as a good source of water during monsoon season. In order to increase the recharge, tanks, and percolation ponds may be provided with the recharge wells/recharge shafts penetrating this impervious layer to make it more effective in recharging the aquifer.

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## CHAPTER 4

### **ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

#### **INTRODUCTION**

This chapter deals with the various anticipated environmental impacts and mitigation measures of the proposed mining activity. The proposed method of mining is Opencast Mechanized and the quarry operation involves Shallow Jack Hammer Drilling, Blasting, Excavation, Formation of benches, Loading and Transportation of minerals. The above activities may affect the surrounding environment like removal of rock mass, Loss of flora and fauna of the area, surface water discharge, change in air and water quality, etc., If adequate measures are not taken for the proposed operations, it will cause the environmental degradation of the area and it will lead to affect to the ecosystem of the surrounding environment.

In order to maintain the existing environmental scenario of the proposed mine lease area it is mandatorily required to assess the present ecology and environment of the proposed mine lease area and buffer area of the project before starting mining operations. The various environmental impacts which are identified by the proposed quarrying activities have been discussed below and its subsequent paragraphs.

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

**4.1 DETAILS OF INVESTIGATED ENVIRONMENTAL IMPACTS DUE TO PROJECT LOCATION POSSIBLE ACCIDENTS, PROJECT DESIGN, PROJECT CONSTRUCTION, REGULAR OPERATIONS FINAL DECOMMISSIONING OR REHABILITATION OF A COMPLETE PROJECTLAND ENVIRONMENT**

This is a proposed Rough Stone Quarry & Gravel Quarry of S.F.No.99/1, 99/3A, 100/1, 100/2 and 100/5A over an extent of 2.22.5 Ha in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State. The method of mining is Opencast mechanized with a bench width and height of 5m. It is proposed to excavate to 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> gravel formation up to a depth of 32 m (BGL) for the period of five years. There is no stream/odai within the mine lease area.

The main anticipated impact on the Land Environment due to quarrying operation is change in Landscape, change in Land – use Pattern.

The entire mine lease area is Patta land. The project area of 2.22.5 ha boundary barrier except in eastern direction. It is proposed to be altered by effective quarrying operation such as excavation (1.51.5 Ha), Infrastructure (0.02.0), Road (0.01.0 Ha) and green belt will be developed in the safety zone of 0.68.0 Ha. The ultimate depth of quarrying is proposed with maximum depth of 32m BGL and will not intersect the ground water table.

**4.2 MEASURES FOR MINIMIZING AND /OR OFFSETTING ADVERSE  
 IMPACTS IDENTIFIED**

Aspect	Impact	Mitigation measures																						
<p><b>Topography</b></p>	<p>The area is exhibits almost plain topography covered by rough stone and Gravel formation. Quarrying activity will lead to change in geological setting of the area i.e., Due to the quarrying activity in the mine lease area will leads to affect the aesthetic view on the environment. Further, due to the movement of heavy vehicles in and around the mine lease area will leads to affect the surrounding agricultural lands, ecology and biodiversity, human habitations due to the emissions from vehicles like SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, etc., The existing land use pattern is given as under.</p> <table border="1" data-bbox="432 1049 1012 1377"> <thead> <tr> <th>Land Use</th> <th>Present Area (Ha)</th> <th>Area in use during the quarrying period (Ha)</th> </tr> </thead> <tbody> <tr> <td>Quarrying Pit</td> <td>Nil</td> <td>1.51.5</td> </tr> <tr> <td>Infrastructure</td> <td>Nil</td> <td>0.02.0</td> </tr> <tr> <td>Roads</td> <td>Nil</td> <td>0.01.0</td> </tr> </tbody> </table>	Land Use	Present Area (Ha)	Area in use during the quarrying period (Ha)	Quarrying Pit	Nil	1.51.5	Infrastructure	Nil	0.02.0	Roads	Nil	0.01.0	<p>The major impact due to this project on land environment is the change in land use. Mining activity will be carried out upto a depth of 32 m Below ground level. At the end of mining period, the quarried pit will act as a water reservoir to store the rain water.</p> <p>Land Use at the end of mine will be as follows.</p> <table border="1" data-bbox="1075 769 1787 1117"> <thead> <tr> <th>Land Use</th> <th>Area in use during the quarrying period (Ha)</th> </tr> </thead> <tbody> <tr> <td>Area left for water body</td> <td>1.51.5</td> </tr> <tr> <td>Green Belt</td> <td>0.68.0</td> </tr> <tr> <td>Remaining area</td> <td>0.03.0</td> </tr> <tr> <td><b>Total</b></td> <td><b>2.22.5</b></td> </tr> </tbody> </table> <p>At the mine closure stage 1.51.5 Ha of lease area will be left as rain water harvesting pond. 0.68.0 Ha will be developed with green belt.</p>	Land Use	Area in use during the quarrying period (Ha)	Area left for water body	1.51.5	Green Belt	0.68.0	Remaining area	0.03.0	<b>Total</b>	<b>2.22.5</b>
Land Use	Present Area (Ha)	Area in use during the quarrying period (Ha)																						
Quarrying Pit	Nil	1.51.5																						
Infrastructure	Nil	0.02.0																						
Roads	Nil	0.01.0																						
Land Use	Area in use during the quarrying period (Ha)																							
Area left for water body	1.51.5																							
Green Belt	0.68.0																							
Remaining area	0.03.0																							
<b>Total</b>	<b>2.22.5</b>																							

Green Belt	Nil	0.68.0
Unutilized	2.22.5	Nil
<b>Total</b>	<b>2.22.5</b>	<b>2.22.5</b>

The ultimate pit dimension of the mine lease area is given below.

Ultimate Pit dimension at the end of Mining plan Period			
Pit No.	Length (max) (m)	Width (Avg) (m)	Depth (max) (m)
I	178	85	32 m Below ground level

If mining is not done systematically it will lead to the dumping failure in the mining area.

Greenbelt shall be developed around the mine lease area and the details has been given below.

Year	Species	No. of trees	Spacing	Survival
I	Pungai,	1100	3m x 3m	80%
II	Vagai,	-		
III	Vembu,	-		
IV	Manjal	-		
V	konrai, Naval, Puvarasu, etc	-		
<b>Total</b>		<b>1100</b>		

Due to the thick vegetation around the mine lease area and sprinkling of water around the haul roads the dust emissions arise from the vehicles will be controlled.

At the end of mining period, fencing will be provided around the mine lease area to arrest the entry of public/cattle to the mining area.

The rough stone and Gravel are proposed to quarry 5m bench height and 5m width with 47° slope and with opencast Mechanized method. As per the approved mining plan a safety distance of 7.5m shall be provided. There is no overburden anticipated during the entire Rough Stone and Gravel quarrying operation. The excavated rough stone and Gravel will be directly loaded into tipper to the needy crusher/other buyers.

<p><b>Drainage</b></p>	<p>Mine drainage is surface water or groundwater that drains from an active or abandoned mine. One of the adverse impact of mine drainage is it will contaminate the ground water.</p>	<p>As per the approved mining plan the ultimate pit limit is 32m (BGL). The ground water table is reported as 65 m. In the proposed mining plan only 32m below ground level has been envisaged as workable depth for safe &amp; economic quarrying for the entire lease period. Hence the quarrying operation may not affect the ground water.</p>
<p><b>Soil Quality and Agriculture</b></p>	<p>In monsoon seasons due to the excavation of minerals soil erosion and sediment deposition will occur in the nearby water bodies.</p>	<p>It is proposed to quarry upto a depth of 32m below ground level and the nearby water table is 65m. So, the mining activity will not affect the ground water. To prevent the soil erosion during monsoon season, garland drain will be constructed with silt traps.</p>
<p><b>Visual impact on surrounding environment</b></p>	<p>Quarrying activities and rock extraction generally cause several environmental effects on the surrounding areas. The alteration of landscape due to activities like excavation, drilling or blasting, in particular, often generates a visual impact on the receptors set in the surroundings. Among these effects, the shape, extent, or chromatic contrast of the mining surface with the original land form may represent a huge loss of appeal for the growth of new urban settlements.</p>	<p>The reclamation of the post mined quarry surface is aimed at restoring the ecological balance taking into account geological parameters but also local flora and climate. Further the ultimate depth of mining is 32m. In the post mining stage the quarried out pit will be used for rainwater harvesting.</p>

#### **4.2.1 SOLID WASTE GENERATION AND MANAGEMENT**

The plastic waste generation is very negligible and it will be collected from the source level in specific dustbin and disposed through the municipal bins.

- Identification of solid waste generations
- Providing dustbins to collect with different color coding
- Creating awareness among the employees
- Developing common storage yards
- Disposal to the nearby municipal yards
- Record keeping
- Review once in quarter

#### **4.2.2 WATER ENVIRONMENT**

##### **Impact on Surface Water Resources**

There is no seasonal or perennial Odai within the M.L area. The drainage pattern of the region is plane to sub-dendritic. Surface run-off water of the M.L. area is drained through proposed drainage and collected in the bottom of the quarry and collected water will be used for same quarry operation as such for plantation & dust suppression.

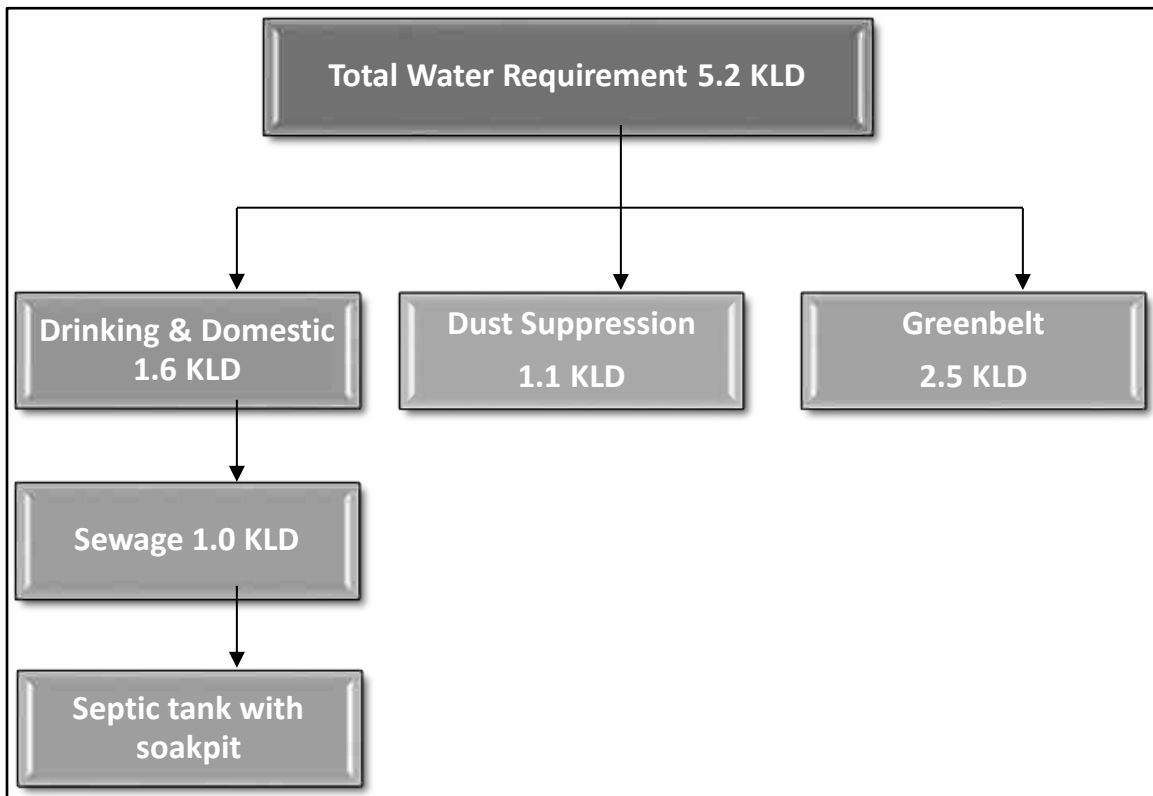
Sangarabarani River is located at a distance of 3.4 km in South west direction of lease area. Water table is found at a depth of 65m.

Since these water bodies are located outside the lease area and there is no discharge of effluent or any untreated water from the mines will be made into these water bodies, there is no major impact. The project proponent will restrict the mining operation only within the lease and no other work will be carried out near the canal or any area outside the mining lease.

### Impact due to Water use in Mines

In the proposed mines water will be mainly used for domestic purpose, dust suppression & plantation. Total water requirement for the project is 5.2 KLD which will be sourced from outside agencies. Negligible sewage of 1.0 KLD will be generated, for which a septic tank with soak pit will be set up. The water balance diagram is given below.

**FIG 4.1 WATER BALANCE DIAGRAM**



### Impact on Ground Water

The mining activity is not likely to intersect ground water as the ground water table occurs at a depth of 65 m. The mining will go up to the maximum depth of 32 m BGL. So, there will be no chance of intersecting the ground water table by the mining activity. So, the impact of mining on the ground water is not envisaged.



### Mitigation measures

- Entire lease area will be provided with proper garland drains.
- Check wears will be provided to prevent solids from wash off.
- Construction of garland drains around freshly excavated so that flow of water with loose material is prevented.
- The mine water will be passed through the natural slopes and valleys and gets accumulated in the settling tank (Bottom pit)

### Ground water environment in buffer zone

The scenario of ground water in Vilupuram District, Vanur Taluk is given below.

Table: 4.1 Ground Water Level Status in Vilupuram District							
S. No.	Assessment Unit (Firka)	Net Annual Ground water availability	Existing gross ground water consumption for irrigation	Existing gross ground water consumption for domestic and industrial water supply	Existing gross ground water consumption for all uses	Stage of ground water development	Category
1	Vilupuram	148,771	141,402.85	5,010.48	146,413.34	98%	Over Exploited

Source:nwm.gov.in

It is planned to carryout appropriate rainwater harvesting schemes and artificial recharge schemes in the area.

### 4.2.3 VEGETATION

#### VEGETATION IN THE CORE ZONE

The mine lease area is devoid of major plantation. Shrubs and bushes are majorly found within the lease area. The proponent has planned to develop green belt in an area of 0.68.00 Ha. Trees like Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc will be planted around the mine lease area. A total of 1100 trees are planned to be planted. Spacing will be 3m x 3m.

## FAUNA

There are no sanctuaries/national parks in the buffer zone of 10km study area. The commonly found fauna in the buffer zone are given in Chapter III. During mining activity, the impacts and mitigation measures for Fauna are given in below table.

<b>Table 4.2 Impacts and mitigation measures for Fauna</b>		
<b>S.No.</b>	<b>Impact</b>	<b>Mitigation measure</b>
1	Fauna is affected due to noise and vibration.	Sirens will be blown before blasting in the mines. To reduce noise levels, plantation will be done. Blasting will be carried out only in the allotted time.
2	Dust generation due to mining activities	To reduce dust generation, mist sprayers will be used. During transportation, the material will be covered with tarpaulin. Water sprinkling will be done to reduce generation of pollutants.
3	Change in land use of the lease area	After the mine closure stage, the mine pit will be left as rain water collecting tank, which can attract bird population in the nearby areas.
4	Accidental falling of animals	To prevent entry of animals, the mine lease surrounding area will be properly fenced with barbed wire.

### **4.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF ENVIRONMENTAL COMPONENTS.**

#### **4.3.1 IMPACT DUE TO MINING OPERATION**

Impact prediction is a very important phenomenon in evaluating the environmentally potential adverse impacts for any proposed mine project. The impact prediction is always carried out under worst possible conditions so as to mitigate or to eliminate the environmental hazards. These predictions thus calculated are superimposed over the baseline data to calculate the net impact on the environment after the proposed mine Project comes into production.

### **4.3.2 IMPACT ON AIR ENVIRONMENT**

The impacts on air environment from a mining activity depend on various factors like production capacity, machinery involved, operations and maintenance of various equipment's and vehicle. Apart from these, there will be other activities associated viz transportation of mineral and waste, stocking facilities and dump management within the mine lease area that may contribute to pollution.

### **4.3.3 Air Emissions**

The impacts on air environment from a mining activity depend on various factors like production capacity, machinery involved, operations and maintenance of various equipment's and vehicle. Apart from these, there will be other activities associated viz transportation of mineral and waste, stocking facilities and dump management within the mine lease area that may contribute to pollution.

### **4.3.4 Quantitative Estimation of Impacts on Air Environment**

An attempt has been made to predict the incremental rise of various ground level concentrations above the baseline status in respect of air pollution due to proposed is 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> gravel by the open-cast mechanized mining method.

The pollutants released into the atmosphere will disperse in the down wind direction and finally reach the ground at farther distance from the source. The concentration of ground level concentrations mainly depends upon the strength of the emission source and micrometeorology of the study area.

In order to estimate the ground level concentrations due to the emission from the proposed project, EPA approved Industrial Source Complex ISC AERMOD View Model has been employed.

The mathematical model used for predictions on air quality impact in the present study is ISC-AERMOD View-6.8.6. It is the next generation air dispersion model, which incorporates planetary boundary layer concepts.

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

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

Special features of AERMOD include its ability to treat the vertical inhomogeneity of the planetary boundary layer special treatment of surface releases, irregularly shaped area sources, a plume model for the convective boundary layer, limitation of vertical mixing in the stable boundary layer, and fixing the reflecting surface at the stack base.

The AERMET is the meteorological preprocessor for the AERMOD. Input data can come from hourly cloud cover observations, surface meteorological observations and twice-a-day upper air soundings. Output includes surface meteorological observations and parameters and vertical profiles of several atmospheric parameters.

The AERMAP is a terrain preprocessor designed to simplify and standardize the input of terrain data for the AERMOD. Input data include receptor terrain elevation data. Output includes, for each receptor, location and height scale, which are elevations used for the computation of airflow around hills.

**Salient features of the AERMOD model are given hereunder:**

- ❖ Excavation operations are considered as area sources.
- ❖ Transportation of material on haulage roads has been considered as line source

The predicted ground level concentrations for study period computed using AERMOD model are plotted as isopleths.

**4.3.5 Sources of Dust Emission**

The proposed mining is carried out by mechanized opencast method. The air borne particulate matter generated by ore handling operations, transportation and screening of ore is the main air pollutant. The emissions of sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) contributed by diesel operated excavation/loading equipment and vehicles plying on haul roads are marginal. Prediction of impacts on

air environment has been carried out taking into consideration proposed production and net increase in emissions. Based on the various operations involved in the production of minerals, the various emission sources has been identified as given below.

- a. Area sources.
- b. Line sources.

Extraction of mineral from mine, are considered as area sources. Transportation of material from mining benches to various end points are considered as line sources. The impact of above sources on air environment is discussed below:

The other sources of air pollution are the dust generated during the movement of tippers on the haul road. Water tankers with spraying arrangement will be used for regular water sprinkling on the haul roads to ensure effective dust suppression. The tippers are well maintained so that exhaust smoke does not contribute abnormal values of noxious gases and un-burnt hydrocarbons.

#### **4.3.6 Emission Details**

All the emissions discussed above are quantified for proposed maximum production of is 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> gravel by the open-cast mechanised mining method. The existing air quality levels are covered in the baseline scenario. Excavation, loading and transportation through tippers are the major sources, which are of significance. Therefore, the emissions considered for modeling are from drilling blasting, excavation & transportation rough stone and Gravel.

The emissions are computed based on AP-42 emission factors. Operational hours, activity rate, wind speed and moisture content have been considered for estimation of emissions from point and area sources. For line source, apart from operational hours, activity rate, moisture, silt content and vehicle weight have been considered. Predictions are carried out for the worst-case scenario of simultaneous operation of excavators (area sources) and tippers for transportation from mine pit to loading pit (line sources) over a distance of 500 m.

The number of working days has been taken at 300 days per year with 8 hours of operation/day, hence the concentrations predicted are considered to be the worst case. With control measures, the emissions have been taken at 30% of uncontrolled emissions for handling and 10% of uncontrolled emissions for transportation.

#### **4.3.7 Meteorological Data**

The meteorological data recorded continuously during the month of March 2024 – May 2024 on hourly basis on wind speed, wind direction and temperature has been processed to extract the 24- hourly mean meteorological data as per the guidelines of IMD and MoEF for application of AERMOD model. Stability classes computed for the mean hours is based on guidelines issued by CPCB on modeling. Mixing heights representative of the region have been taken from the available published literature.

#### **4.3.8 Summary of Predicted Ground Level Concentrations**

Ground level concentrations due to the mining activities have been estimated to know the incremental raise and extent of impact in the study area.

The maximum ground level concentration is estimated to be about 0.34  $\mu\text{g}/\text{m}^3$  of PM<sub>2.5</sub> & 2.01  $\mu\text{g}/\text{m}^3$  of PM<sub>10</sub> within the mine area and surrounding cluster area 0.78  $\mu\text{g}/\text{m}^3$  of PM<sub>2.5</sub> & 5.03  $\mu\text{g}/\text{m}^3$  of PM<sub>10</sub>, where mining operations are being carried out. The impact of mining operations would be negligible beyond 0.5 km.

**Figure – 4.1** represents the spatial distribution of the predicted ground level concentrations of PM<sub>10</sub> due to emissions from mine.

#### 4.3.9 Emission sources & Quantification

Various point and non-point sources of emissions from Proposed Rough Stone and Gravel Quarry of Thiru.D.Gnanaguru, S/o. Dhanapal (Rough Stone & Gravel) is quantified and presented below:

##### Area Emissions – Total Material handling

Quantity, m <sup>3</sup>	Rough Stone: 2,06,595 m <sup>3</sup> Gravel: 30,428 m <sup>3</sup>
Operational Hours Per Year	2400
Activity Rate, t/hr.	49.8
Emission of dust, g/t.	0.18
Emission of dust, g /hr.	51.74693
Area of influence, m <sup>2</sup>	625
Uncontrolled emission rate g/s/m <sup>2</sup>	0.000043022
Controlled emission rate, PM10 g/s/m <sup>2</sup>	0.0000430228
Controlled emission rate, PM2.5 g/s/m <sup>2</sup>	0.0000028681

##### Area Emissions – Total Material handling (Cluster Rough Stone & Gravel)

Quantity, m <sup>3</sup>	Existing Quarries: <ul style="list-style-type: none"> <li>• Thiru.V.Ramesh (3.53.0 Ha) - Rough Stone (90544.6 m<sup>3</sup>) &amp; Gravel quarry (4910.4 m<sup>3</sup>).</li> <li>• Tvl.Sree Tiruchendur Murugan Blue Metals (4.57.5 Ha) - Rough Stone (103105.6 m<sup>3</sup>) &amp; Gravel (10571.8 m<sup>3</sup>).</li> </ul>
Operational Hours Per Year	2400
Activity Rate, t/hr.	67.67
Emission of dust, g/t.	0.20
Emission of dust, g /hr.	59.51436
Area of influence, m <sup>2</sup>	625
Uncontrolled emission rate g/s/m <sup>2</sup>	0.00043022
Controlled emission rate, PM10 g/s/m <sup>2</sup>	0.000430228
Controlled emission rate, PM2.5 g/s/m <sup>2</sup>	0.00028681

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**Line Source – Transport of Rough Stone & Gravel from Pit to Boundary**

<b>Quantity, m<sup>3</sup></b>	<b>Rough Stone: 2,06,595 m<sup>3</sup> Gravel: 30,428 m<sup>3</sup></b>
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ day	39.86
Lead length/trip, Km	0.8
Total VKT/day	31.88
Emission Kg/VKT	0.22
Total emission Kg/year	2104.6
Uncontrolled emission rate g/s/m	37118
Controlled emission rate, PM10 g/s/m	0.371182
Controlled emission rate, PM2.5 g/s/m	0.02474

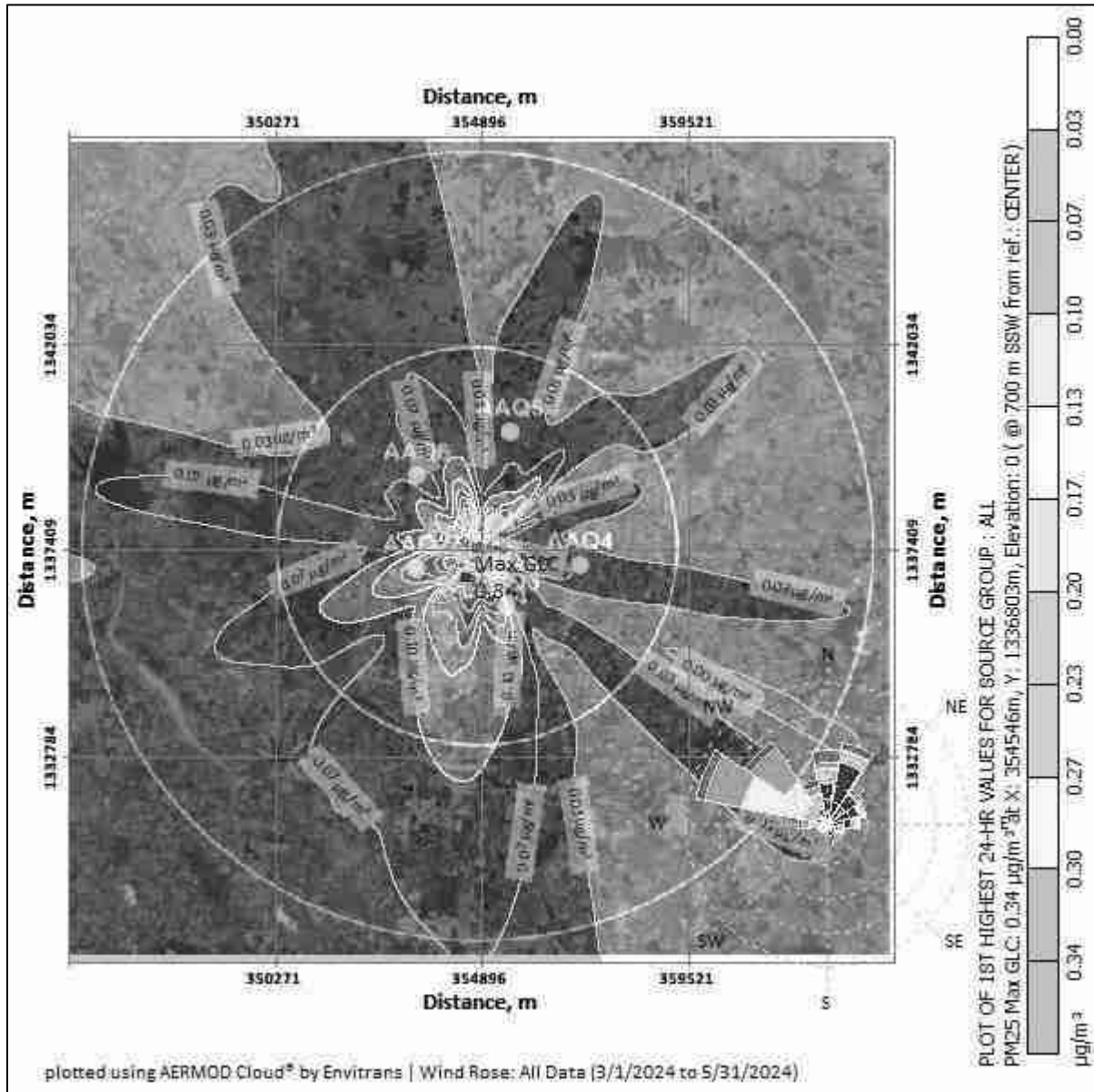
**Line Source – Transport of Rough Stone & Gravel from Pit to Boundary**

<b>Quantity, m<sup>3</sup></b>	<b>Existing Quarries:</b>
	<ul style="list-style-type: none"> <li>• Thiru.V.Ramesh (3.53.0 Ha) - Rough Stone (90544.6 m<sup>3</sup>) &amp; Gravel quarry (4910.4 m<sup>3</sup>).</li> <li>• Tvl.Sree Tiruchendur Murugan Blue Metals (4.57.5 Ha) - Rough Stone (103105.6 m<sup>3</sup>) &amp; Gravel (10571.8 m<sup>3</sup>).</li> </ul>
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ day	54.12
Lead length/trip, Km	1.6
Total VKT/day	86.59
Emission Kg/VKT	0.24
Total emission Kg/Year	6234.48
Uncontrolled emission rate g/s/m	717047
Controlled emission rate, PM10 g/s/m	0.717047
Controlled emission rate, PM2.5 g/s/m	0.25837

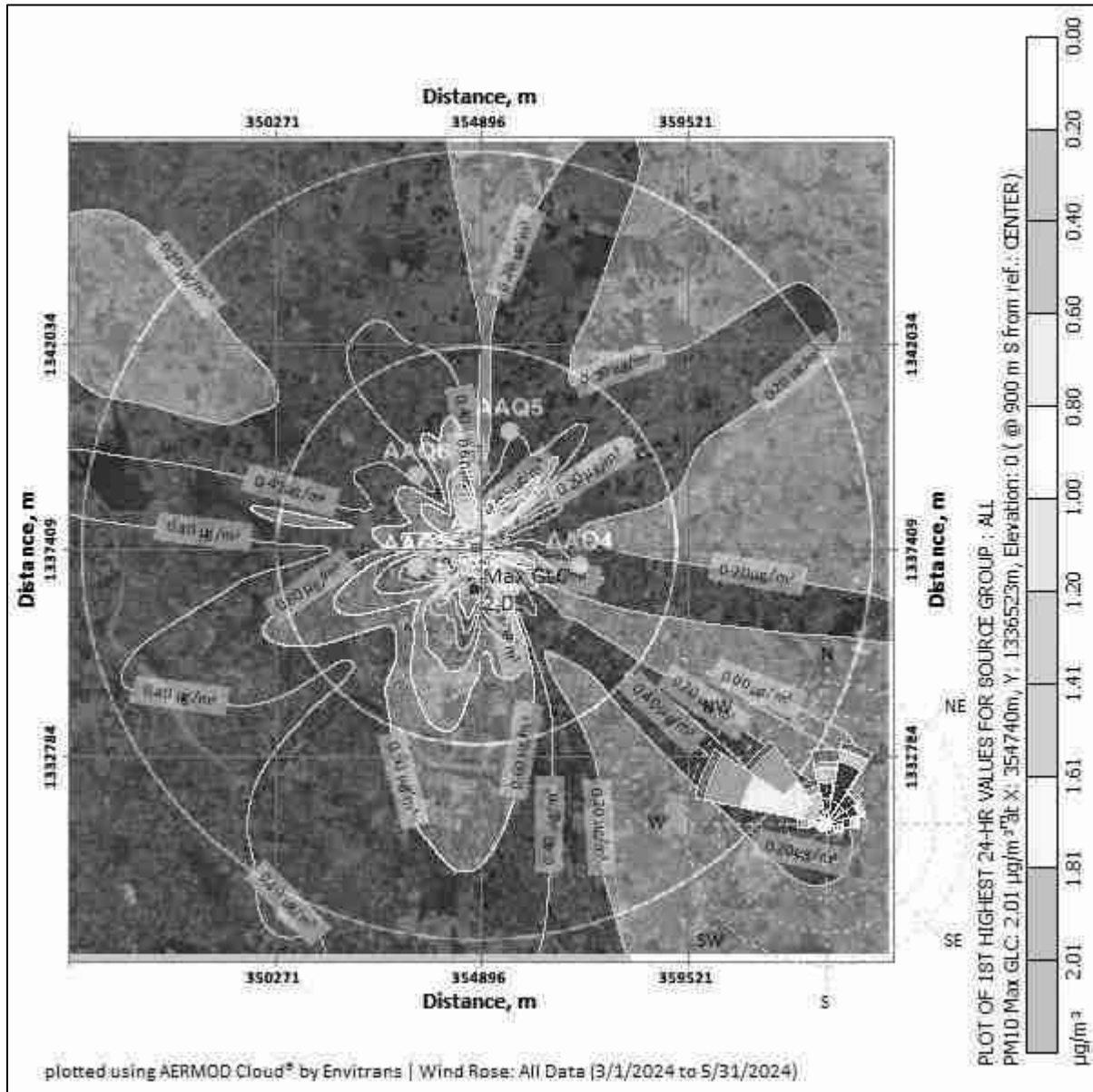
Note: \*Emission factor computed based on wind speed of 2 m/s, and moisture content of 10 %. + Emission factor computed based on silt content of 10 % and moisture content of 10 %



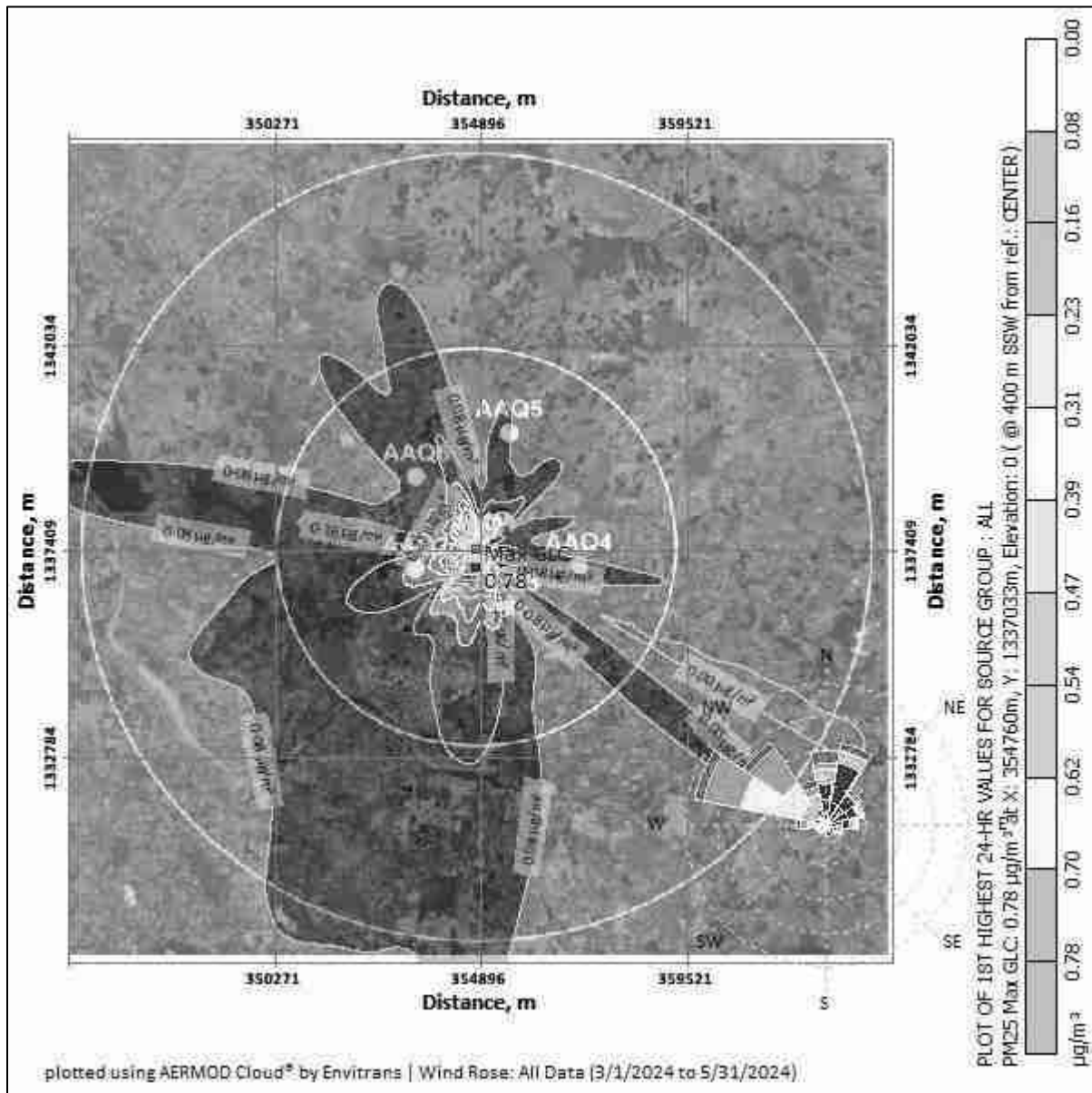
**FIG 4.2 Isopleth of GLC Prediction for PM<sub>2.5</sub>**



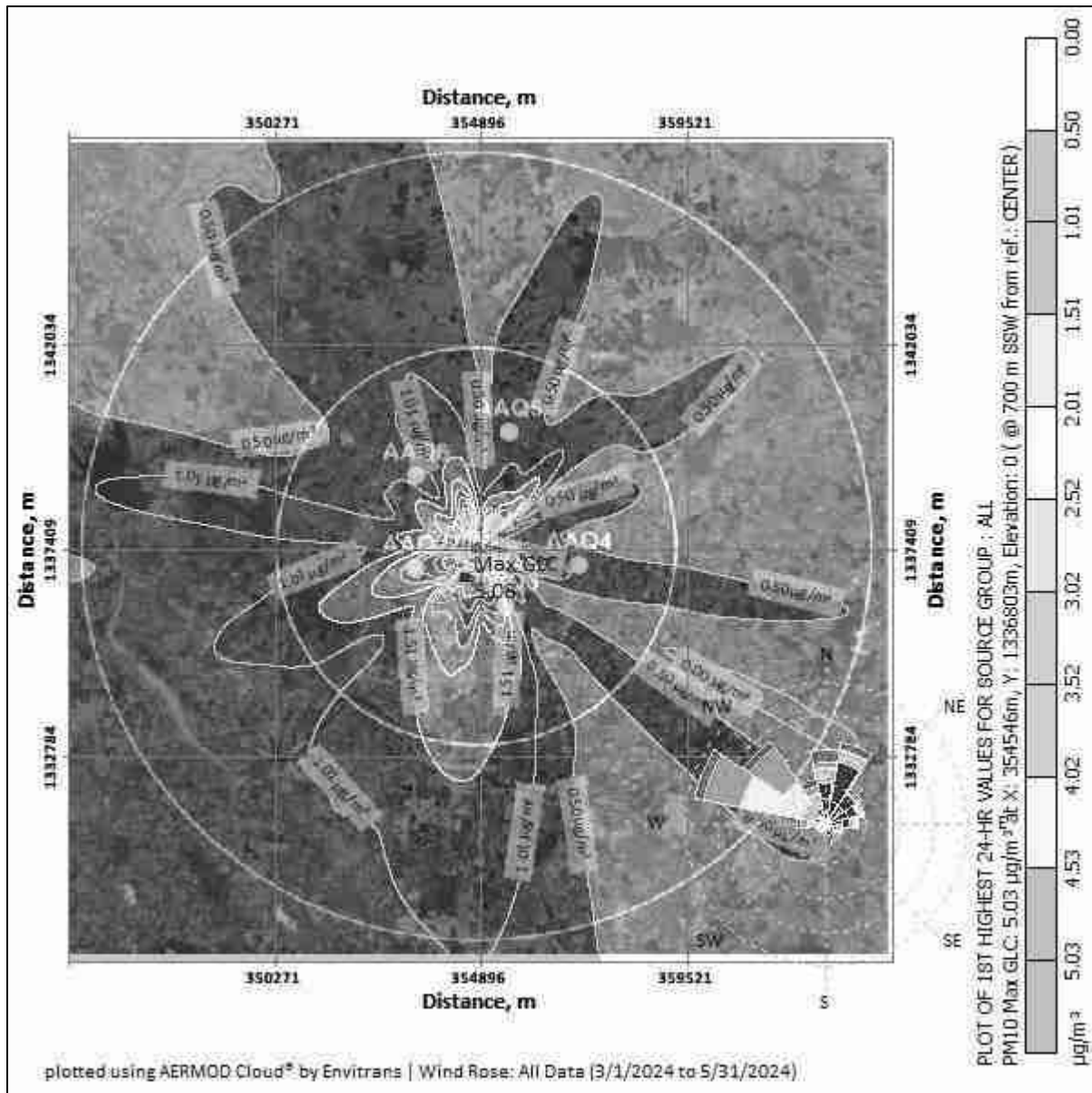
**FIG 4.3 Isopleth of GLC Prediction for PM<sub>10</sub>**



**FIG 4.4 Isopleth of GLC Prediction –Cumulative for PM<sub>2.5</sub>**



**FIG 4.5 Isopleth of GLC Prediction –Cumulative for PM<sub>10</sub>**



**PREDICTED AMBIENT AIR QUALITY:**

The post project Concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 4.3.

**Table 4.3 Concentrations of PM2.5 after Project Implementation**

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Project site	35.35	0.34	35.69	60
2	Ambuzhukkai	27.32	0.27	27.59	
3	Kondalamkuppam	25.45	0.23	25.68	
4	Semangalam	24.25	0.17	24.42	
5	Karasanur	24.3	0.10	24.4	
6	Eraiyr	23.1	0.03	23.13	

**Table 4.3a Cluster Concentrations of PM2.5 after Project Implementation**

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Project site	35.35	0.78	36.13	60
2	Ambuzhukkai	27.32	0.62	27.94	
3	Kondalamkuppam	25.45	0.47	25.92	
4	Semangalam	24.25	0.39	24.64	
5	Karasanur	24.3	0.31	24.61	
6	Eraiyr	23.1	0.08	23.18	

**Table 4.3b Concentrations Of Pm10 After Project Implementation**

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Project site	74.40	2.0	76.40	100
2	Ambuzhukkai	58.15	1.61	59.76	
3	Kondalamkuppam	58.65	1.41	60.06	
4	Semangalam	51.06	1.20	52.26	
5	Karasanur	51.00	1.00	52.00	
6	Eraiyr	51.35	0.60	51.95	

**Table 4.3c Cluster Concentrations of PM10 after Project Implementation**

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Project site	74.40	5.03	79.43	100
2	Ambuzhukkai	58.15	4.53	62.68	
3	Kondalamkuppam	58.65	3.52	62.17	
4	Semangalam	51.06	2.52	53.58	
5	Karasanur	51.00	2.01	53.01	
6	Eraiyur	51.35	1.51	52.86	

The above report seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for  $\text{PM}_{10}$  are in the range of  $51.95 \mu\text{g}/\text{m}^3$  to  $76.4 \mu\text{g}/\text{m}^3$  and for  $\text{PM}_{2.5}$  are in the range of  $23.13 \mu\text{g}/\text{m}^3$  to  $35.69 \mu\text{g}/\text{m}^3$  and  $\text{PM}_{10}$  are surrounding area range of  $52.86 \mu\text{g}/\text{m}^3$  to  $79.43 \mu\text{g}/\text{m}^3$  and for  $\text{PM}_{2.5}$  are in the range of  $23.18 \mu\text{g}/\text{m}^3$  to  $36.13 \mu\text{g}/\text{m}^3$  which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below.

- Wet drilling will be practiced in drilling operation.
- Water sprinkling will be done in haul roads & loading etc.
- The mines workers are provided with the dust masks.
- Three-layer plantation in the safety zone.

DG sets shall be periodically maintained as per manufacturer's specifications.

#### **4.4 ASSESSMENT OF SIGNIFICANCE OF IMPACTS (CRITERIA FOR DETERMINING SIGNIFICANCE, ASSIGNING SIGNIFICANCE).**

##### **4.4.1 NOISE ENVIRONMENT**

The main noise generating source during mining operation and related activities are drilling, excavation, loading and transportation. Intermittent noise is generated due to operation of diesel generator.

#### 4.4.2 Likely Noise Levels in Lease Area due to mining activity

S.No.	Source Name	Noise Level in dB (A)
1	Diesel generator	90
2	Excavator Operation	86
3	Trucks movement	82
4	Drilling	96
5	Blasting	102

It is expected that the generated noise will be limited within the mine lease area and there will be no profound effect of noise on the buffer zone. The noise level will be maintained below the threshold limit by vigorous maintenance of the machineries. Wet drilling with dust extractor is being used to reduce the noise level during the mining operation.

Noise levels were measured in the lease area and in the nearby villages Ambuzhukkai, Kondalamkuppam, Semangalam, Karasanur and Eraiyur the values are given below.

S. No.	Location	Distance and direction from Mine lease area	Day Equivalent (in dBA)	Night Equivalent (dBA)
1	Project site	Core Zone	53.4	44.1
2	Ambuzhukkai	1.82km, W	52.1	41.7
3	Kondalamkuppam	2.19km, S	50.1	41.7
4	Semangalam	3.03km, NE	51.3	42.3
5	Karasanur	2.10 Km, N	47.8	42.6
6	Eraiyur	1.29 Km, NW	49.4	42.8

The noise levels are within the MoEF & CC limits of 70 dB(A) in the working area and in the buffer areas, the values are below the limit of 75 dB(A). Since, the residential area norm has been considered for all five locations mentioned above, during mining operation mine lease area will be considered as industrial area/quarry area for which DGMS norms 85 dB(A)/CPCB guidelines 75 dB(A)

#### **4.4.3 Impact of Noise due to mining**

- ✚ Noise generation in mining is due to operation like drilling, blasting and transportation of minerals within and outside the lease area.
- ✚ As per DGMS (Directorate General of Mines Safety) limits, the acceptable noise level is 85 dB(A) for an exposure period of 8 hours.
- ✚ Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress. Noise pollution also impacts the health and well-being of wildlife.
- ✚ Noise exceeding prescribed limits may cause impairment like abnormal loudness perception, tinnitus which causes a persistent high-pitched ringing in the ears, paracusis or distorted hearing.

#### **4.5 MITIGATION MEASURES**

##### **4.5.1 Mitigation measures for Noise level control**

- ✚ As the distance between the source and receptor increases, the noise level decreases. Hence, there will be a natural attenuation.
- ✚ The proponent has planned to develop green belt in the periphery of the lease area which diminishes sound volume by dampening them.
- ✚ All the equipment/machinery/tippers involved will be properly maintained to control noise generation.
- ✚ Conducting regular health checkups for employees involved.
- ✚ Employees will be made to work on shifts to reduce their exposure time.
- ✚ Providing earplugs to all employees.
- ✚ Providing green walls/nets wherever possible.

By adopting these measures, the noise levels will be maintained well within MoEF & CC limits since the baseline value is low.



#### 4.5.2 IMPACTS DUE TO VIBRATION

There will be negligible vibration of ground due to the following activities.

- ✦ Due to Blasting
- ✦ Due to Drilling
- ✦ Due to movement of machinery

##### Impacts

- ✦ Though vibration will be only felt by the people working inside the lease area it is usually undesired.
- ✦ Vibration may also cause fly rocks.
- ✦ It may frighten the birds and small insects in the lease area. However, it will be felt only for a short period.

##### Mitigation measures

- ✦ The DG set will be kept within the acoustic enclosure made by the stone blocks.
- ✦ Drills will be equipped with sharp bits and wet drilling will be adopted.
- ✦ A well-planned green belt is proposed for the mining to reduce noise level.
- ✦ Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.
- ✦ Regular maintenance of the machineries and vehicles to reduce the noise level.
- ✦ Use of ear muffs by the workers with occupational exposure to noise.
- ✦ Carrying out blasting on limited scale, only from 12:00 PM to 2:00 PM
- ✦ Control of fly rock and vibration by maintaining peak particle velocity within the standard as prescribed by the DGMS and MOEF & CC.
- ✦ Shallow depth jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive.
- ✦ Supervising blasting by competent and statutory Foreman/ Mines Manager.

#### 4.5.3 SOCIO ECONOMIC IMPACT

The lease area is Patta land and owned by the PP, The proponent has planned to spend **INR 8,00,000** for CER activities.

#### 4.5.4 OCCUPATIONAL HEALTH

##### Impacts on humans due to various mining activities

The occupational risk due to proposed mining may be due to drilling, blasting, excavation and transportation. A total of 25 workers will be engaged in the mining activity. Mining activity may cause various health problems to the mines workers as follows:

- Dust generated during excavation, drilling, stone cutting, sizing and transportation may cause health problems like Silicosis, Asthma, Tuberculosis and other respiratory lungs disorders.
- Heavy weight lifting by the workers may cause injuries to arms, legs and back.
- Noise generated during the mining activity may cause Noise Induced Hearing Loss (NIHL).

<b>Table 4.5 Impacts on humans due to various mining activities</b>		
<b>S.No.</b>	<b>Type of activity</b>	<b>Impact</b>
1	Dust generation due to drilling and blasting	Continuous exposure to dust causes Pneumonia, Tuberculosis, Rhematic arthritis and Segmental Vibration
2	Noise generation due to drilling and blasting	Short term impact will be lack of sleep, high blood pressure and heart ailments. Long term exposure may lead to partial or permanent deafness
3	Unexpected accidents	Risks include fly rocks, cracks or fissures due to improper mining methods

##### Mitigation measures

- The mines worker will be provided with dust mask to minimize the inhalation of the dust.
- Water sprinkling twice in a day is in practice on the haul roads, near excavation and roads to reduce the fugitive dust emission.
- Wet drilling and drilling with dust extractor will be practiced.
- Ear muffs will be supplied to the workers working in the noise prone area

- The mining site will be supplied with first aid facilities and the entire mines worker will have access to that.
- The mines workers will be well trained about the safety practices in the mining activities.
- As per Mines Rules, 1955, medical examination of employees at the initial stage and periodically, shall be done by a team of qualified medical officers provided by the project proponent.
- Regular medical checkup camps shall also be arranged for detection of occupational diseases and minor disease in the nearby rural population.
- Free checkup and medicine for treatment for their acute and chronic illness shall be provided by the lessee. Conducting periodical Medical Examination as per DGMS.
- Making all first aid kits available in mines office
- Keeping fire extinguisher in place
- Educating the employees about how to handle unexpected happenings
- Posting information containing emergency contact numbers in mines office
- By adopting all these measures, the safety of the employees working in the quarry will be ensured.

#### **4.5.5 WASTE MANAGEMENT**

##### **Solid Waste**

Since the entire mined out material will be utilized there will not be any solid waste generation from this project. However, the Solid waste (MSW) generated from administrative activities will be properly collected and disposed to Govt. Authorized yards / Re-cylers / Disposers.

##### **Liquid Waste**

There is no process effluent generation from this mine. Hence no liquid waste is generated. Domestic wastewater i.e 1.0 KLD will be discharged in soak pit via septic tank.

### **Hazardous Waste Management**

In this project the following management practices will be followed:

In the quarrying operation, the source of hazardous waste is from machinery maintenance activities that are waste oil/ Waste lubricants / Used filters / Used Hydraulic hoses. The said hazardous waste are very negligible quantity , it will be properly collected in the source level, stored in impervious storage yards and disposed off as per the Hazardous waste (Trans-boundary Movement) Management Rules, 2016.

### **Plastic Waste**

Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

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## **CHAPTER 5**

### **ANALYSIS OF ALTERNATIVES**

#### **5.1 DESCRIPTION OF EACH ALTERNATIVE**

Analysis of alternative site helps in selection of best possible site for the project. On one hand it helps to closeness to the existing infrastructure and on other hand it also helps to minimize the impact of project on environment.

#### **5.2 SUMMARY OF ADVERSE IMPACTS OF EACH ALTERNATIVE**

The project proponent has prepared mining plan under rule 19(1) 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Dept. of Geology & Mining, Viluppuram vide Rc.No. A/G&M/116/2023 dated 18.03.2024.

- There is no forest land or other Eco-sensitive places.
- Proposed mine site is selected on the basis of occurrence of mineral for suitable end use.

Hence seeking alternative site is not required.

#### **5.3 MITIGATION MEASURES PROPOSED FOR EACH ALTERNATIVE**

The mining technology is mechanized Opencast in single-shift operation without any change in technology. The operation will be carried out as per DGMS norms. No alternate technology will be used. Details of the technology used are given in Chapter II.

#### **5.4 SELECTION OF ALTERNATIVE**

In case of Mining projects alternate site selection is not necessary as the mining is site specific and the area in which mining will be carried out has been adequately proved for presence of mineral. The deposit is also having good infrastructural facilities for access and development.

## CHAPTER 6

### **ENVIRONMENTAL MONITORING PROGRAMME**

#### **6.1 TECHNICAL ASPECTS OF THE MONITORING THE EFFECTIVENESS OF MITIGATION MEASURES (INCL MEASUREMENTS, METHODOLOGIES, FREQUENCY LOCATION DATA ANALYSIS, REPORTING SCHEDULES EMERGENCY PROCEDURES DETAILED BUDGET AND PROCUREMENT SCHEDULES)**

##### **6.1.1 ENVIRONMENTAL MONITORING**

Monitoring is done to measure the efficiency of control measures implemented. Regular monitoring of various environmental parameters like air, water, noise and soil environments is needed to assess the status of environment during the project operation.

A schedule is framed with timeline to monitor various parameters during the operation of the project. The schedule is framed based on MoEF & CC and Tamil Nadu State Pollution Control Board. In case the SEIAA/TNPCB/MoEF & CC or other statutory bodies demand monitoring of any additional parameter/factor, the same will also be done.

The proposed quarry is a small quarry. Hence the Mines-in-charge will be responsible for environmental related activities. After obtaining EC, the conditions mentioned in EC will be strictly followed. The Mines-in-charge will be responsible for implementing the conditions. EC compliance report will also be submitted periodically.

##### **6.1.2 OBJECTIVES OF ENVIRONMENTAL MONITORING**

The objectives of Environmental Monitoring are as follows.

- ✚ Monitoring and analysis of air and water samples
- ✚ Implementing the control and protective measures.
- ✚ Coordinating the environment related activities within the project as well as with outside agencies. Collecting statistics of health of workers and population of the surrounding villages. Green belt development etc.
- ✚ Monitoring the progress of implementation of Environmental Management Programme.

- ✚ Monitoring the noise generation in and around the project areas.
- ✚ Monitoring of wastewater treatment and disposal of solid waste.
- ✚ The laboratory will be suitably equipped for sampling/testing for various environmental pollutants.

### 6.1.3 ENVIRONMENTAL MONITORING SCHEDULE

To evaluate the effectiveness of Environmental Management Programme, regular monitoring of the important environmental parameters will be taken up. The frequency of monitoring different parameters is given in table 6.1.

<b>Table 6.1 Environmental Monitoring Schedule</b>			
<b>Sl.No.</b>	<b>Description of Parameters</b>	<b>Parameters</b>	<b>Frequency</b>
1	Air	Air Quality for SPM, PM-10, PM-2.5, SO <sub>2</sub> and NO <sub>x</sub>	24-hour average samples Once in a 3 month
2	Water	General, Physical, and chemical parameters	Once per season
3	Noise	L <sub>eq</sub> , L <sub>max</sub> , L <sub>min</sub> , L <sub>eq</sub> Day & L <sub>eq</sub> Night dB(A)	8-hour average samples Once in a 3 month
4	Soil	Physical and Chemical characteristics	Once per season

### 6.1.4 LOCATION

Monitoring of the above-mentioned environmental parameters would be done at appropriate and sensitive areas. The exact location of monitoring is given as Figure – 3.4, 3.10, 3.12 & 3.14.

### 6.1.5 MEASUREMENT METHODOLOGY

#### (a) **Ambient Air Quality**

Ambient air quality will be monitored for SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. The instruments like high volume air samplers and Respirable dust samplers would be used for this purpose. These parameters will be monitored as mentioned in the monitoring schedule previously.

**(b) Water Quality**

Water quality analysis will be done quarterly and the monitored parameters include pH, Temperature, TDS, etc. as specified by SPCB from time to time.

**(c) Noise Monitoring**

Noise level will be monitored in working environment mainly noise producing sources over the boundary and around the mining area.

**(d) Green Belt and Afforested Areas**

Continuous vigilance and monitoring of green belt will be done for performance and survival rate of the saplings. Watch and ward personnel will properly guard the plantation. Provision will be made for fertilizers application and watering on schedule.

**(e) Socio-Economics**

Socio-economic of the core and buffer zone details elaborated in Chapter-3.

**6.1.6 TECHNICAL ASPECTS OF MONITORING THE EFFECTIVENESS OF MITIGATION MEASURES**

The above monitoring schedule will be followed periodically. After collection of the data, the mines-in-charge will analyze the data obtained. The data thus obtained will be incorporated in the EC Compliance report submitted to the regional office, MoEF & CC. The measurement methodologies will be as per CPCB/BIS/MoEF &CC/DGMS norms.

**6.1.7 EMERGENCY PROCEDURES**

In case of any emergency due to environmental conditions, the mines in-charge will immediately report to the top-level management and the emergency response protocol will be implemented as per MoEF & CC/ SPCB / DGMS norms.



### 6.1.8 REPORTS TO BE GENERATED

The Project Proponent will maintain records of each test and its interpretation so as to formulate an adequate Environmental Management Plan. The set of records planned to be maintained by Project Proponent are given in below table 6.2.

<b>Table 6.2 Important Records to be maintained by PP</b>	
<b>S.No.</b>	<b>Particulars</b>
1	Monitoring results for Air, Water & Soil.
2	Records of slope failure, land erosion & drainage.
3	Plantation Records
4	Environmental and related standards/ norms
5	Records pertaining to statutory consents, approvals.
6	Periodic Medical examination (PME) records.
7	Complain register (Environmental pollution)
8	Records on water and electricity consumption
9	Periodic progress records.
10	Environmental Expenses Records

### 6.1.9 DETAILED BUDGET AND PROCUREMENT SCHEDULES

The budget planned for environmental monitoring is given below.

**Table 6.3 - Environmental Management Plan Budget**

<b>Sl .No</b>	<b>Budget planned for</b>	<b>Capital Cost Amount (INR)</b>	<b>Recurring Cost/Annum Amount (INR)</b>
1	Air Environment	9,87,000	7,140,00
2	Noise Environment	50,000	5,260,00
3	Water Environment	2,22,000	1,45,000
4	Implementation of EC, Mining Plan & DGMS Condition	12,51,000	12,41,00
5	Green Belt	2,50,000	33,000
6	Additional Key EMP Expenses	30,80,000	10,000
<b>Total</b>		<b>58,40,000/-</b>	<b>26,69,000</b>

\*\*\*\*\*

## **CHAPTER 7**

### **ADDITIONAL STUDIES**

The additional studies covered for this EIA / EMP report are,

- Public consultation
- Risk Assessment
- Social Impact Assessment, R&R Action Plans
- Cumulative Environmental Impact Assessment Study
- A detailed Hydrogeological Study
- Slope Stability plan

#### **7.1 PUBLIC CONSULTATION**

After the preparation of the draft EIA/EMP report, it must be submitted to the State Pollution Control Board. A public consultation will be conducted on behalf of the Pollution Control Board through the District Collector and the officials from the PCB. A prior notice must be issued about the event, along with the time and date, in two leading newspapers. The opinions, suggestions, demands, and objections of people, NGO environmentalists, etc. are sought, and the proceedings are recorded. The replies of the proponent and corresponding officials will be recorded in the final EIA/EMP report.

#### **7.2 RISK ASSESSMENT & MANAGEMENT**

##### **(a) Objectives**

Risk assessment is a method in which possible threats/hazards which may arise during mining operations are identified so that adequate machinery/equipment are made available in precaution. The objectives of environmental risk assessment are governed by the following, which excludes natural calamities:

- ✚ To identify the potential hazardous areas so that necessary design safety measures can be adopted to minimize the probability of accidental events.
- ✚ To identify the potential areas of environmental disaster which can be prevented by proper design of the installations and its controlled operation.
- ✚ To manage the emergency situation or a disastrous event, if any, from the mining operation.

The major hazards related to the mining activities are as follows

- ✚ Open cast bench slope failure
- ✚ Accident due to fall of quarry sides
- ✚ Accident due to machineries
- ✚ Accident due to explosives
- ✚ Accident due to large block cutting, separation and loading

Some of the common hazards are identified and the corresponding precautionary measures are drafted.

<b>Table 7.1 Hazards and Precautionary measures</b>		
<b>S.No.</b>	<b>Hazard</b>	<b>Precautionary measures</b>
1	Fire	Fire suppressants will be made available at mines office and explosive storage room.
2	Explosion	Controlled blasting will be done. DGMS norms will be strictly followed during blasting. Blasting will be done only by trained professionals.
3	Combustion of chemicals or hazardous substances	Combustible Substances are stored with all precautionary measures. Fire suppressant is made available at storage site
4	Landslide	Width, height and slope will be maintained as suggested by DGMS
5	Accidents during handlings	All vehicles will be properly maintained. Overloading will not be done. Only trained/certified people will be employed.
6	Accidental fall of people or animals	The lease area will be fenced properly. Only people working in the mines will be permitted to enter.

### 7.3 REHABILITATION AND RESETTLEMENT (R & R) PLAN

No land is acquired from people dwelling in the area. The lease area is an uninhabited land. No R & R plan is proposed.

#### 7.3.1 CUMULATIVE ENVIRONMENTAL IMPACT ASSESSMENT STUDY

The details of other quarries located within the 500m radius of this project are provided below:

<b>Table 7.2 Details of quarries within 500m radius (as per 500m certificate)</b>					
Sl. No	Name and address	Village and Taluk	S.F.No.	Extent (in Ha)	Period of lease
<b>Abandoned Quarries</b>					
1	Nil				
<b>Existing Quarries</b>					
1	Thiru.V.Ramesh, S/o.Vengatapathi, No.5, Thiyagarayar Street, HLL Colony, Pammal, Chennai - 75	Thollamur Village, Vanur Taluk,	16/11, 12, 17/1 & 18/3B	3.53.0 Ha	07.03.2022 to 06.03.2027
2	Tvl.Sree Thiruchendhur Murugan Blue Metals, Represented by its partner, Thiru.P.Subramani No.3-3/3-3, Main Road, Thoravi Village, Vikravandi Taluk, Viluppuram	Thollamur Village, Vanur Taluk	20/1, 2A, 2B, 3, 4, 6, 99/2, 3B & 6	4.57.5 Ha	04.01.2022 to 03.01.2027
<b>Proposed Quarry</b>					
1	Thiru.D.Gnanaguru, S/o. Dhanapal, No.219/1C, Iyyanar Kovil street, Tennamadevi Village, Vikravandi Taluk, Viluppuram District	Thollamur Village, Vanur Taluk	99/1, 99/3A, 100/1, 100/2 and 100/5A	2.22.5 Ha	Under Proposed Quarry

A cumulative impact of these two proposed quarries has been studied and the details are given in Chapter IV.

### 7.3.2 AIR QUALITY IMPACT PREDICTION FOR THE CLUSTER

The AERMOD atmospheric dispersion modeling (AERMOD Cloud remote version) is used for assessment of incremental Ground level concentration (GLC) for the cluster area. Area source model taken into consideration taking into consideration of wet drilling and loading of the cluster mines. Further line source model was taken into consideration for transportation through haul road. Baseline meteorological studies were conducted for the period of March to May 2024. The following sources are considered.

#### Emission sources & Quantification of the cluster area.

Various point and non-point sources of emissions from Proposed Rough Stone and Gravel Quarry of Thiru.D.Gnanaguru, S/o. Dhanapal (Rough Stone & Gravel) is quantified and presented below:

#### Area Emissions – Total Material handling

Quantity, m <sup>3</sup>	Rough Stone: 2,06,595 m <sup>3</sup> Gravel: 30,428 m <sup>3</sup>
Operational Hours Per Year	2400
Activity Rate, t/hr.	49.8
Emission of dust, g/t.	0.18
Emission of dust, g /hr.	51.74693
Area of influence, m <sup>2</sup>	625
Uncontrolled emission rate g/s/m <sup>2</sup>	0.000043022
Controlled emission rate, PM10 g/s/m <sup>2</sup>	0.0000430228
Controlled emission rate, PM2.5 g/s/m <sup>2</sup>	0.0000028681

#### Area Emissions – Total Material handling (Cluster Rough Stone & Gravel)

Quantity, m <sup>3</sup>	Existing Quarries:
	<ul style="list-style-type: none"> <li>Thiru.V.Ramesh (3.53.0 Ha) - Rough Stone (90544.6 m<sup>3</sup>) &amp; Gravel quarry (4910.4 m<sup>3</sup>).</li> <li>Tvl.Sree Tiruchendur Murugan Blue Metals (4.57.5 Ha) - Rough Stone (103105.6 m<sup>3</sup>) &amp; Gravel (10571.8 m<sup>3</sup>).</li> </ul>
Operational Hours Per Year	2400
Activity Rate, t/hr.	67.67
Emission of dust, g/t.	0.20
Emission of dust, g /hr.	59.51436
Area of influence, m <sup>2</sup>	625
Uncontrolled emission rate g/s/m <sup>2</sup>	0.00043022
Controlled emission rate, PM10 g/s/m <sup>2</sup>	0.000430228
Controlled emission rate, PM2.5 g/s/m <sup>2</sup>	0.00028681

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**Line Source – Transport of Rough Stone & Gravel from Pit to Boundary**

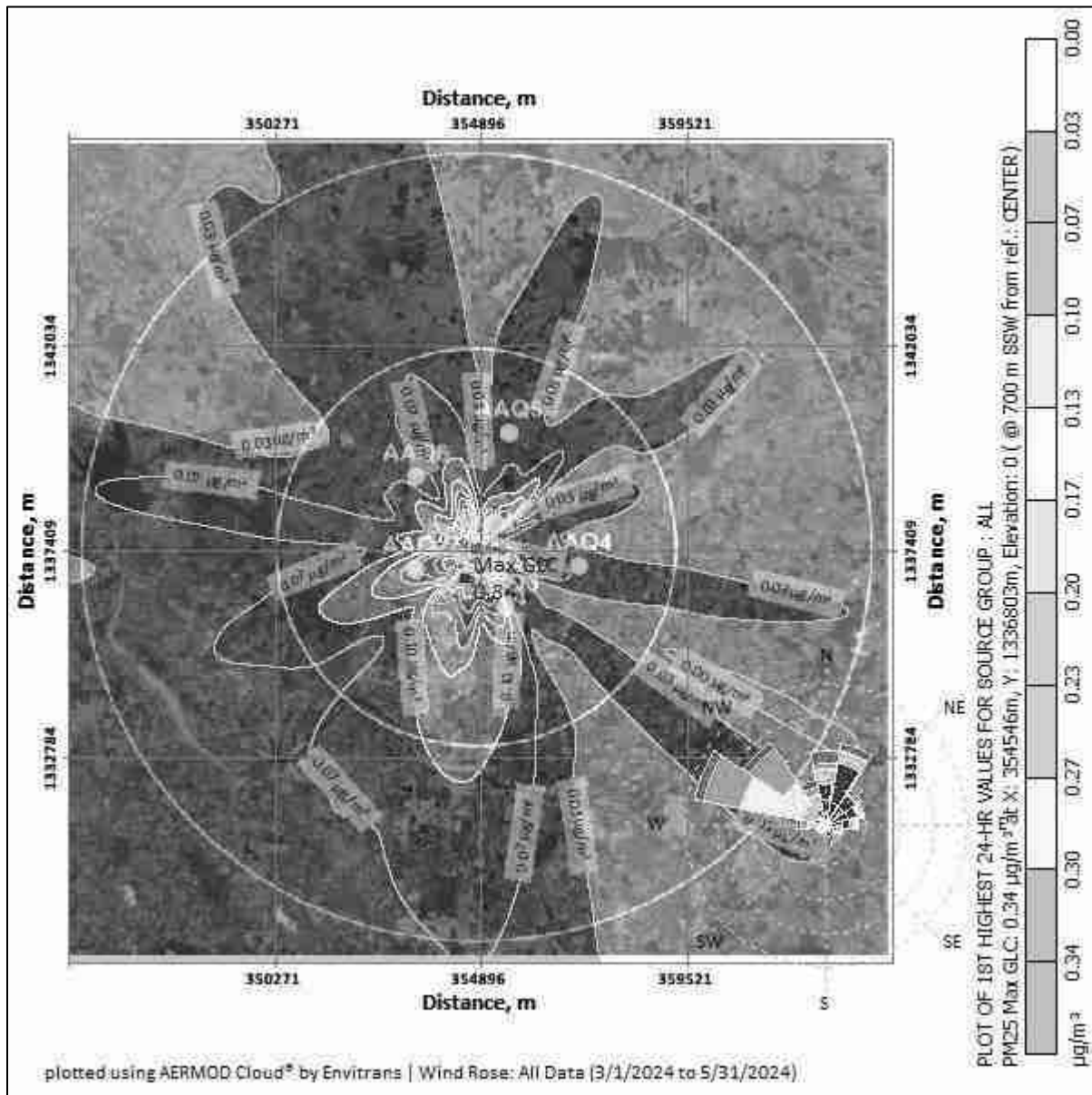
<b>Quantity, m<sup>3</sup></b>	<b>Rough Stone: 2,06,595 m<sup>3</sup> Gravel: 30,428 m<sup>3</sup></b>
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ day	39.86
Lead length/trip, Km	0.8
Total VKT/day	31.88
Emission Kg/VKT	0.22
Total emission Kg/year	2104.6
Uncontrolled emission rate g/s/m	37118
Controlled emission rate, PM10 g/s/m	0.371182
Controlled emission rate, PM2.5 g/s/m	0.02474

**Line Source – Transport of Rough Stone & Gravel from Pit to Boundary**

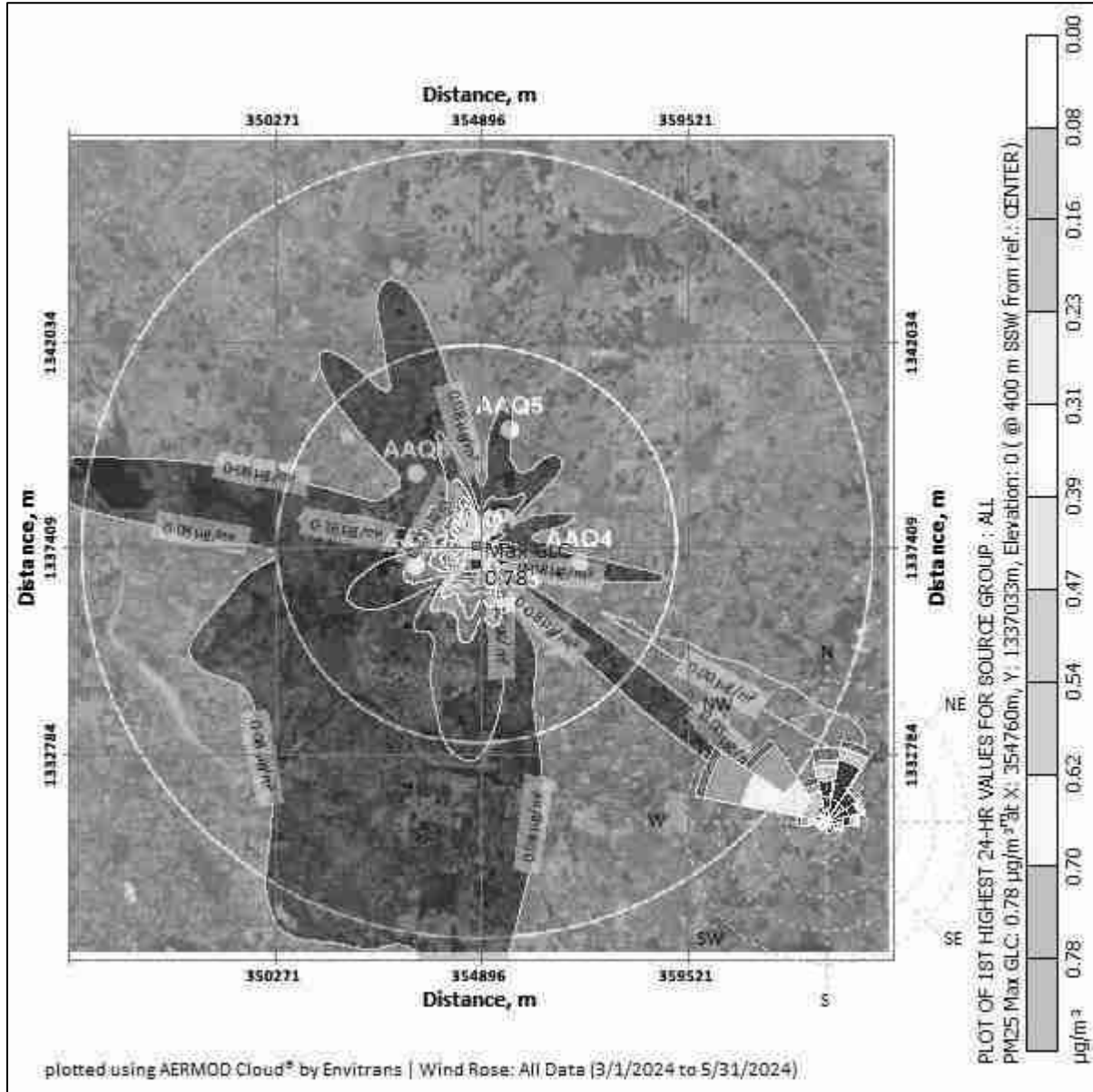
<b>Quantity, m<sup>3</sup></b>	<b>Existing Quarries:</b>
	<ul style="list-style-type: none"> <li>• Thiru.V.Ramesh (3.53.0 Ha) - Rough Stone (90544.6 m<sup>3</sup>) &amp; Gravel quarry (4910.4 m<sup>3</sup>).</li> <li>• Tvl.Sree Tiruchendur Murugan Blue Metals (4.57.5 Ha) - Rough Stone (103105.6 m<sup>3</sup>) &amp; Gravel (10571.8 m<sup>3</sup>).</li> </ul>
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ day	54.12
Lead length/trip, Km	1.6
Total VKT/day	86.59
Emission Kg/VKT	0.24
Total emission Kg/Year	6234.48
Uncontrolled emission rate g/s/m	717047
Controlled emission rate, PM10 g/s/m	0.717047
Controlled emission rate, PM2.5 g/s/m	0.25837

Note: \*Emission factor computed based on wind speed of 2 m/s, and moisture content of 10 %. + Emission factor computed based on silt content of 10 % and moisture content of 10 %

**FIG 7.1 Isopleth of GLC Prediction for PM<sub>2.5</sub>**

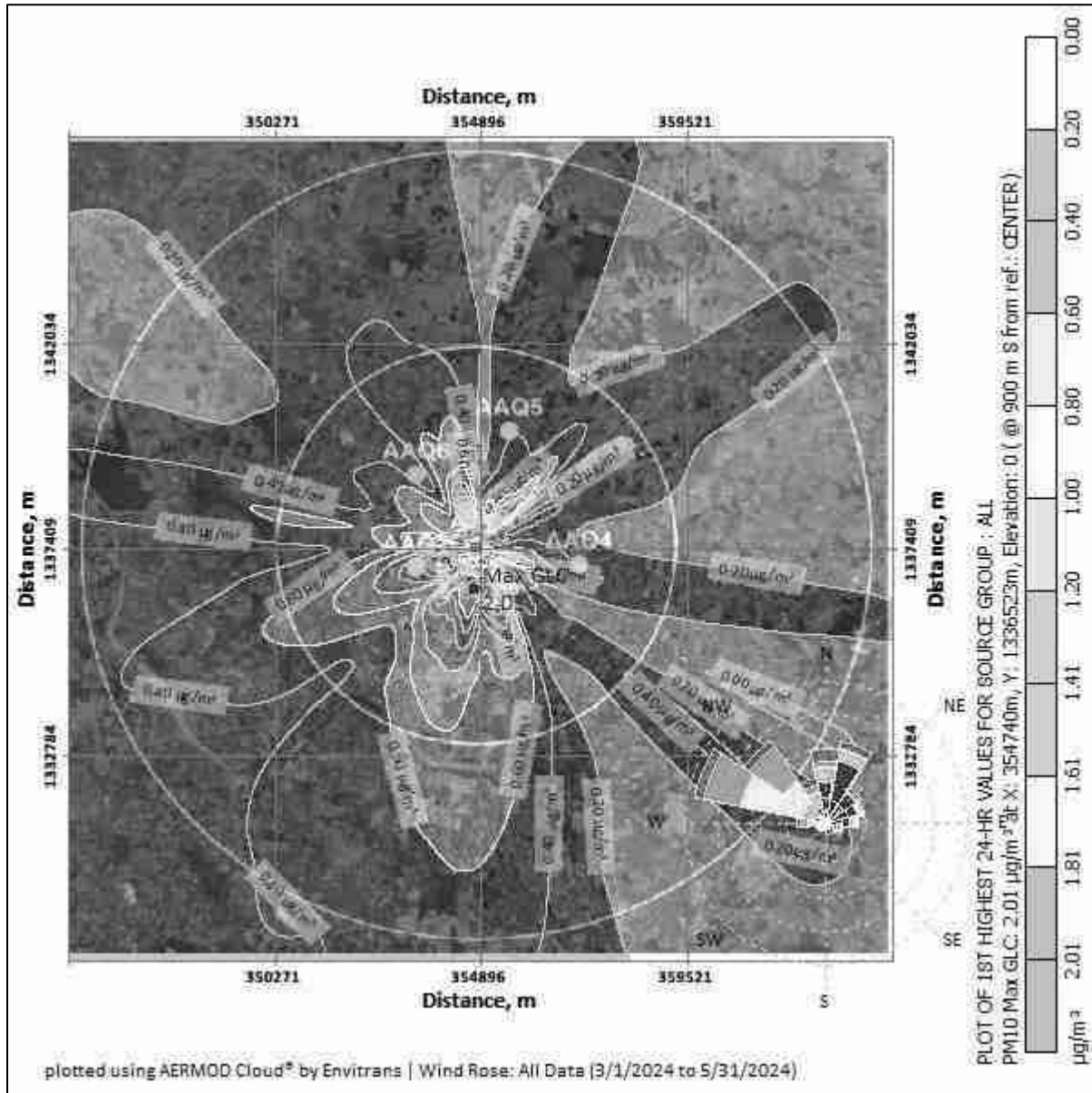


**FIG 7.2 Isopleth of GLC Prediction for PM<sub>10</sub>**

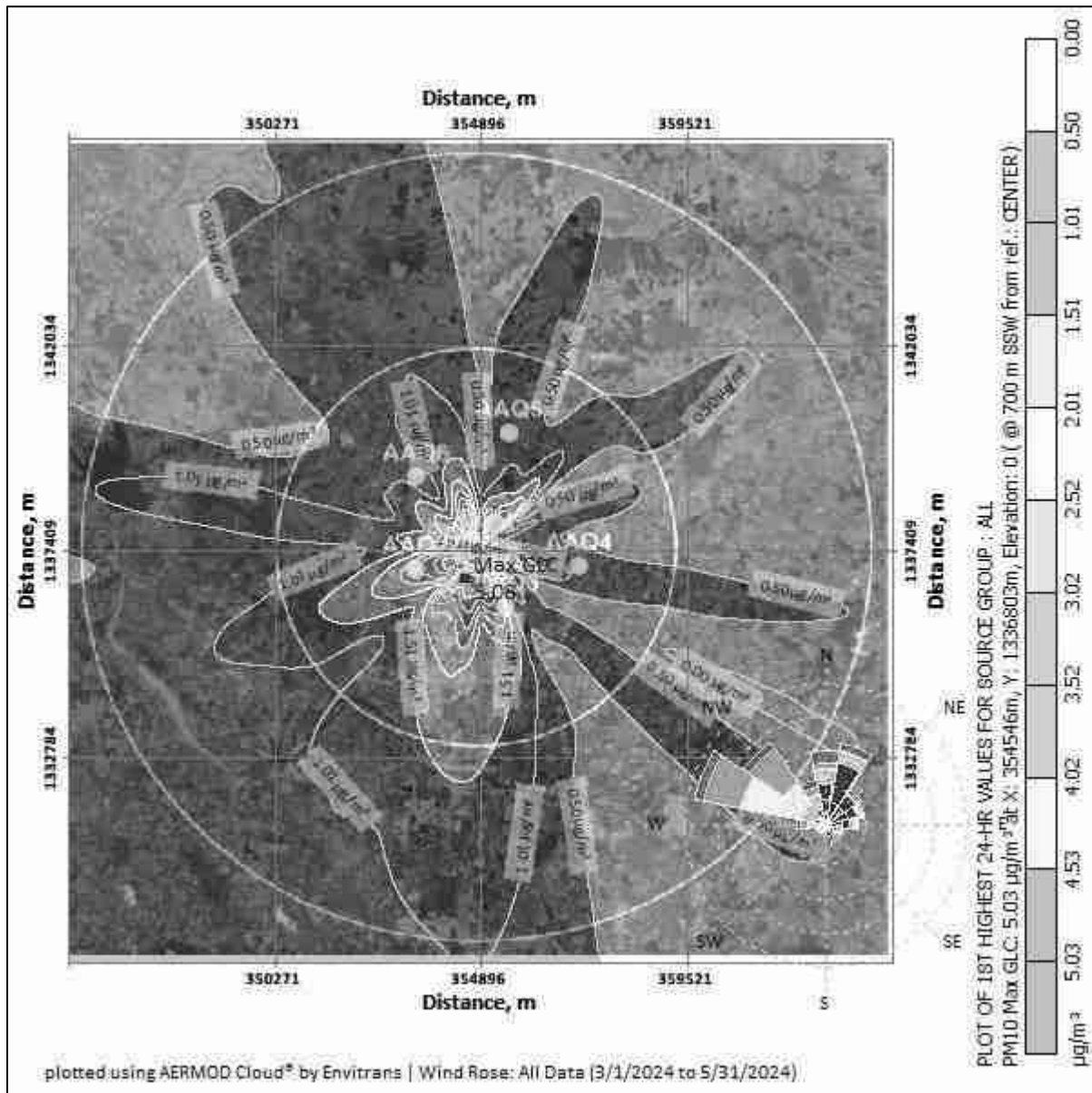




**FIG 7.3 Isoleth of GLC Prediction –Cumulative for PM<sub>2.5</sub>**



**FIG 7.4 Isopleth of GLC Prediction –Cumulative for PM<sub>10</sub>**



**PREDICTED AMBIENT AIR QUALITY:**

The post project Concentrations of PM10, PM2.5, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 4.3.

DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

**Table 7.3 Concentrations of PM2.5 after Project Implementation**

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Project site	35.35	0.34	35.69	60
2	Ambuzhukkai	27.32	0.27	27.59	
3	Kondalamkuppam	25.45	0.23	25.68	
4	Semangalam	24.25	0.17	24.42	
5	Karasanur	24.3	0.10	24.4	
6	Eraiyr	23.1	0.03	23.13	

**Table 7.4 Cluster Concentrations of PM2.5 after Project Implementation**

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Project site	35.35	0.78	36.13	60
2	Ambuzhukkai	27.32	0.62	27.94	
3	Kondalamkuppam	25.45	0.47	25.92	
4	Semangalam	24.25	0.39	24.64	
5	Karasanur	24.3	0.31	24.61	
6	Eraiyr	23.1	0.08	23.18	

**Table 7.5 Concentrations of PM10 after Project Implementation**

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Project site	74.40	2.0	76.40	100
2	Ambuzhukkai	58.15	1.61	59.76	
3	Kondalamkuppam	58.65	1.41	60.06	
4	Semangalam	51.06	1.20	52.26	
5	Karasanur	51.00	1.00	52.00	
6	Eraiyr	51.35	0.60	51.95	

<b>Table 7.5a Cluster Concentrations of PM10 after Project Implementation</b>					
<b>SL. No</b>	<b>Location</b>	<b>Background Concentration</b>	<b>Predicted incremental Concentration</b>	<b>Post Project Concentration</b>	<b>Statutory Limits in <math>\mu\text{g}/\text{m}^3</math></b>
1	Project site	74.40	5.03	79.43	100
2	Ambuzhukkai	58.15	4.53	62.68	
3	Kondalamkuppam	58.65	3.52	62.17	
4	Semangalam	51.06	2.52	53.58	
5	Karasanur	51.00	2.01	53.01	
6	Eraiyur	51.35	1.51	52.86	

The above report seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for PM<sub>10</sub> are in the range of 51.95  $\mu\text{g}/\text{m}^3$  to 76.4  $\mu\text{g}/\text{m}^3$  and for PM<sub>2.5</sub> are in the range of 23.13  $\mu\text{g}/\text{m}^3$  to 35.69  $\mu\text{g}/\text{m}^3$  and PM<sub>10</sub> are surrounding area range of 52.86  $\mu\text{g}/\text{m}^3$  to 79.43  $\mu\text{g}/\text{m}^3$  and for PM<sub>2.5</sub> are in the range of 23.18  $\mu\text{g}/\text{m}^3$  to 36.13  $\mu\text{g}/\text{m}^3$  which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below.

- Wet drilling will be practiced in drilling operation.
- Water sprinkling will be done in haul roads & loading etc.
- The mines workers are provided with the dust masks.
- Three-layer plantation in the safety zone.

DG sets shall be periodically maintained as per manufacturer's specifications.

### **Cumulative Impact on Traffic**

The mined-out minerals will be transported by means of trucks to the consumers like crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. The cumulative impact on traffic due to transportation of minerals from these three leases are provided below:

**Table 7. 6 – Impact on Traffic**

Description	Rough Stone & Gravel Production Per day in tons	No. of Lorry Load per day
P1, P2 & P3	939.8	93.98
<b>Total</b>		<b>93.98</b>

The proposed projects will bring 93.98 trips per day. The existing road can absorb this additional traffic due to this project. Various measures like proper maintenance of road, covering of the loaded truck with tarpaulin, water sprinkling will be carried out to ensure no adverse impact on the logistical front.

### **7.3.3 HYDROGEOLOGICAL STUDY**

There is Sangarabarani River is located at a distance of 3.4 km in South west direction of lease area. Due to the presence of these water bodies nearby, a detailed hydrogeological study has been done. As suggested in the Precise Area Communication letter, safety distances of 7.5m to adjacent Patta land.

### **7.3.4 SLOPE STABILITY STUDY**

The proposed quarry is a very small quarry and the production is also less. Opencast mechanized mining with a bench height of 5m and bench width of 5m and overall slope 47° is proposed. The depth of mining is proposed as 32m (BGL), which is the ultimate pit limit. Also, there is no overburden since the entire mined out material will be utilized.

As far as technical factors are concerned, the following precautionary measures will be adopted:

- Strict adherence to DGMS norms
- Frequent inspection by Mines-in-charge/Mines Manager
- Bench height, width, slope will be as per DGMS norms

### **7.3.5 DISASTER MANAGEMENT PLAN**

Proper preventive mechanism exists already in the mines.

- Precautionary measures are well explained to all staff by the mines in-charge.
- PPE necessary for all staff are available in the quarry. No person is allowed to enter inside without PPE. Avoiding quarrying during unfavorable environmental conditions.
- Carrying out safe blasting by following DGMS norms
- Safety equipment like fire extinguisher, first aid kit, etc are present in the mine.
- Proper maintenance of machinery used for mining
- In case of any emergency, the contact numbers of mines in-charge, mines manager, Management contact are available in the mine's office.

### **7.3.6 MINE CLOSURE PLAN**

The quarrying operation is proposed up to a depth of 32m (BGL) only, which will be achieved in 5 years. The ultimate pit dimension will be 178 x 85 x 32. After completion of quarrying operation, the mined-out pit will be left as rain water harvesting pond. The quarry will be properly fenced with barbed wire.

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## **CHAPTER 8**

### **PROJECT BENEFITS**

#### **INTRODUCTION**

Thiru.D.Gnanaguru has proposed Rough stone and gravel quarry over an extent of 2.22.5 ha located at S.F.No.99/1, 99/3A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State.

#### **PROJECT BENEFITS**

Project benefits are attributed in various ways as under:

- Environment Benefits
- Employment Potential: Skilled, Semi-skilled & Un-skilled
- Economic Benefits
- Social Benefits

#### **8.1 IMPROVEMENTS IN THE PHYSICAL INFRASTRUCTURE**

The project area is located on Patta land, thereby causing no impact on the loss of agriculture or forest land. The project will create employment opportunities in the area. There will be no adverse effect of mining on the socioeconomic status of the people; rather, mining activities will improve their standard of living. The mining activity creates employment opportunities for the local people, and this definitely raises their economic status. Apart from the overall beneficial impact of the project on the local people of the region, it is felt necessary to augment facilities in the fields of education, health, and social awareness, including concern for the environment and ecosystem.

## **8.2 IMPROVEMENTS IN THE SOCIAL INFRASTRUCTURE**

The proposed project will help in improving the socio-economic status of the near-by villages by generating direct or indirect employment opportunities. Substantial amount of indirect revenue will be generated by transportation activities along with employment e.g. labour, helper etc.

### **ECONOMIC BENEFITS:**

The execution of proposed mine will boost the economy of the area by creating direct & indirect jobs for locals. There will be a positive cumulative impact of the project on the economy.

## **8.3 EMPLOYMENT POTENTIAL: SKILLED, SEMI-SKILLED & UN-SKILLED**

The mining activity at proposed Rough Stone and Gravel of Thiru.D.Gnanaguru, S/o. Dhanapal will create direct employment opportunity for 25 local people. As per MOEF & CC Notification CER cost is arrived for an amount of 8 Lakhs, it will be utilized as per the CER letter received from the competent authority, enclosed as annexure no 13.

## **8.4 OTHER TANGIBLE BENIFITS**

The mine management will recruit semi-skilled & unskilled eligible workers from the nearby villages depending upon requirement in the mines and the eligibility, qualification and experience of local persons.

The overall effect will result in higher standard of living viz. better education, improved health and sanitation facilities, housing and acquisition of consumer durables. Housing, transport, medical, educational and other civic amenities will get improved in the future. This is envisaged as a major positive benefit.

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## CHAPTER 9

### ENVIRONMENTAL COST BENEFIT ANALYSIS

As per EIA Notification dated 14th Sept., 2006, as amended from time to time, 'Environmental Cost Benefit Analysis' is applicable only if the same is recommended at the Scoping stage.

As per the ToR points issued by SEIAA-TN vide ToR Identification No. TO24B0108TN5596993N, dated 29.06.2024 for the proposed project, the 'Environmental Cost Benefit Analysis' is not prescribed.

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## CHAPTER 10

### ENVIRONMENTAL MANAGEMENT PLAN

#### **10.1 DESCRIPTION OF THE ADMINISTRATIVE ASPECTS OF ENSURING OF ENSURING THAT MITIGATIVE MEASURES ARE IMPLEMENTED AND THEIR EFFECTIVENESS MONITORED AFTER APPROVAL OF THE EIA.**

##### **10.1.1 OBJECTIVES**

The Environmental Management Plan is developed to ensure that a project is implemented in an environmentally sustainable manner, where all contractors and subcontractors, including consultants, understand the potential environmental risks arising from the project and take appropriate actions to minimize those risks. EMP also ensures that the project implementation is carried out in accordance with the planned design and by taking appropriate mitigation measures to reduce adverse environmental impacts during the project's life cycle. The impacts due to this mining project are detailed in Chapter 4 and Mitigation measures at the source level and an overall Management Plan at the site level are elaborated on in this chapter.

##### **10.1.2 BASIC OF EMP**

The Environmental Management Plan for the proposed project activities is formulated taking into considerations the following key environmental issues.

- ✚ Project activities
- ✚ Studies on Environmental Impact Assessment
- ✚ Air & water pollution control
- ✚ Working zone environment improvement
- ✚ Occupational hazards & safety
- ✚ Environmental monitoring facilities
- ✚ Environmental management costs

EMP covers all phases of the project considering the impacts with mitigation measures and monitoring programme. The plan outlines the measures that will be undertaken to ensure compliance with environmental legislations and to minimize adverse impact. Details of EMP measures for implementation in the mine are given below.

<b>Table 10.1 Environmental Management Plan</b>	
<b>Environmental Parameter</b>	<b>Mitigation Measures</b>
Air	Wet drilling to suppress the dust emission from drill machine
	Regular water sprinkling on haulage road through fixed water sprinkler.
	1.1 KLD of water will be used for dust suppression.
	Avoiding blasting during high wind period, night times and temperature inversion periods.
	Regular grading of haul road to clear accumulation of loose material.
	It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements
	Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution
	Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted air pollution control measures.
	Afforestation for control of dust.
Surface water	There is Sangarabarani River is located at a distance of 3.4 km in South west direction of lease area. Adequate safety distance is left. No dumping of material or discharge will be done in or near the river or water body.
	Surface runoff management structures like garland drain of required length which is connected to a settling pond will be constructed around the quarry to collect the rain water.
	Monthly or after rainfall, inspection will do to ensure performance of water management structures and systems. There is no discharge of any effluent into nearby water bodies.

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

Ground Water	The quarrying operation is proposed upto a depth of 32 m above ground level, Water table is found at a depth of 65 m, hence the project will not intersect the Ground water table during entire quarry period.
Water Consumption and Wastewater generation	Water required for this project will be sourced from vendors.
	Domestic wastewater generation of 1.0 KLD will be treated in septic tank with soak pit.
	Conduct ground water and surface water monitoring for parameters specified by CPCB
Noise	The workers employed are provided with protection equipment, earmuffs and ear- plugs for the protection from high noise level generated at the mine site wherever required.
	Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
	Development of thick greenbelt all along the safety Zone (7.5 m) of the project area to attenuate the noise and the same will be maintained.
	Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation.
	Annual ambient noise level monitoring is carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring.
Ground Vibration and Fly Rock Control	Controlled blasting using delay detonators will be carried out to maintain the PPV value well within the prescribed standards of DGMS.
	Drilling and blasting will be carried under the supervision of qualified persons.
	Will be Ensured that blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material.
	To be Undertake noise or vibration monitoring.
Land Environment	At conceptual stage, the mining pits will be converted into Rain Water Harvesting pit. Remaining area will be converted into greenbelt area.

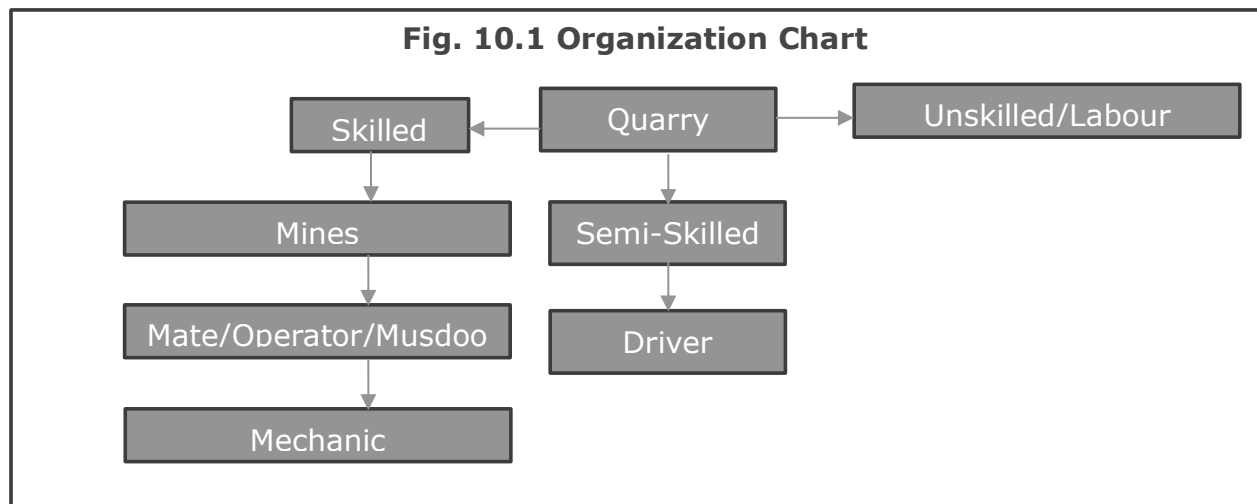
	No external dumping i.e., outside the project area. The entire material will be sold.
	Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.
	The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.
	Frequent Soil and ground water testing as per Environmental Monitoring Plan.
Top Soil / Overburden	There is no overburden anticipated during the quarrying operation.
Biological Environment	During mining, thick plantation will be carried out on the mentioned safety zone areas.
	The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
	Regular review on green belt development programme.
	Year wise greenbelt development plan mentioned in Chapter III will be monitored.

### **10.1.3 ADMINISTRATION AND TECHNICAL SETUP**

Since this is a very small quarry, the mines in-charge will take care of all environment related aspects. He will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level. The action plan for monitoring consists of monitoring of following environmental components.

- ✚ Monitoring of the water/ waste water quality, air quality and solid waste generated.
- ✚ Analysis of the water and air samples collected through external laboratory.
- ✚ Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.

- ✦ Co-ordination of the environment related activities within the project as well as with outside agencies.
- ✦ Collection of health statistics of the workers and population of the surrounding villages.
- ✦ Green belt development.
- ✦ Monitoring the progress of implementation of the environmental monitoring programme.
- ✦ Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.



1	Skilled	Mines Manager(II Class)	1 No
		Foreman/Mine Mate	2 Nos
		Operator	6 Nos
		Mechanic	1 No
2	Semi-Skilled	Diver	3 Nos
3	Un-skilled	Labours	12 Nos
Total			25 Nos

#### **10.1.4 ENVIRONMENTAL POLICY**

- The Project Proponent has stipulated a well-defined Environmental policy by which the lessee is committed to conducting business with a strong environmental conscience towards the community, customers, and employees. The Environment policy is given as below.

- The Environment policy of "Rough Stone & Gravel Quarry of Thiru.D.Gnanaguru, S/o. Dhanapal is that the rules and commitment are driven towards conservation of the environment.
- The lessee is committed to efficient use of natural resources based on the reduce, recycle and reuse method.
- The project is committed to the identification of possible impacts and will take the necessary management steps to mitigate the impacts.
- Environment performance will be regularly monitored and reported for continual improvement of our environment and health performance.

#### **10.1.5 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT**

Occupational safety and health are very closely related to productivity and a good employer-employee relationship. The main factors affecting occupational health in quarries are fugitive dust and noise. Safety of employees during quarrying operations and maintenance of mining equipment will be taken care of as per the Mines Act 1952 and Rule 29 of the Mines Rules 1955. To avoid any adverse effect on the health of workers due to dust, noise, and vibration, sufficient measures have been provided. The health status of workers in the mine will be regularly monitored under an occupational surveillance programme. Under this programme, all employees are subjected to a detailed medical examination at the time of employment. Before the induction of employees, a pre-medical checkup is done. In addition, a periodical medical checkup will be done annually for all employees.

#### **10.1.6 COST OF ENVIRONMENTAL CONTROL MEASURES**

The effective implementation of EMP is not only reduce pollution load and comply the regulatory requirement but also increase productivity and improve marketability of product. The capital and recurring cost of EMP for the cluster of mines has been given in below table.

**Table 10.2 - Environmental Management Plan Budget**

<b>Sl .No</b>	<b>Budget planned for</b>	<b>Capital Cost Amount (INR)</b>	<b>Recurring Cost/Annum Amount (INR)</b>
1	Air Environment	9,87,000	7,140,00
2	Noise Environment	50,000	5,260,00
3	Water Environment	2,22,000	1,45,000
4	Implementation of EC, Mining Plan & DGMS Condition	12,51,000	12,41,00
5	Green Belt	2,50,000	33,000
6	Additional Key EMP Expenses	30,80,000	10,000
<b>Total</b>		<b>58,40,000/-</b>	<b>26,69,000/-</b>

#### **10.1.7 CONCLUSION**

Various aspects of mining activities were considered, and related impacts were evaluated. Considering all the possible ways to mitigate the Environmental concerns, an Environmental Management Plan was prepared, and INR 205.88 lakhs has been allocated for the same. The EMP is dynamic, flexible, and subjected to periodic review. For projects where major environmental impacts are associated, EMP will be under regular review. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP, and the project will have a positive impact on the study area.

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## CHAPTER 11

### SUMMARY & CONCLUSION

#### 11.1 OVER ALL JUSTIFICATION FOR IMPLEMENTATION OF THE PROJECT

##### INTRODUCTION

Thiru.D.Gnanaguru, S/o. Dhanapal has obtained Precise Area Communication Letter from Assistant Director, Department of Geology and Mining, Viluppuram to quarry out 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> of Gravel from an extent of 2.22.5 Ha located in S.F.No.99/1, 99/3A, 100/1, 100/2 and 100/5A at Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the proposed "Rough Stone and Gravel Quarry of Thiru.D.Gnanaguru, S/o. Dhanapal mines cluster falls under Schedule 1(a) of EIA Notification and its subsequent amendments the project comes under Category B1. The ToR for preparation of EIA/EMP report of the project was approved vide ToR Identification No. TO24B0108TN5596993N, dated 29.06.2024. This report has been prepared in line with the approved TOR for production of maximum excavation of 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> of Gravel.

S.No.	Description	Status/Remarks
1.	Sector	1(a), non-coal mining
2.	Category of the project	B1
3.	Proposed mineral	Rough Stone and Gravel
4.	Type of Lease	New Lease
5.	Extent of the lease	2.22.5 Ha
6.	Proposed depth of Mining	32m BGL
7.	Method of mining	Opencast Mechanized
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years
10.	Proposed production quantity for five years	Rough Stone: 2,06,595 m <sup>3</sup> Gravel: 30,428 m <sup>3</sup>

The Lessee Thiru.D.Gnanaguru, S/o. Dhanapal is an individual with sound experience in the identification, quarrying and marketing of Rough Stone and Gravel. The proposed land is a Patta land and attached as **Annexure 6**.

### **11.1.1 LOCATION**

This project site is located in Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State with Latitude 12°02'58.03"N to 12°03'06.84"N and Longitude: 79°39'57.68"E to 79°40'03.51"E. with Survey of India Topo Sheet No.57- P/12. To conduct the study, the proposed mine lease area (core zone) and an impact zone of 10 km radius (called buffer zone) around the proposed mine site were considered. The EIA report is based on three months baseline data (i.e. March 2024 to May 2024)

### **11.1.2 GEOLOGY**

The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high-grade metamorphic rock. The strike of the Charnockite formation is N45°E –S45°W with dipping towards SE80°.

### **11.1.3 PROJECT DESCRIPTION**

This is a proposed Rough Stone quarry by Opencast Mechanized mining method with drilling and blasting. The quarrying is restricted up to a depth of 32m below ground level. The geological reserves are estimated to be 6,40,500 m<sup>3</sup> of Rough Stone and 42,700 m<sup>3</sup> Gravel. The mineable reserve calculated by deducting 7.5m safety distance and bench loss. The mineable reserves are 2,06,595 m<sup>3</sup> of Rough Stone and 30,428 m<sup>3</sup> Gravel which will be recovered at the rate of 100% recovery upto a depth of 32 m Below ground level for the period of five years.

- It is proposed to quarry out rough stone with 5m bench height, 5m width with 47° slope using conventional Open cast Mechanized method. The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough Stone.
- There is no overburden anticipated during entire rough stone & Gravel quarrying operation.

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<b>S.No.</b>	<b>Type of Detail</b>	<b>Description</b>
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	Fresh project
3	Category	B1
4	Nature of mineral	Minor Mineral
5	Production	Rough Stone: 2,06,595 m <sup>3</sup> Gravel: 30,428 m <sup>3</sup>
6	Life	5 years
7	Waste generation and management	There is no overburden anticipated during the quarrying operation. Hence, no waste generation.
8	Bench height and width	Height and Width – 5m
9	Ultimate pit depth	32m (BGL)
10	End use	Rough Stone and Gravel will be loaded into tippers to needy buyers for producing aggregates, M-sand.

#### **11.1.4 PROJECT REQUIREMENTS**

The requirements of the project is given below.7

<b>S.No.</b>	<b>Nature of requirement</b>	<b>Description</b>
1	Water requirement	Total water requirement of 5.2 KLD which will be procured from the outside agencies. Out of 1.6 KLD drinking water requirement, green belt development is 2.5KLD and dust suppression is 1.1 KLD.
2	Power requirement	No electricity is needed for mining operations, for office demands, it will be met from the state grid.
3	Manpower requirement	Permanent employees – 10, temporary employees – 15
4	Financial requirement	Total EMP cost will be Rs.205.88 Lakhs (by Life of quarry), in which Rs.147.48 lakhs for recurring costs for the period of 5 years
5	Funds for Socio economic development	INR 8 Lakhs is allocated. In addition, any demand raised by people during public hearing will also be met.

### 11.1.5 DESCRIPTION OF LEASE AREA

The features in the study area is given below.

Table 11.1 Description of the lease area				
S.No.	Areas	Distance from project site		
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil within 15km radius		
2	Areas which are important or sensitive for ecological reasons			
A	Wetlands, water courses or other water bodies,	Water bodies	Distance	Direction
		Canal	120m	S
		Thollamur Eri 1	160m	S
		Thollamur Eri 2	415m	NE
		Odai	280m	NE
		Sangarabaran i	3.4km	SW
		Suttukanni Vaykkal	4.7km	SE
		Vidur Dam	8.2km	NW
B	Coastal zone, biospheres,	Nil within 10km radius		
C	Mountains, forests	Nil within 10km Radius Oussudu Lake Birds Sanctuary – 11.5km (SE)		
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within 15km radius		
4	Inland, coastal, marine or underground waters	Nil within 15km radius		
5	State, National boundaries	Nil within 15km radius		
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nil within 15km radius		
7	Defense installations	Nil within 15km radius		

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8	Densely populated or built-up area	Thollamur Village (730m - E)
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Thollamur Village (730m - E)
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Nil
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	Nil
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No. The area is not prone to earthquakes, floods, etc.

The baseline data collection for meteorology, air, water, noise and soil environments have been carried out during March to May 2024. Air, water, noise and soil samples are collected and analyzed through NABL accredited lab.

## **11.2 EXPLANATION OF HOW ADVERSE EFFECTS HAVE BEEN MITIGATED**

### **11.2.1 AIR ENVIRONMENT**

The air monitoring has been carried out in 6 locations and the results are given below.

<b>S. No.</b>	<b>Station Code</b>	<b>Locations</b>	<b>Distance &amp; Direction</b>	<b>Coordinates</b>
1	AAQ 1	Project site	Core Zone	12°03'02.35"N 79°40'00.51"E
2	AAQ 2	Ambuzhukkai	1.82km, W	12°02'54.75"N 79°38'57.35"E
3	AAQ 3	Kondalamkuppam	2.19km, S	12°01'52.68"N 79°40'25.48"E
4	AAQ 4	Semangalam	3.03km, NE	12°03'28.93"N 79°41'38.76"E
5	AAQ 5	Karasanur	2.10 Km, N	12°04'11.23"N 79°40'22.86"E
6	AAQ6	Eraiyyur	1.29 Km, NW	12°03'32.24"N 79°39'23.34"E

DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.

Station ID	Min	Max	Avg.
<b>Particulate matter PM<sub>-2.5</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	32.0	38.7	35.35
AAQ-2	24.53	30.1	27.32
AAQ-3	22.42	28.48	25.45
AAQ-4	21.57	26.93	24.25
AAQ-5	21.6	27.0	24.3
AAQ-6	20.8	25.4	23.1
<b>CPCB NAAQS 2009 for PM<sub>2.5</sub> - 60 µg/m<sup>3</sup></b>			
<b>Particulate matter PM<sub>-10</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	67.5	81.3	74.4
AAQ-2	52.2	64.1	58.15
AAQ-3	56.7	60.6	58.65
AAQ-4	45.9	57.3	51.06
AAQ-5	55.1	46.9	51.00
AAQ-6	46.3	56.4	51.35
<b>CPCB NAAQS 2009 for PM<sub>10</sub> - 100 µg/m<sup>3</sup></b>			
<b>Sulphur Di-oxide as SO<sub>2</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	8.4	9.8	9.10
AAQ-2	6.7	8.3	7.50
AAQ-3	8.2	9.9	9.05
AAQ-4	7.6	10.1	8.85
AAQ-5	7.9	10.4	9.15
AAQ-6	5.5	7.8	6.65
<b>CPCB NAAQS 2009 for SO<sub>2</sub> - 80 µg/m<sup>3</sup></b>			
<b>Oxide of Nitrogen as NO<sub>2</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	13.2	17.8	15.50
AAQ-2	10.1	12.1	11.10
AAQ-3	9.7	12.6	11.15
AAQ-4	9.7	12.6	11.15
AAQ-5	8.4	11.3	9.85
AAQ-6	9.6	11.9	10.75
<b>CPCB NAAQS 2009 for NO<sub>2</sub> - 80 µg/m<sup>3</sup></b>			

All the values of pollutant concentrations were found to be within the NAAQs Standards.

## 11.2.2 WATER ENVIRONMENT

Table 11.3 Results of Ground Water sampling Analysis in 6 locations							Specification/ Limit (As per IS:10500: 2012 )	
	W1	W2	W3	W4	W5	W6	Desir able	Permis sible
Odour	AGREEAB LE	AGREEAB LE	AGREEAB LE	AGREEAB LE	Agreeabl e	AGREEA BLE	Agree able	Agreea ble
Turbidity	<1	<1	<1	<1	<1	<1	Agree able	Agreea ble
pH at 25 °C	6.76	6.72	6.96	7.19	7.06	6.84	6.5 - 8.5	No Relaxat ion
Electrical Conductivity	1648	1320	1782	696.1	1027	2499	1	5
Total Dissolved Solids	990	792	1070	420	616	1498	500	2000
Total hardness as CaCO3	452	516	476	165	402	491	1	15
Calcium as Ca	80.4	95.6	116.4	39.4	67.2	110.4	200	600
Magnesium as Mg	60.2	66.5	44.4	16.0	56.2	51.6	200	600
Calcium as CaCO3	201	239	291	98.5	168	276	75	200
Magnesium as CaCO3	251	277	185	66.5	234	215		
Total alkalinity as CaCO3	438	434	526	180	374	366		
Chloride as Cl-	245	212	314	145	170	598	250	1000
Free Residual chlorine as Cl-	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	30	100
Sulphates as SO42-	190	107	239	75.6	83.2	360	45	No Relaxat ion
Iron as Fe	0.05	0.03	0.05	0.08	0.04	0.09	200	400
Nitrate as NO3	2.44	2.36	3.7	1.52	2.4	4.32	1	No Relaxat ion
Fluoride as F	0.44	0.49	0.59	0.32	0.36	0.52	0.1	0.3
Manganese as Mn	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL(D.L- 0.05)	Not Specif ied	Not Specifi ed

All the values were found to be within permissible limits

### 11.2.3 NOISE ENVIRONMENT

Noise levels were measured in 6 locations and the results are given below.

Table.11.4 Noise monitoring results					
S. No	Location	Day equivalent	Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	Project site	52.9	43.6	75	70
2	Ambuzhukkai	51.6	41.2		
3	Kondalamkuppam	49.6	41.2		
4	Semangalam	50.8	41.8		
5	Karasanur	47.3	49.3		
6	Eraiyrur	52.1	41.7		

### 11.2.4 SOIL ENVIRONMENT

Soil samples are collected from 6 locations and the results are given below.

Table 11.5 Results of Soil Sample Analysis								
S.No	Parameter	Unit	S1	S2	S3	S4	S5	S6
			Results	Results	Results	Results	Results	Results
1	pH at 25 °C	-	8.16	7.76	7.47	5.78	6.75	6.97
2	Electrical Conductivity	µmhos/cm	192	220	286	192	90.67	391.7
3	Dry matter content	%	86.78	90.43	89.55	97.65	92.23	80.77
4	Water Content	%	13.22	9.57	10.45	2.35	7.77	19.23
5	Organic Matter	%	0.62	0.91	0.45	0.71	0.55	0.54
6	Soil texture	-	SILTY CLAY	SILTY CLAY	CLAY	SILTY CLAY	SILTY CLAY	SILTY CLAY
7	Grain Size Distribution	%	3.08	4.76	5.16	4.22	5.71	2.86
	i. Sand							
8	ii. Silt	%	40.55	47.92	36.78	42.93	43.49	57.45
9	iii. Clay	%	56.37	47.32	58.06	52.85	50.80	39.69
10	Phosphorous as P	mg/kg	0.45	0.49	0.91	0.58	0.79	0.67
11	Sodium as Na	mg/kg	1026	608	794	610	1009	825
12	Potassium as K	mg/kg	535	238	390	340	652	339
13	Nitrogen and Nitrogenous Compounds	mg/kg	212	346	286	402	168	270
14	Total Soluble Sulphate	%	BDL(D.L.O .02)	BDL(D.L.O .02)	BDL(D.L.O .02)	BDL(D.L.O .02)	BDL(D.L.O .02)	BDL(D.L.O .02)
15	Porosity	%	22.2	20.9	31.8	29	30.6	23.4
16	Water Holding Capacity	Inches /foot	3.6	3.3	3.5	3.1	3.9	3.6



### 11.2.5 BIOLOGICAL ENVIRONMENT

#### FLORA

For measuring the extent of flora present in the study area, the area is divided in to 4 quadrants. The flora population in each quadrant is summed up for the total population in the study area. Field survey is done. Erukku, Aavarai and Nayuruvi are found in lease area. In the buffer zone, common trees like Neem, papaya, mango, teak, etc and shrubs like Avarai, Aloe vera, etc, climbers like Kovai,jasmine etc are found.

#### FAUNA

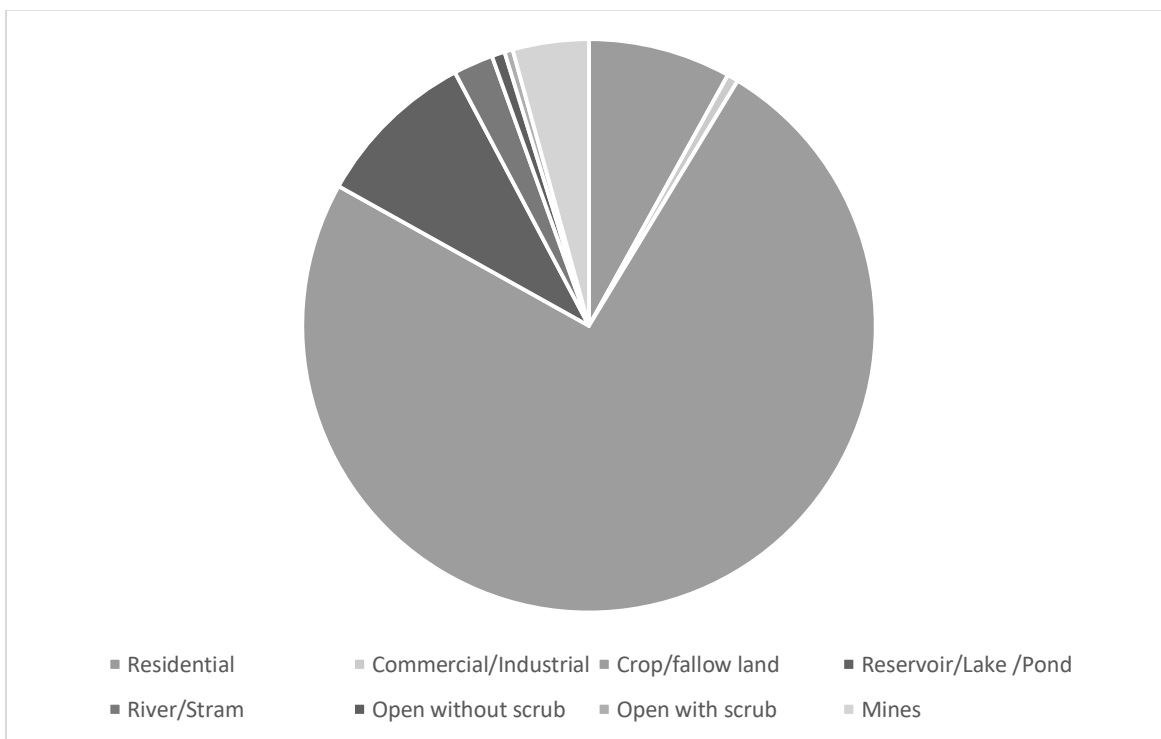
In the study area, commonly found animals like dogs, cats, bush rat, cows, birds like crow, Myna, Sparrow, etc were found.

### 11.2.6 LAND USE

The land use land cover data is found using the LANDSAT – 9 satellite imagery. The number of bands used are 11. The land use pattern is given below:

**Table No. 11.6: Major Land Use Units of the Study Area in Percentage**

S. No	1st Level Classification	Area in (sq.km)	Percentage (%)	2nd Level Classification	Area in (sq.km)	Percentage (%)
1	Built-up or habitation	27.78	8.68	Residential	25.76	8.05
				Commercial/Industrial	2.02	0.63
2	Agriculture	238.13	74.42	Crop/fallow land	238.13	74.42
3	Water bodies	36.5	11.40	Reservoir/Lake /Pond	29.3	9.16
				River/Stram	7.2	2.25
4	Waste Land	3.85	1.20	Open without scrub	2.35	0.73
				Open with scrub	1.5	0.47
5	Mines	13.74	4.29	Mines	13.74	4.29
<b>Total</b>		<b>320</b>	<b>100</b>		<b>320</b>	<b>100</b>



### **11.2.7 SOCIO ECONOMIC ENVIRONMENT**

The socio economic environment of the study area is studied by conducting primary sites through site visits and conducting sample surveys. The secondary data obtained from Census 2011 is also used.

The following data area collected from secondary data.

- Demographic pattern.
- Health pattern
- Occupational structure.
- Amenities available.

The expert visited 5 villages in the study area namely Ambuzhukkai, Karasanur, Eraiyur, Kondalamkuppam and Semangalam village. Discussions were held with the people from nearby locality to study the social and economic conditions prevailing in the area. The expert also visited nearby hospitals, primary health centres and Tharuvai. The following observations were made.

The following observations were made.

Primary schools are available in many villages. For hospital facilities, people in the locality have to go to hospital in Thollamur which is about 730m from the lease area. Major schools with higher secondary and senior secondary schools are located in Thollamur. The major Thollamur Union located in the area is Villupuram. Facilities like petrol pump stations, ATM facility are available in Thollamur.

### **11.2.8 HYDROGEOLOGY OF THE LEASE AREA**

Since there is Sangarabarani River is located at a distance of 3.4 km in South west direction of lease area, the hydrological and hydrogeological pattern of the study area is studied in detail using satellite imagery.

Sangarabarani River is the major river in the lease area. But there is no running water currently in the river. Only during monsoons, water gets stagnated at a few places.

There are many tanks located in the study area, which are mostly dry throughout the year. These tanks get water only during monsoons. The factors may be monsoon failure, insufficient rainfall, poor rain water management and water consuming patterns.

### **11.2.9 GROUND WATER STUDY**

For Ground water study, satellite imagery is used. Water levels from monitoring levels are collected through imaging. The pre-monsoon and post-monsoon data are collected and the results are analyzed.

During field visit, it is observed that water is available in wells only after monsoon. The yield is obtained at deep levels only.

As far as the mining lease area is considered, the area is rocky and no major seepage is envisaged. The production quantity is very less and the depth proposed is 32 m BGL. Hence, there will not be any major impact due to mining on water levels or ground water levels in the area.

## **ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Environmental impacts on the following environments are identified.

- Land environment
- Water environment
- Vegetation
- Fauna
- Air environment
- Noise environment
- Socio-economic impacts

### **11.2.10 LAND ENVIRONMENT: IMPACT AND MITIGATION MEASURES**

The major impact due to this project on land environment is the change in land use. Since this quarry is a small one and the production is less, mining activity will be carried out upto 32 m BGL. Other than quarrying of minerals, no other change will be done since there is no dumping. To prevent soil erosion during monsoon season, garland drain will be constructed with silt traps. At the mine closure stage, 1.51.5 Ha of lease area will be left as rain water harvesting pond. 0.68.0Ha will be developed with green belt. For this, plants like Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indica are selected. A total of 1100 trees are planned to be planted. Spacing will be 3m x 3m.

### **11.2.11 WATER ENVIRONMENT: IMPACT AND MITIGATION MEASURES**

There is no water body present inside the lease area. The entire water requirement for the project is 5.2 KLD which will be sourced from outside agencies. Negligible sewage will be generated, for which a septic tank with soak pit will be set up.

During monsoon season, the excess rain water, if any, will be led through garland drain of 0.6m width and 0.3 m depth to the collection pond with silt traps.

Since the mining operation will be limited upto depth of 32m (BGL), there will not be any seepage. However, the rain water percolation and collection of water from

seepage shall be less than 300lpm and it shall be pumped out periodically by a stand by diesel powered Centrifugal pump motivated with 7.5H.P.Motor. The quality of water is expected to be potable. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water can also be used for plantation purposes

The major water bodies found in the buffer zone are.

- Canal – 120m (S),
- Odai – 280m (NE),
- Thollamur Eri 1 – 170m (S),
- Thollamur Eri 2 – 415m (NE),
- Kulam – 470m (SW),
- Sangarabarani river – 3.4km (SW),
- Suttukanni Vaykkal - 4.7km (SE),
- Vidur Dam - 8.2km (NW)

Since these water bodies are located outside the lease area and there is no discharge of effluent or any untreated water from the mines will be made in to these water bodies, there is no major impact. For the canal, adequate safety distance is left. The proponent will restrict the mining operation only within the lease and no other work will be carried out near the canal or any area outside the lease.

It is planned to carryout appropriate rainwater harvesting schemes and artificial recharge schemes in the area.

- Rain water falling in the quarry will be collected efficiently through garland drains.
- Water thus collected will be passed through collection tank with silt traps. This water can be used by the proponent for water sprinkling and for green belt purposes.
- Excess water after desiltation will be provided to downstream users, if any

### **11.2.12 BIOLOGICAL ENVIRONMENT: IMPACT AND MITIGATION MEASURES**

#### **Impacts**

- Fauna is affected due to noise and vibration.
- Dust generation due to mining activities
- Change in land use of the lease area
- Accidental falling of animals

#### **Mitigation measures**

- Sirens will be blown before blasting in the mines. To reduce noise levels, plantation will be done. Blasting will be carried out only in the allotted time.
- To reduce dust generation, mist sprayers will be used. During transportation, the material will be covered with tarpaulin. Water sprinkling will be done to reduce generation of pollutants
- After the mine closure stage, the mine pit will be left as rain water collecting tank, which can attract bird population in the nearby areas.
- To prevent entry of animals, the mining area will be properly fenced.

### **11.2.13 AIR ENVIRONMENT: IMPACT AND MITIGATION MEASURES**

The major air pollutants due to mining operations are fugitive emissions like PM<sub>10</sub>, PM<sub>2.5</sub>. Other than these pollutants, gaseous emissions of sulfur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

The major impacts are Dust emission due to drilling, blasting and transportation. The major mitigation measures include Using Wet drilling methods, Allowing drilling only with PPE, Carrying out blasting only during specified times, Avoiding blasting during unfavourable weather conditions, Using explosives of good quality, Using mist sprayers Regular wetting of transport, Covering the materials carried in tippers with tarpaulin, Proper maintenance of vehicles used for transportation, Conducting regular emission tests for vehicles used for transport Development of greenbelt is proposed in the safety zone of 7.5m barriers in the lease area.

The anticipated data is calculated using AERMOD software and the projected values are found to be within limits.

#### **11.2.14 NOISE ENVIRONMENT: IMPACT AND MITIGATION MEASURES**

##### **Impacts**

- ✚ Noise generation in mining is due to operation like drilling, blasting and transportation of minerals within and outside the lease area.
- ✚ As per DGMS (Directorate General of Mines Safety) and OSHA (Occupational Safety and Health Administration) limits, the acceptable noise level is 85 dB(A) for an exposure period of 8 hours.
- ✚ Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress. Noise pollution also impacts the health and well-being of wildlife.
- ✚ Noise exceeding prescribed limits may cause impairment like abnormal loudness perception, tinnitus, which causes a persistent high-pitched ringing in the ears, paracusis or distorted hearing

##### **Mitigation measures**

- ✚ As the distance between the source and receptor increases, the noise level also decreases. Hence, there will be a natural attenuation
- ✚ The proposed has planned to develop green belt in the periphery of the lease area, which diminishes sound volume by dampening them.
- ✚ All the equipment/machinery/trucks involved will be properly maintained to control noise generation
- ✚ Conducting regular health checkups for employees involved
- ✚ Employees will be made to work on shifts to reduce their exposure time
- ✚ Providing earplugs to all employees

By adopting these measures, the noise levels will be maintained well within MoEF & CC limits since the baseline value is low.

### **11.2.15 VIBRATION: IMPACT AND MITIGATION MEASURES**

#### **Impacts**

- ✦ Though vibration will be only felt by the people working inside the lease area, it is usually undesired.
- ✦ Vibration may also cause flyrocks
- ✦ It may frighten the birds and small insects in the lease area. However, it will be felt only for a short period

#### **Mitigation measures**

- ✦ Carrying out blasting on limited scale, only from 12:00 PM to 2:00 PM
- ✦ Control of fly rock and vibration by maintaining peak particle velocity with in standard as prescribed by the DGMS and MOEF & CC.
- ✦ Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive
- ✦ Supervising blasting by competent and statutory foreman/ mines manager

### **11.2.16 SOCIO ECONOMIC ENVIRONMENT**

#### **Impact and Mitigation measures**

No land is acquired from anyone. No rehabilitation is needed. Hence, there is no negative impact. The proponent has planned to spend INR 8,00,000 for CER activities. This amount will be subjected to change after public hearing.

### **11.2.17 OCCUPATIONAL HEALTH**

#### **Impacts**

Dust generation due to drilling and blasting, Noise generation due to drilling and blasting, unexpected accidents. Continuous exposure to dust causes Pneumonia, Tuberculosis, Rhematic arthritis and Segmental Vibration, Short term impact will be lack of sleep, high blood pressure and heart ailments. Long term exposure may lead to partial or permanent deafness, Risks include fly rocks, cracks or fissures due to improper mining methods



### **Mitigation measures**

- Using dust suppression measures like water spraying on roads to reduce rise of air pollutants
- Providing green belt for air pollutant and noise attenuation
- Ensuring slope stability
- Employing only trained professionals for blasting
- Conducting Pre-Medical Examination for employees before inducting
- Conducting periodical Medical Examination once in 6 months.
- Making all first aid kits available in mines office
- Keeping fire extinguisher in place
- Educating the employees about how to handle unexpected happenings
- Posting information containing emergency contact numbers in mines office
- By adopting all these measures, the safety of the employees working in the quarry will be ensured.

### **11.2.18 NVIRONMENTAL MONITORING PROGRAMME**

Monitoring is done to measure the efficiency of control measures implemented. Regular monitoring of various environmental parameters like air, water, noise and soil environments is needed to assess the status of environment during the project operation. A schedule is framed with timeline to monitor various parameters during the operation of the project. To evaluate the effectiveness of environmental management programme, regular monitoring of the important environmental parameters will be taken up. Air monitoring will be carried out once in 3 months, water sample will be collected once in a season, noise will be monitored once in 3 months, soil samples will be analyzed once per season. For EMP, a budget of INR 205.88 Lakhs is allocated.

### **11.2.19 PROJECT BENEFITS**

#### **Financial benefits**

- This project will contribute financially through payment of taxes like royalty, GST, etc
- The project will also contribute via CSR.
- The demands of people during public hearing will also be considered by the project proponent

#### **Social benefits**

- This project provides employment to 25 people directly. Local people will be hired for unskilled labour.
- Through CSR, nearby schools, hospitals will be benefitted.
- For CSR, INR 8,00,000 is allocated.
- Based on the demand of the people during public hearing, further funds will be allocated, if necessary.
- Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and 205.88 lakhs for the five years has been allocated as EMP cost. The EMP is dynamic, flexible and subjected to periodic review. For project where the major environmental impacts are associated, EMP will be under regular review. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

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## CHAPTER 12

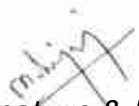
### DISCLOSURE OF CONSULTANTS

*Global Mining Solutions is a NABET Accredited EIA consultant as per NABET certificate NABET/EIA/2326/IA 0110. The registered office of Global Mining Solutions is at Plot No.6, S.F.No.13/2 A2, VS City, RC Chetty Patty, Kottamettupatty, Omalur, Salem, Tamilnadu-636455.*

*Declaration by Experts contributing to the proposed Rough Stone and Gravel Quarry over an extent of 2.22.5 Ha, while total cluster area of 10.33.0 Ha at Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State.*

*I, hereby, certify that I was a part of the EIA team that developed the above EIA.*

*EIA Coordinator Name: M. Manikandan*


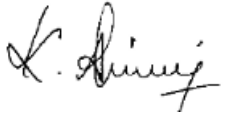




  
*Signature & Date*

*Period of involvement: March 2024 to May 2024.*

**Contact information:**

**M/s Global Mining Solutions**  
**Plot No.6, SF No. 13/2, A2, VS City, RC Chetty Patty,**  
**Kottamettupatty, Omalur,**  
**Salem, Tamil Nadu – 636 455**

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**



<b>S. No.</b>	<b>Functional areas</b>	<b>Name of the expert/s</b>	<b>Involvement (period and task**)</b>	<b>Signature and Date</b>
1	AP	Dhanalakshmi Ramanathan	Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation measures for air pollution.  <u>Period: March 2024 to May 2024.</u>	
2	WP	Abirami Kaliaperumal	Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact.  <u>Period: March 2024 to May 2024</u>	
3	SHW	Ramadoss N	Assessment of waste generated from the project, suggested waste management practices.  <u>Period: March 2024 to May 2024</u>	
4	SE	Sarasvathy K	Baseline SE studies. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan.  <u>Period: March 2024 to May 2024</u>	
5	EB	Saravanan S	Baseline data collection of related to ecology of the area.  <u>Period: March 2024 to May 2024</u>	
6	HG	Ravinthiran N	Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area.  <u>Period: March 2024 to May 2024</u>	

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

7	AQ	Srilatha Thiruveedhula	Air quality modeling utilizing the area source model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures. <u>Period: March 2024 to May 2024</u>	T. Srilatha
8	NV	Dhanalakshmi Ramanathan	Ambient noise study of the area. Incremental noise generation due to quarry operation and impact of the noise due to the project. <u>Period: March 2024 to May 2024</u>	R. Dhananjay
9	LU	Dhanalakshmi Ramanathan	Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment. <u>Period: March 2024 to May 2024</u>	R. Dhananjay
10	RH	S.V. Prashant	Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker. <u>Period: March 2024 to May 2024</u>	S. Prashant
11	SC	Shisupal Sing	Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil. <u>Period: March 2024 to May 2024</u>	Shisupal Singh
12	GEO	Valliappan Meyyappan	Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area. <u>Period: March 2024 to May 2024</u>	Valliappan

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

**TM-FAE:**

S.No	Name of TM (FAE)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	M.Prabu	LU	T.Srilatha	<u>March 2024 to May 2024</u>	Associated with FAE in preparing Land use map based on satellite imagery, Land use classification and analysis, Impact prediction on surrounding land environment	
		HG	Ashok Kumar		Associated with FAE in studying hydrogeological pattern of study area, Studying ground water and the impact of the project on ground water	
2	M. Manikandan	EB	S.Saravanan	<u>March 2024 to May 2024</u>	Associated with the expert in baseline data collection related to ecology of the study area	
		SC	Shishupal Singh		Associated with the expert in Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

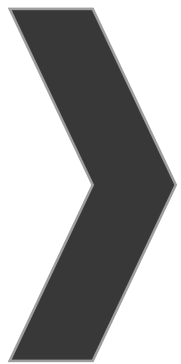
**TM-FAA:**

S. No	Name of TM (FAA)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	Suresh	WP	Abirami Kaliaperumal	<u>March 2024 to May 2024</u>	Associated with the expert in assessing existing water quality, studying impact of the project on surface and ground water quality, suggesting mitigation measures for minimizing impact	M. Suresh
		AP	Dhanalakshmi Ramanathan		Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	
2	S.Kamaraj	SC	Shishupal Singh	<u>March 2024 to May 2024</u>	Associated with the expert in Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	S. Kamaraj
		RH	S.V.Prashant		Associated with the expert in Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the workers	
3.	S.AsanAli	WP	Abirami Kaliaperumal	<u>March 2024 to May 2024</u>	Associated with the expert in assessing existing water quality, studying impact of the project on surface and ground water quality, suggesting mitigation measures for minimizing impact	S. Asan ali
		GEO	Valliappan Meyyappan		Associated with the expert in preparing Geological map, assessing stability of quarry slope faces and dump, management plan for mine stability, after use of mining quarry and geological features of the area	
		AP	Dhanalakshmi Ramanathan		Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	

**DRAFT EIA/EMP FOR THE PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D. GNANAGURU OVER AN EXTENT OF 2.22.5 HA LOCATED AT S.F.NOS. 99/1, 99/3A, 100/1, 100/2 AND 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

		NV	Dhanalakshmi Ramanathan		Associated with the expert in monitoring and analysis of blast induced ground vibration in order to develop the site-specific equation for its prediction, monitoring of fly rocks & air blast (noise), preparation of SOP's for the safety blasting practice in the mines.	
4.	Mownica.B	AP	Dhanalakshmi Ramanathan	<u>March 2024 to May 2024</u>	Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	Mownica.B
		NV	Dhanalakshmi Ramanathan		Associated with the expert in monitoring and analysis of blast induced ground vibration in order to develop the site-specific equation for its prediction, monitoring of fly rocks & air blast (noise), preparation of SOP's for the safety blasting practice in the mines.	
5.		GEO	Valliappan Meyyappan		with the expert in preparing Geological map, assessing stability of quarry slope faces and dump, management plan for mine stability, after use of mining quarry and geological features of the area	
	G.BalaSubramani	NV	Dhanalakshmi Ramanathan	<u>March 2024 to May 2024</u>	Associated with the expert in monitoring and analysis of blast induced ground vibration in order to develop the site-specific equation for its prediction, monitoring of fly rocks & air blast (noise), preparation of SOP's for the safety blasting practice in the mines.	G.BalaSubramani





**ANNEXURE-1**





सत्यमेव जयते

**File No: 10898**  
**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Issued by the State Environment Impact Assessment**  
**Authority(SEIAA), TAMIL NADU)**

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Dated 29/06/2024

To,

D GNANAGURU  
D GNANAGURU  
Thiru.D.Gnanaguru, S/o. Dhanapal, No.219/1C, Iyyanar Kovil street, Tennamadevi Village,  
Vikkiravandi Taluk, Viluppuram District., Viluppuram , VILLUPURAM, TAMIL NADU, Viluppuram  
, 605601  
Muruganjltgroups@gmail.com

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

**Sir/Madam,**

This is in reference to your application for Grant of Terms of Reference with Public Hearing under the provision of the EIA Notification 2006-regarding in respect of project (ToR) for the Proposed Rough stone & Gravel Quarry lease over an extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District, submitted to SEIAA-TN vide proposal number SIA/TN/MIN/470957/2024 dated 06/06/2024.

**Ref:**

1. Online Proposal No SIA/TN/MIN/473463/2024, Dated:20.05.2024.
2. Your application submitted for Terms of Reference dated:21.05.2024.

2. The particulars of the proposal are as below :

<b>(i) TOR Identification No.</b>	TO24B0108TN5596993N
<b>(ii) File No.</b>	10898
<b>(iii) Clearance Type</b>	TOR
<b>(iv) Category</b>	B1
<b>(v) Project/Activity Included Schedule No.</b>	1(a) Mining of minerals
<b>(vii) Name of Project</b>	Rough Stone and Gravel Quarry of Thiru.D.Gnanaguru
<b>(viii) Name of Company/Organization</b>	D GNANAGURU
<b>(ix) Location of Project (District, State)</b>	VILLUPURAM, TAMIL NADU
<b>(x) Issuing Authority</b>	SEIAA
<b>(xii) Applicability of General Conditions</b>	no

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.
4. The above-mentioned proposal has been considered by (SEIAA) Appraisal Committee of SEIAA in the meeting held on 25/06/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,) are available on PARIVESH portal which can be accessed by scanning the QR Code above.
5. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects and public hearing issues and compliance thereto furnished by the Project Proponent, recommended the proposal for grant of Terms of Reference under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
6. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to grant Terms of Reference for instant proposal of Thiru.D GNANAGURU under the provisions of EIA Notification, 2006 and as amended thereof.
7. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
8. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
9. This issues with the approval of the Competent Authority.
10. The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

**Copy To**

1. The Additional Chief Secretary to Government, Environment, Climate Change and 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 - 110 032.
3. The Chairperson, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.
6. The District Collector, Viluppuram District.
7. Stock File.

**Annexure 1**

**Specific Terms of Reference for (Mining Of Minerals)**

**1. Seac Conditions - Site Specific**

S. No	Terms of Reference
1.1	<p>1. The Proponent shall furnish a slope stability action plan for the proposed quarry operation, during the EIA appraisal.</p> <p>2. The PP shall carry out a comprehensive study indicating the Travelling route used for quarry operation, Crusher activity as proposed pertaining to the traffic surveys and Axle load surveys and demand forecasting for the next 10 years in the cluster area including the Traffic Volume, Identification of possible improvements in the existing alignment and bypassing congested locations with alternatives, investigation of required sub-grade and sub-soil characteristics and strength for road and embankment design and sub soil investigation, identification of sources of construction material, etc.</p> <p>3. The Proponent shall study about the addition of proposed quarrying operation in the existing cluster over the economic growth of the area falling within 10 km from the cluster of mines.</p> <p>4. 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 with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, Schools/Colleges industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.</p>

## 2. Seac Standard Conditions

S. No	Terms of Reference
2.1	<p>1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:</p> <ul style="list-style-type: none"> <li>(i) Original pit dimension</li> <li>(ii) Quantity achieved Vs EC Approved Quantity</li> <li>(iii) Balance Quantity as per Mineable Reserve calculated.</li> <li>(iv) Mined out Depth as on date Vs EC Permitted depth</li> <li>(v) Details of illegal/illicit mining</li> <li>(vi) Violation in the quarry during the past working.</li> <li>(vii) Quantity of material mined out outside the mine lease area</li> <li>(viii) Condition of Safety zone/benches</li> <li>(ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.</li> </ul> <p>2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.</p> <p>3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.</p> <p>4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.</p> <p>5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.</p> <p>6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.</p> <p>7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed</p>

S. No	Terms of Reference
	<p>and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining &amp; Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p> <p>8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual ‘Slope Stability Plan’ for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.</p> <p>9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, III/ Class mines manager appointed by the proponent.</p> <p>10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.</p> <p>11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.</p> <p>12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <p>13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>14. Quantity of minerals mined out.</p> <ul style="list-style-type: none"> <li>● Highest production achieved in any one year</li> <li>● Detail of approved depth of mining.</li> <li>● Actual depth of the mining achieved earlier.</li> <li>● Name of the person already mined in that leases area.</li> <li>● If EC and CTO already obtained, the copy of the same shall be submitted.</li> <li>● Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</li> </ul> <p>15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p> <p>16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p> <p>17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees &amp; safety distance between the adjacent quarries &amp; water bodies nearby provided as per the approved mining plan.</p> <p>18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.</p> <p>19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act’1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.</p> <p>20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping &amp; 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</p>

S. No	Terms of Reference
	<p>shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p> <p>21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality &amp; flora/fauna including traffic/vehicular movement study.</p> <p>22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control &amp; health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p> <p>23. Rain water harvesting management with recharging details along with water balance (both monsoon &amp; non-monsoon) be submitted.</p> <p>24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p> <p>25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&amp;R issues, if any, should be provided.</p> <p>26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.</p> <p>27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.</p> <p>28. Impact on local transport infrastructure due to the Project should be indicated.</p> <p>29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area &amp; 300m buffer zone and its management during mining activity.</p> <p>30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.</p> <p>31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.</p> <p>32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.</p> <p>33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner</p> <p>34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>36. Occupational Health impacts of the Project should be anticipated and the proposed preventive</p>

S. No	Terms of Reference
	<p>measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.</p> <p>37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.</p> <p>38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.</p> <p>39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.</p> <p>40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.</p> <p>41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&amp;CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.</p> <p>42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine</p> <p>43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.</p>

### 3. Seiaa Specific Conditions:

S. No	Terms of Reference
3.1	<p>After detailed discussions, the Authority accepted the recommendation of SEAC and decided to grant of Terms of Reference (ToR) along with with Public Hearing for the quantity of 2,06,595 m<sup>3</sup> of Rough Stone &amp; 30,428 m<sup>3</sup> of Gravel with an ultimate depth of mining is 32 m BGL as per the approved mining plan, under cluster of undertaking the combined Environmental Impact Assessment Study and Preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC &amp; normal conditions.</p>

### 4. Seiaa Standard Conditions:

S. No	Terms of Reference
4.1	<p><b>Cluster Management Committee</b></p> <ol style="list-style-type: none"> <li>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.</li> <li>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.,</li> <li>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.</li> <li>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.</li> <li>5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic</li> </ol>



S. No	Terms of Reference
	<p>manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.</p> <p>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.</p> <p>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.</p> <p>8. The committee shall furnish the Emergency Management plan within the cluster.</p> <p>9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.</p> <p>10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation &amp; safety.</p> <p>11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.</p> <p><b>Impact study of mining</b></p> <p>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</p> <ol style="list-style-type: none"> <li>a) Soil health &amp; soil biological, physical land chemical features .</li> <li>b) Climate change leading to Droughts, Floods etc.</li> <li>c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, &amp; Livelihood of the local people.</li> <li>d) Possibilities of water contamination and impact on aquatic ecosystem health.</li> <li>e) Agriculture, Forestry &amp; Traditional practices.</li> <li>f) Hydrothermal/Geothermal effect due to destruction in the Environment.</li> <li>g) Bio-geochemical processes and its foot prints including environmental stress.</li> <li>h) Sediment geochemistry in the surface streams.</li> </ol> <p><b>Agriculture &amp; Agro-Biodiversity</b></p> <p>13. Impact on surrounding agricultural fields around the proposed mining Area.</p> <p>14. Impact on soil flora &amp; vegetation around the project site.</p> <p>15. Details of type of vegetations including no. of trees &amp; 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.</p> <p>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.</p> <p>17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</p> <p>18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.</p> <p><b>Forests</b></p> <p>19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.</p> <p>20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.</p> <p>21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.</p> <p>22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.</p> <p><b>Water Environment</b></p> <p>23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping &amp; 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</p>

S. No	Terms of Reference
	<p>groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</p> <p>24. Erosion Control measures.</p> <p>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, &amp; any ecological fragile areas.</p> <p>26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</p> <p>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.</p> <p>29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p><b>Energy</b></p> <p>31. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.</p> <p><b>Climate Change</b></p> <p>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.</p> <p>33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil &amp; below soil carbon stock.</p> <p><b>Mine Closure Plan</b></p> <p>34. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.</p> <p><b>EMP</b></p> <p>35. Detailed Environment Management Plan along with adaptation, mitigation &amp; remedial strategies covering the entire mine lease period as per precise area communication order issued.</p> <p>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.</p> <p><b>Risk Assessment</b></p> <p>37. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.</p> <p><b>Disaster Management Plan</b></p> <p>38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards &amp; to cope with disaster/untoward accidents in &amp; around the proposed mine lease area due to the proposed method of mining activity &amp; its related activities covering the entire mine lease period as per precise area communication order issued.</p> <p><b>Others</b></p> <p>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.</p> <p>40. As per the MoEF&amp; CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.</p> <p>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 &amp; microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.</p>

**Standard Terms of Reference for (Mining of minerals)**

**1.**

<b>S. No</b>	<b>Terms of Reference</b>
<b>1.1</b>	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.
<b>1.2</b>	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.
<b>1.3</b>	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
<b>1.4</b>	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also
<b>1.5</b>	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
<b>1.6</b>	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
<b>1.7</b>	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need eloboration in form of lengthe, quantity and quality of water to be diverted
<b>1.8</b>	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.
<b>1.9</b>	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.

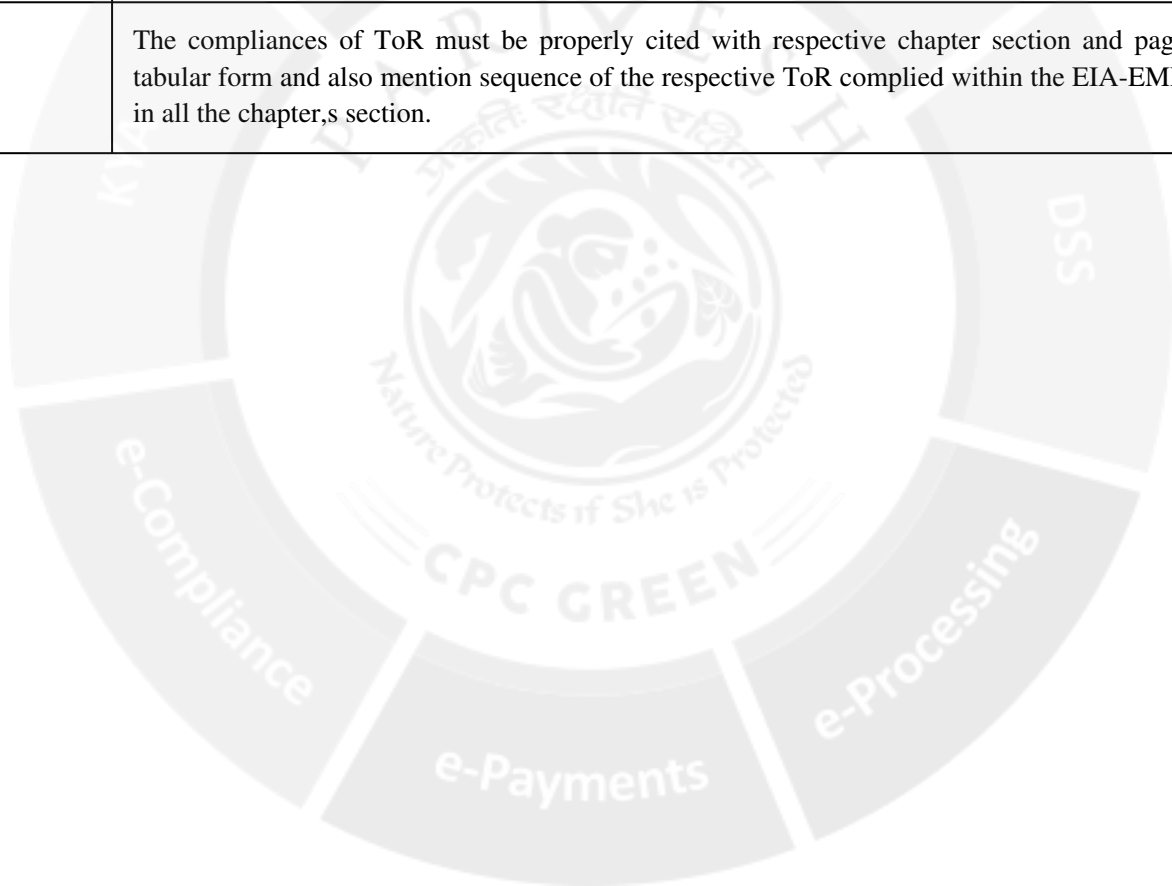
S. No	Terms of Reference																																										
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.																																										
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.																																										
1.12	<p>Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights</p> <table border="1" data-bbox="336 835 1465 1108"> <thead> <tr> <th data-bbox="336 835 630 891">S.N ML/Project Land use</th> <th data-bbox="630 835 853 907">Area under Surface Rights(ha)</th> <th data-bbox="853 835 1214 907">Area Under Mining Rights(ha)</th> <th data-bbox="1214 835 1465 907">Area under Both (ha)</th> </tr> </thead> <tbody> <tr> <td data-bbox="336 907 630 947">1 Agricultural land</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="336 947 630 987">2 Forest Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="336 987 630 1028">3 Grazing Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="336 1028 630 1068">4 Settlements</td> <td></td> <td></td> <td></td> </tr> <tr> <td data-bbox="336 1068 630 1108">5 Others (specify)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" data-bbox="336 1176 1222 1413"> <thead> <tr> <th data-bbox="336 1176 470 1216">S.N.</th> <th data-bbox="470 1176 1102 1216">Details</th> <th data-bbox="1102 1176 1222 1216">Area (ha)</th> </tr> </thead> <tbody> <tr> <td data-bbox="336 1216 470 1256">1</td> <td data-bbox="470 1216 1102 1256">Buildings</td> <td></td> </tr> <tr> <td data-bbox="336 1256 470 1296">2</td> <td data-bbox="470 1256 1102 1296">Infrastructure</td> <td></td> </tr> <tr> <td data-bbox="336 1296 470 1337">3</td> <td data-bbox="470 1296 1102 1337">Roads</td> <td></td> </tr> <tr> <td data-bbox="336 1337 470 1377">4</td> <td data-bbox="470 1337 1102 1377">Others (specify)</td> <td></td> </tr> <tr> <td></td> <td data-bbox="470 1377 1102 1413">Total</td> <td></td> </tr> </tbody> </table>	S.N ML/Project Land use	Area under Surface Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	1 Agricultural land				2 Forest Land				3 Grazing Land				4 Settlements				5 Others (specify)				S.N.	Details	Area (ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (specify)			Total	
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1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.																																										
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.																																										

S. No	Terms of Reference
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.
1.24	Detailed water balance should be provided. The break up of water requirement as per different

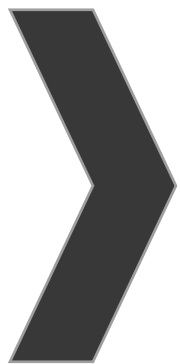
S. No	Terms of Reference
	activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.27	PP to evaluate the green house emission gases from the mine operation and corresponding carbon absorption plan.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic

S. No	Terms of Reference																																																						
	status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.																																																						
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.																																																						
1.38	Corporate Environment Responsibility:																																																						
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.																																																						
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.																																																						
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.																																																						
1.42	d) To have proper checks and balances, the company should have a well laid down 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.																																																						
1.43	e) Environment Management Cell and its responsibilities to be clearly spelled out in EIA/ EMP report																																																						
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.																																																						
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.																																																						
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.																																																						
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.																																																						
1.48	<p>Details on the Forest Clearance should be given as per the format given:</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%;">Total ML Total</td> <td style="width: 15%;"></td> <td style="width: 15%;">Date</td> <td style="width: 15%;">Extent</td> <td style="width: 15%;">of</td> <td style="width: 15%;">Balance area for which</td> <td style="width: 15%;">Status of appl</td> <td style="width: 15%;">For</td> </tr> <tr> <td></td> <td>Project Area Forest</td> <td></td> <td>of FC</td> <td>Forest Land</td> <td>FC</td> <td>is yet to be</td> <td>diversion of forest</td> <td></td> </tr> <tr> <td></td> <td>(ha)</td> <td>land (ha)</td> <td></td> <td></td> <td>obtained</td> <td>land</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>If more than one</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>provide details of</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>each FC</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Total ML Total		Date	Extent	of	Balance area for which	Status of appl	For		Project Area Forest		of FC	Forest Land	FC	is yet to be	diversion of forest			(ha)	land (ha)			obtained	land					If more than one									provide details of									each FC						
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1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report																																																						

S. No	Terms of Reference
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.







# ANNEXURE-2



ந.க.எண். அ/புவி (ம) கர/116/2023  
நாள்:11.03.2024.

உதவி இயக்குநர்  
புவியியல் மற்றும் சுரங்கத்துறை அலுவலகம்,  
விழுப்புரம்.

குறிப்பாணை



**பொருள்:** கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் மற்றும் கிராவல் - விழுப்புரம் மாவட்டம் - வானூர் வட்டம் - தொள்ளமூர் கிராமம் - பட்டா புல எண்கள். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0), 101/1 (0.27.5) மற்றும் 101/7 (0.32.0) ஆகியவற்றில் 2.82.0 ஹெக்டேர் பரப்பளவில் பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குவாரி குத்தகை அனுமதி கோரி திரு.D.ஞானகுரு, த/பெ.தனபால் என்பவர் விண்ணப்பம் செய்தது - பட்டா புல எண்கள். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0) ஆகியவற்றில் 2.22.5 ஹெக்டேர் பரப்பளவில் உரிமம் வழங்க பரிந்துரை செய்து அறிக்கை வரப்பெற்றது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவினை பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

**பார்வை:**

1. திரு.D.ஞானகுரு, த/பெ.தனபால், 219/C, அய்யனார் கோவில் தெரு, தென்னமாதேவி கிராமம், விக்கிரவாண்டி வட்டம், விழுப்புரம் மாவட்டம் என்பவரது விண்ணப்பம் நாள்.29.09.2023.
2. வருவாய் கோட்டாட்சியர், விழுப்புரம் கடித எண். ந.க.அ4/51/2024, நாள்.01.03.2024..
3. விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநர் அவர்களின் புலத்தணிக்கை அறிக்கை நாள்: 06.03.2024.

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விழுப்புரம் மாவட்டம், விக்கிரவாண்டி வட்டம், தென்னமாதேவி கிராமத்தைச் சேர்ந்த திரு.D.ஞானகுரு, த/பெ.தனபால் என்பவர் விழுப்புரம் மாவட்டம், வானூர் வட்டம், தொள்ளமூர் கிராமம், பட்டா புல எண்கள். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0), 101/1 (0.27.5), 101/7 (0.32.0), ஆகியவற்றில் 2.82.0 ஹெக்டேர் பரப்பளவில் பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை அனுமதி கோரி பார்வை 1-ல் காணும் விண்ணப்பத்தினை சமர்ப்பித்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக, விழுப்புரம் வருவாய் கோட்டாட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் அறிக்கையில் விழுப்புரம் மாவட்டம், வானூர் வட்டம், தொள்ளமூர் கிராமம், பட்டா புல எண்கள். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0) மற்றும் 100/5A (0.39.0) ஆகியவற்றில் 2.22.5 ஹெக்டேர் பரப்பளவில் உள்ள பட்டா நிலத்தில் திரு.D.ஞானகுரு, த/பெ.தனபால் என்பவருக்கு பத்தாண்டுகளுக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி

D. Suresh



உரிமம் வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என செய்துள்ளனர்.

- i. விண்ணப்ப புலன்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளியும் மற்றும் அரக புறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி மேற்கொள்ளப்பட வேண்டும்.
- ii. குவாரிப்பணி மேற்கொள்ளும் போது அருகிலுள்ள அரக புறம்போக்கு மற்றும் பட்டா நிலங்களுக்கு எவ்வித இடையூறும் இல்லாமல் குவாரிப்பணி செய்ய வேண்டும்.
- iii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை DGPS சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்ப்பிக்க வேண்டும்.
- iv. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-41ன்படி தகுதிவாய்ந்த நபரால் கரங்க திட்டம் தயார் செய்து துணை இயக்குநர் அவர்களின் ஒப்புதல் பெறவேண்டும்.
- v. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-42ன்படி மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்திடமிருந்து சுற்றுச்சூழல் சான்று பெற்று சமர்ப்பிக்கப்படவேண்டும்.

எனவே, விழுப்புரம் வருவாய் கோட்டாட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் கரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் பரிந்துரை அறிக்கையின் அடிப்படையில் விழுப்புரம் மாவட்டம், வானூர் வட்டம், தொள்ளமூர் கிராமம், பட்டா எண். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0) மற்றும் 100 5A (0.39.0) ஆகியவற்றில் 2.22.5 ஹெக்டேர் பரப்பளவில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன்படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 பத்து வருட காலத்திற்கு திரு. D.ஞானசூரு, த/பெ.தனபால் 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 கரங்க திட்டத்தினை தகுதிவாய்ந்த நபர் (QP) மூலமாக கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு தயாரித்த அதனை 90 தினங்களுக்குள் உதவி இயக்குநர் (புவியியல் மற்றும் கரங்கத்துறை) அவர்களின் பரிசீலனைக்கு சமர்ப்பிக்குமாறு விண்ணப்பதாரரை கேட்டுக்கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட கரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன்படி சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

- i. விண்ணப்ப புலன்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளியும் மற்றும் அரக புறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி மேற்கொள்ளப்பட வேண்டும்.



- 3 -

- ii. குவாரிப்பணி மேற்கொள்ளும் போது அருகிலுள்ள அரசு மூம்போக்கு மற்றும் பட்டா நிலங்களுக்கு எவ்வித இன யூறும் இலவாமல் குவாரிப்பணி செய்ய வேண்டும்.
- iii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை மூல சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்ப்பிக்க வேண்டும்.

உ. தனி இயக்குநர்,  
புவியியல் மற்றும் கரங்கத்தூறை,  
விழுப்புரம்.

*[Handwritten signature]*  
11.2.24

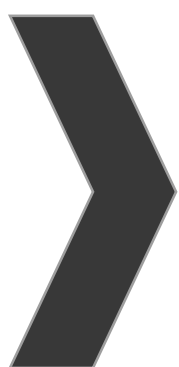
பெறுநர்  
திரு. D.ஞானகுரு,  
த/பெ.தனபால்,  
219/C, அய்யனார் கோவில் தெரு,  
தென்னமாதேவி கிராமம்,  
விக்கிரவாண்டி வட்டம்,  
விழுப்புரம் மாவட்டம்.

நகல்:-

1. மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.
2. ஆணையர், புவியியல் மற்றும் கரங்கத்தூறை, கிண்டி, சென்னை.

*[Handwritten signature]*





**ANNEXURE-2**





From  
Tmt. S.Safiya, M.Sc.,  
Assistant Director,  
Geology and Mining,  
Viluppuram.

To  
Thiru.D.Gnanaguru,  
S/o.Dhanapal,  
No.219/1C, Iyyanar Kovil Street,  
Tennamadevi Village,  
Vikravandi Taluk,  
Viluppuram District.

**Rc.No.A/G&M/116/2023 Dated 18.03.2024**

Sub: Mines & Minerals - Minor Mineral - Rough stone and Gravel - Viluppuram District - Vanur Taluk - Thollamur Village - over an extent of 2.22.5 hectares of patta lands - S.F.Nos. 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0) - Quarry lease application preferred by Thiru.D.Gnanaguru, S/o.Dhanapal - Precise area communicated - Submission of mining plan for approval - Approved - Regarding.

Ref: 1. Quarry lease application dated 29.09.2023 preferred by Thiru.D.Gnanaguru, S/o.Dhanapal, No.219/1C, Iyyanar Kovil Street, Tennamadevi Village, Vikravandi Taluk, Viluppuram District.  
2. Assistant Director, Geology and Mining, Viluppuram Letter Rc.No.A/G&M/116/2023 Dated 11.03.2024.  
3. Mining Plan submitted by Thiru.D.Gnanaguru, S/o.Dhanapal Dated 18.03.2024.

\*\*\*\*\*

In the reference 2<sup>nd</sup> cited, it has been communicated that the S.F.Nos. 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0) over an extent of 2.22.5 hectares of Thollamur Village, Vanur Taluk, Villupuram District as precise area for grant of quarry lease for quarrying rough stone and gravel for a period of 10 years to Thiru.D.Gnanaguru, S/o.Dhanapal with a direction to produce on Mining Plan for approval and to obtain Environment Clearance in respect of the precise area as per Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959.

2. Accordingly, the applicant has submitted the draft mining plan prepared by the Recognized Qualified Person for approval vide reference 3<sup>rd</sup> cited.

3. The draft mining plan submitted in respect of the precise area has been examined with reference to the provisions of Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the followings are observed.

- i) The Boundary Co-Ordinates (GPS readings) for the entire boundary pillars (4 Nos.) of the area have been incorporated and shown in the mining plan.

*D. Curry*

- ii) All the conditions stipulated in the Assistant Director, Geology and Mining, Viluppuram letter Rc.No.A/G&M/116/2023 dated 11.03.2024.
- iii) The available geological and minable reserves as follows.

Depth in Mts.	Geological reserves in Cu.m.	Minal Reserves in Cu.m.
32 m. below ground level	Rough stone: 640500 Gravel : 42700	Rough stone: 206595 Gravel : 30428

3. In the light of the above, in exercise of the powers confirmed under Rule 41 (7) of Tamil Nadu Minor Mineral Concession Rules, 1959 the mining plan in respect of Rough stone and gravel quarry to Thiru.D.Gnanaguru, S/o.Dhanapal is 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, 1986, 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.

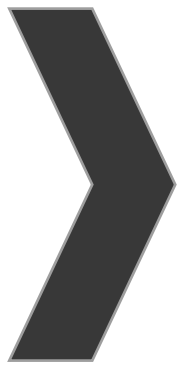
Encl: Two copies of Approved Mining Plan.

*[Signature]*  
Assistant Director,  
Dept. of Geology and Mining,  
Viluppuram.

Copy to:

*[Signature]*  
18.3.24  
The Commissioner of Geology and Mining, Chennai-32.

*[Signature]*



# APPROVAL MINING PLAN



# MINING PLAN FOR THOLLAMUR ROUGH STONE & GRAVEL QUARRY

(Prepared under rule 19(1), 41 & 42 of Tamil Nadu  
Minor Mineral Concession Rules, 1959)



## LOCATION OF THE QUARRY LEASE AREA

STATE : TAMIL NADU  
DISTRICT : VILUPPURAM  
TALUK : VANUR  
VILLAGE : THOLLAMUR  
S.F.NOS : 99/1, 99/3A, 100/1, 100/2  
AND 100/5A  
EXTENT : 2.22.5Ha

### ECO-FRIENDLY



### SUSTAINABILITY



### SAFETY



### FOR APPLICANT

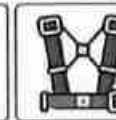
THIRU. D.GNANAGURU,  
S/o. Dhanapal,  
No.219/1C, Iyyanar Kovil street,  
Tennamadevi Village,  
Vikravandi Taluk,  
Viluppuram District.

### PREPARED BY

C.Natarajan, M.Sc.,M.Phil.,

### Qualified Person

No.93/36E2, Subramaniyar Kovil Street,  
Omalar Taluk, Salem District, Tamil Nadu,  
Pin code-636 455.  
Mobile: 97502 23535 & 94446 54520.



(PPE)

D. Cruz

D.Gnanaguru,  
S/o,Dhanapal,  
No.219/C, Iyyanar Kovil Street,  
Tennamadevi Village, Vikkiravandi Taluk,  
Viluppuram District.



**CONSENT LETTER FROM THE APPLICANT**

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 2.22.5hectares of Patta lands in S.F.Nos.99/1, 99/3A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State has been prepared by

**C.Natarajan, M.Sc.,M.Phil.,**

**Qualified Person**

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

**C.Natarajan, M.Sc.,M.Phil.,**

**Qualified Person**

No.93/36E2, Subramaniyar Kovil Street,  
Omalar Taluk, Salem District,  
Tamil Nadu, Pin code-636 455.  
Mobile:97502 23535 & 94446 54520.

I hereby undertake that all modifications so 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 building on me in all respects.

Signature of the Applicant

  
D.Gnanaguru

Place: Viluppuram

Date: 11.03.2024



D.Gnanaguru,  
S/o,Dhanapal,  
No.219/C, Iyyanar Kovil Street,  
Tennamadevi Village, Vikkiravandi Taluk,  
Viluppuram District.



**DECLARATION**

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 2.22.5hectares of Patta lands in S.F.Nos.99/1, 99/3A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State has been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Signature of the Applicant

*D. Gnanaguru*

D.Gnanaguru

Place: Viluppuram

Date: 11.03.2024

*D. Gnanaguru*

**C.Natarajan, M.Sc.,M.Phil.,**

**Qualified Person**

No.93/36E2, Subramaniyar Kovil Street,

Omalar Taluk, Salem District,

Tamil Nadu, Pin code-636 455.

Mobile:97502 23535 & 94446 54520.




CERTIFICATE

This is to certify that, the provisions of under rules 41 & 42 as Amended in under Tamil Nadu Minor Mineral Concession Rules, 1959, have been observed in the Mining Plan for the grant of **Rough Stone and Gravel** quarry lease over an extent of 2.22.5hectares of Patta lands in S.F.Nos.99/1, 99/3A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State applied by Thiru.D.Gnanaguru, for fresh quarry lease.

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.

Certified

Signature of Qualified Person.

  
C.Natarajan, M.Sc.,M.Phil.,

**Qualified Person**

C.NATARAJAN M.Sc.,M.Phil.,  
Qualified Person

Place: Salem

Date: 12.03.2024

*D. Cms*





**C.Natarajan, M.Sc.,M.Phil.,**

**Qualified Person**

No.93/36E2, Subramaniyar Kovil Street,  
Omalur Taluk, Salem District,  
Tamil Nadu, Pin code-636 455.  
Mobile:97502 23535 & 94446 54520.

**CERTIFICATE**

Certified that, in preparation of Mining Plan for **Rough Stone and Gravel** quarry over an extent of 2.22.5hectares of Patta lands in S.F.Nos.99/1, 99/3A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State for Thiru.D.Gnanaguru, covers all the provisions of Mines Act, Rules, and Regulations etc., made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Certified

Signature of Qualified Person.

  
**C.Natarajan, M.Sc.,M.Phil.,**  
**Qualified Person**

**C.NATARAJAN M.Sc.,M.Phil.,**  
**Qualified Person**

Place: Salem

Date: 12.03.2024

*D. Cruz*

## CERTIFICATE



Certified that I, C.Natarajan, residing at No.93/36 E2, Subramanyar Kovil Street, Omalur Taluk, Salem District, Tamil Nadu, Pin Code-636 455. I am a Post graduate in Geology (M.Sc., Geology) from Annamalai university and more than five years of experience in mining Field.

Rule 15(1)(a) and (b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) concession Rules 2016 stipulates the eligibility for preparing Mining Plans as "(1)(a) a post graduate degree in Geology granted by a university established" and (1)(b) "Professional experience of five years of working in a supervisory capacity in the field of mining after obtaining the degree". Since my qualification and experience are satisfied the Rule (1)(a) and (1)(b) of 15 of the Said Rules, I am eligible to prepare Mining Plans for both Major and Minor Minerals.

Accordingly I prepared this Mining Plan in respect of Rough Stone and Gravel quarry lease applied for an extent of 2.22.5hectares of Patta land in S.F.Nos.99/1, 99/3A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District by Thiru. D.Gnanaguru, for a period of Ten years. Since the Mining Plan is prepared as per the provisions contained in Rule 15(1) (a) and (b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) concession Rules 2016, the same may be approved by the Competent Authority.

  
C.Natarajan, M.Sc., M.Phil.,

Qualified Person

C.NATARAJAN M.Sc., M.Phil.,

Qualified Person

Place: Salem

Date: 12.03.2024



**CONTENTS**



S. No.	Description	Page No.
1.0	Introduction	1
2.0	General Information	5
3.0	Location	6
4.0	Geology and Mineral Reserves	8
5.0	Mining	12
6.0	Blasting	15
7.0	Mine Drainage	16
8.0	Other Permanent Structures	17
9.0	Employment Potentials & Welfare Measures	18
10.0	Environment Management Plan	20
11.0	Mine Closure Plan	23
12.0	Any Other Details Intend to furnish by the Applicant	24

*D. Cruz*



**Annexure**

S. No.	Description	Annexure No.
1.0	Precise Area Communication letter issued by the Assistant Director, Department of Geology and Mining,	I
2.0	Copy of FMB	II
3.0	Copy of village map	III
4.0	Copy of Patta	IV
5.0	Copy of Adangal	V
6.0	Copy of A Register	VI
7.0	Copy of Identity Proof	VII
8.0	Copy of QP Certificate	VIII

**LIST OF PLATES**

S. No.	Description	Plate No.
1.0	Location Plan	I
2.0	Environmental Plan	I-A
3.0	Satellite imagery map	I-B
4.0	Topo sketch of Quarry lease applied area for 10Km Radius	I-C
5.0	Key Plan	I-D
6.0	Quarry lease & Surface plan	II
7.0	Topography, Geological, plan and sections	III
8.0	Mineable plan and sections	IV
9.0	Year wise Development and Production Plan & Sections	V
10.0	Conceptual Plan & Sections	VI

*D. C. S.*



## MINING PLAN FOR MINOR MINERALS

### ROUGH STONE AND GRAVEL

Over an extent of 2.22.5hectares of Patta land in S.F.Nos.99/1, 99/3A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State.

(PREPARED UNDER RULE 19(1), 41 and 42 OF TNMMCR 1959)

#### **1.0 Introduction and Executive Summary;**

1. The present Mining Plan is prepared for Thiru.D.Gnanaguru, S/o. Dhanapal, residing at No.219/1C, Iyyanar Kovil street, Tennamadevi Village, Vikkiravandi Taluk, Viluppuram District.
2. The application was processed by the Assistant Director, Department of Geology and Mining, Viluppuram, and passed an order vide Rc.No.A/G&M/116/2023 dated 11.03.2024 directing the applicant to produce approved Mining Plan under Rule 41(5) of the Tamil Nadu Minor Mineral Concession Rules, 1959 and Environmental Clearance Certificate under Rule 42 from the State Level Environmental Impact Assessment Authority (SEIAA) for the grant of quarry lease to quarry **Rough Stone and Gravel** over an extent of 2.22.5 hectares of Patta lands in S.F.Nos. 99/1, 99/3A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District of Tamil Nadu State for a period of ten years.
3. Accordingly, Mining Plan is prepared under the provisions of rule 19(1), 41 and 42 as per the amendments under Tamil Nadu Minor Mineral Concession Rules, 1959 by incorporating following the conditions imposed in the precise area communication letter.
  - a) A safety distance of 7.5m shall be maintained to the adjacent patta lands and safety distance of 10m shall be maintained to government poramboke land while quarrying operation.
  - b) The applicant should not cause any hindrance to adjoining government lands and patta lands while rough stone quarrying operations.
  - c) The applicant should be submit DGPS survey report before the grant of quarry lease.



4. Geological Resources is estimated at 6,40,500m<sup>3</sup> of Rough stone and 12,700m<sup>3</sup> of gravel formation and Mineable Reserves is estimated at 2,06,595m<sup>3</sup> of Rough Stone and 30,428m<sup>3</sup> of gravel formation and after leaving necessary safety distance from the lease boundary as indicated in the precise area letter and relevant mining laws in force.
5. The production schedule is proposed production of 2,06,595m<sup>3</sup> of Rough Stone, 30,428m<sup>3</sup> of gravel formation for the period of first five years.
6. The applicant ensured that, child labours under 18 years of age will not be engaged for quarrying operation.
7. The applicant ensure that will appoint should have valid certified persons (Mines Manager, Foreman, Mate) during quarrying operation.
8. Environmental parameters,
  - i) The area does not attract the Forest Conservation Act, 1980 as there is no forest around 10km radius.
  - ii) There is no interstate boundary around 3.0Kms radius.
  - iii) There is no wild life animal sanctuary within 10Kms radius from the project site area under the Wildlife (Protection) Act, 1972.

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

9. Environmental measures to be adopted shall be,
  - i) Dust Control at source while drilling and blasting,
  - ii) Dust suppression at loading point and transport haul roads,
  - iii) Noise Control in blasting, control of fly rock missiles and vibration by doing peak particle velocity with in standard as prescribed by the DGMS and MOEF.
  - iv) Unnecessary land degradation should be avoided or damaged land should be reclaimed or rehabilitated.
  - v) Avoid uneven rat hole mining and follow scientific and systematic mining by safe bench system of open cast mining.
  - vi) Mining near major fracture zones if any should be avoided to control ground water fluctuation in the adjacent agricultural lands.



- vii) Emission test of vehicles should be in tack to maintain minimum emission level of flue gases.
- viii) Noise level should not exceed 80db and the vehicles should use only permitted Air Horn while on road near residential areas.
- ix) Safety zones as prescribed by the Department of Geology and Mining from adjacent infrastructures should be strictly adhere to.
- x) And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

**EXECUTIVE SUMMARY:**

a.	Name of the Village Panchayat	:	Thollamur
b.	Name of the Panchayat Union	:	Vanur
c.	The proposed total Movable Reserves	:	2,06,595m <sup>3</sup> of Rough Stone, 30,428m <sup>3</sup> of gravel formation
d.	The proposed quantity of reserves (level of production) for Five years to be mined is(Recoverable reserves)	:	2,06,595m <sup>3</sup> of Rough Stone, 30,428m <sup>3</sup> of gravel formation
e.	Total extent of the area	:	2.22.5Ha
f.	Proposed Period of mining	:	Five Years
g.	Existing depth	:	It is fresh quarry lease applied area
h.	Proposed Depth of mining	:	32m below ground level for the proposed mining plan.
i.	Method of mining/level of mechanization	:	Opencast, Semi-mechanized Mining with a bench height of 5m and bench width of 5m is proposed.
j.	Types of Machineries used in the quarry	:	Machineries like Tractor mounted compressor attached with Jack hammers, Excavators are proposed to deploy for quarrying operation.
k.	Cost of the Project		
	A. Fixed Assets Cost		Rs. 16,35,000/-
	B. Operational Cost		Rs. 51,50,000/-
	C. EMP Cost		Rs. 5,40,000/-
			Total Project cost(A+B+C)= <b>Rs.73,25,000/-</b>



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

Corners	Co- ordinates		Distance between the corners
	Latitude	Longitude	
1	12° 02' 58.65"N	79° 39' 57.68"E	1-2 = 31.6m
2	12° 02' 59.63"N	79° 39' 58.01"E	2-3 = 113.0m
3	12° 03' 03.16"N	79° 39' 59.06"E	3-4 = 22.0m
4	12° 03' 03.30"N	79° 39' 58.35"E	4-5 = 76.4m
5	12° 03' 05.77"N	79° 39' 58.64"E	5-6 = 8.2m
6	12° 03' 05.89"N	79° 39' 58.40"E	6-7 = 30.0m
7	12° 03' 06.84"N	79° 39' 58.62"E	7-8 = 55.2m
8	12° 03' 06.21"N	79° 40' 00.32"E	8-9 = 49.2m
9	12° 03' 04.67"N	79° 39' 59.86"E	9-10 = 51.0m
10	12° 03' 04.35"N	79° 40' 01.52"E	10-11 = 42.6m
11	12° 03' 05.70"N	79° 40' 01.85"E	11-12 = 4.0m
12	12° 03' 05.67"N	79° 40' 01.98"E	12-13 = 13.0m
13	12° 03' 05.52"N	79° 40' 02.38"E	13-14 = 49.4m
14	12° 03' 03.96"N	79° 40' 01.99"E	14-15 = 16.0m
15	12° 03' 04.09"N	79° 40' 01.48"E	15-16 = 42.2m
16	12° 03' 02.76"N	79° 40' 01.13"E	16-17 = 15.6m
17	12° 03' 02.66"N	79° 40' 01.64"E	17-18 = 59.0m
18	12° 03' 02.13"N	79° 40' 03.51"E	18-19 = 28.2m
19	12° 03' 01.21"N	79° 40' 03.44"E	19-20 = 8.4m
20	12° 03' 01.18"N	79° 40' 03.16"E	20-21 = 10.4m
21	12° 03' 00.84"N	79° 40' 03.08"E	21-22 = 63.8m
22	12° 03' 01.34"N	79° 40' 01.03"E	22-23 = 85.4m
23	12° 02' 58.58"N	79° 40' 00.70"E	23-24 = 10.6m
24	12° 02' 58.50"N	79° 40' 01.04"E	24-25 = 15.0m
25	12° 02' 58.03"N	79° 40' 00.93"E	25-1 = 100.0m



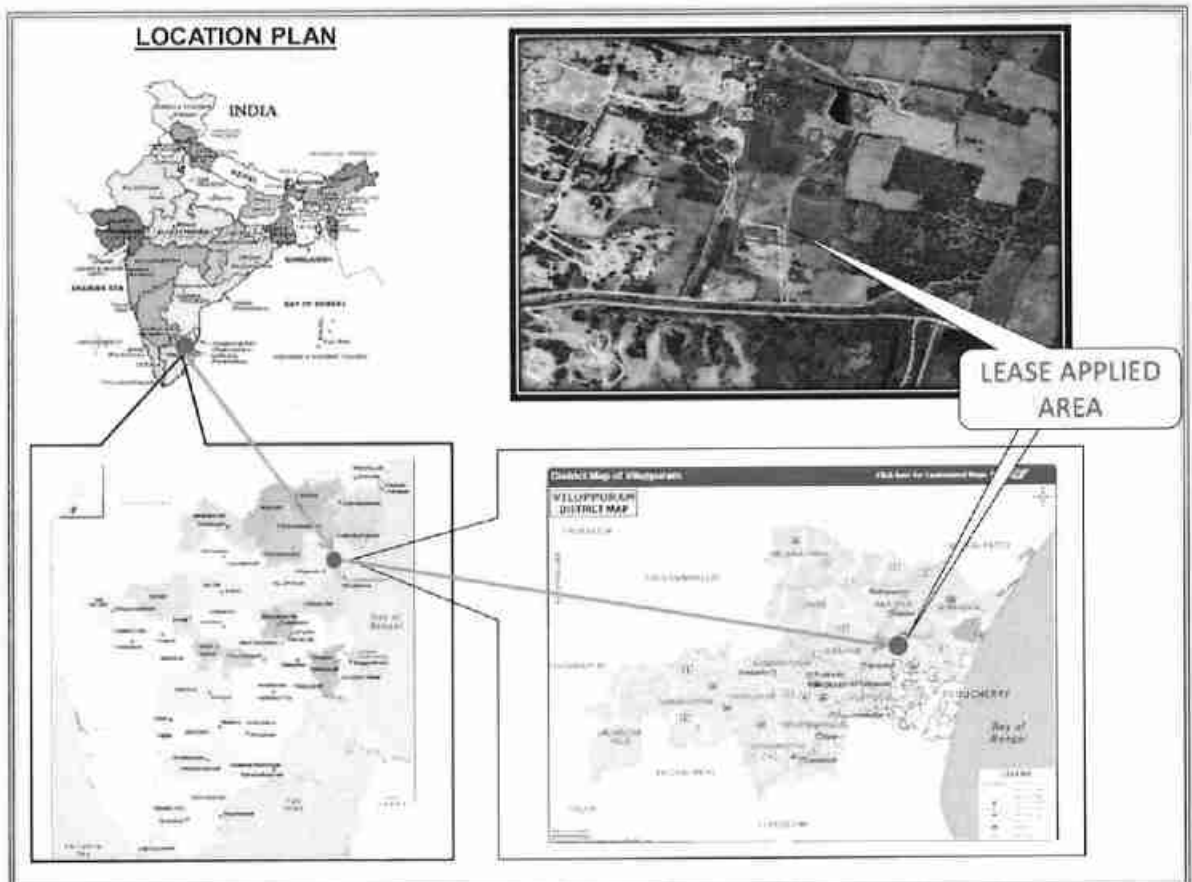
<b>2.0 General Information:</b>			
2.1	a.	Name of the Applicant	: Thiru.D.Gnanaguru,
	b.	Address of the Applicant with phone No and e-mail id if any	: S/o. Dhanapal, No.219/1C, Iyyanar Kovil street, Tennamadevi Village, Vikkiravandi Taluk, Viluppuram District. Pin Code- 605601 Cell No.:98430 64178 & 98431 64178
	c.	Status of the Applicant	: Individual
2.2	a.	Mineral Which the applicant intends to mine	: Rough Stone and Gravel.
	b.	Precise area communication letter No.	: Precise area communication letter received from the Assistant Director, Department of Geology and Mining, Viluppuram, vide Rc.No.A/G&M/116/2023 dated 11.03.2024.
	c.	Period of permission / lease granted	: The Assistant Director, Department of Geology and Mining, Viluppuram, has grant of lease period for <b>ten years</b> .
	d.	Name and Address of the QP preparing Mining Plan	: <b>C.Natarajan, M.Sc.,M.Phil., Qualified Person</b> No.93/36E2, Subramaniyar Kovil Street, Omalur Taluk, Salem District, Tamil Nadu, Pin-636 455. Mobile: 97502 23535 & 94446 54520.





**3.0 Location:**

S.No	Details of the Area:	
1	Corner Coordinates	Latitude :12°02'58.03"N to 12°03'06.84"N Longitude :79°39'57.68"E to 79°40'03.51"E
2	Toposheet Number	57- P/12
3	The altitude of the area	75m (MSL)
4	Extent	2.22.5Ha
5	Survey Nos	99/1, 99/3A, 100/1, 100/2 and 100/5A
6	Village	Thollamur
7	Taluk	Vanur
8	District	Viluppuram
9	State	Tamil Nadu





a.	Classification of the Area (Ryotwari / poramboke / others)	:	Patta land
b.	Ownership / Occupancy of the Applied area (Surface rights)	:	It is patta land registered in the name of applicant vide patta nos.1420 and 1389, Please refer Annexure No: IV.
c.	Toposheet No. with Latitude and Longitude	:	Topo Sheet No: 57-P/ 12 : Latitude :12°02'58.03"N to12°03'06.84"N : Longitude :79°39'57.68"E to79°40'03.51"E
d.	Existence of Public Road / Railway line if any nearby the area and approximate distance	:	There is an existing road from the area leads to Thollamur- Ambuzhkkai village road on southern side of the area.  The Nearest Railway line is Viluppuram to Chennai line which is about 13Km on northwestern side of the area.

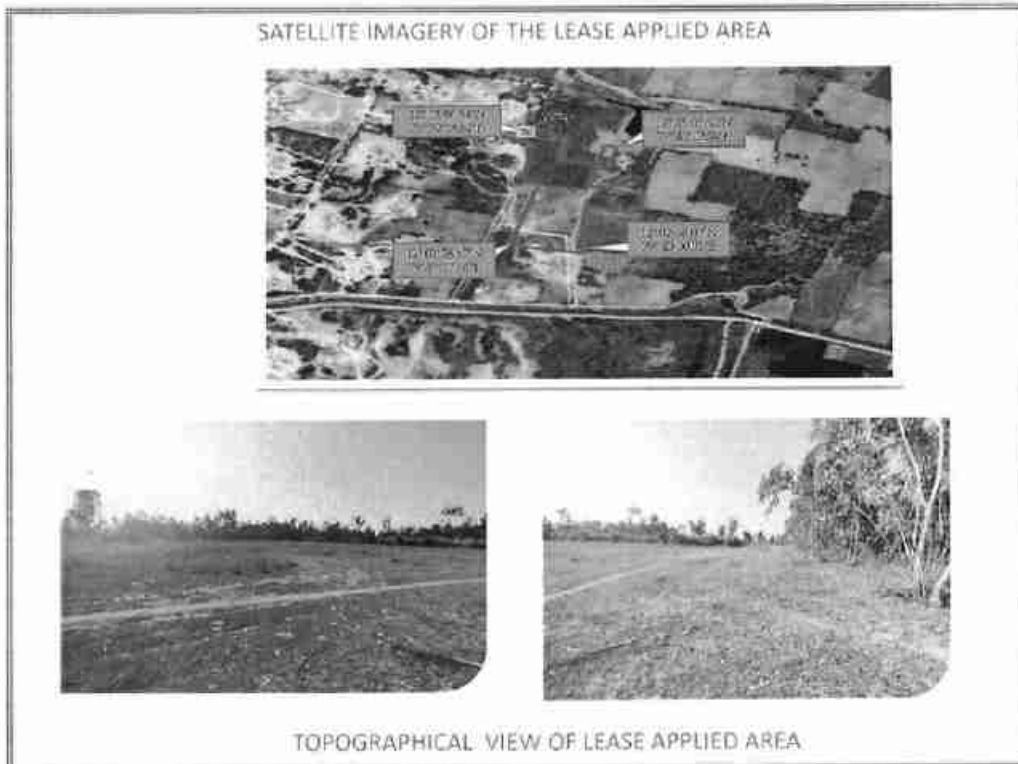


Fig. Location of the lease applied area



**PART - A**

**4.0 Geology and Mineral Reserves:**

4.1	a. Topography	<p>: ➤ The area applied for quarry lease is exhibits almost plain topography covered by Gravel formation. The massive Charnockite formation is noticed below 2m (Avg) Gravel formation and sloping towards southeastern side of the area, the altitude of the area is above 75m (maximum) from MSL.</p> <p>➤ No major river is found nearby the lease applied area.</p> <p>➤ Water table is found at a depth of 65m in summer and 62m in rainy seasons.</p> <p>➤ Temperature of the area is reported to be 18°C to a maximum of 42°C during summer.</p> <p>➤ Rainfall of this area is about 800mm to 900 mm during the both NE &amp; SW monsoons.</p>
	b. General Geology of the Area	<p>: The area is underlain by the wide range of metamorphic rocks of peninsular gneissic complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The geological formations found in the district are Archaean rocks like Gneisses, Granites, Charnockites basic granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite.</p> <p>The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock.</p> <p>The strike of the Charnockite formation is N45°E -S45°W with dipping towards SE80°.</p> <p>The general geological succession of the area is given as under.</p>



			<b>AGE</b>	<b>ROCK TYPE</b>
			Recent	Gravelly soil Unconformity
			Archaean	Dolerite dyke Charnockite.  Peninsular Gneissic complex and Calc Gneiss
4.2		Details of Exploration already carried out if any	:	No exploration was carried out, as the Rough stone formations are clearly visible from adjacent existing quarry pit.
4.3	a.	Estimation of Reserves	:	The Geological and Recoverable reserves are estimated by cross sectional method. Totally six sections have been drawn, three sections drawn length wise as (X-Y), (X1-Y1), (X2-Y2) and another three sections drawn width wise as (A-B), (C-D), (E-F) to cover maximum area considered for lease. The Plans and Sections have been drawn with a scale of 1:1000 and 1:500 respectively. Please refer plate No.III.

**a. Geological Resources**

The quarrying is restricted up to a depth of 32m below ground level only, availability of resources is given below.

Table No-1

Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume m <sup>3</sup>	Gravel in m <sup>3</sup>	Geological Resources Rough stone in m <sup>3</sup>
XY-AB	I	104	32	2	6656	6656	
	II	104	32	5	16640		16640
	III	104	32	5	16640		16640
	IV	104	32	5	16640		16640
	V	104	32	5	16640		16640
	VI	104	32	5	16640		16640
	VII	104	32	5	16640		16640
<b>Total</b>						<b>6656</b>	<b>99840</b>
X1Y1-AB	I	58	58	2	6728	6728	
	II	58	58	5	16820		16820
	III	58	58	5	16820		16820
	IV	58	58	5	16820		16820
	V	58	58	5	16820		16820
	VI	58	58	5	16820		16820
	VII	58	58	5	16820		16820
<b>Total</b>						<b>6728</b>	<b>100920</b>



X1Y1- CD	I	28	60	2	3360	3360	
	II	28	60	5	8400		8400
	III	28	60	5	8400		8400
	IV	28	60	5	8400		8400
	V	28	60	5	8400		8400
	VI	28	60	5	8400		8400
	VII	28	60	5	8400		8400
	<b>Total</b>					<b>3360</b>	
X1Y1-EF	I	108	86	2	18576	18576	
	II	108	86	5	46440		46440
	III	108	86	5	46440		46440
	IV	108	86	5	46440		46440
	V	108	86	5	46440		46440
	VI	108	86	5	46440		46440
	VII	108	86	5	46440		46440
	<b>Total</b>					<b>18576</b>	
X2Y2- CD	I	45	82	2	7380	7380	
	II	45	82	5	18450		18450
	III	45	82	5	18450		18450
	IV	45	82	5	18450		18450
	V	45	82	5	18450		18450
	VI	45	82	5	18450		18450
	VII	45	82	5	18450		18450
	<b>Total</b>					<b>7380</b>	
<b>Grand Total</b>					<b>42700</b>		<b>640500</b>

Gravel Formation : 42,700m<sup>3</sup>

The Geological Resources of Rough stone : 6,40,500m<sup>3</sup>



**b. Mineable Reserve**

The mineable reserve calculated by deducting 7.5m safety distance and

Table No-2

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m <sup>3</sup>	Gravel in m <sup>3</sup>	Mineable Reserves of Rough stone in m <sup>3</sup>
XY-AB	I	88	24	2	4224	4224	
	II	83	22	5	9130		9130
	III	73	17	5	6205		6205
	IV	63	12	5	3780		3780
	V	53	7	5	1855		1855
	<b>Total</b>						<b>4224</b>
X1Y1-AB	I	50	50	2	5000	5000	
	II	48	48	5	11520		11520
	III	43	43	5	9245		9245
	IV	38	38	5	7220		7220
	V	33	33	5	5445		5445
	VI	28	28	5	3920		3920
	VII	23	18	5	2070		2070
	<b>Total</b>						<b>5000</b>
X1Y1-CD	I	28	52	2	2912	2912	
	II	28	50	5	7000		7000
	III	28	45	5	6300		6300
	IV	28	40	5	5600		5600
	V	28	30	5	4200		4200
	VI	28	20	5	2800		2800
	<b>Total</b>						<b>2912</b>
X1Y1-EF	I	100	70	2	14000	14000	
	II	98	65	5	31850		31850
	III	93	55	5	25575		25575
	IV	88	45	5	19800		19800
	V	83	35	5	14525		14525
	VI	78	25	5	9750		9750
	VII	73	15	5	5475		5475
	<b>Total</b>						<b>14000</b>
X2Y2-CD	I	29	74	2	4292	4292	
	II	24	72	5	8640		8640
	III	14	67	5	4690		4690
	<b>Total</b>						<b>4292</b>
<b>Grand Total</b>						<b>30428</b>	<b>206595</b>

The mineable reserve is computed as 2,06,595m<sup>3</sup> of Rough stone and 30,428m<sup>3</sup> of Gravel formation upto a depth 32m below ground level only.





<b>5.0 Mining:</b>	
5.1	Method of Mining : 1. Opencast method of semi mechanized mining with 5.0m height 5m width of the bench. 2. However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106(2) (b) as above is seldom possible due to various inherent petrogenetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of mines safety for which necessary provision is available with the regulation 106 (2) (b) of MMR-1961, under Mine Act-1952.
5.2	Mode of Working : The rough stone is proposed to quarry 5m bench height, 5m width with conventional opencast semi-Mechanized method. The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough stone to the needy crushers/other buyers. The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining. Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers/other buyers. Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast semi mechanized method of mining.
5.3	Proposed bench height & Width : Quarrying of Rough Stone is proposed bench height of 5m and bench width of 5m.
5.4	Details of Overburden / Mineral Production proposed for the first 5 years. : The overburden in the form of Gravel, after the excavation of Gravel and Rough stone will be directly loaded into tipper to the needy crushers/other buyers for road project and construction works for filling and leveling of low lying areas.

*D. Cruz*





**The Yearwise Production and Development Table**

Table No -3

Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m <sup>3</sup>	Gravel in m <sup>3</sup>	Miscellaneous rough stone in m <sup>3</sup>
I	XY-AB	I	88	24	2	4224	4224	
		II	83	22	5	9130		9130
		III	73	17	5	6205		6205
		IV	63	12	5	3780		3780
		V	53	7	5	1855		1855
	X1Y1-AB	I	50	50	2	5000	5000	
		II	48	48	5	11520		11520
		III	43	43	5	9245		9245
	<b>Total</b>							<b>9224</b>
II	X1Y1-CD	I	28	52	2	2912	2912	
		II	28	50	5	7000		7000
		III	28	45	5	6300		6300
	X2Y2-CD	I	29	74	2	4292	4292	
		II	24	72	5	8640		8640
		III	14	67	5	4690		4690
	X1Y1-EF	I	25	70	2	3500	3500	
		II	25	65	5	8125		8125
		III	25	55	5	6875		6875
<b>Total</b>							<b>10704</b>	<b>41630</b>
III	X1Y1-EF	I	75	70	2	10500	10500	
		II	73	65	5	23725		23725
		III	63	55	5	17325		17325
	<b>Total</b>							<b>10500</b>
IV	X1Y1-EF	III	5	55	5	1375		1375
		IV	88	45	5	19800		19800
	X1Y1-CD	IV	28	40	5	5600		5600
		V	11	30	5	1650		1650
	X1Y1-AB	IV	38	38	5	7220		7220
		V	33	33	5	5445		5445
<b>Total</b>								<b>41090</b>
V	X1Y1-CD	V	17	30	5	2550		2550
		VI	28	20	5	2800		2800
	X1Y1-EF	V	83	35	5	14525		14525
		VI	78	25	5	9750		9750
		VII	73	15	5	5475		5475
	X1Y1-AB	VI	28	28	5	3920		3920
		VII	23	18	5	2070		2070
<b>Total</b>								<b>41090</b>
<b>Grand Total</b>							<b>30428</b>	<b>206595</b>

The applicant has proposed to carry out 2,06,595m<sup>3</sup> of Rough stone and 30,428m<sup>3</sup> of Gravel formation upto a depth of 32m below ground level for the period of first five years.

*D. Cruz*



5.5	Machineries to be used																		
	a. Drilling	: It is proposed to use following machineries for quarrying rough stone																	
		S.No	Type	Nos	Dia Hole mm	Make	Motive power												
		1	Jack hammer	4	32	Atlas Copco	Compressed air												
		2	Compressor	1	-	Atlas Capco	Diesel Drive												
	b. Loading	: Excavator of 0.90m <sup>3</sup> bucket capacity (with Rock breaker attachment) (1No).																	
	c. Transportation	: Tipper 3Nos (5/10Ts) capacity.																	
5.6	Disposal of Overburden	: The overburden in the form of Gravel, after the excavation gravel will be directly loaded into tipper to the needy buyers for road project and construction works for filling and leveling of low lying areas.																	
5.7	Brief Note on Conceptual Mining Plan for the entire lease period	<p>: Conceptual Mining Plan is prepared with an object of ten years of systematic development of bench lay outs, selection of ultimate pit limit, depth of quarrying, ultimate pit slope, selection of sites for construction of infrastructures etc.</p> <p>Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc.</p> <p>Ultimate Pit dimension is given as under,</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="4">Ultimate Pit dimension</th> </tr> <tr> <th>Pit No</th> <th>Length (max) in (m)</th> <th>Width (Avg) in (m)</th> <th>Depth(max) in(m)</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>178</td> <td>85</td> <td>32</td> </tr> </tbody> </table> <p>Afforestation has been proposed on all along the boundary barrier by planting trees.</p> <p>All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be carried out every year as per the MOEF norms.</p>						Ultimate Pit dimension				Pit No	Length (max) in (m)	Width (Avg) in (m)	Depth(max) in(m)	I	178	85	32
Ultimate Pit dimension																			
Pit No	Length (max) in (m)	Width (Avg) in (m)	Depth(max) in(m)																
I	178	85	32																

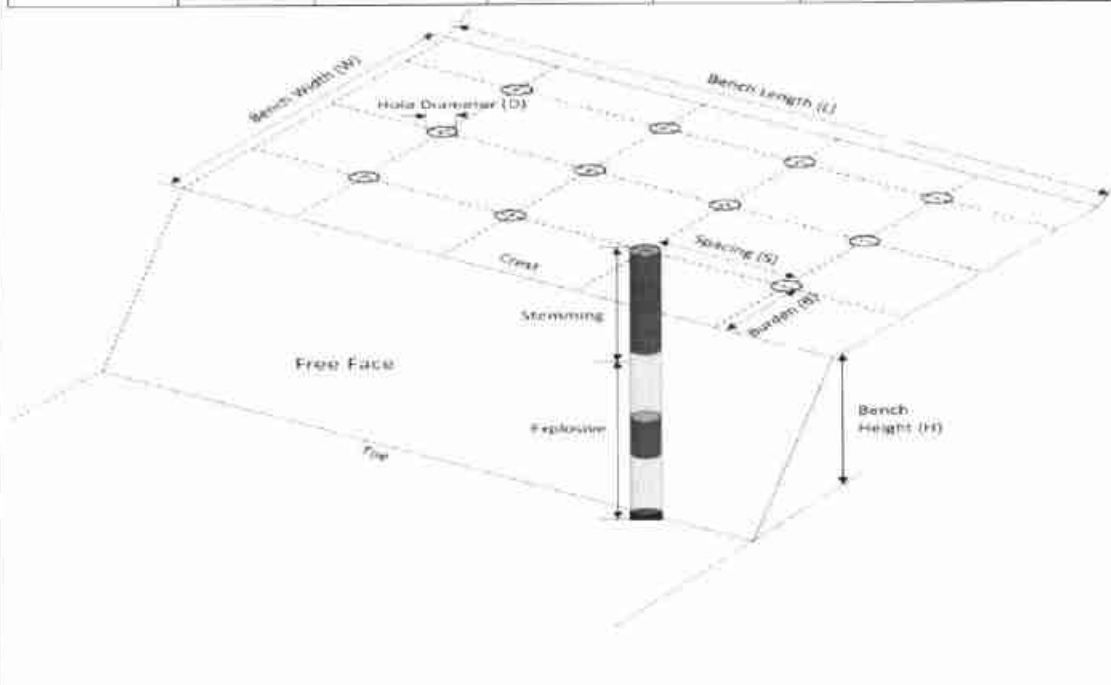
*D. Cruz*



**6.0 Blasting:**

6.1 Blasting Pattern : The massive formation shall be broken into pieces of portable size by drilling and blasting using jack hammers and shot hole blasting. Powder factor of explosives for breaking such hard rock shall be in the order of 6 to 7 Tonnes per K.g of explosives. Blasting parameters are as follows.

Diameter of the hole	Spacing	Depth	Burden for hole	Pattern of hole	Inclination of hole
32-36mm	0.6m	1 to 1.5m	0.6m	Zig Zag	70° from the horizontal



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



6.3	Measures proposed to minimize ground vibration due to blasting	<p>: &gt; Controlled blasting measures will be adopted for minimizing ground vibration and fly rock.</p> <p>&gt; Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly rock.</p> <table border="1" data-bbox="778 600 1358 808"> <tr> <td>Number of holes</td> <td>: 120</td> </tr> <tr> <td>Powder factor</td> <td>: 6Ts/Kg of explosives</td> </tr> <tr> <td>Total explosive required</td> <td>: 60Kg slurry explosives</td> </tr> <tr> <td>Charge / hole</td> <td>: 0.5Kg</td> </tr> <tr> <td>Blasting time</td> <td>: 12-2 Pm</td> </tr> </table>	Number of holes	: 120	Powder factor	: 6Ts/Kg of explosives	Total explosive required	: 60Kg slurry explosives	Charge / hole	: 0.5Kg	Blasting time	: 12-2 Pm
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Charge / hole	: 0.5Kg											
Blasting time	: 12-2 Pm											
6.4	Storage of Explosives and safety measures to be taken while blasting.	<p>: &gt; The applicant will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/ mines manager.</p> <p>&gt; <b>The applicant ensure that will appoint the Mate (Should have Valid Blaster Certificate) during Blasting Operation.</b></p>										
<b>7.0 Mine Drainage:</b>												
7.1	Depth of Water table	<p>: The ground water table is reported as 65m below ground level. In the proposed mining plan only 32m (below ground level) depth has been envisaged as workable depth for safe &amp; economic quarrying for the entire lease period. Hence the quarrying operation may not affect the ground water.</p>										
7.2	Arrangement and Places where the mine water is finally proposed to be discharged	<p>: The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300lpm and it shall be pumped about periodically by a stand by diesel powered Centrifugal pump motivated with 7.5H.P.Motor. The quality of water is potable and it is not contaminated with any hazardous things. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water stored in the old pit will also be used for plantation purposes</p>										



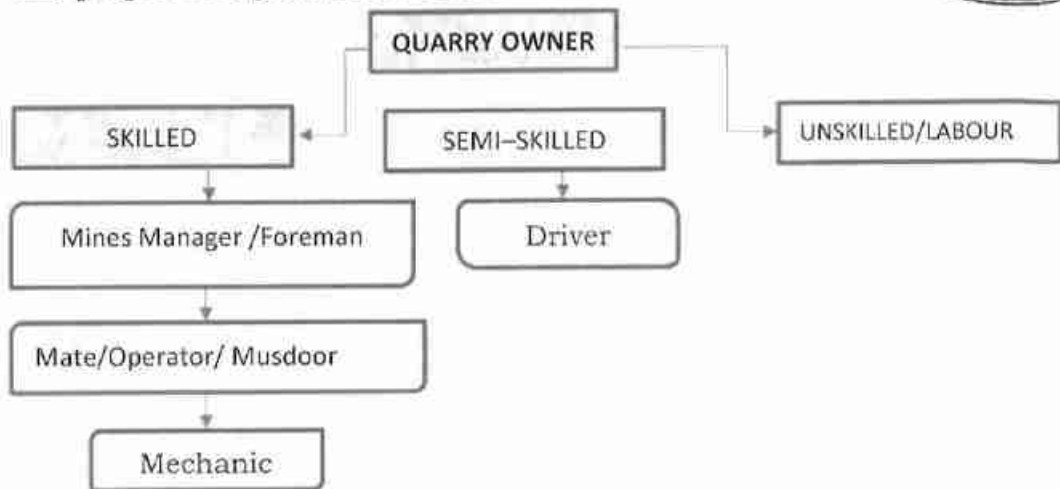
<b>8.0 Other Permanent Structures:</b>		
8.1	Habitations / Village	: There are no habitations within a radius of 300m.
8.2	Power lines (HT/LT)	: There is no Power line (HT/LT) passing within a radius of 50m.
8.3	Water bodies (River, Pond, Lake, Odai, Channel etc)	: There is a seasonal odai passing on southern side of the area and is 140m away from the lease applied area, there is tank situated on southern and northeastern side of the area and is 150m and 420m away from the area.
8.4	Archeological / Historical Monuments	: There are no Archeological / Historical Monuments within a radius of 300m.
8.5	Road (NH, SH, Village Road etc)	: The National Highway (NH-32) Thindivanam – Thoothukudi is about 9km on northeastern side of the area. The State Highway (SH-136) Vellemedupettai – Puducherry is about 1.9Km on northern side of the area.
8.6	Places of Worship	: There are no Places of Worship within a radius of 50m.
8.7	Reserved Forest / Forest / Social Forest / Wild Life Sanctuary etc.,	: There is no Reserved Forest / Wild Life Sanctuary etc., within a radius of 1Km.
8.8	Any Interstate Border, Protected areas under the Wild Life (Protection) Act, 1972, Critically Polluted Areas as Identified by Central Pollution Control Board and Notified Eco sensitive areas	: There are No inter State border within a radius of 3.0Kms.
8.9	Any Other Structures	: Nil



**9.0 Employment Potential & Welfare Measures:**

9.1 Employment Potential (Management & Supervisory personal)

**The proposed organization chart**



1.	Skilled	Mines Manager	1 No.
		Foreman / Mate	2 No.
		Operator	6 No.
		Mechanic	1 No.
2.	Semi-skilled	Driver	3 No.
3.	Unskilled	Labours	12Nos
Total =			25Nos

Allowing 10% absentee, the no. of men of roll will be around 22.

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

- **It is been ensured that, child labours under 18 years of age will not be engaged for quarrying operation.**
- **Necessary life insurance policies will be taken by the applicant to all the employees up to the end of the lease period.**

9.2 Welfare Measures

a. Drinking Water

: Packaged drinking water is available from the nearby approved water vendors in Thollamur village which is about 0.9Km on eastern side of the area.



b.	Sanitary facilities	: Semi-permanent latrines & urinals shall be maintained at convenient places for use of labourers as per the provisions of Rule (33) of the Mines Rules, 1960 separately for males and females. Washing facilities shall also be arranged as per rule (36) of the Mines Rules, 1960.
c.	First Aid Facility	: First aid kits are kept in Mines office room, in case of such eventualities the victim will be given first aid immediately at the site and injured person will be taken to the hospital. Hospital is available at distance of 7.5Km (SE) in Vanur the competent and Statutory foreman/ permit manager will be in charge of first aid.
d.	Labour Health	: As per Mines Rule, Periodic medical examination related to occupational health safety will be conducted to all the workers in applicant's own cost.
e.	Precautionary safety measures to the Labourers:	
	<p>Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc., have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation.</p> <p>Necessary training will be conducted once in a year to all the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation.</p> <div data-bbox="399 1321 821 1915" data-label="Image"> </div> <div data-bbox="869 1344 1428 1892" data-label="Image"> </div>	

*D. Cruz*





**PART - B**

**10.0 Environmental Management Plan:**

10.1	Existing Land Use Pattern	<p>: 1. The area exhibits almost plain area covered by Gravel formation.</p> <p>2. Quarrying operation is proposed up to a depth of 32m below ground level for the proposed mining plan period.</p> <p>3. Fluctuation of Water table in this area is in between 65m and 62m during a year.</p> <p>4. This region receives the average annual rainfall of 800mm to 900mm. The surrounding area is practiced by the seasonal cultivation.</p> <p>The existing land use pattern is given as under.</p> <p align="center">Table No-4</p> <table border="1" data-bbox="694 873 1412 1131"> <thead> <tr> <th>Sl. No.</th> <th>Land Use</th> <th>Present Area (Ha)</th> <th>Area in use during the quarrying period (Ha)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Quarrying Pit</td> <td>Nil</td> <td>1.51.5</td> </tr> <tr> <td>2.</td> <td>Infrastructure</td> <td>Nil</td> <td>0.02.0</td> </tr> <tr> <td>3.</td> <td>Roads</td> <td>Nil</td> <td>0.01.0</td> </tr> <tr> <td>4.</td> <td>Green Belt</td> <td>Nil</td> <td>0.68.0</td> </tr> <tr> <td>5.</td> <td>Unutilized</td> <td>2.22.5</td> <td>Nil</td> </tr> <tr> <td></td> <td><b>Total =</b></td> <td><b>2.22.5</b></td> <td><b>2.22.5</b></td> </tr> </tbody> </table>	Sl. No.	Land Use	Present Area (Ha)	Area in use during the quarrying period (Ha)	1.	Quarrying Pit	Nil	1.51.5	2.	Infrastructure	Nil	0.02.0	3.	Roads	Nil	0.01.0	4.	Green Belt	Nil	0.68.0	5.	Unutilized	2.22.5	Nil		<b>Total =</b>	<b>2.22.5</b>	<b>2.22.5</b>
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10.2	Water Regime	<p>: Water table in this area is noticed at a depth of 65m and presently, in the proposed mining plan only 32m (below ground level) depth has been envisaged as workable depth for safe &amp; economic quarrying for the entire lease period. hence, it will not affect the ground water depletion of this area.</p>																												
10.3	Flora and Fauna	<p>: Except acacia bushes, no other valuable trees are noticed in the applied area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.</p>																												
10.4	Climatic conditions	<p>: Generally subtropical climatic condition prevails throughout the year and there is no sharp variation in climate.</p> <p>This District receives rain both in south west and north east monsoon.</p> <p>The average rainfall is about 800mm to 900mm and the temperature ranges from 18°C during winter and to a maximum of 42°C during the summer.</p>																												





10.5	Human Settlement	<p>The nearest habitations with the population is given as under.</p> <p style="text-align: center;">Table No-5</p> <table border="1" data-bbox="683 405 1417 719"> <thead> <tr> <th data-bbox="683 405 746 528">S. No</th> <th data-bbox="746 405 991 528">Name of the Village</th> <th data-bbox="991 405 1235 528">Approximate distance &amp; Direction from lease applied area</th> <th data-bbox="1235 405 1417 528">Approximate population</th> </tr> </thead> <tbody> <tr> <td data-bbox="683 528 746 573">1.</td> <td data-bbox="746 528 991 573">Parangani</td> <td data-bbox="991 528 1235 573">2.8Km - NE</td> <td data-bbox="1235 528 1417 573">500</td> </tr> <tr> <td data-bbox="683 573 746 618">2.</td> <td data-bbox="746 573 991 618">Eraiyr</td> <td data-bbox="991 573 1235 618">1.1km - NW</td> <td data-bbox="1235 573 1417 618">800</td> </tr> <tr> <td data-bbox="683 618 746 663">3.</td> <td data-bbox="746 618 991 663">Kondalamkuppam</td> <td data-bbox="991 618 1235 663">2.2km - SE</td> <td data-bbox="1235 618 1417 663">300</td> </tr> <tr> <td data-bbox="683 663 746 719">4.</td> <td data-bbox="746 663 991 719">Ambuzhkkai</td> <td data-bbox="991 663 1235 719">1.7km - SW</td> <td data-bbox="1235 663 1417 719">400</td> </tr> </tbody> </table>	S. No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population	1.	Parangani	2.8Km - NE	500	2.	Eraiyr	1.1km - NW	800	3.	Kondalamkuppam	2.2km - SE	300	4.	Ambuzhkkai	1.7km - SW	400
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10.6	Plan for Air, Dust Suppression	<p>Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying. Wet drilling and dust extractor arrangements will be provided to drilling units so as to control raise of dust from the site of drilling. Operators, those exposed directly to such conditions will be provide such protective equipment like mask, ear plug, helmet, gloze etc., as per the Mines Act.</p>																				
10.7	Plan for Noise Control	<p>Quarrying of Rough Stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out to check the noise level in and around the quarry site. Nowhere the noise level should exceed the permissible limit of 80db during the quarry working hours.</p>																				
10.8	Environmental Impact Assessment Statement Describing Impact on mining on the next Five years	<p>The mining plan proposed is for a small production of Rough stone without involving deep hole drilling and heavy blasting. Such limited mining activity is not likely to cause any impact adversely on environment as far as pollution of air, water and noise is concerned, anyhow environmental impact studies will be conducted as per EIA notification issued by MOEF.</p>																				



10.9	Proposal for Waste Management	:	There is no waste anticipated in this rough stone quarry operation.
10.10	Proposal of Reclamation of Land affected during mining activities and at the end of mining.	:	In the proposed mining plan 32m (below ground level) depth has been envisaged as workable depth for safe & economic mining during the lease period. Hence, after quarry reaches ultimate pit limit (for this lease period) of 32m depth, fencing will be constructed around the quarried pits to prevent inherent entry of the public and cattle.
10.11	Program for Afforestation	:	The 7.5m safety distance along the lease boundary has been identified to be utilized for afforestation. Appropriate native species of Neem/Pungan trees will be planted in the first year. Nearly 6800Sqm area is proposed to use under afforestation by planting 816nos of Neem/Pungan trees during first year with an anticipated survival rate of 80%. The Quarry landuse, layout and afforestation plan is shown in Plate No.III.
10.12	Proposed Financial Estimate / Budget for (EMP) Environment Management		
	<b>A. Fixed Asset Cost:</b>		
	1. Land Cost (600000/1Ha)=		Rs. 13,35,000
	2. First aid room and accessories		Rs.1,00,000
	3. Labour Shed		Rs.1,00,000
	4. Sanitary Facility		Rs.1,00,000
	<b>Total=</b>		<b>Rs. 16,35,000/-</b>
	<b>B. Operational Cost:</b>		
	1. Machineries	:	Rs.50,00,000-
	2. Fencing cost	:	Rs. 1,50,000
	<b>Total</b>	:	<b>Rs.51,50,000/-</b>



<b>C.EMP Cost:</b>	Budget Provision for the entire quarrying period.
	: Air Quality Sampling = Rs. 10,000/-
	: Water Quality Sampling = Rs. 40,000/-
	: Noise Monitoring = Rs. 20,000/-
	: Ground vibration test = Rs. 20,000/-
<b>Expenditure</b>	
1. Drinking water facility	Rs.1,00,000/-
2. Sanitary Arrangements	Rs. 50,000/-
3. Safety kids	Rs. 50,000/-
4. Water sprinkling	Rs. 1,00,000/-
5. Afforestation	Rs. 1,20,000/-
<b>Total=</b>	<b>Rs. 5,40,000/-</b>
<b>Total Project Cost (A+B+C)</b>	<b>Rs. 73,25,000/-</b>
<b>CSR Cost(2% of Total Project Cost)</b>	<b>Rs. 1,46,500/-</b>

**11.0 Mine Closure Plan:**

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



**12.0 Any Other Details Intend to Furnish by the Applicant:**

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

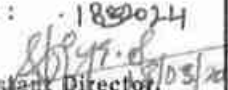
Prepared by

  
**C.Natarajan, M.Sc.,M.Phil.,**  
**Qualified Person**


**C.NATARAJAN M.Sc.,M.Phil.,**  
**Qualified Person**

Place : Salem

Date : 12.03.2024

This mining plan is approved according to the instructions and guidelines issued by the Chief Engineer of Geology and Mining, Chennai vide letter No. G.M. 116/2023 dated 19-11-2012 and based on incorporation of the conditions laid by the Assistant Director of Geology and Mining, Viluppuram in precise area communication letter  
Re.No. B/013M/116/2023      Dated: 18.03.2024  
  
Assistant Director,  
Geology and Mining,  
Viluppuram.

Dated: 18.03.2024

  
18.3.24

ந.க.எண். அ/புவி (ம) கர/116/2023  
நாள்:11.03.2024.

உதவி இயக்குநர்  
புவியியல் மற்றும் சுரங்கத்துறை அலுவலகம்,  
விழுப்புரம்.



குறிப்பாணை

**பொருள்:** கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் மற்றும் கிராவல் - விழுப்புரம் மாவட்டம் - வானூர் வட்டம் - தொள்ளமூர் கிராமம் - பட்டா புல எண்கள். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0), 101/1 (0.27.5) மற்றும் 101/7 (0.32.0) ஆகியவற்றில் 2.82.0 ஹெக்டேர் பரப்பளவில் பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குவாரி குத்தகை அனுமதி கோரி திரு.D.ஞானகுரு, த/பெ.தனபால் என்பவர் விண்ணப்பம் செய்தது - பட்டா புல எண்கள். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0) ஆகியவற்றில் 2.22.5 ஹெக்டேர் பரப்பளவில் உரிமம் வழங்க பரிந்துரை செய்து அறிக்கை வரப்பெற்றது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவினை பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை:**
1. திரு.D.ஞானகுரு, த/பெ.தனபால், 219/C, அய்யனார் கோவில் தெரு, தென்னமாதேவி கிராமம், விக்கிரவாண்டி வட்டம், விழுப்புரம் மாவட்டம் என்பவரது விண்ணப்பம் நாள்.29.09.2023.
  2. வருவாய் கோட்டாட்சியர், விழுப்புரம் கடித எண். ந.க.அ4/51/2024, நாள்.01.03.2024..
  3. விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநர் அவர்களின் புலத்தணிக்கை அறிக்கை நாள்: 06.03.2024.

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விழுப்புரம் மாவட்டம், விக்கிரவாண்டி வட்டம், தென்னமாதேவி கிராமத்தைச் சேர்ந்த திரு.D.ஞானகுரு, த/பெ.தனபால் என்பவர் விழுப்புரம் மாவட்டம், வானூர் வட்டம், தொள்ளமூர் கிராமம், பட்டா புல எண்கள். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0), 101/1 (0.27.5), 101/7 (0.32.0), ஆகியவற்றில் 2.82.0 ஹெக்டேர் பரப்பளவில் பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை அனுமதி கோரி பார்வை 1-ல் காணும் விண்ணப்பத்தினை சமர்ப்பித்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக, விழுப்புரம் வருவாய் கோட்டாட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் அறிக்கையில் விழுப்புரம் மாவட்டம், வானூர் வட்டம், தொள்ளமூர் கிராமம், பட்டா புல எண்கள். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0) மற்றும் 100/5A (0.39.0) ஆகியவற்றில் 2.22.5 ஹெக்டேர் பரப்பளவில் உள்ள பட்டா நிலத்தில் திரு.D.ஞானகுரு, த/பெ.தனபால் என்பவருக்கு பத்தாண்டுகளுக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி

D. Suresh



உரிமம் வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என செய்துள்ளனர்.

- i. விண்ணப்ப புலன்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளியும் மற்றும் அரக புறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி மேற்கொள்ளப்பட வேண்டும்.
- ii. குவாரிப்பணி மேற்கொள்ளும் போது அருகிலுள்ள அரக புறம்போக்கு மற்றும் பட்டா நிலங்களுக்கு எவ்வித இடையூறும் இல்லாமல் குவாரிப்பணி செய்ய வேண்டும்.
- iii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை DGPS சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்ப்பிக்க வேண்டும்.
- iv. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-41ன்படி தகுதிவாய்ந்த நபரால் கரங்க திட்டம் தயார் செய்து துணை இயக்குநர் அவர்களின் ஒப்புதல் பெறவேண்டும்.
- v. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-42ன்படி மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்திடமிருந்து சுற்றுச்சூழல் சான்று பெற்று சமர்ப்பிக்கப்படவேண்டும்.

எனவே, விழுப்புரம் வருவாய் கோட்டாட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் கரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் பரிந்துரை அறிக்கையின் அடிப்படையில் விழுப்புரம் மாவட்டம், வானூர் வட்டம், தொள்ளமூர் கிராமம், பட்டா எண். 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0) மற்றும் 100 5A (0.39.0) ஆகியவற்றில் 2.22.5 ஹெக்டேர் பரப்பளவில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன்படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 பத்து வருட காலத்திற்கு திரு. D.ஞானசூரு, த/பெ.தனபால் 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 கரங்க திட்டத்தினை தகுதிவாய்ந்த நபர் (QP) மூலமாக கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு தயாரித்த அதனை 90 தினங்களுக்குள் உதவி இயக்குநர் (புவியியல் மற்றும் கரங்கத்துறை) அவர்களின் பரிசீலனைக்கு சமர்ப்பிக்குமாறு விண்ணப்பதாரரை கேட்டுக்கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட கரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன்படி சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

- i. விண்ணப்ப புலன்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளியும் மற்றும் அரக புறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி மேற்கொள்ளப்பட வேண்டும்.



- 3 -

- ii. குவாரிப்பணி மேற்கொள்ளும் போது அருகிலுள்ள அரசு மூம்போக்கு மற்றும் பட்டா நிலங்களுக்கு எவ்வித இன யூறும் இலவாமல் குவாரிப்பணி செய்ய வேண்டும்.
- iii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை மூல சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்ப்பிக்க வேண்டும்.

உதவி இயக்குநர்,  
புவியியல் மற்றும் கரங்கத்தூறை,  
விழுப்புரம்.

*[Handwritten signature]*  
11.2.24

பெறுநர்  
திரு. D.ஞானகுரு,  
த/பெ.தனபால்,  
219/C, அய்யனார் கோவில் தெரு,  
தென்னமாதேவி கிராமம்,  
விக்கிரவாண்டி வட்டம்,  
விழுப்புரம் மாவட்டம்.

நகல்:-

1. மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.
2. ஆணையர், புவியியல் மற்றும் கரங்கத்தூறை, கிண்டி, சென்னை.

*[Handwritten signature]*



District : Viluppuram

Taluk : VANUR

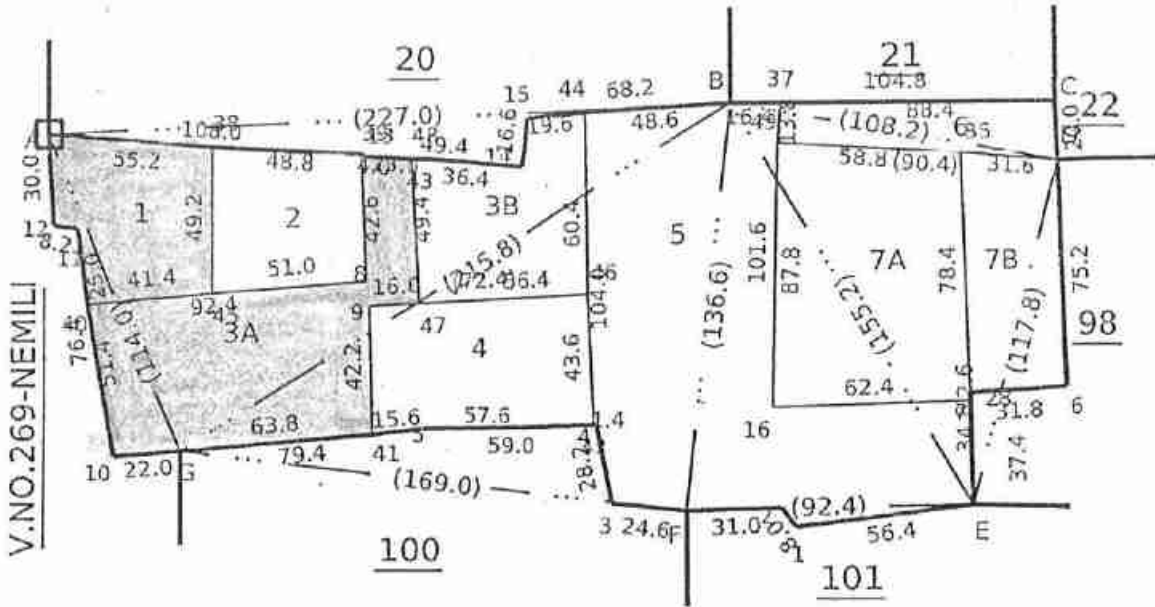
Village : Thollamur [266]



Survey No : 99

Area : Hect 03 Acres 60.50

Scale : 1 : 2554



*S. Raj*

சிறப்பு நிர்வாக அலுவலர்  
 மன்றம்  
 புதுவாள் 64  
 வானூர் வட்டம், விழுப்புரம் மாவட்டம்.  
 16/08/2023

LEASE APPLIED AREA





District : Viluppuram

Taluk : VANUR

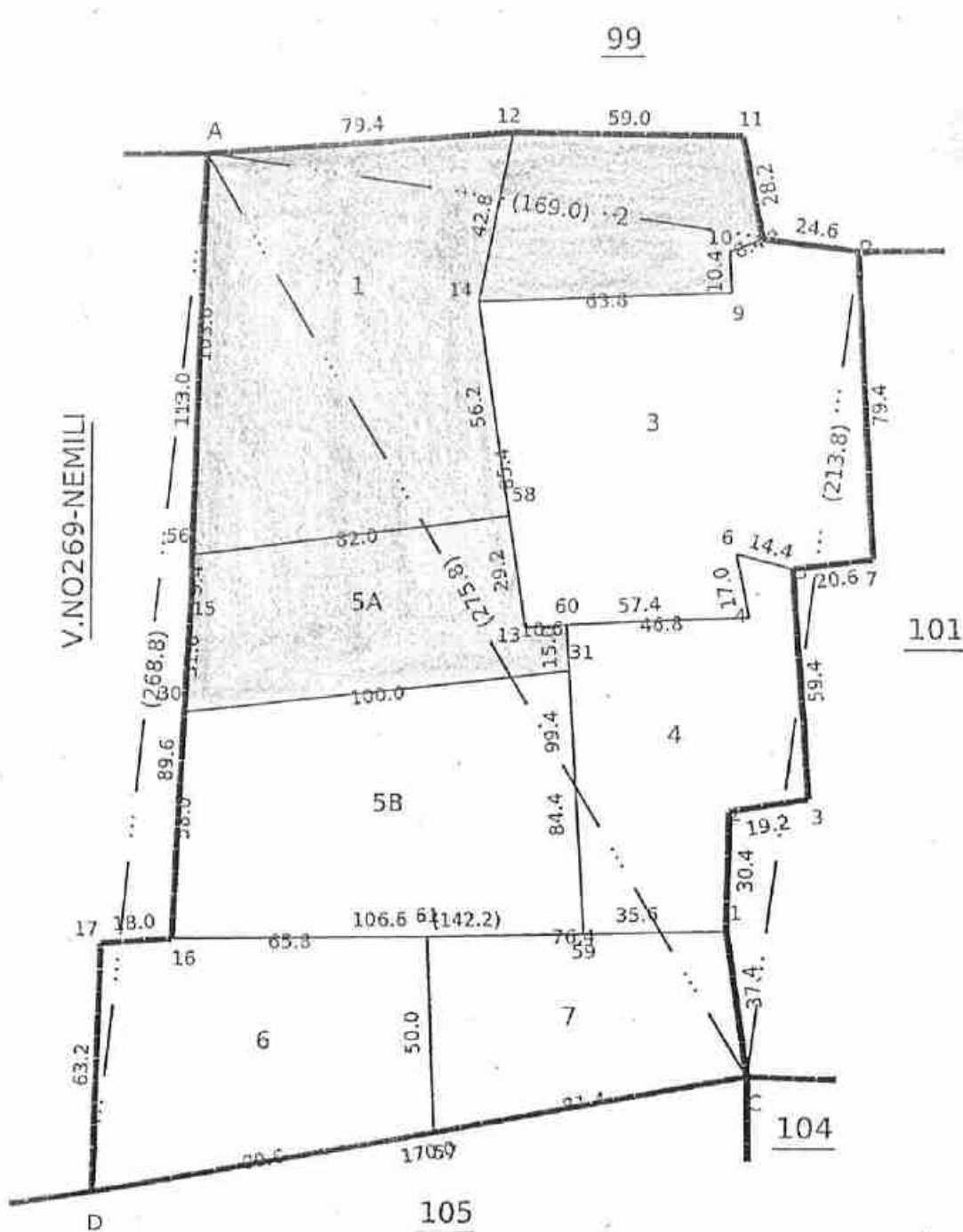
Village : Thollamur [266]



Survey No. 100

Area : Hect 04 Ares 50

Scale : 1 : 1771



12 - சைக்கிள் பாதை

S. Ravi

சுற்றுலா மற்றும் மது அமைச்சு

மது அமைச்சு

மது அமைச்சு

மது அமைச்சு

மது அமைச்சு

மது அமைச்சு

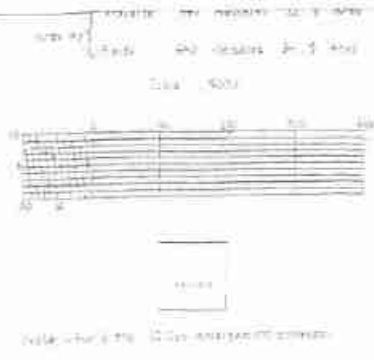
16/08/20

Digitally Signed By 270

GOVARTHANAN

260 5 7





No. 297  
KONDAI

No. 295  
KONDALANKUPPAM

No. 292  
TIRUVAIKKARAI

LEASE APPLIED AREA

*Handwritten signature*



தமிழக அரசு  
வருவாய்த் துறை

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

மாவட்டம் : விழுப்புரம்

வட்டம் : வாணார்

வருவாய் கிராமம் : தொள்ளாமூர்

பட்டா எண் : 1420

உரிமையாளர்கள் பெயர்

1. தனபால் மகன் ஞானகுரு

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
99	I	0 - 27.00	1.50	--	--	--	--	2023/0103/07/341712- --- 01-08-2023
99	3A	0 - 54.00	3.00	--	--	--	--	2023/0103/07/341712- --- 01-08-2023
		0 - 81.00	4.50					

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 07/02/266/01420/20627 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 16-08-2023 அன்று 01:47:41 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : விழுப்புரம்

வட்டம் : வாணூர்

வருவாய் கிராமம் : தொள்ளாமூர்

பட்டா எண் : 1389

உரிமையாளர்கள் பெயர்

1. தனபால்

தந்தை

ஞானகுரு



புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
100	1	0 - 75.50	4.19	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
100	2	0 - 27.00	1.50	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
100	5A	0 - 39.00	2.16	--	--	--	--	2022/0105/07/417614- -2022/07/02/000052SD -- 27-09-2022
100	7	0 - 36.00	2.50	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
101	1	0 - 27.50	1.53	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
101	7	0 - 32.00	1.78	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
99	7B	0 - 24.29	1.35	--	--	--	--	2022/0105/07/417614- -2022/07/02/000052SD -- 27-09-2022
		2 - 61.29	15.01					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 07/02/266/01389/20611 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 16-08-2023 அன்று 12:53:20 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

D. Cruz

1433ஆம் பசலியில்

விடுப்பு

மாவட்டம்

மாணவர்



புல வரித் திட்டத்தின்படி புலங்களின் விபரம்.					சார்பு யானரின் பெயர்.	முதல்					
(1) நில ஆளவை எண்.	(2) உட்பிரிவு எண்.	(3) பரப்பு.	(4) தீர்வை.	(5) ஒரு போகம் அல்லது இரு போகம்.	(6) கைப்பற்று தாரகுடைய பெயரும் என்னும் அல்லது அனுபோக தாரகுடைய பெயர்.	(7) நிலத்தின் எந்த பகுதி யாவது சார்புயானரால் பயிரிடப்பட்டுள்ளது.	(8) எந்த பாதத்தில் பயிர் செய்யப்பட்டது. எந்த மாதத்தில் அறுவடை செய்யப்பட்டது.	(9) பயிரின் பெயர்.	(10) பயிரான அறுவடையான பரப்பு.	(11) உள்பையான பாய்ச்சல் ஆதாரம்.	(12) விளைச்சல் அளவு விடுக்காடு.
99	1	0.270	1.50	1420	செவ்வாடு			செவ்வாடு	0.270		
99	3A	0.540	3.00	1420	do			"	0.540		
100	1	0.755	4.19	1389	do			"	0.755		
	2	0.270	1.50	1389	do			"	0.270		
	5A	0.390	2.16	1389	do			"	0.390		
	7	0.360	2.50	1389	do			"	0.360		
101	1	0.275	1.53	1389	do			"	0.275		
	7	0.320	1.78	1389	do			"	0.320		
99	7B	0.24.29	1.35	1389	do			"	0.24.29		
/ 2 கிராமங்களில் /											
செவ்வாடு அல்லது											
செவ்வாடு அல்லது 2 கிராமங்களில் செவ்வாடு											
செவ்வாடு அல்லது செவ்வாடு அல்லது											
S. Ravi											
கிராம நிர்வாக அலுவலர்											
மாணவர் விடுப்பு துறை											
புலவாரி 4 கிராமங்களில் கிராம											
வாரியர் வட்டம், விடுப்பு மாவட்டம்.											
16/08/2023											

D. Suresh

## அ-பதிவேடு விவரங்கள்

மாவட்டம் : விழுப்புரம்

வட்டம் : வாலூர்

கிராமம் : தொள்ளாமூர்



1. புல எண்	99	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	1	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	193-1A	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 27.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.50
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1420
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுரு

## குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 100627 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : விழுப்புரம்

வட்டம் : வானூர்

கிராமம் : தொள்ளாமூர்



1. புல எண்	99	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	3A	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	193-2	11. தீர்வை (சூ - ஹெ)	5.55
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 54.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (சூ - பை)	3.00
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1420
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுரு

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 100627 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

D. Suresh

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்

வட்டம் : வானூர்

கிராமம் : தொள்ளாமூர்

1. புல எண்	100	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	1	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	195-1A1	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 75.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	4.19
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1389
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுரு

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20611 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

D. Suresh



அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்  
வட்டம் : வானூர்  
கிராமம் : தொள்ளாமூர்

1. புல எண்	100	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	2	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	194	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 27.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.50
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	1389
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுரு

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20611 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

D. Luis

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்  
வட்டம் : வானூர்  
கிராமம் : தொள்ளாமூர்

1. புல எண்	100	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	5A	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	100-5	11. கீர்வை (ரு - ஹெ)	5.55
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 39.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த கீர்வை (ரு - ஸ்ப)	2.16
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1389
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுரு

குறிப்பு 1:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டினூடே பெறப்பட்டவை.  
இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20611 என்ற  
குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

D. Cruz


 भारत सरकार  
 GOVERNMENT OF INDIA  

 ஞானகுரு தனபால்  
 Gnanaguru Dhanapal  
 பிறந்த நாள்/DOB: 15/05/1979  
 ஆண்/MALE  


9908 9840 8208

எனது ஆதார், எனது அடையாளம்


 भारत 2.0 निम्नलिखित पदचान प्राधिकरण  
 UNIQUE IDENTIFICATION AUTHORITY OF INDIA  
 முகவரி:  
 S/O: தனபால், 219/A, ஞானார் கோவில் தெரு,  
 தென்மேற்கேய், விழுப்புரம்,  
 தமிழ் நாடு - 605601  
 Address :  
 S/O: Dhanapal, 219/A, JYANAR  
 KOVIL STREET, Tenkamadevi,  
 Viluppuram,  
 Tamil Nadu - 605601  

 9908 9840 8208

 1947  
 [info@uidai.gov.in](mailto:info@uidai.gov.in)  
 [www.uidai.gov.in](http://www.uidai.gov.in)  
 P.O. Box No. 1547  
 Bangalore-500 091

D. Cruz

ANNEXURE VII

# CHIETTINAD CEMENT CORPORATION LTD.,

(Regd. Office: BANU SEETHAI HALL BUILDING IV & V FLOORS, 603, ANNA SALAI, MADRAS-600006.)  
WORKS OFFICE: PULIYUR.



PHONE 21144  
22744 | KARUR  
TELE: 21745  
GRAM "CEMENT" Puliyur C.F.  
Telex: 0456-219.  
STD Code: 04324.

22<sup>nd</sup> September, 1987.

Y. RAJU., B.E.,  
MINES MANAGER & DY. GENERAL MANAGER.

## CERTIFICATE.

This is to certify that Mr.C.Natarajan has been working as a Geologist from 14-12-1979 to till date. He has been incharge of supervision of day to day functions in respect of Exploration, Preparation of Geological Plans & Sections, Preparation of Mines Plans, and Quality control and other allied mining activities in the following Pits of our Seethainagar Limestone Mines in Anna District.

<u>Name of the Pit.</u>	<u>Average Raising/day.</u>
1. Alambadi Pit.	- 1,700 T.
2. Mallapuram Pit.	- 900 T.
3. Karikkali Pit.	- 150 T.
	-----
Total.	- 2,750 T.
	-----

He has got nearly Eight years of total experience in our Mines in the above supervisory capacity.

for CHIETTINAD CEMENT CORPORATION LTD.,

(Y. RAJU).

Mines Manager & Dy. General Manager.

*D. C. S.*



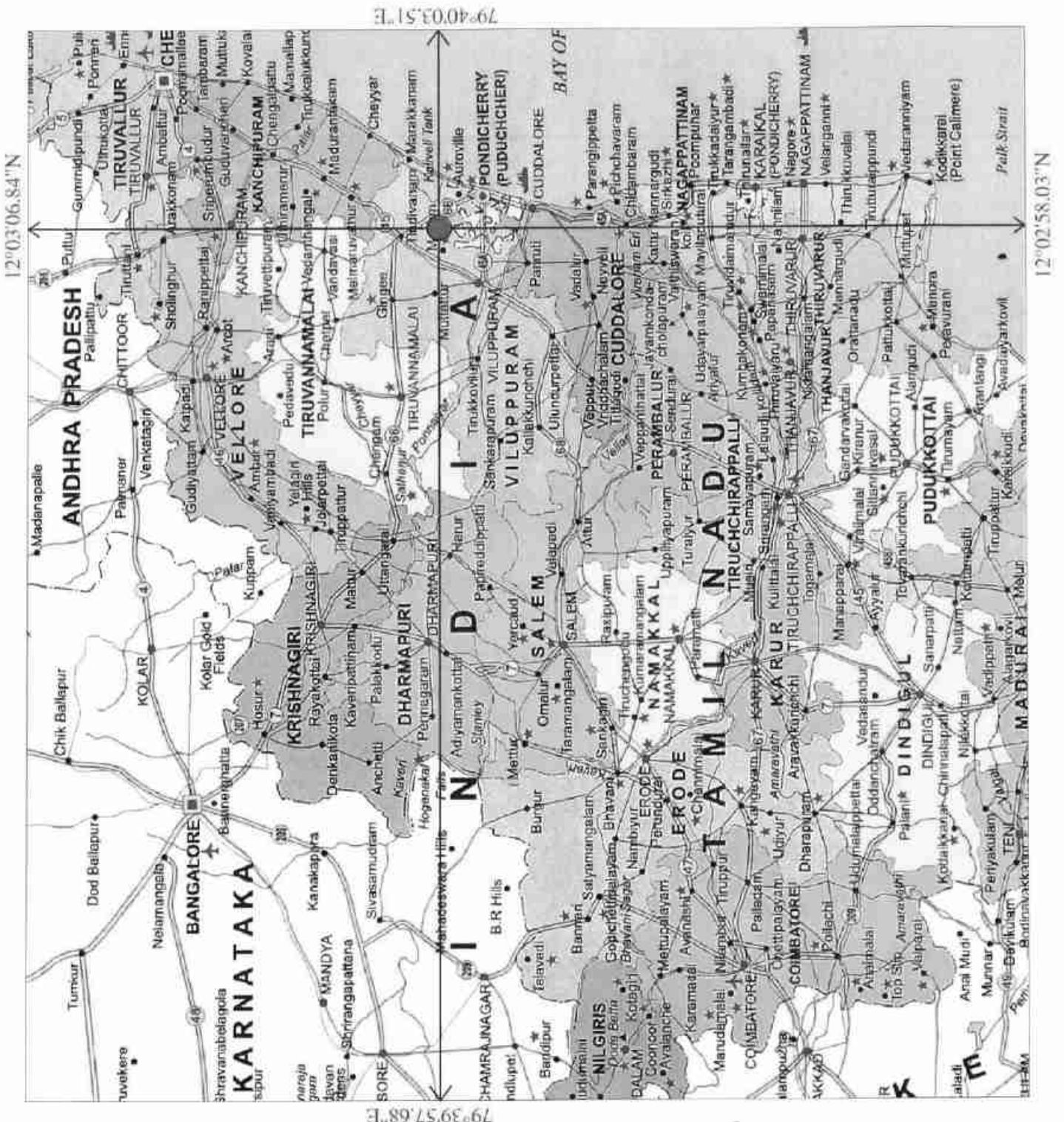
## Faculty of Science

The Senate of the Annamalai University hereby makes known that E. Narayana has been admitted to the Degree of Master of Science (by Examination) in Physics, he having been certified by duly appointed Examiners at the examination held in April, 1976, to be qualified to receive the same and that he was placed in the First Class.

Given under the seal of the University.

Annamalaiyar,  
24th December, 1976.

N. Chandrasekha  
D. Cruz Vico. Chancellor. 282



**PLATE NO-1**

DATE OF SURVEY : 11.03.2024

**APPLICANT:**

THIRU.D.GNANAGURU/  
S/o,DHANAPAL  
NO.219/C, IYANAR KOVIL STREET,  
TENNAMADEVI VILLAGE,  
VIKKIRAVANDI TALUK,  
VILUPPURAM DISTRICT.

**QUARRY LEASE APPLIED AREA:**

S.F.NO'S : 99/1, 99/3A, 100/1, 100/2 & 100/5A  
EXTENT : 2.22.5 Ha,  
VILLAGE : THOLLAMUR,  
TALUK : VANUR,  
DISTRICT : VILUPPURAM.

**INDEX**

Q. L. APPLIED AREA : ●

TOPO SHEET NO : 57 P / 12

LATITUDE : 12°02'58.03" N to 12°03'06.84" N

LONGITUDE : 79°39'57.68" E to 79°40'03.51" E

**LOCATION PLAN**

NOT TO SCALE

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION  
IN THIS PLATE IS TRUE AND CORRECT TO  
THE BEST OF MY KNOWLEDGE BASED UPON  
THE LEASE MAP AUTHENTICATED BY STATE  
GEOMATICS DEPARTMENT

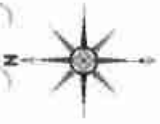


12°02'58.03" N

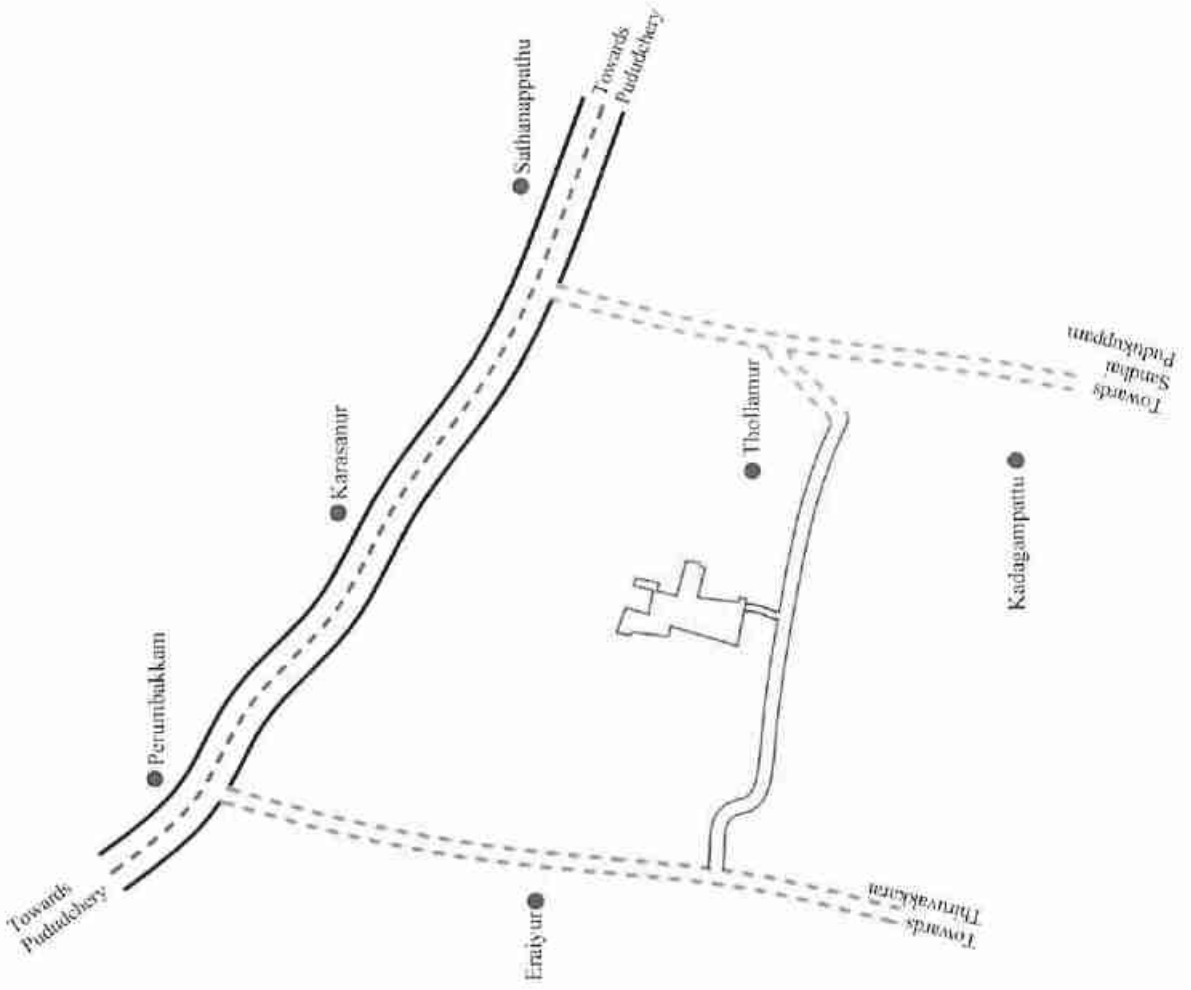
79°39'57.68" E

*D. Cruz*

**KEY PLAN**



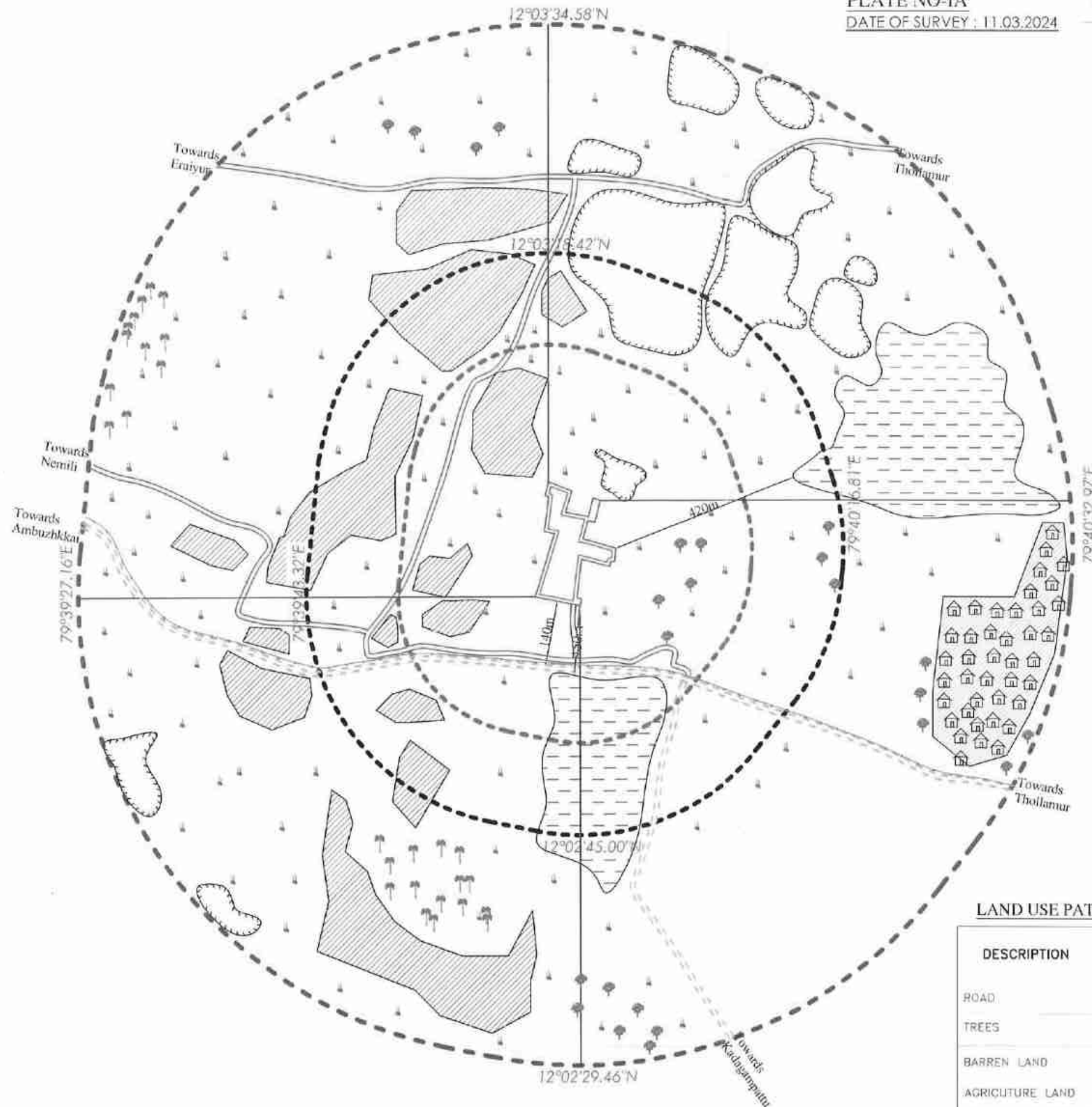
<b>PLATE NO-ID</b>	
<b>DATE OF SURVEY :</b>	11.03.2024
<b>APPLICANT:</b>	THIRU.P.GNANAGURU, S/o, DHANAPAL NO.219/C, RYANAR KOVIL STREET, TENNAMADEVI VILLAGE, VIKKIRAVANDI TALUK, VILUPPURAM DISTRICT.
<b>QUARRY LEASE APPLIED AREA:</b>	S.F.NO'S : 99/1, 99/3A, 100/1, 100/2 & 100/5A, EXTENT : 2.22.5 Ho, VILLAGE : THOLLAMUR, TALUK : VANUR, DISTRICT : VILUPPURAM.
<b>INDEX</b>	
Q.L. APPLIED AREA	
APPROACH ROAD	
CARTRACK	
PANCHAYAT ROAD	
STATE HIGHWAY	
<b>HABITATIONS KEY PLAN</b>	
<b>PREPARED BY</b>	<i>[Signature]</i> To Scale 1:1000
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLAN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT	
<i>[Signature]</i> C.N. RAJANISH, M.Phil., QUALIFIED PERSON	



*D. Cruz*



PLATE NO-IA  
DATE OF SURVEY : 11.03.2024



**APPLICANT:**  
THIRU.D.GNANAGURU,  
S/o,PHANAPAL,  
NO.219/C, IYYANAR KOVIL STREET,  
TENNAMADEVI VILLAGE,  
VIKKIRAVANDI TALUK,  
VILUPPURAM DISTRICT.



**QUARRY LEASE APPLIED AREA:**  
S.F.NO'S : 99/1, 99/3A, 100/1, 100/2 & 100/3A  
EXTENT : 2.22.5 Ha.  
VILLAGE : THOLLAMUR,  
TALUK : VANUR,  
DISTRICT : VILUPPURAM.

**INDEX**  
TOPO SHEET NO : 57 P/ 12  
LATITUDE : 12°02'58.03"N TO 12°03'06.84"N  
LONGITUDE : 79°39'57.68"E TO 79°40'03.51"E

Q.L.APPLIED AREA	
7.5m SAFETY DISTANCE	
300M RADIUS	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
PANCHAYAT ROAD	
BARREN LAND	
TREES	
SEASONAL AGRICULTURE	
HABITATIONS	
QUARRY PIT	
TANK	
CARTRACK	
ODAI	
CRUSHER UNIT	

**LAND USE PATTERN**

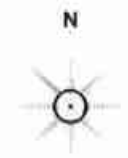
DESCRIPTION	AREA IN (%)
ROAD	10
TREES	05
BARREN LAND	40
AGRICULTURE LAND	10
HABITATIONS	05
WATER BODIES	15
CRUSHER	15

**ENVIRONMENTAL PLAN**  
SCALE 1: 10,000

**PREPARED BY :**  
THIS IS TO CERTIFY THAT THE INFORMATION  
IN THIS PLATE IS TRUE AND CORRECT TO  
THE BEST OF MY KNOWLEDGE BASED UPON  
THE LEASE MAP AUTHENTICATED BY STATE  
GOVERNMENT

*C. Natarajan*  
C.NATARAJAN, M.Sc., M.Phil.,  
QUALIFIED PERSON





**PLATE NO-IB**  
 DATE OF SURVEY : 11.03.2024

**APPLICANT:**  
 THIRU.D GNANAGURU,  
 S/o.DHANAPAL,  
 NO.219/C, IYYANAR KOVIL STREET,  
 TENNAMADEVI VILLAGE,  
 VIKKIRAVANDI TALUK,  
 VILUPPURAM DISTRICT.

**QUARRY LEASE APPLIED AREA:**  
 S.F.NO'S : 99/1, 99/3A, 100/1, 100/2 & 100/5A,  
 EXTENT : 2.22.5 Ha.  
 VILLAGE : THOLLAMUR,  
 TALUK : VANUR,  
 DISTRICT : VILUPPURAM.

**INDEX**

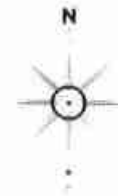
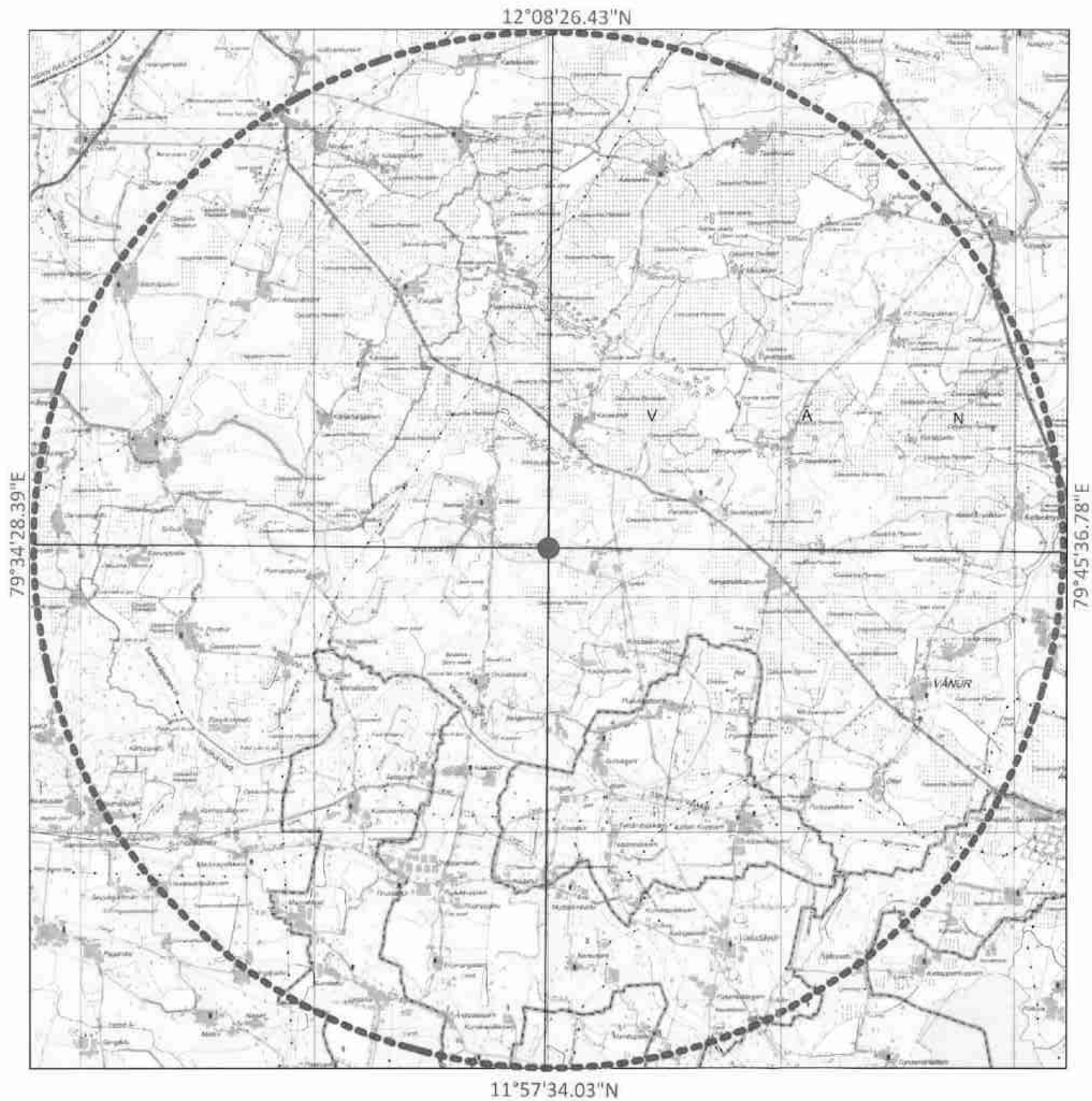
TOPO SHEET NO : 57 P/ 12  
 LATITUDE : 12°02'58.03"N TO 12°03'06.84"N  
 LONGITUDE : 79°39'57.68"E TO 79°40'03.51"E

Q.L.APPLIED AREA	
7.5m SAFETY DISTANCE	
300M RADIUS	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
CARTTRACK	
PANCHAYAT ROAD	

**SATELLITE IMAGERY MAP**  
 SCALE 1: 10,000

**PREPARED BY :**  
 THIS IS TO CERTIFY THAT THE INFORMATION  
 IN THIS PLATE IS TRUE AND CORRECT TO  
 THE BEST OF MY KNOWLEDGE BASED UPON  
 THE LEASE MAP AUTHENTICATED BY STATE  
 GOVERNMENT

C.NATARAJAN, M.Sc., M.Phil.,  
 QUALIFIED PERSON



**PLATE NO-IC**  
 DATE OF SURVEY : 11.03.2024

**APPLICANT:**  
 THIRU.D.GNANAGURU,  
 S/o.DHANAPAL,  
 NO.219/C, IYANAR KOVIL STREET,  
 TENNAMADEVI VILLAGE,  
 VIKKIRAVANDI TALUK,  
 VILUPPURAM DISTRICT.

**QUARRY LEASE APPLIED AREA:**  
 S.F.NO'S : 99/1, 99/3A, 100/1, 100/2 & 100/5A,  
 EXTENT : 2.22.5 Ha,  
 VILLAGE : THOLLAMUR,  
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 DISTRICT : VILUPPURAM.

**INDEX**  
 TOPO SHEET NO : 57 P/ 12  
 LATITUDE : 12°02'58.03"N TO 12°03'06.84"N  
 LONGITUDE : 79°39'57.68"E TO 79°40'03.51"E

**QUARRY LEASE APPLIED AREA**   
**10KM RADIUS** 


**CONVENTIONAL SYMBOLS**

Water	
Highway	
Other roads	
Railway	
Canal	
Drainage	
Boundary	
Settlement	
Forest	
Barren land	
Open land	
Water tank	
Well	
Electricity pole	
Telephone pole	
Survey station	
Spot height	
Spot level	
Spot elevation	
Spot depression	
Spot level	
Spot elevation	
Spot depression	
Spot level	
Spot elevation	
Spot depression	

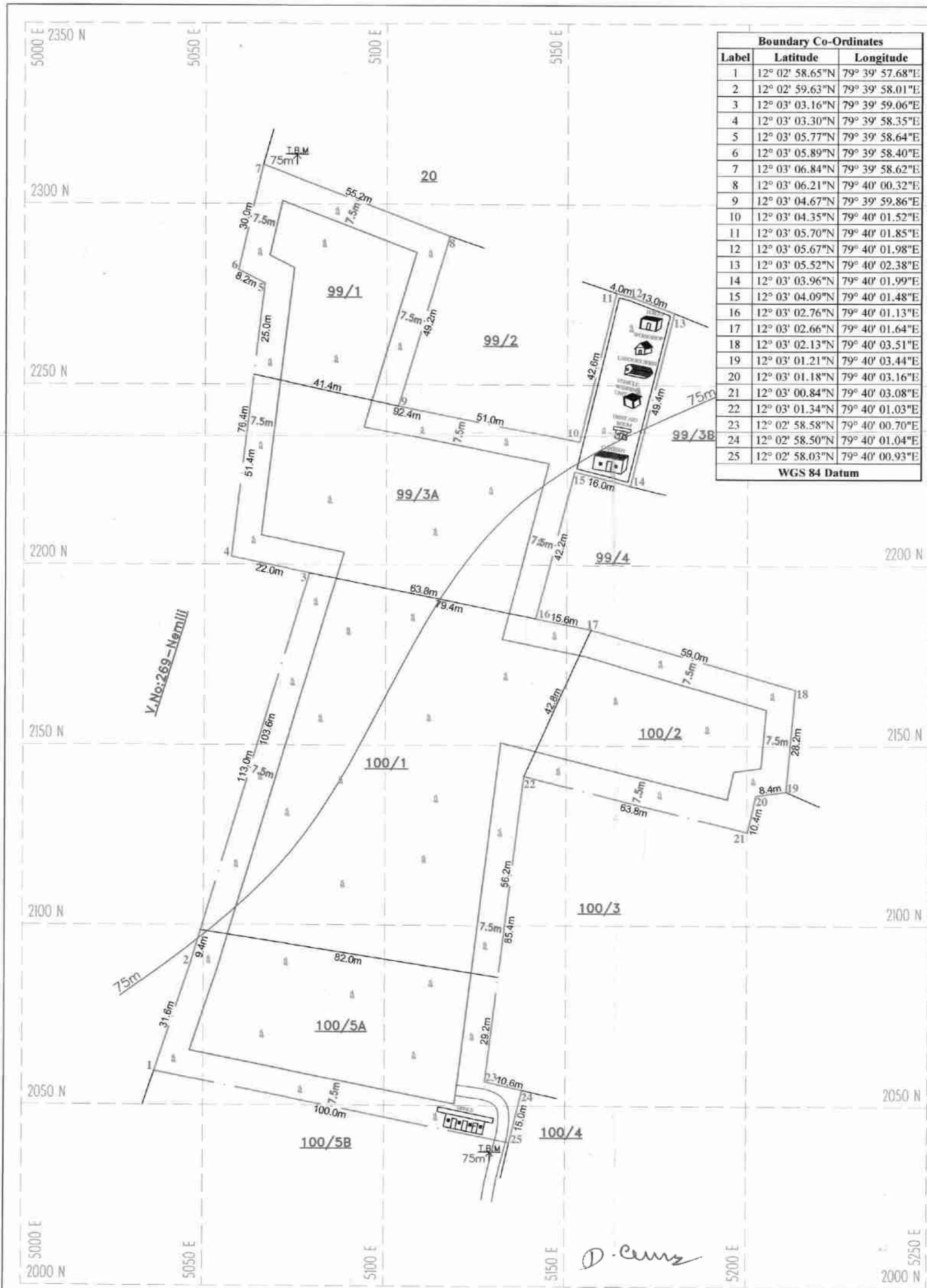
**TOPO SKETCH OF QUARRY LEASE**

**APPLIED AREA FOR**  
**10Km RADIUS**  
 SCALE - 1:100000

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

  
 C.NATARAJAN, M.Sc, M.Phil.,  
 QUALIFIED PERSON





Boundary Co-Ordinates		
Label	Latitude	Longitude
1	12° 02' 58.65"N	79° 39' 57.68"E
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24	12° 02' 58.50"N	79° 40' 01.04"E
25	12° 02' 58.03"N	79° 40' 00.93"E

WGS 84 Datum

**PLATE NO-II**  
 DATE OF SURVEY : 11.03.2024

**APPLICANT:**  
 THIRU.D.GNANAGURU,  
 S/o,DHANAPAL,  
 NO.219/C, IYANAR KOVIL STREET,  
 TENNAMADEVI VILLAGE,  
 VIKKIRAVANDI TALUK,  
 VILUPPURAM DISTRICT.

**QUARRY LEASE APPLIED AREA:**  
 S.F.NO'S : 99/1, 99/3A, 100/1, 100/2 & 100/5A.  
 EXTENT : 2.22.5 Ha,  
 VILLAGE : THOLLAMUR,  
 TALUK : VANUR,  
 DISTRICT : VILUPPURAM.

**INDEX**

- Q.LEASE APPLIED BOUNDARY
- 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB

**QUARRY LEASE & SURFACE PLAN**  
 SCALE 1 : 1000

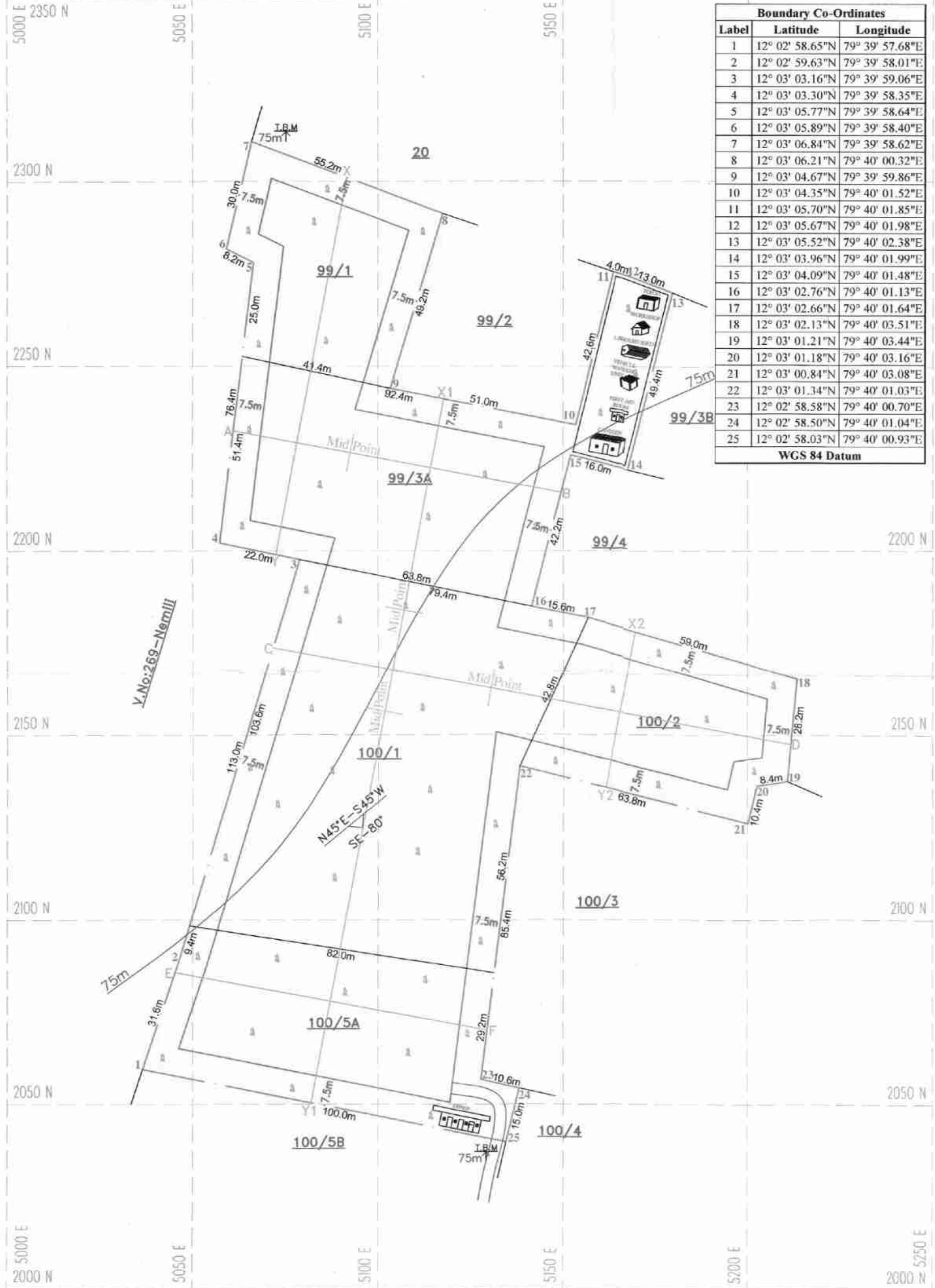
**PREPARED BY:**  
 THIS IS TO CERTIFY THAT THE INFORMATION  
 IN THIS PLATE IS TRUE AND CORRECT TO  
 THE BEST OF MY KNOWLEDGE BASED UPON  
 THE LEASE MAP AUTHENTICATED BY STATE  
 GOVERNMENT

*C. Natarajan*  
 C.NATARAJAN, M.Sc., M.Phil.  
 QUALIFIED PERSON

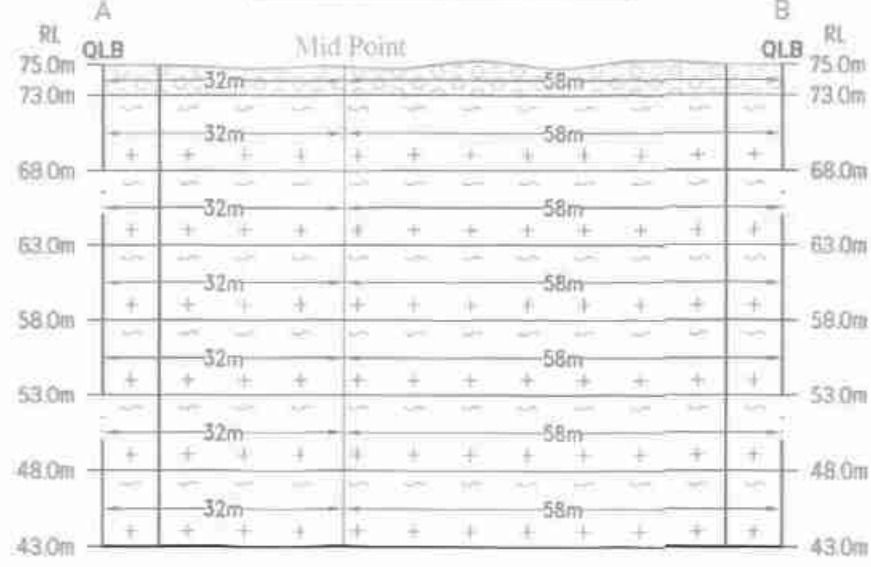


Boundary Co-Ordinates		
Label	Latitude	Longitude
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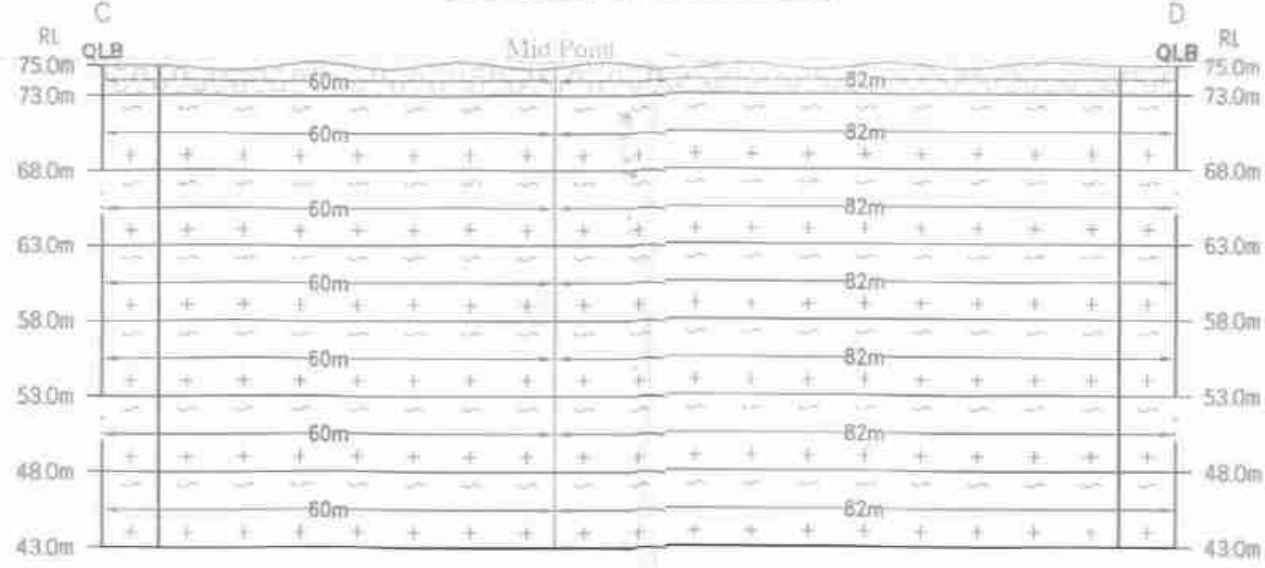
WGS 84 Datum



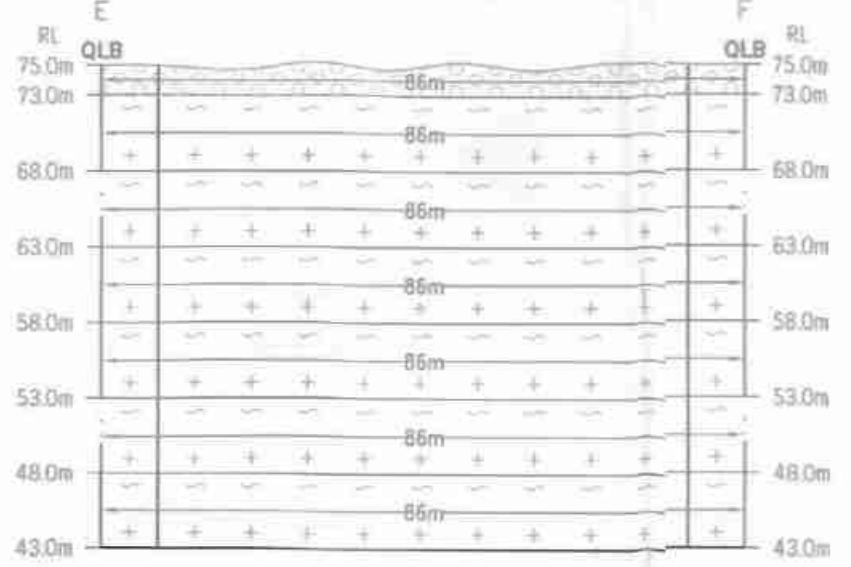
SECTION ALONG A-B



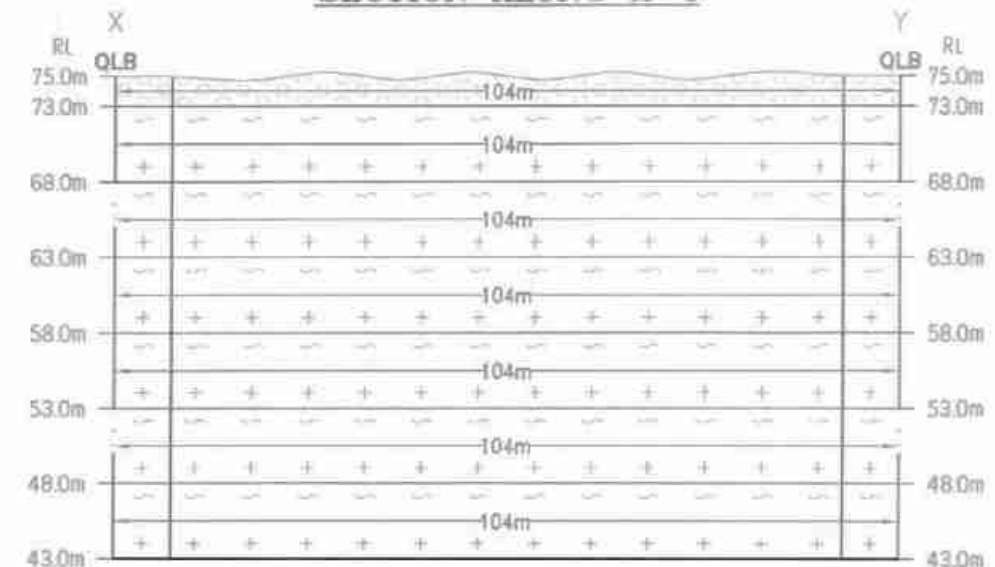
SECTION ALONG C-D



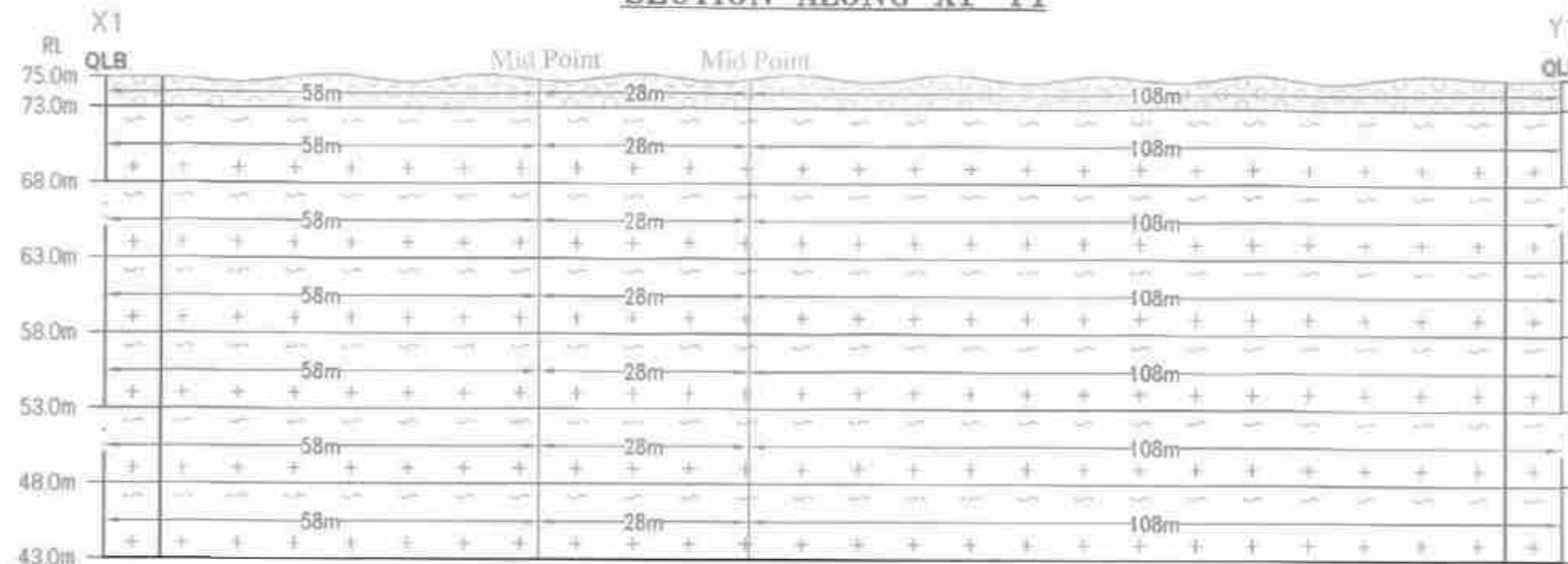
SECTION ALONG E-F



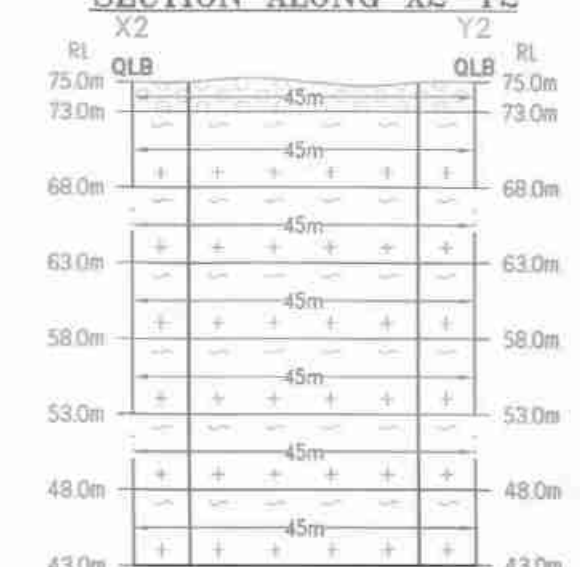
SECTION ALONG X-Y



SECTION ALONG X1-Y1



SECTION ALONG X2-Y2



**PLATE NO-III**  
**DATE OF SURVEY : 11.03.2024**  
**APPLICANT:**  
 THIRU.D.GNANAGURU,  
 5/a,DHANAPAL,  
 NO.219/C, IYYANAR KOVIL STREET,  
 TENNAMADEVI VILLAGE,  
 VIKKIRAVANDI TALUK,  
 VILUPPURAM DISTRICT.  
**QUARRY LEASE APPLIED AREA:**  
 S.F.NO'S : 99/1, 99/3A, 100/1, 100/2 & 100/5A.  
 EXTENT : 2.22.5 Ha,  
 VILLAGE : THOLLAMUR,  
 TALUK : VANUR,  
 DISTRICT : VILUPPURAM.

**INDEX**

Q.LEASE APPLIED BOUNDARY	
7.5m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
APPROACH ROAD	
CONTOUR	
SCRUB	
GRAVEL	
ROUGH STONE	
STRIKE & DIP	

**TOPOGRAPHY, GEOLOGICAL  
 PLAN & SECTIONS**  
 SCALE 1 : 1000  
 SECTIONS HOR 1:1000, VER 1:500  
**PREPARED BY:**  
 THIS IS TO CERTIFY THAT THE INFORMATION  
 IN THIS PLATE IS TRUE AND CORRECT TO  
 THE BEST OF MY KNOWLEDGE BASED UPON  
 THE LEASE MAP AUTHENTICATED BY STATE  
 GOVERNMENT

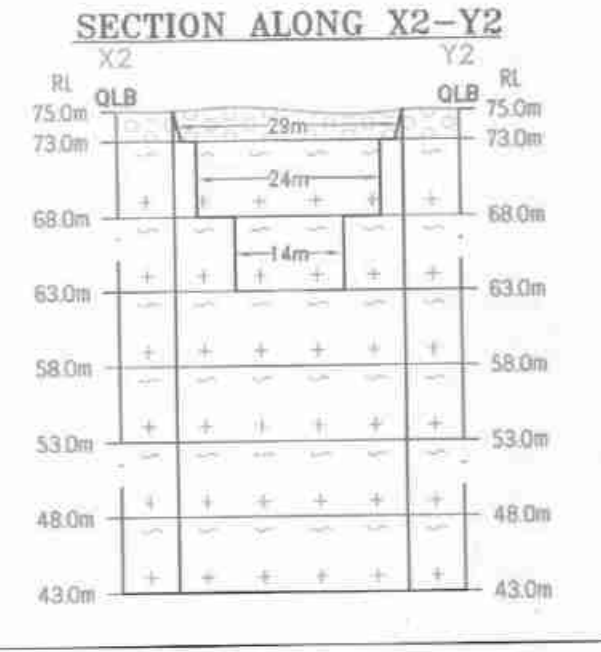
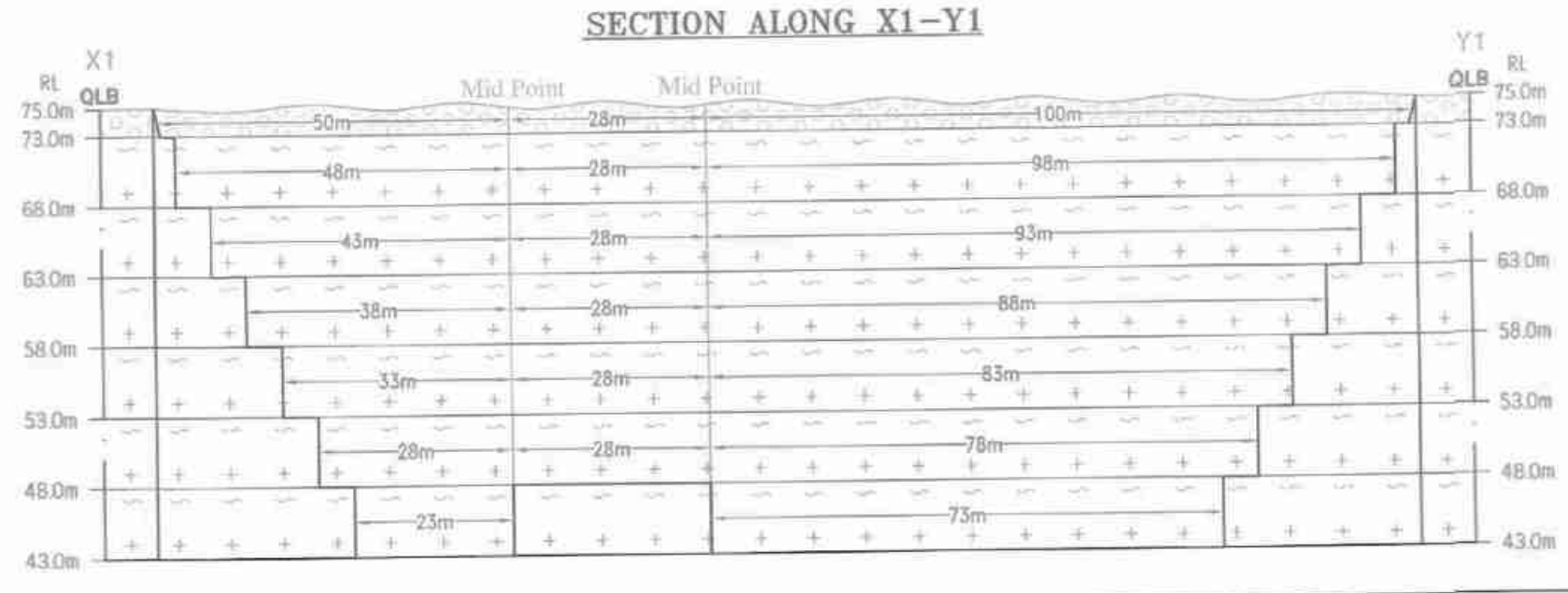
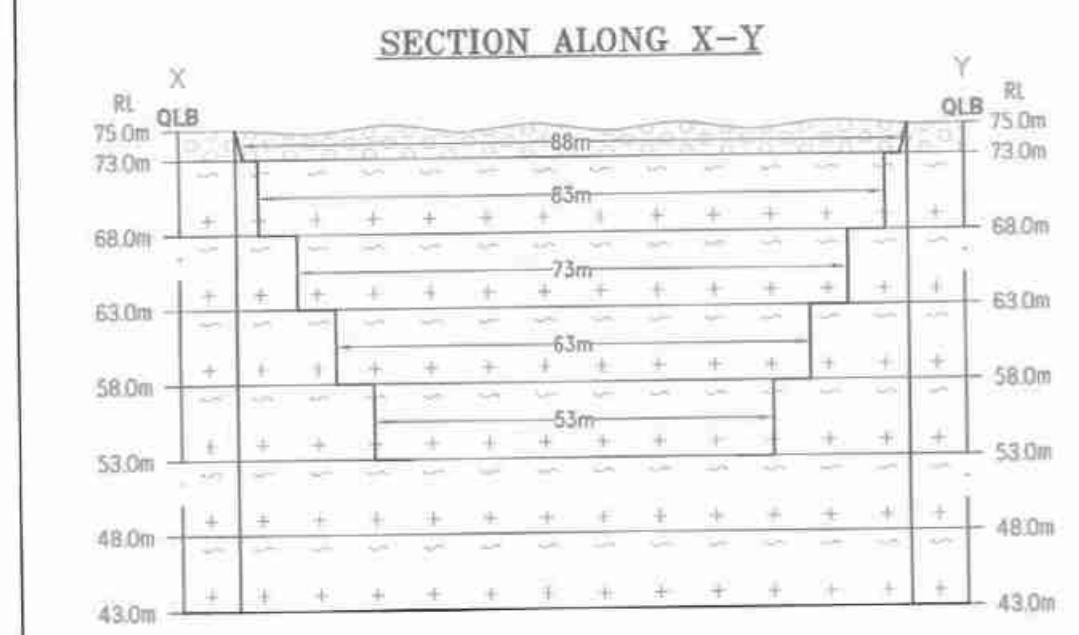
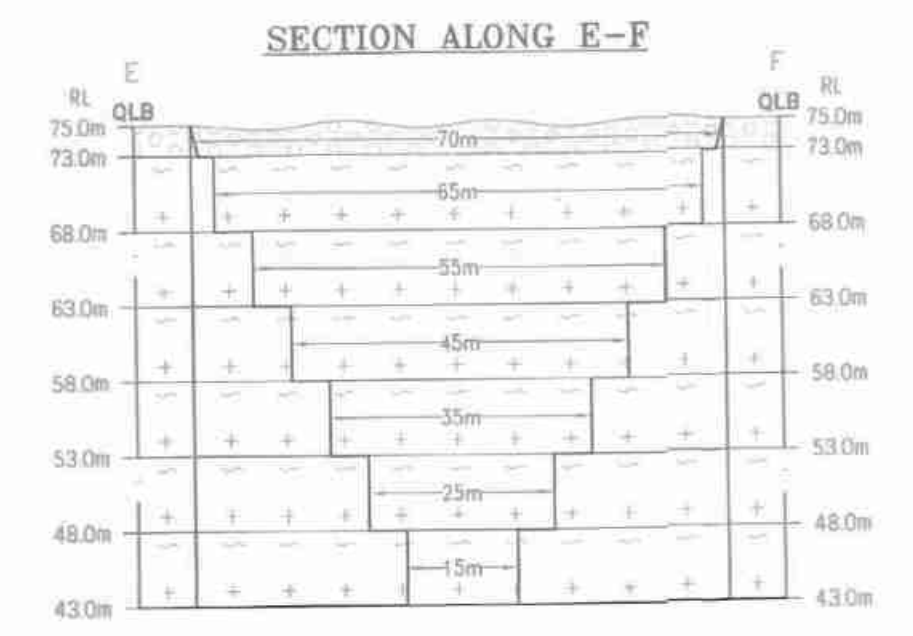
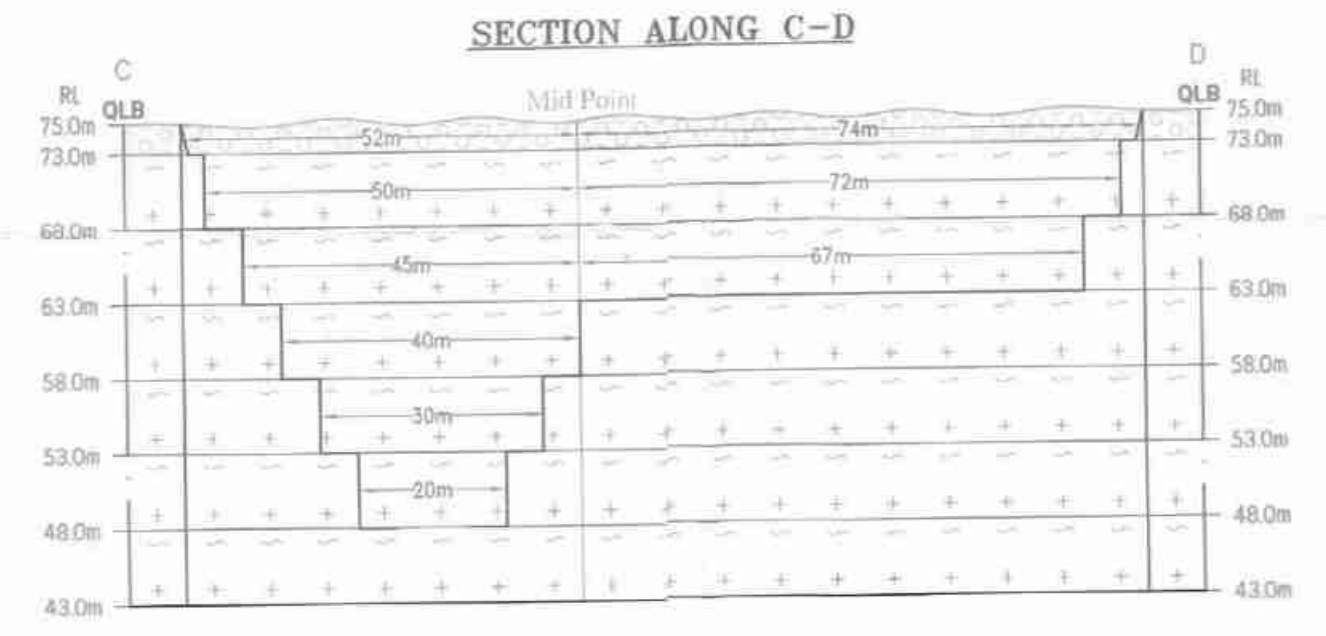
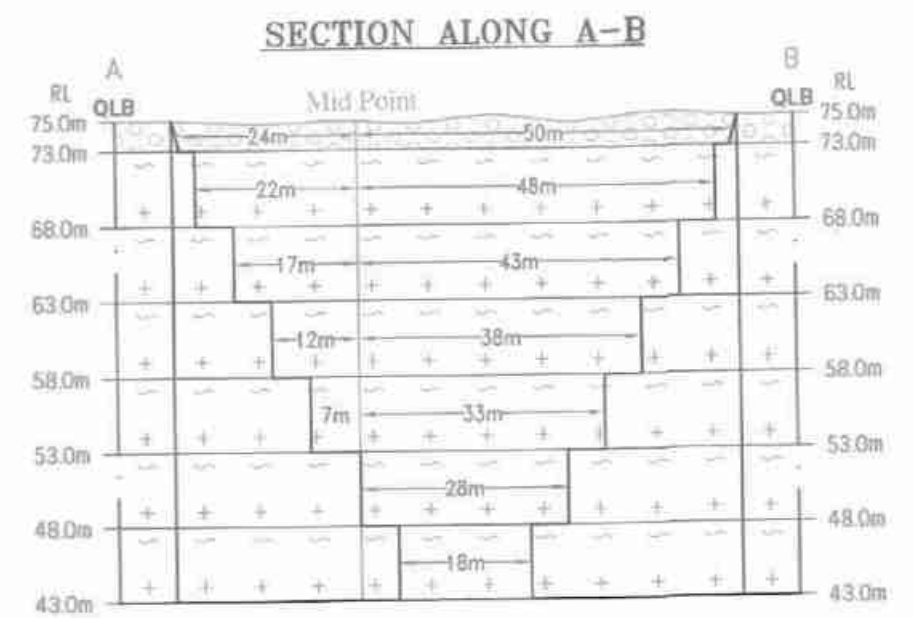
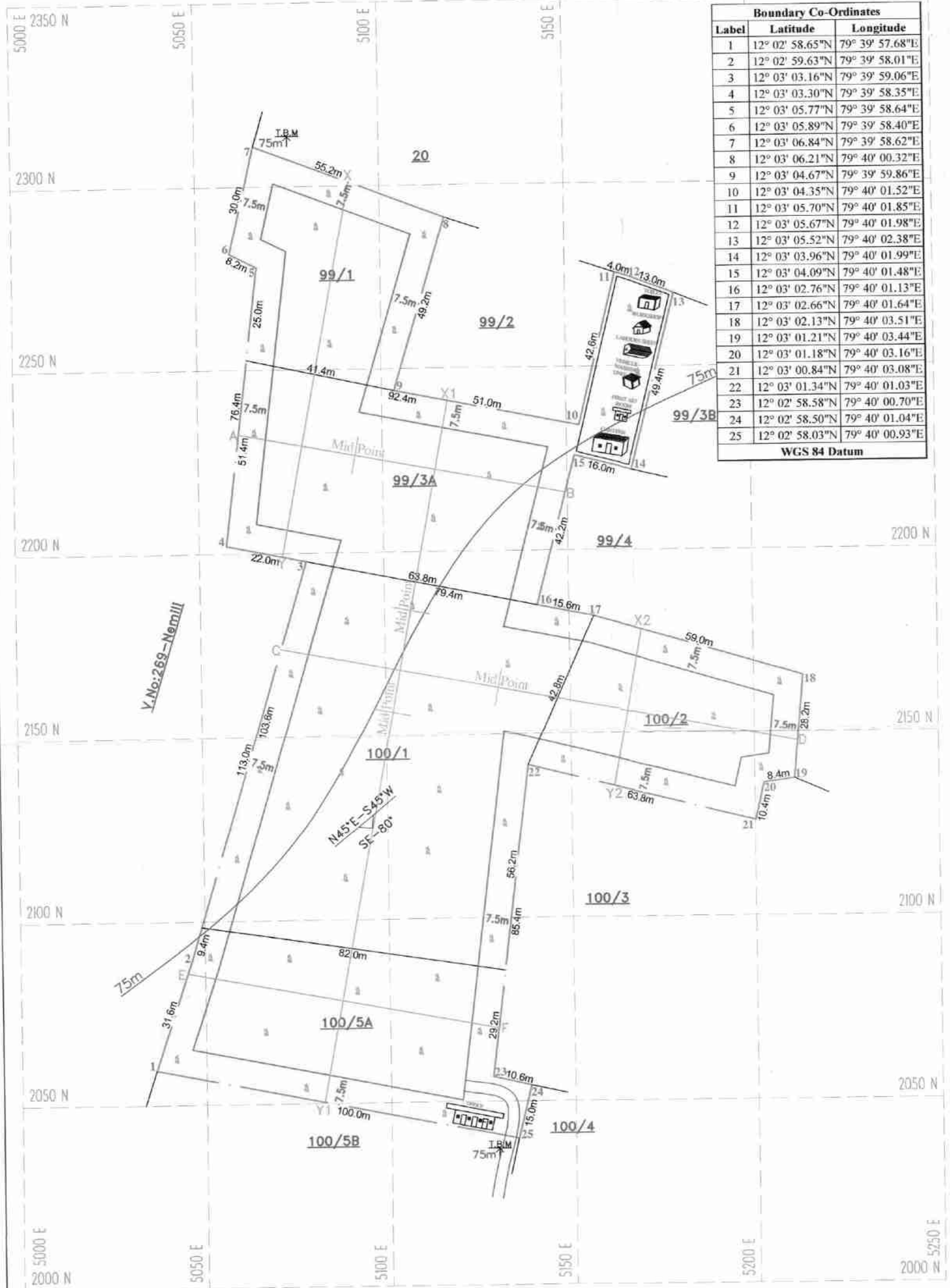
*C. Natarajan*  
 C.NATARAJAN, M.Sc., M.Phil.,  
 QUALIFIED PERSON 289





Boundary Co-Ordinates		
Label	Latitude	Longitude
1	12° 02' 58.65"N	79° 39' 57.68"E
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24	12° 02' 58.50"N	79° 40' 01.04"E
25	12° 02' 58.03"N	79° 40' 00.93"E

WGS 84 Datum



**PLATE NO-IV**  
 DATE OF SURVEY : 11.03.2024

**APPLICANT:**  
 THIRU.D.GNANAGURU,  
 S/o.DHANAPAL,  
 NO.219/C, IYYANAR KOVIL STREET,  
 TENNAMADEVI VILLAGE,  
 VIKKIRAVANDI TALUK,  
 VILUPPURAM DISTRICT.

**QUARRY LEASE APPLIED AREA:**  
 S.F.NO'S : 99/1, 99/3A, 100/1, 100/2 & 100/5A,  
 EXTENT : 2.22.5 Ha,  
 VILLAGE : THOLLAMUR,  
 TALUK : VANUR,  
 DISTRICT : VILUPPURAM.

**INDEX**

- Q.LEASE APPLIED BOUNDARY
- 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- GRAVEL
- ROUGH STONE
- STRIKE & DIP

**MINEABLE PLAN & SECTIONS**  
 SCALE 1 : 1000  
 SECTIONS HOR 1:1000, VER 1:500

**PREPARED BY:**  
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

*C. Natarajan*  
 C.NATARAJAN,M.Sc,M.Phil.,  
 QUALIFIED PERSON

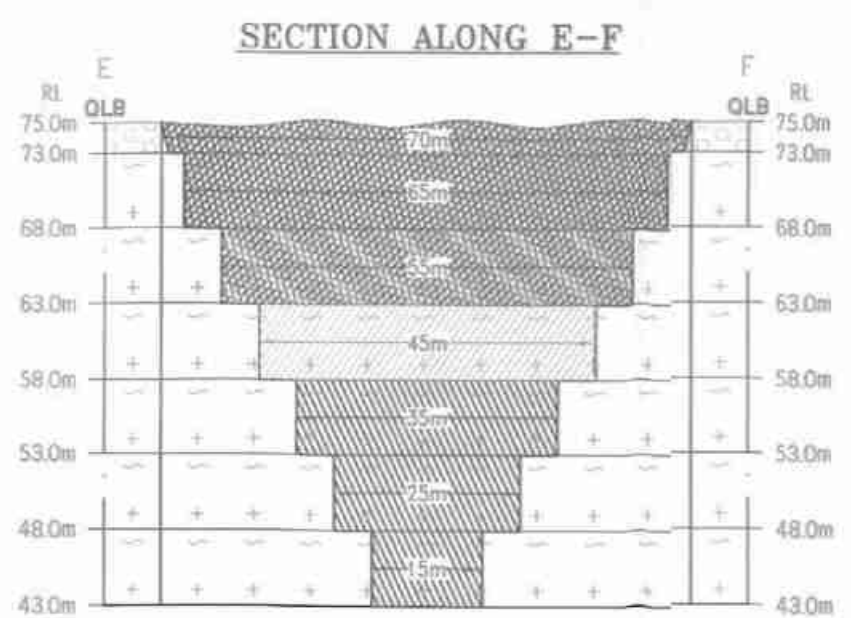
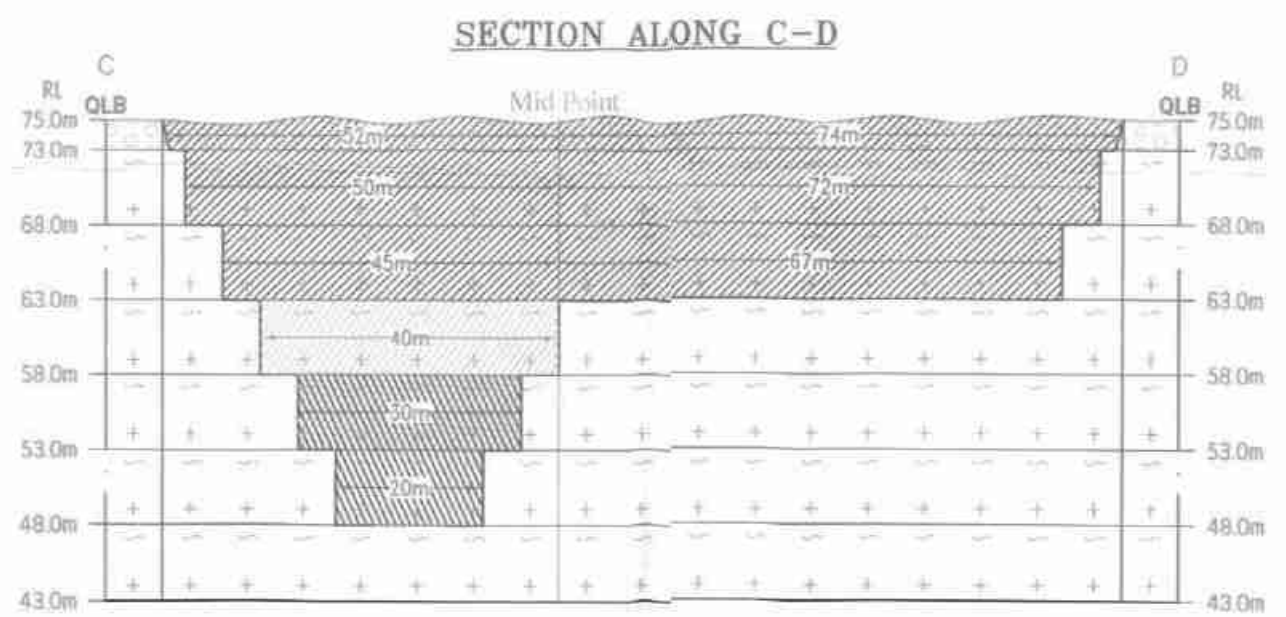
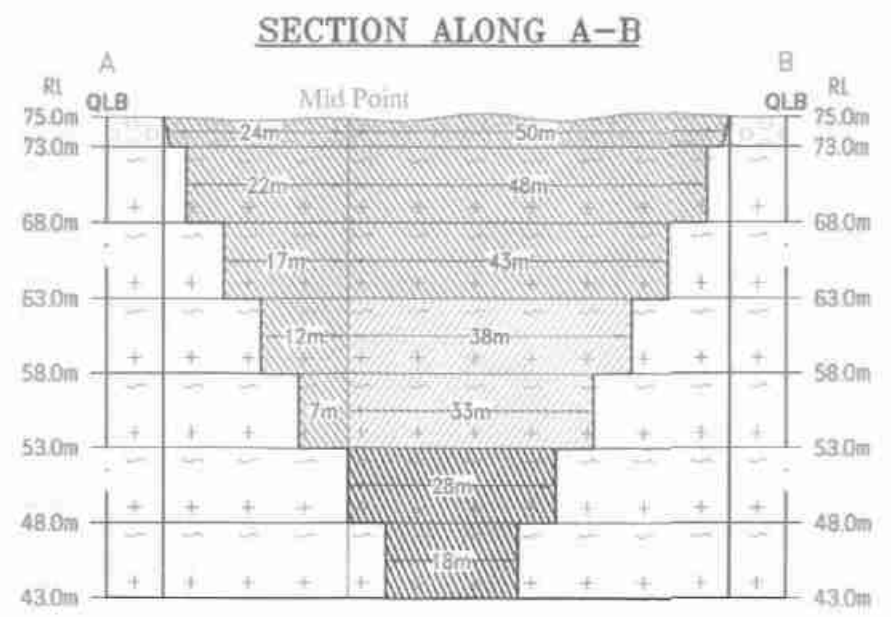
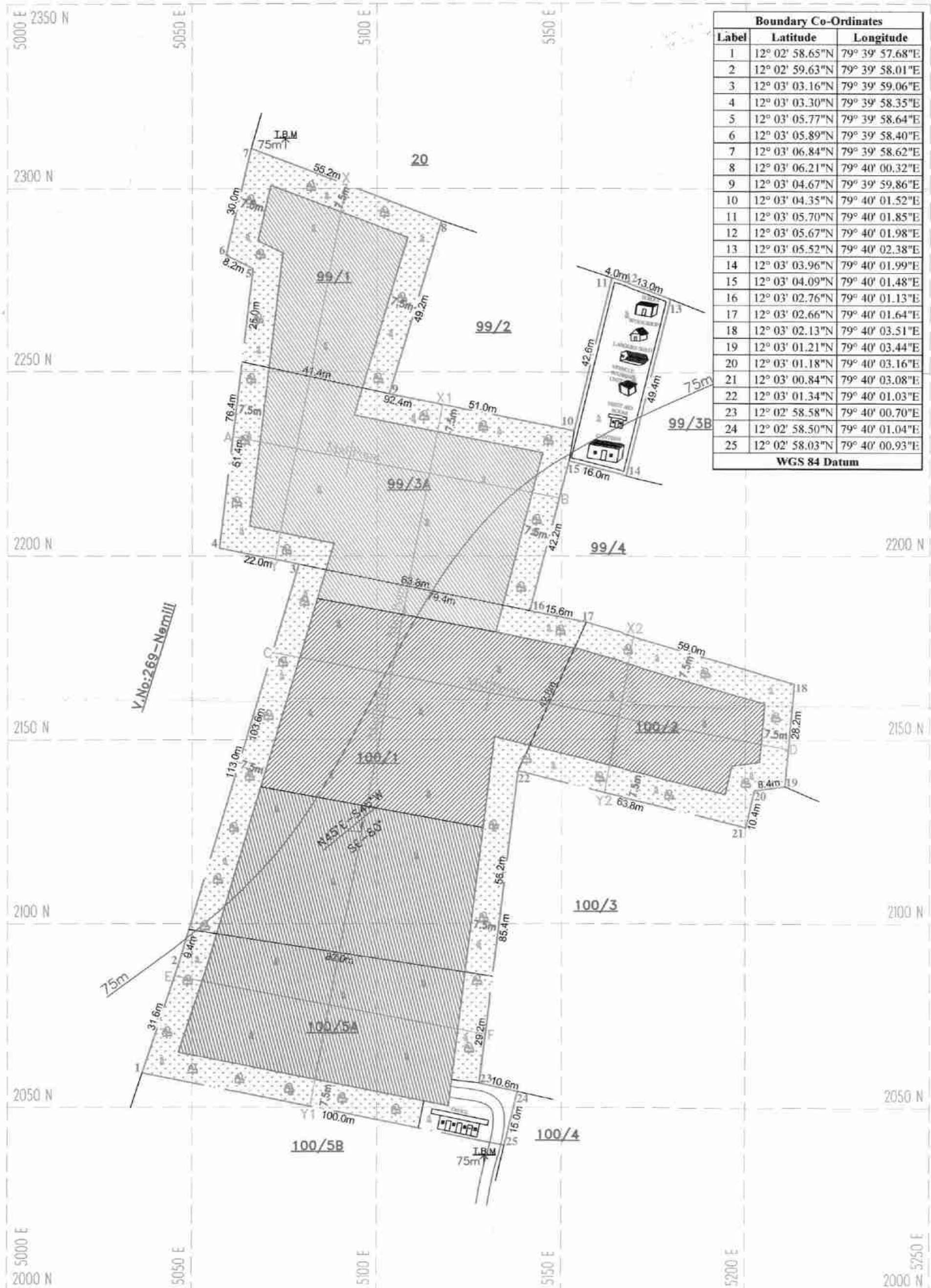




Boundary Co-Ordinates		
Label	Latitude	Longitude
1	12° 02' 58.65"N	79° 39' 57.68"E
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25	12° 02' 58.03"N	79° 40' 00.93"E

WGS 84 Datum

PRESENT & POST LAND USE PATTERN		
DESCRIPTION	PRESENT AREA (Ha)	AREA AT THE END OF THIS QUARRYING PERIOD (Ha)
AREA UNDER QUARRYING	NII	1.51.5
INFRASTRUCTURE	NII	0.02.0
ROADS	NII	0.01.0
GREEN BELT	NII	0.68.0
UN-UTILIZED AREA	2.22.5	NII
GRAND TOTAL	2.22.5	2.22.5



1st yr Proposed area to be Quarried

2nd yr Proposed area to be Quarried

3rd yr Proposed area to be Quarried

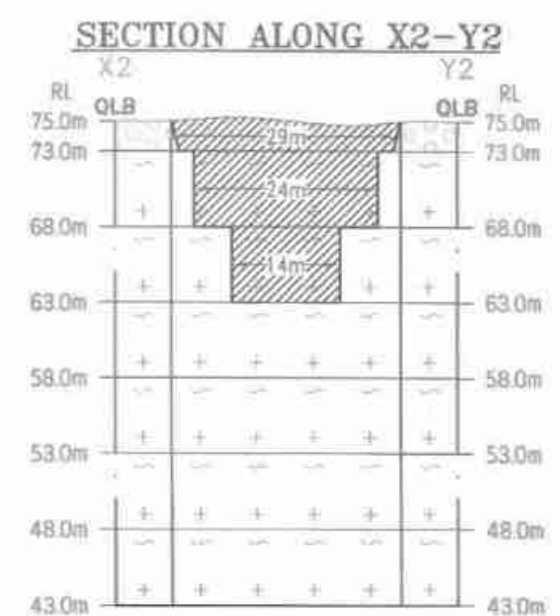
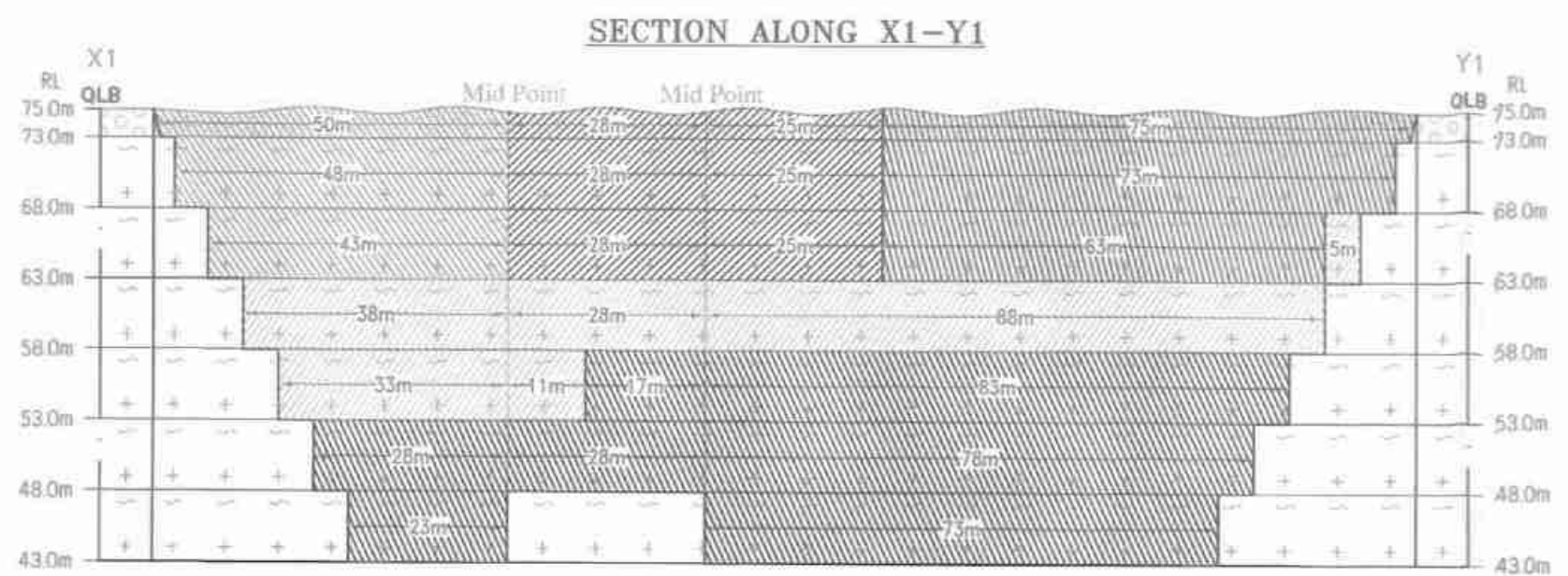
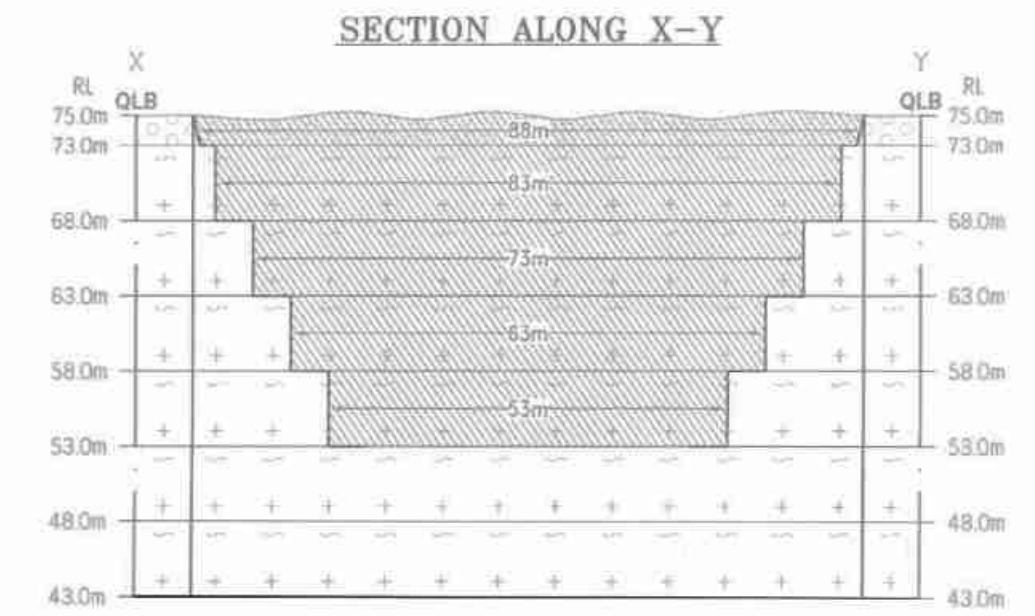
4th yr Proposed area to be Quarried

5th yr Proposed area to be Quarried

Proposed area to be Planted

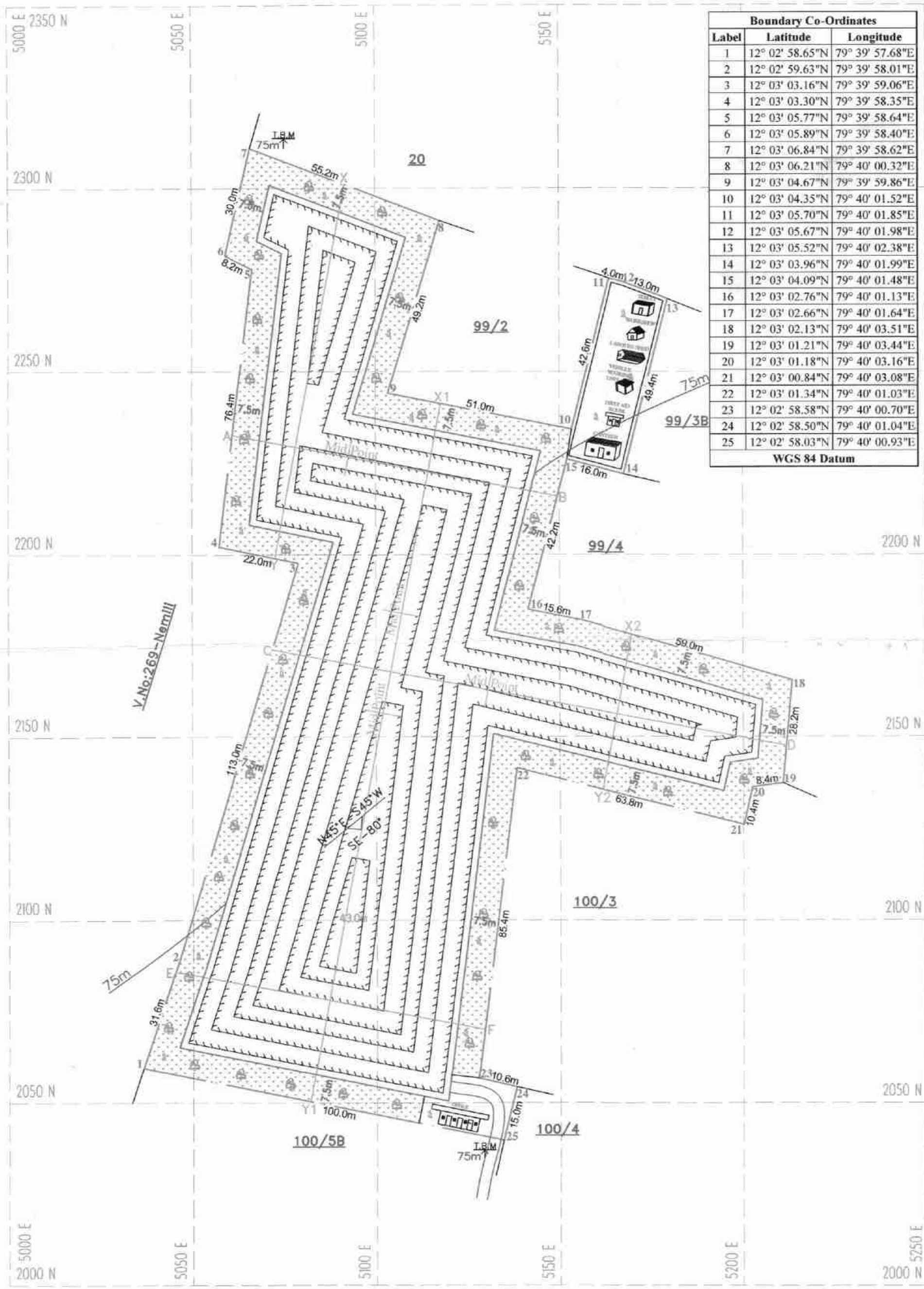
**PLATE NO-V**  
**DATE OF SURVEY : 11.03.2024**  
**APPLICANT:**  
 THIRU.D.GNANAGURU,  
 S/O.DHANAPAL,  
 NO.219/C, IYYANAR KOVIL STREET,  
 TENNAMADEVI VILLAGE,  
 VIKKIRAVANDI TALUK,  
 VILUPPURAM DISTRICT.  
**QUARRY LEASE APPLIED AREA:**  
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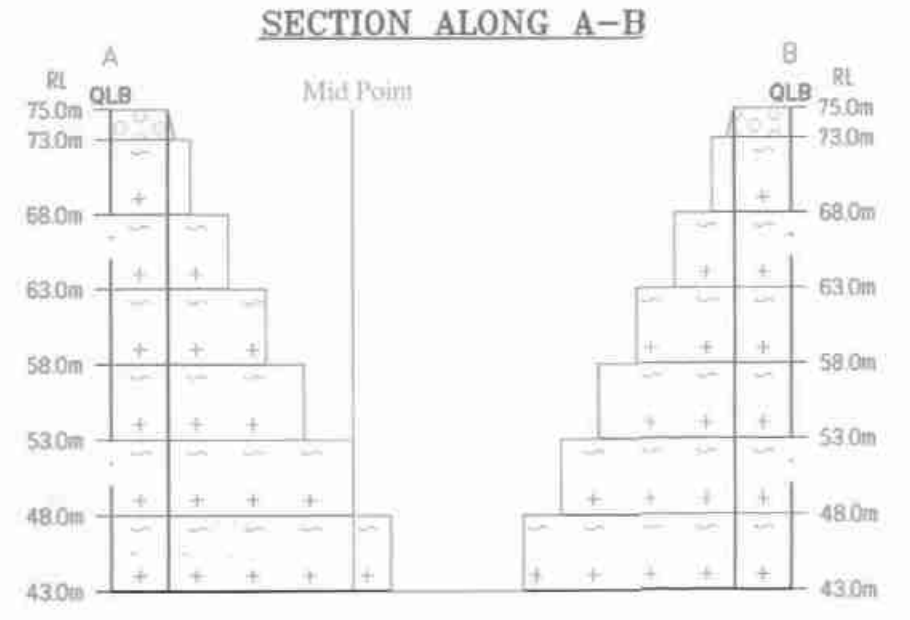
**YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS**  
 SCALE 1 : 1000  
 SECTIONS HOR 1:1000, VER 1:500  
**PREPARED BY:**  
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT  
  
 C.NATARAJAN, M.Sc., M.Phil.,  
 QUALIFIED PERSON 291





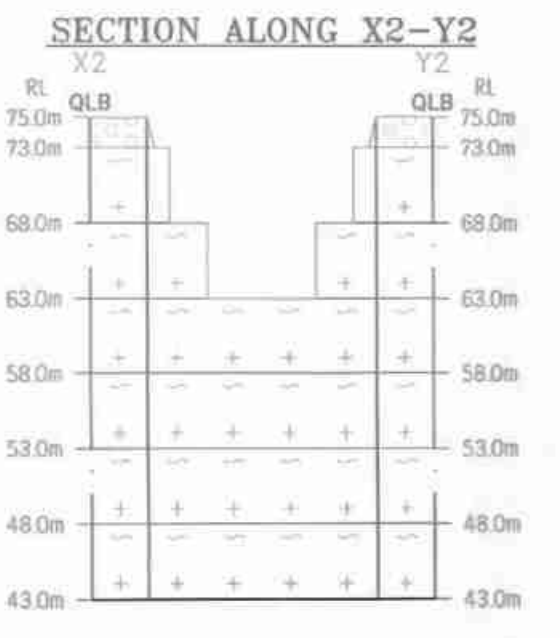
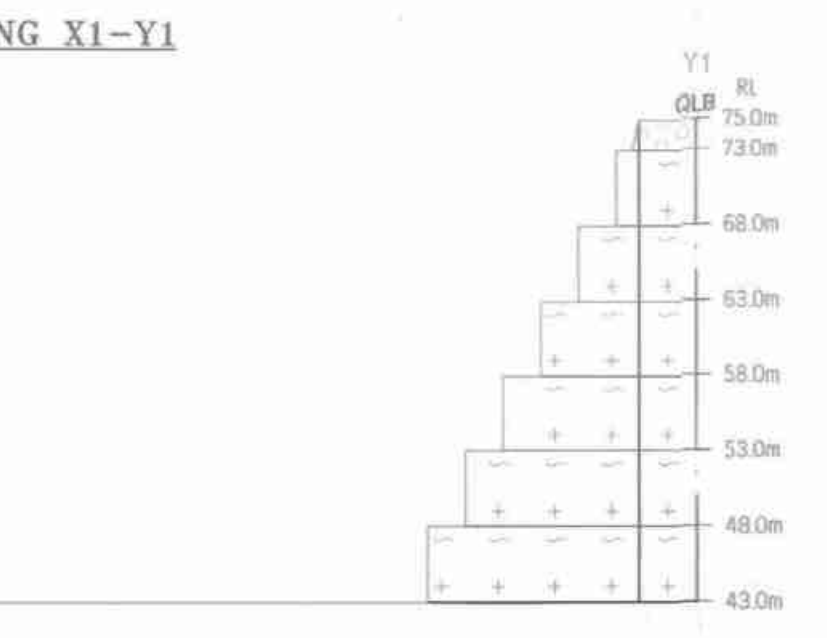
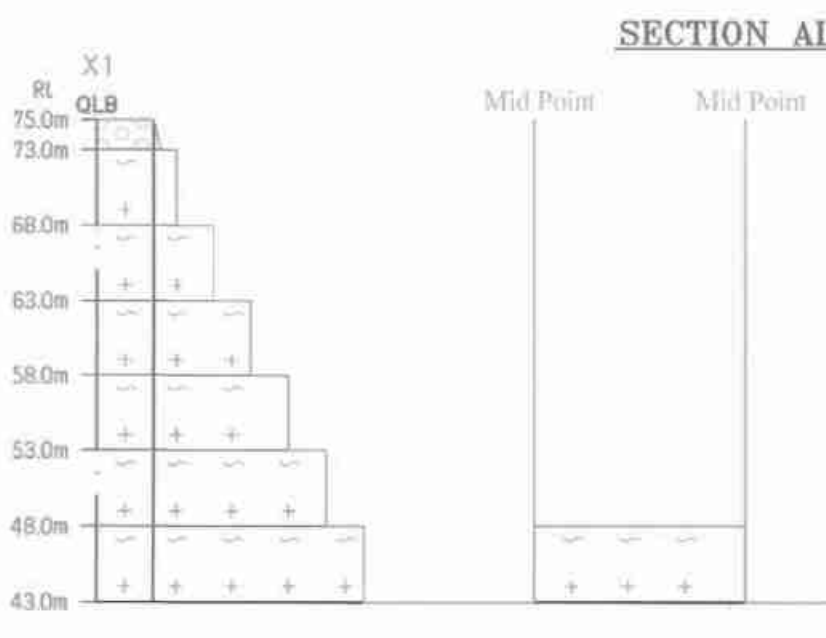
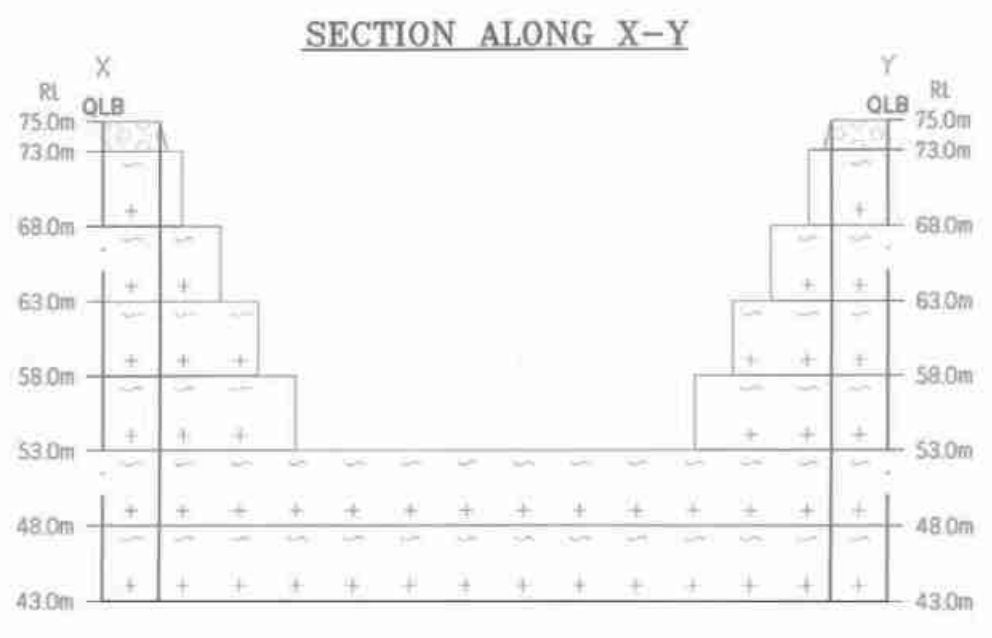
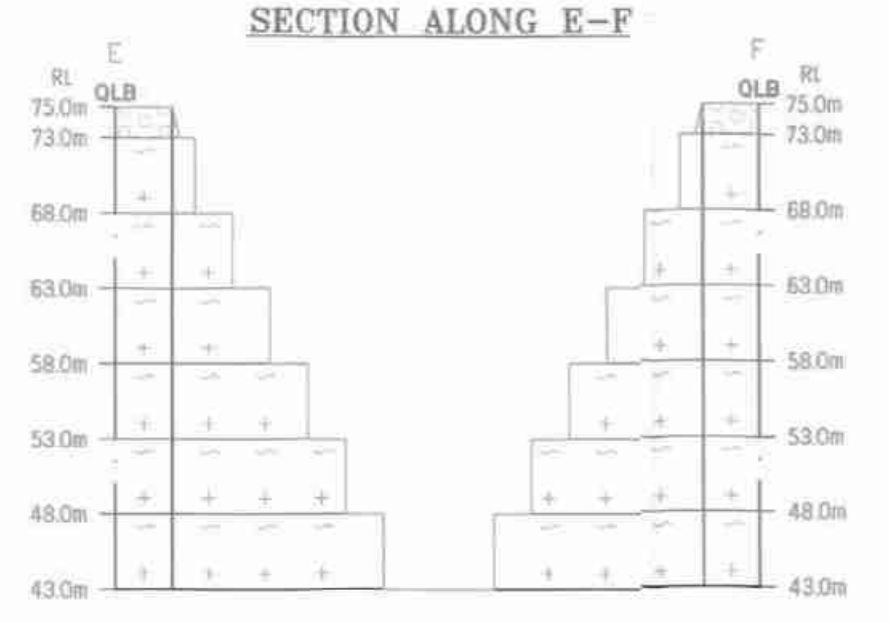
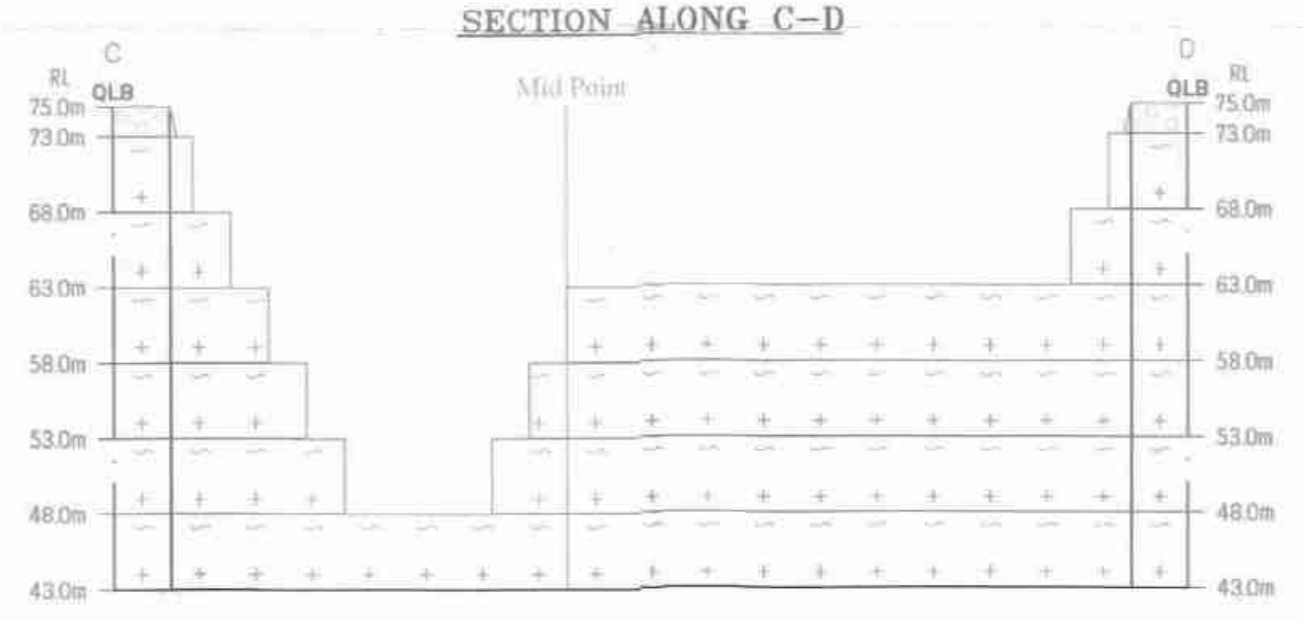
Boundary Co-Ordinates		
Label	Latitude	Longitude
1	12° 02' 58.65"N	79° 39' 57.68"E
2	12° 02' 59.63"N	79° 39' 58.01"E
3	12° 03' 03.16"N	79° 39' 59.06"E
4	12° 03' 03.30"N	79° 39' 58.35"E
5	12° 03' 05.77"N	79° 39' 58.64"E
6	12° 03' 05.89"N	79° 39' 58.40"E
7	12° 03' 06.84"N	79° 39' 58.62"E
8	12° 03' 06.21"N	79° 40' 00.32"E
9	12° 03' 04.67"N	79° 39' 59.86"E
10	12° 03' 04.35"N	79° 40' 01.52"E
11	12° 03' 05.70"N	79° 40' 01.85"E
12	12° 03' 05.67"N	79° 40' 01.98"E
13	12° 03' 05.52"N	79° 40' 02.38"E
14	12° 03' 03.96"N	79° 40' 01.99"E
15	12° 03' 04.09"N	79° 40' 01.48"E
16	12° 03' 02.76"N	79° 40' 01.13"E
17	12° 03' 02.66"N	79° 40' 01.64"E
18	12° 03' 02.13"N	79° 40' 03.51"E
19	12° 03' 01.21"N	79° 40' 03.44"E
20	12° 03' 01.18"N	79° 40' 03.16"E
21	12° 03' 00.84"N	79° 40' 03.08"E
22	12° 03' 01.34"N	79° 40' 01.03"E
23	12° 02' 58.58"N	79° 40' 00.70"E
24	12° 02' 58.50"N	79° 40' 01.04"E
25	12° 02' 58.03"N	79° 40' 00.93"E

WGS 84 Datum



Ultimate Pit Dimension  
L178m(Max)X85(Avg)mXD32m(Max)

Proposed area to be Planted



**PLATE NO-VI**  
DATE OF SURVEY : 11.03.2024

**APPLICANT:**  
THIRU.D.GNANAGURU,  
S/o.DHANAPAL,  
NO.219/C, IYYANAR KOVIL STREET,  
TENNAMADEVI VILLAGE,  
VIKKIRAVANDI TALUK,  
VILUPPURAM DISTRICT.

**QUARRY LEASE APPLIED AREA:**  
S.F.NO'S : 99/1, 99/3A, 100/1, 100/2 & 100/5A.  
EXTENT : 2.22.5 Ha,  
VILLAGE : THOLLAMUR,  
TALUK : VANUR,  
DISTRICT : VILUPPURAM.

INDEX	
Q.LEASE APPLIED BOUNDARY	
7.5m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
APPROACH ROAD	
CONTOUR	
SCRUB	
GRAVEL	
ROUGH STONE	
STRIKE & DIP	
PROPOSED QUARRY PIT	

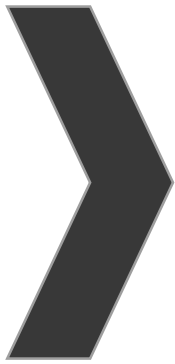
**CONCEPTUAL PLAN & SECTIONS**  
SCALE 1 : 1000  
SECTIONS HOR 1:1000, VER 1:500

**PREPARED BY:**  
THIS IS TO CERTIFY THAT THE INFORMATION  
IN THIS PLATE IS TRUE AND CORRECT TO  
THE BEST OF MY KNOWLEDGE BASED UPON  
THE LEASE MAP AUTHENTICATED BY STATE  
GOVERNMENT

*C. Natarajan*  
C.NATARAJAN, M.Sc., M.Phil.,  
QUALIFIED PERSON







**ANNEXURE-4**



From  
Tmt. S.Safiya, M.Sc.,  
Assistant Director,  
Geology and Mining,  
Viluppuram.

To  
Thiru.D.Gnanaguru,  
S/o.Dhanapal,  
No.219/1C, Iyyanar Kovil Street,  
Tennamadevi Village,  
Vikravandi Taluk,  
Viluppuram District.

**Rc.No.A/G&M/116/2023 Dated 02.04.2024**

Sub: Mines & Minerals – Minor Mineral – Rough stone and Gravel - Viluppuram District – Vanur Taluk – Thollamur Village - over an extent of 2.22.5 hectares of patta lands – S.F.Nos. 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0) – Quarry lease application preferred by Thiru.D.Gnanaguru, S/o.Dhanapal – Precise area communicated – Details of quarries situated within 500 meter radial distance – furnished - reg.

Ref: 1. Assistant Director, Geology and Mining, Viluppuram Letter Rc.No.A/G&M/116/2023 Dated 11.03.2024.

2. Representation from Thiru.D.Gnanaguru, S/o.Dhanapal Dated 18.03.2024.

With reference to your letter in the reference 2<sup>nd</sup> 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 2.22.5 hectares of patta lands – S.F.Nos. 99/1 (0.27.0), 99/3A (0.54.0), 100/1 (0.75.5), 100/2 (0.27.0), 100/5A (0.39.0) of Thollamur 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.	V.Ramesh, S/o.Vengatapathi, No.5, Thiyagarayar Street, HLL Colony, Pammal, Chennai – 75.	Rough stone & Gravel	Vanur, Thollamur	16/11 16/12 17/1 18/3B	0.45.0 0.74.5 1.63.5 <u>0.70.0</u> <b>3.53.0</b>	07.03.2022 to 06.03.2027	-

*D. Curry*


2.	Tvl.Sree Thiruchendhur Murugan Blue Metals represented by its partner Thiru. P.Subramani, No.3-3/3-3, Main Road, Thoravi Village, Vikravandi Taluk, Viluppuram District.	Rough stone & Gravel	Vanur, Thollamur	20/1	0.83.0	04.01.2022 to	
				20/2A	0.42.5		
				20/2B	0.43.0	03.01.2027	
				20/3	1.34.0		
				21/4	0.31.5		
				21/6	0.56.0		
				99/2	0.24.0		
99/3B	0.28.5						
99/6	<u>0.15.0</u> <u>4.57.5</u>						


### 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.D.Gnanaguru, S/o.Dhanapal, No.219/1C, Iyyanar Kovil Street, Tennamadevi Village, Vikravandi Taluk, Viluppuram District.	Rough stone & Gravel	Vanur, Thollamur	99/1 99/3A 100/1 100/2 100/5A	0.27.0 0.54.0 0.75.5 0.27.0 <u>0.39.0</u> <u>2.22.5</u>	-

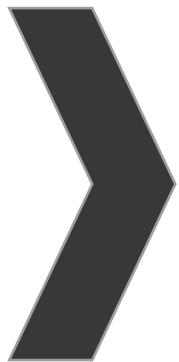
### III. Abandoned quarries :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period	Remarks
NIL							

  
 Assistant Director,  
 Dept. of Geology and Mining,  
 Viluppuram.

  
 02.04.24





# ANNEXURE-5



TOPOGRAPHICAL VIEW OF  
THOLLAMUR VILLAGE D. GUNNAGURU  
ROCKSTONE/GRAVEL QUARRY LEASE APPLIED AREA.



LOCATION DETAILS:

Name and Address of the  
Applicant :

D. Gunnaguru  
S/o. G. Dharmapal  
219/C. Ayyanur Kent Street  
Thennamadu  
Villupuram. 605602

S.F.No: 99/1, 99/3A, 100/1, 100/2, 100/5A.

Extent: 2.22.5 Ha

Village: Thollamur

Taluk: Vanur

Dist: Villupuram

State: Tamilnadu.

S. Raju  
சீராமன் ரிசர்வ் டிபன்டென்ட்  
மதுரை மாவட்டம்  
புதுவாணர் 64 தொண்டைவர் கிராமம்  
வாணூர் வட்டம், விழுப்புரம் மாவட்டம்.

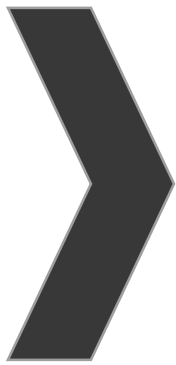
## சான்று

விழுப்புரம் மாவட்டம் வானூர் வட்டம் தொள்ளாமூர் கிராமம் அயன் புஞ்சை சர்வே எண் 99/1(0.27.0), 99/3A(0.54.0), 100/1(0.75.5), 100/2(0.27.0), 100/5A(0.39.0), மொத்த ஹெக்டேர் (2.22.5) நிலம் பட்டா எண் 1384,1420 ன் படி தனபால் மகன் ஞானகுரு என்பவர் பெயரில் கிராம கணக்கில் தாக்கலாகி உள்ளது மேற்படி புல எண்ணில் ஓடைகள் ஏதுவும் இல்லை . மேற்படி புல எண்ணில் உயர்மின் அழுத்த கம்பிகள் ஏதுவும் இல்லை. மேற்படி புல எண்ணில் 300 மீட்டர் சுற்றளவில் எந்தவிதமான குடியிருப்புகள், வரலாற்று சிறப்புமிக்க பிரதான சின்னங்கள் , கோவில்கள் ஏதுவும் இல்லை . மேற்படி இடத்தில் கருங்கல் மற்றும் சரள் வெட்டி, எடுக்க கிராமத்தில் நாளது தேதியில் ஆட்சேபனை ஏதுமில்லை என்று சான்றளிக்கப்படுகிறது.

S. Raji  
கிராம சர்வேட்டர்  
விழுப்புரம் மாவட்டம் வானூர் வட்டம்  
தொள்ளாமூர் கிராமம் அயன் புஞ்சை  
சர்வேட்டர் அலுவலகம், விழுப்புரம்

D. Suresh





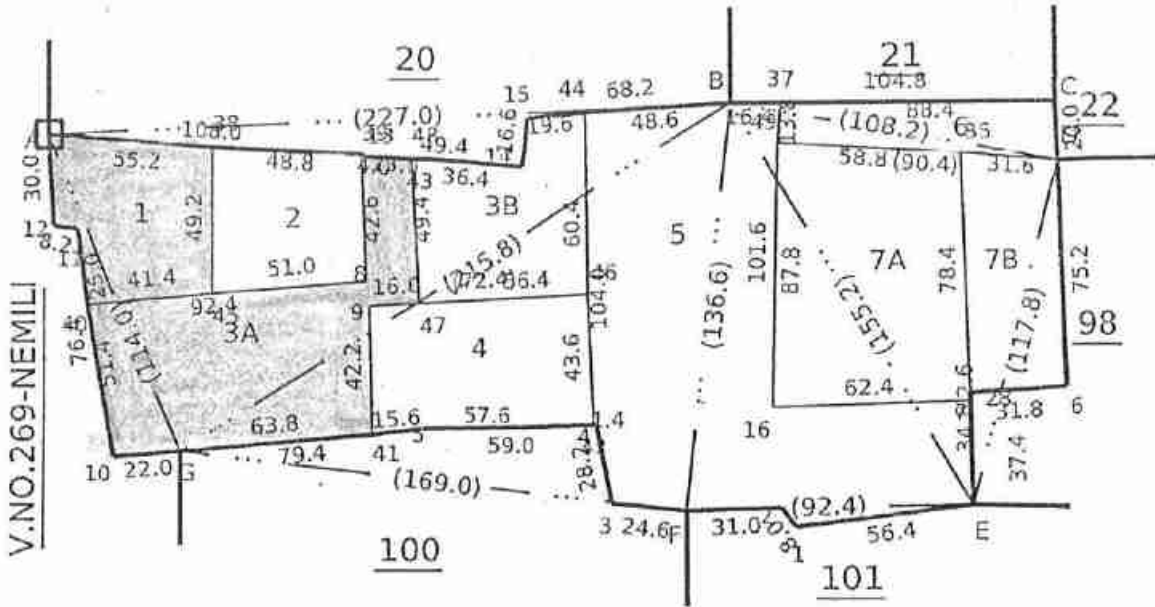
**ANNEXURE-6**



District : Viluppuram  
 Taluk : VANUR  
 Village : Thollamur [266]



Survey No : 99  
 Area : Hect 03 Acres 60.50  
 Scale : 1 : 2554



V.NO.269-NEMILI

*(Handwritten signature)*

S. Raju  
 கிராம நிர்வாக அலுவலர்  
 மன்றம் திண்டிவனம்  
 புதினம் 64 ஏக்கர் பகுதி  
 வாரியர் வட்டம், திண்டிவனம் மாவட்டம்.  
 16/08/2023

LEASE APPLIED AREA

District : Viluppuram

Taluk : VANUR

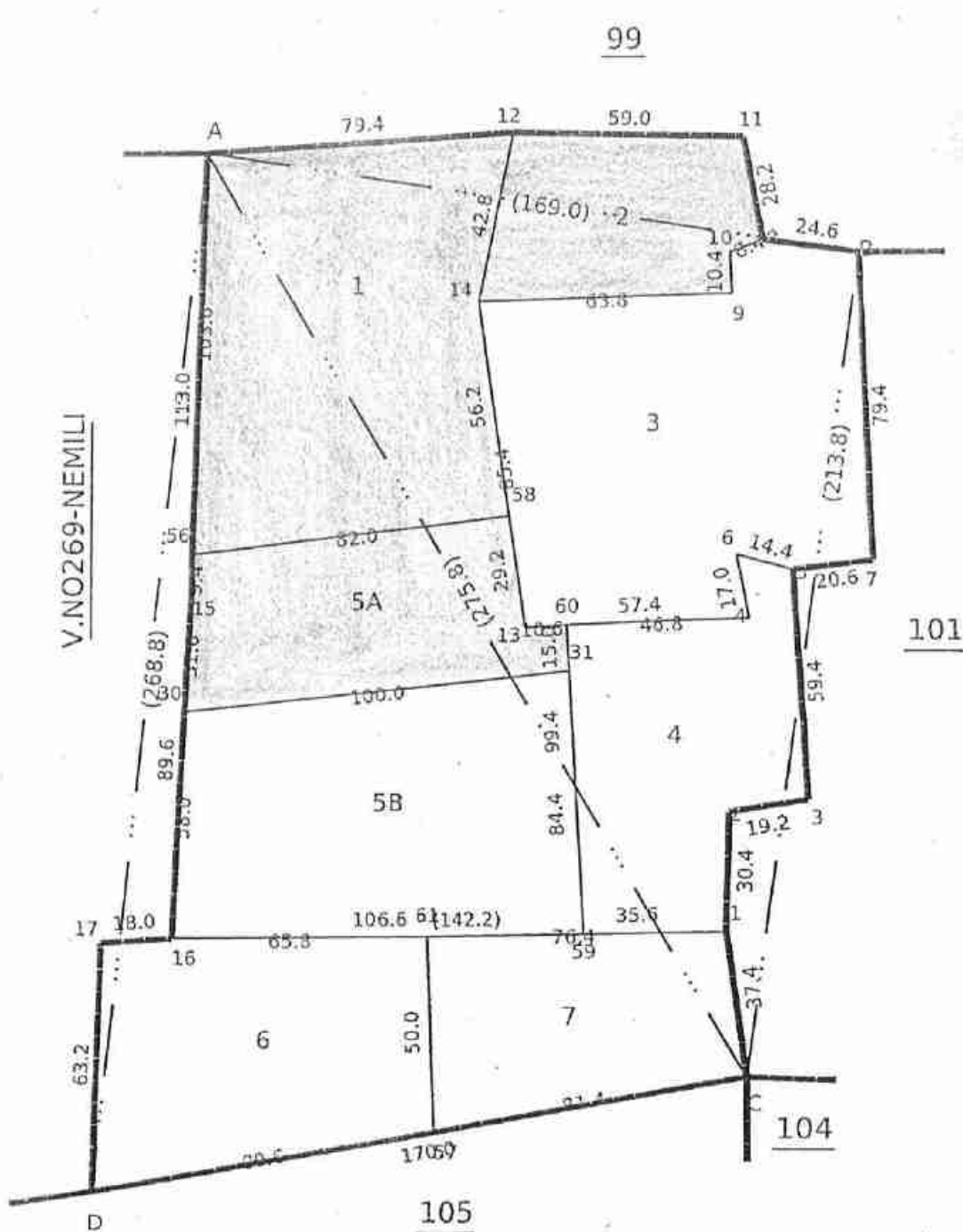
Village : Thollamur [266]



Survey No. 100

Area : Hect 04 Ares 50

Scale : 1 : 1771



12 - சைக்கிள் பாதை

S. Ravi

சுற்றுலா மற்றும் மது அமைச்சு

மது அமைச்சு

மது அமைச்சு

மது அமைச்சு

மது அமைச்சு

மது அமைச்சு

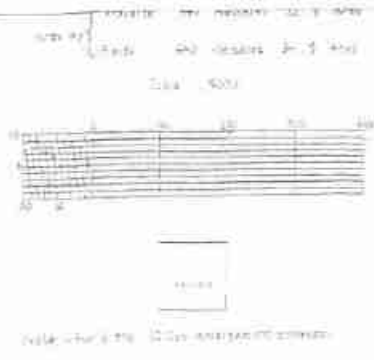
16/08/20

Digitally Signed By 305

GOVARTHANAN

260 5 7





No. 297  
KONDALANKUPPAM

No. 295  
KONDALANKUPPAM

No. 292  
TIRUVAIKKARAI

LEASE APPLIED AREA



தமிழக அரசு  
வருவாய்த் துறை

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

மாவட்டம் : விழுப்புரம்

வட்டம் : வாணார்

வருவாய் கிராமம் : தொள்ளாமூர்

பட்டா எண் : 1420

உரிமையாளர்கள் பெயர்

1. தனபால் மகன் ஞானகுரு

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
99	I	0 - 27.00	1.50	--	--	--	--	2023/0103/07/341712- --- 01-08-2023
99	3A	0 - 54.00	3.00	--	--	--	--	2023/0103/07/341712- --- 01-08-2023
		0 - 81.00	4.50					

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 07/02/266/01420/20627 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 16-08-2023 அன்று 01:47:41 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

D. Cruz



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : விழுப்புரம்

வட்டம் : வாணார்

வருவாய் கிராமம் : தொள்ளாமூர்

பட்டா எண் : 1389

உரிமையாளர்கள் பெயர்

1. தனபால்

தந்தை

ஞானகுரு



புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
100	1	0 - 75.50	4.19	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
100	2	0 - 27.00	1.50	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
100	5A	0 - 39.00	2.16	--	--	--	--	2022/0105/07/417614- -2022/07/02/000052SD -- 27-09-2022
100	7	0 - 36.00	2.50	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
101	1	0 - 27.50	1.53	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
101	7	0 - 32.00	1.78	--	--	--	--	2022/0103/07/300856- --- 15-09-2022
99	7B	0 - 24.29	1.35	--	--	--	--	2022/0105/07/417614- -2022/07/02/000052SD -- 27-09-2022
		2 - 61.29	15.01					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 07/02/266/01389/20611 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 16-08-2023 அன்று 12:53:20 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

D. Cruz

1433ஆம் பசலியில்

விசேஷம்

மாவட்டம்

மாணவர்



புல வரித் திட்டத்தின்படி புலங்களின் விபரம்.					சார்பு யானரின் பெயர்.	முதல்	பயிரின் பெயர்.	பயிரான அறுவடையான பரப்பு.	உள்பையான பாய்ச்சல் ஆதாரம்.	விளைச்சல் அளவு விழுக்காடு.	
(1) நில அளவை எண்.	(2) உட்பிரிவு எண்.	(3) பரப்பு.	(4) தீர்வை.	(5) ஒரு போகம் அல்லது இரு போகம்.							
99	1	0270	1.50	1420	கைப்பற்று தாரகுடைய பெயரும் எண்ணும் அல்லது அனுபோக தாரகுடைய பெயர்.	திலத்தின் எந்த பகுதி யாவது சார்புயானரால் பயிரிடப்பட்டுள்ளது.	எந்த பாதத்தில் பயிர் செய்யப்பட்டது. எந்த மாதத்தில் அறுவடை செய்யப்பட்டது.	பயிரின் பெயர்.	பயிரான அறுவடையான பரப்பு.	உள்பையான பாய்ச்சல் ஆதாரம்.	விளைச்சல் அளவு விழுக்காடு.
99	3A	0540	3.00	1420	செவ்வாடு				0270		
99	1	0755	4.19	1389	do				0540		
	2	0270	1.50	1389	do				0755		
	5A	0390	2.16	1389	do				0270		
	7	0360	2.50	1389	do				0390		
101	1	0275	1.53	1389	do				0360		
	7	0320	1.78	1389	do				0275		
99	7B	0242	1.35	1389	do				0320		
									0242		
/ 2 கைப்பற்று /											

S. Ravi  
 கிராம நிர்வாக அலுவலர்  
 மந்தளம், மீதப்ப, கீழப்ப  
 ப.நிலவாரி 24 தொண்டர் கிராமம்  
 வானூர் வட்டம், விழுப்புரம் மாவட்டம்.  
 16/08/2023

D. Ann



## அ-பதிவேடு விவரங்கள்

மாவட்டம் : விழுப்புரம்

வட்டம் : வாலூர்

கிராமம் : தொள்ளாமூர்



1. புல எண்	99	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	1	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	193-1A	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 27.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.50
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1420
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுரு

## குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 100627 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்

மாவட்டம் : விழுப்புரம்

வட்டம் : வானூர்

கிராமம் : தொள்ளாமூர்



1. புல எண்	99	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	3A	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	193-2	11. தீர்வை (சூ - ஹெ)	5.55
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 54.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (சூ - பை)	3.00
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1420
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுரு

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 100627 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

D. Suresh

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்

வட்டம் : வானூர்

கிராமம் : தொள்ளாமூர்

1. புல எண்	100	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	1	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	195-1A1	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 75.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	4.19
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1389
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுரு

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20611 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

D. Suresh

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்  
வட்டம் : வானூர்  
கிராமம் : தொள்ளாமூர்

1. புல எண்	100	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	2	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	194	11. தீர்வை (ரூ - ஹெ)	5.55
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 27.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.50
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1389
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுரு

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20611 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

D. Luis

அ-பதிவேடு விவரங்கள்



மாவட்டம் : விழுப்புரம்  
வட்டம் : வானூர்  
கிராமம் : தொள்ளாமூர்

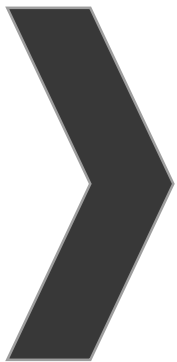
1. புல எண்	100	9. மண் வயனமும் ரகமும்	7 - 2
2. உட்பிரிவு எண்	5A	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	100-5	11. கீர்வை (ரு - ஹெ)	5.55
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 39.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த கீர்வை (ரு - ஸ்ப)	2.16
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1389
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஞானகுகு

குறிப்பு 1:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டினின்று பெறப்பட்டவை.  
இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20611 என்ற  
குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

D. Cruz



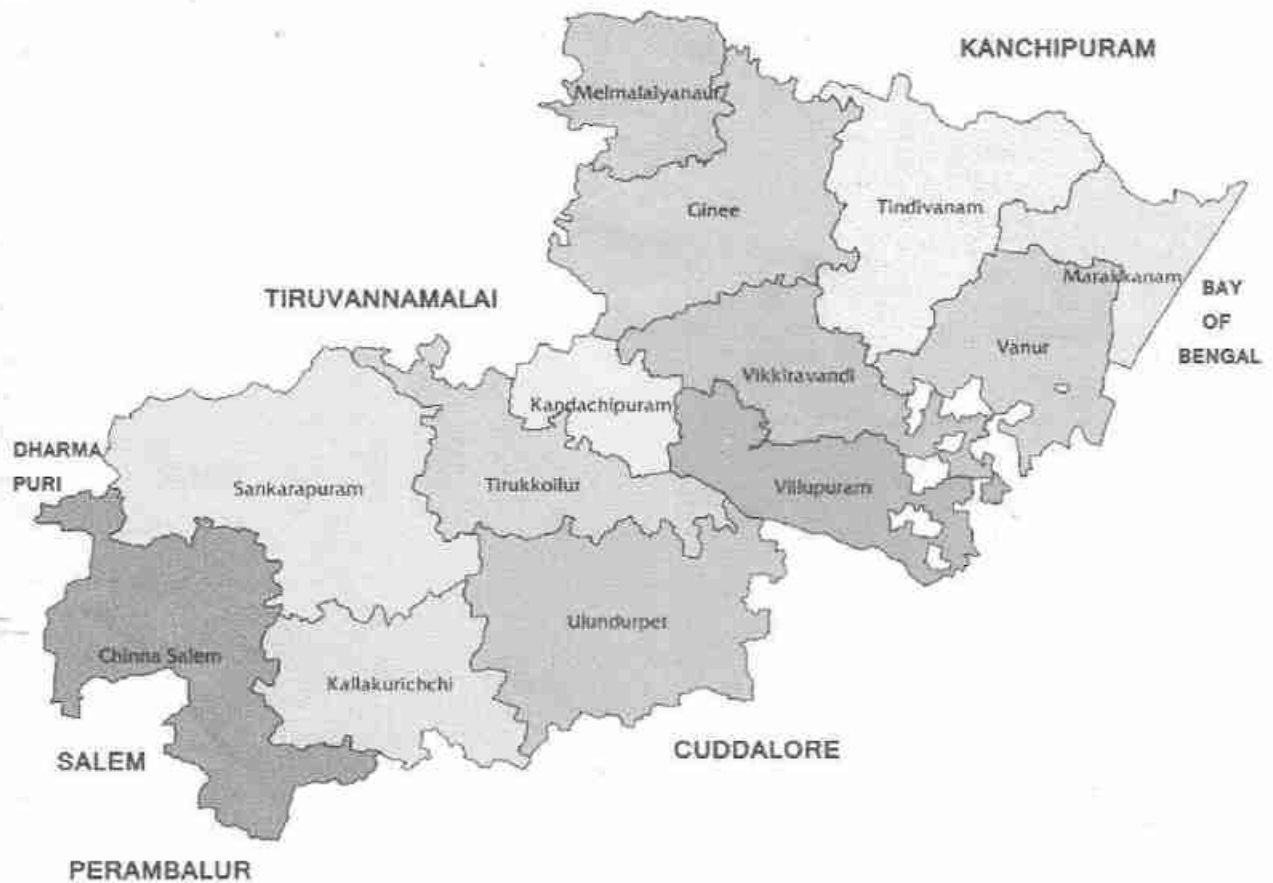
**ANNEXURE-7**

# VILUPPURAM DISTRICT

## DISTRICT SURVEY REPORT OF ROUGH STONE

(Prepared as per Gazette Notification S.O.3611 (E) dated 25.07.2018 of  
Ministry of Environment, Forest and Climate Change)

Taluks  
Viluppuram District



**MAY -2019**

**VILUPPURAM DISTRICT**  
**DISTRICT SURVEY REPORT OF ROUGH STONE**

<b>Chapter</b>	<b>Content</b>	<b>Page No.</b>
1.	Introduction	1
2.	Overview of Mining Activity in the District	1
3.	General Profile of the District	2
4.	Geology of Viluppuram District	5
5.	Drainage of Irrigation pattern	8
6.	Land Utilisation Pattern in the District: Forest, Agricultural, Horticultural, Mining etc.,	12
7.	Surface Water and Ground Water scenario of the District	15
8.	Climate and Rainfall of the District	19
9.	Details of Mining Leases in the District	21
10.	Details of Royalty or Revenue received in last three years	36
11.	Details of Production of Minor Mineral in last three years	36
12.	Mineral Map of the District	37
13.	List of Letter of Intent (LOI) Holder in the District along with its validity	38
14.	Total Mineral Reserve available in the district	40
15.	Quality/Grade of Mineral available in the district	58
16.	Use of Mineral	58
17.	Demand and supply of the Mineral in the last three years	58
18.	Mining Leases marked on the map of the district	59
19.	Details of the area of where there is a cluster of the mining leases	60
20.	Details of Eco-sensitive area	62
21.	Impact on the environment due to Mining activity	62
22.	Remedial measures to mitigate the impact of mining on the environment	63
23.	Reclamation of the mined out area	66
24.	Risk assessment & Disaster Management Plan	66
25.	Details of Occupational health issue in the District	73
26.	Plantation and Green belt development in respect of leases already granted in the district	74
27.	Any other information	74



## **1) Introduction:**

Viluppuram district evolved from the erstwhile composite South Arcot District and commenced functioning from 30th September 1993 as 23rd district of Tamil Nadu State with its Head Quarters as Villupuram and the Viluppuram district is bounded by Bay of Bengal and the Union Territory of Puducherry in the East and Kancheepuram and Thiruvannamalai District in the North, Cuddalore District in the South and Dharmapuri and Salem Districts in West and it covers with a total area of 7194 sq.km. This district lies between 11°38'25" and 12°20'44" of north latitude and 78°15'00" and 79°42'55" of east longitude.

The main minor minerals available in the district include Dolerite Dyke (Black Granite), Migmatites (Multi colour Granite), Rough stone, Brick Earth, Red Earth, Silica Sand, Pebbles and River sand.

As a result of developmental activities and market demand for minor minerals, mining of minor mineral is vital. The mining if not carried out systematically, will result in ill-effects and environmental degradation in project effected area. Therefore a sustainable development of the area involving extraction of mineral wealth vis-à-vis protection of environment is the ultimate solution for betterment of mankind. With the objective of generating Viluppuram District Survey Report for minor minerals, a ten days collaborative field work was carried out by Viluppuram District Geology and Mines Department and Geological Survey of India to locate minor minerals, along with mining activities in the District.

## **2) Overview of mining activity in the district:**

Rocks and Minerals of Economic importance found in Villupuram District are mainly Black Granite (Dolerite), Multi Colour Granite, Rough stone, Silica Sand, Red Earth, Pebbles, and Gravel occur at various places in the district.

Private companies play a major role in quarrying activity for minor minerals and the State Government undertaking viz., TAMIN takes a significant role in quarrying for granite and silica sand in the district. As of now 85 Rough Stone quarry leases, 18 Red earth, Gravel and Pebbles quarry leases are in existence. 68 quarry leases for black granites (dolerite) and 7 quarry leases for Multi colour granites (migmatite) were granted for dimension stone and 3 quarry leases for silica sand and 2 quarry leases for River Sand were also granted in the district.

### **3) General profile of the District.**

#### **3.1 Origin**

Viluppuram District was segregated from the South Arcot District on G.O.Ms.No.1486 Revenue Y(3), Dated 18.12.1992 and became a separate district on 30th September 1993.

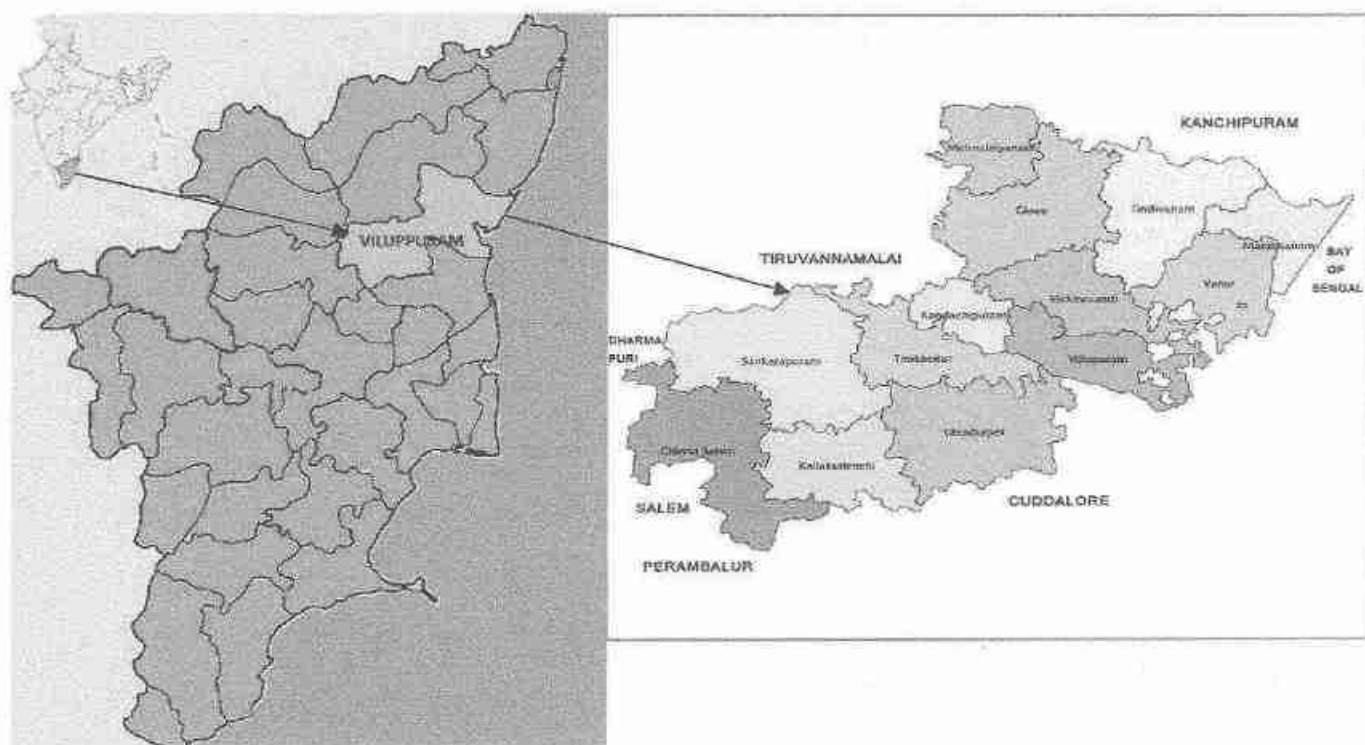
#### **3.2 Location**

Viluppuram District is located in northern Tamil Nadu and is about 160 k.m. south of Chennai. The District has an area of 7194 Sq.Km. and it is bounded by Bay of Bengal and the Union Territory of Puducherry in the East and Kancheepuram and Thiruvannamalai District in the North, Cuddalore District in the South and Dharmapuri and Salem Districts in West. In 1076 Km coastline of Tamil Nadu, this district has a coastline of 30 Km. This district lies between 11°38'25" and 12° 20'44" of north latitude and 78°15'00" and 79°42'55" of east longitude.

Viluppuram District is well connected by rail and road. Viluppuram Junction connects all major cities of India. NH 45 and NH 66 passing through the Viluppuram District connects major cities and towns of Tamilnadu. The nearest port located at Pondicherry which is about 40 km

eastern side of Viluppuram. Location map of the Viluppuram district is shown in plate no.1.

**Plate No: 1. Location Map of Viluppuram District**



### **3.3 Area and Population**

According to the Department of Statistics, Chennai, the Viluppuram District covers an area of 7194 square kilometers. Viluppuram district occupies the First rank among the Districts of the state of Tamil Nadu with regard to its size. The population of the District is 34,58,873 and out of this population, 17,40,819 (50.30 %) are males and the remaining 17,18,054 (48.7%) are females.

### **3.4 Administrative set - up**

Viluppuram District consists of Four Revenue Divisions viz., Viluppuram, Tindivanam, Tirukoilur and Kallakurichi and the District has 13 Revenue Taluks, 3 Municipalities (Viluppuram, Tindivanam & Kallakurichi), 15 Town Panchayats, 22 Panchayat Blocks, 1099 Village panchayats and 1490 Revenue villages. It falls part of three parliamentary constituencies and eleven assembly constituencies in Viluppuram District.

Sl. No.	Name of the Division	Name of the Taluk
1	Viluppuram	Viluppuram
2		Vanur
3		Vikkiravandi
4	Tindivanam	Tindivanam
5		Gingee
6		Marakkanam
7		Melmalayanur
8	Tirukoilur	Tirukoilur
9		Ulundurpet
10		Kandachipuram
11	Kallakurichi	Kallakurichi
12		Sankarapuram
13		Chinnasalem

### 3.5 Agricultural Resources and Irrigation

The district receives the maximum rainfall during the north east monsoon season and it belongs to the North eastern agro-climatic zone and 76 per cent of the land holders own less than one hectare of land in this district. The major crops grown in the district are paddy, groundnut, sugarcane, kambu, gingelly, cotton and tapioca. Almost 50% of the total area is under agriculture. Paddy occupies the maximum area of 1.66 lakh ha, followed by groundnut (0.84 lakh ha), pulses (0.52 lakh ha), sugarcane (0.46 lakh ha) and kambu, (0.20 lakh ha). Maize, gingelly and cotton are grown in an area of about 10,000 ha each. The area of kambu, ragi, maize and pulses has increased comprehensively. The area of paddy and sugarcane is more or less constant over the years. The oilseed crops like groundnut, sunflower and castor have increased markedly over the years. It is the home of four sugar

mills and modern rice mills. Handloom industry also flourishes in the district because of cotton cultivation.

The main reservoirs located in viluppuram distriect are Vidur, Gomugi and Manimukthanathi. According to the Viluppuram District statistical hand book, the major type of irrigation is dug wells which fed about 126870 hectares of lands. Tube wells and tanks irrigate an area of 44337 and 24155 hectares respectively.

### 3.6 Trade and Commerce

Viluppuram district located about 160 km south of Chennai which makes the district one of the suitable district to setup industries. Viluppuram district is producing large quantities of agricultural and poultry products. There are many market committees in Gingee, Tindivanam and Viluppuram functioning in the district for the purchase and sale of rice, cotton, groundnut, gingelly and other oil seeds. The co-operative societies for milk are functioning in all part of the district. There are number of crusher units situated in the district which supplies size reduced stone (jelly) and M-Sand to various part of Tamilnadu. There are number dolerite dyke (black granite) quarries situated in the Viluppuram district which produce highest quality of granites. These granite blocks are mainly exported to countries like Japan, South Koriea, The Netherlands and the United kingdom.

There are three Co-operative sugar mills (Periyasevalai, Moongilthuraipattu, Kachirayapalayam) and three private sector sugar mills also existing in viluppuram district.

### 4. Geology of the District:

The generalized Geology of the district is as follows:

Recent and Sub-Recent	Soil
	Alluvium
	Laterite

Mio - Pliocene	Cuddalore Sandstone with intercalations of clay, shale and pebble bed
Lower Jurassic (Upper Gondwana)	Shales and sandstones
Archaean	Basic dykes, Pegmatites and Quartz veins
	Granites
	Norites
	Charnockitic rocks
	Garnet plagioclase and pyroxene plagioclase rock (Anorthosite)
	Talc Rock (altered ultrabasic rock)
	Talc-Chlorite-Epidote Rock
	Sillimanite - Quartzite
	Magnetite Quartzite
	Hornblende granulites and amphibolites

A 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 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 Charnockite 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 Aladi Formation. The Parur Formation is not exposed in the district. The Patti Formation comprises fossiliferous sandy limestone and Calcareous shale. Mattur Formation and Aladi 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 viluppuram 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 recognised 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- Viluppuram District Resource Map)

### **Mineral Wealth**

The occurrences of limestone, limeshells, clay and rock 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 Tamil Nadu Government (UNDP Programme). The polymetal deposit includes ores 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 exploitation of industrial granites. In addition, the district is also noted for multi-coloured 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 Marakkana. Reh salt (sodium sulphate and carbonate) occur near the eastern flanks of Kaliveli near Marakkanam.



Field photograph: Rough Stone Quarry at Keezh Arungunam Village, Marakkanam Taluk.



Field photograph: Rough Stone Quarry at Keezhmalai Village, Gingee Taluk.

## 5. Drainage of Irrigation Pattern

### Irrigation Practices

The nine-fold land use pattern (2005-06) in the district is given in the



Table below.

S. No.	Classification	Area (Ha)
1	Forests	71697
2	Barren & Uncultivable Lands	56651
3	Land put to non agricultural uses	135874
4	Cultivable Waste	10405
5	Permanent Pastures & other grazing lands	4195
6	Groves not included in the net area sown	6142
7	Current Fallows	86725
8	Other Fallow Lands	19802
9	Net Area sown	330712
	<b>Total</b>	<b>722203</b>

The chief irrigation sources in the district are wells, tube wells, tanks and canal. The block-wise number of irrigation sources in the district is given in the Table below.

S. No.	Block	Canals	Tanks	Tube wells	Ordinary wells
1	Melmalayanur	1	85	468	10911
2	Gingee	0	132	0	11821
3	Vallam	0	119	533	10509
4	Olakkur	1	116	252	6028
5	Mailam	1	94	750	2259
6	Marakanam	0	150	1418	9986
7	Kolijanur	41	55	3385	1388
8	Kanai	18	86	298	10162
9	Kandamangalam	0	62	4597	4843
10	Vikkiravandi	0	170	1332	9799
11	Mugaiyur	24	100	645	5492
12	Tirukoilur	7	60	585	2191
13	Rishivandiyam	0	129	13	6683
14	Sankarapuram	0	101	0	5319
15	Thiruvennainallur	31	135	3765	16421
16	Thiyagadurgam	4	54	63	11387

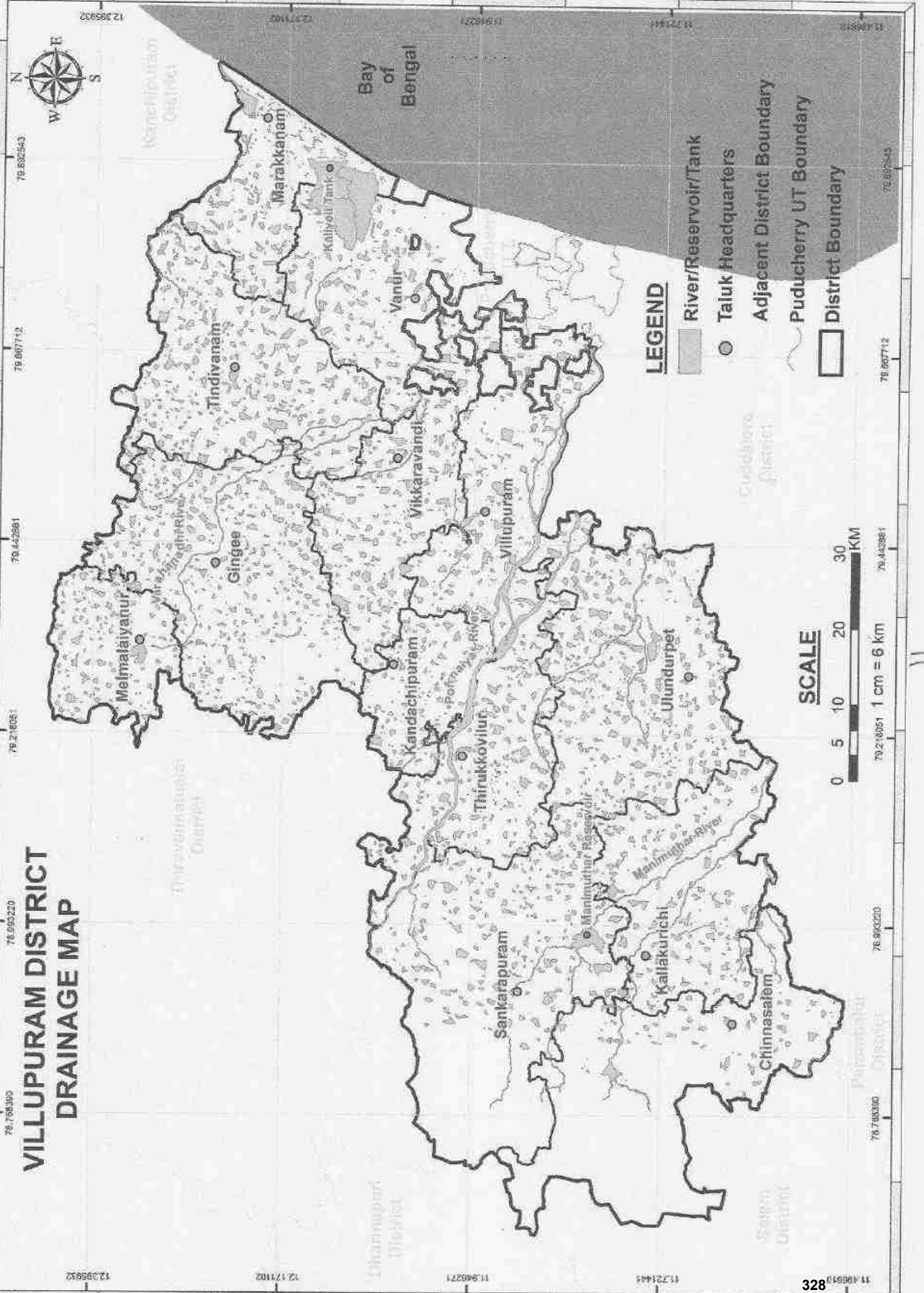
17	Kallakurichi	0	0	25	608
18	Chinnasalem	32	93	38	9306
19	Kalrayan Hills	4	123	0	8540
20	Ulundurpet	14	81	45	11302
21	Tirunavalur	4	58	1775	3285
22	Vanur	14	82	3467	6631
	<b>Total</b>	<b>196</b>	<b>2085</b>	<b>23454</b>	<b>164871</b>

The block-wise and source-wise net area irrigated (2005-06) in the district is given below.






S. No.	Block	Net area Irrigated (Ha)					Total
		Canals	Tanks	Tube wells	Ordinary wells	Other sources	
1	Melmalayanur	0	2597	1200	9138	0	12935
2	Gingee	0	4211	0	8401	0	12612
3	Vallam	0	3790	1384	5623	0	10797
4	Olakkur	0	3239	1264	4741	0	9244
5	Mailam	102	2321	2554	5682	0	10659
6	Marakanam	0	3172	4167	6708	0	14047
7	Koliyanur	0	3196	6069	0	0	9265
8	Kanai	0	3866	1083	5324	0	10283
9	Kandamangalam	0	939	11276	522	0	12737
10	Vikkiravandi	0	3342	3500	4890	0	11732
11	Mugaiyur	980	2415	3376	5100	0	11871
12	Tirukoilur	314	3214	682	5355	0	9565
13	Rishivandiyam	290	2266	68	8871	0	11495
14	Sankarapuram	587	3779	0	8503	0	12869
15	Thiruvennainallur	72	4847	5385	653	0	10957
16	Thiyagadurgam	1525	0	464	5581	0	7570
17	Kallakurichi	2200	2479	12	10128	0	14819
18	Chinnasalem	411	2295	287	14943	0	17936
19	Kalrayan Hills	68	0	0	2012	102	2182
20	Ulundurpet	0	3258	641	5189	0	9088
21	Tirunavalur	0	4386	2741	2588	0	9715
22	Vanur	99	1593	8372	699	0	10763
	<b>Total</b>	<b>6648</b>	<b>61205</b>	<b>54525</b>	<b>120661</b>	<b>102</b>	<b>243141</b>

The well irrigation is highest in Chinnasalem followed by Kallakurichi, Melmalayanur, Rishivandiyam, Sankarapuram, and Gingee so on. (Viluppuram district groundwater brochure, Central Ground Water Board).

# VILLUPURAM DISTRICT DRAINAGE MAP



## LEGEND

-  River/Reservoir/Tank
-  Taluk Headquarters
-  Adjacent District Boundary
-  Puducherry UT Boundary
-  District Boundary

## SCALE



## 6. Land Utilization Pattern in the District: Forest, Agricultural, Horticultural, Mining etc;

Out of the total land area of 7.22 lakh hectares, an extent of 3.31 lakh hectares (45.8 percent) is utilised for cultivation. The waste land (Categories 3&5) available in the district is 67056 ha. Vast stretches of waste land are formed in Gingee, Kallakurichi, Marakkanam and Vanur Blocks. Forest land accounts for 9.93 per cent in the geographical area in the district .

Sl. No.	Classification	Area (Ha)
1	Forests	71697
2	Barren & Uncultivable Lands	56651
3	Land put to non-agricultural uses	135874
4	Cultivable Waste	10405
5	Permanent Pastures & other grazing lands	4195
6	Groves not included in the net area sown	6142
7	Current Fallows	86725
8	Other Fallow Lands	19802
9	Net Area sown	330712
	Total	722203

### 6.1 Forest:

Forest area in the district constitutes about 9.9% of the total area of the District and lies in the areas bordering Salem, Dharmapuri and Thiruvannamalai Districts.

The forests of this district are divided into three regions from the points of view of topography, soil conditions and flora. They are: -

The coastal regions -- containing the casuarinas plantations, sand dunes, the mangroves and scrub jungle. The whole of Pichavaram, Pichavaram extension and Killai Reserved Forests and the Porto Novo and Ariyakosti.

The lateritic region -- containing the extensive cashew plantation and the dry evergreen forest - Kangiruppum Bit I and II,

Velangulam, Ammeri, Narimanam, Semakottai and Extension, Kallamedu and Kuttady Reserved Forests.

The inland plains region – containing the eucalyptus and miscellaneous fuel plantations and the thorny scrub jungles – Alwarmalai, Varanjaram, Porasakurichi, Magarur, Kattumailur, Nangur, Krishnapuram, Thottapadi, Kottalamalai, Melpalangur, Mallapuram and Poosapadi Reserved Forests and Pandur, Sirupakkam, Kattayanallur, Kuttakudi.

Gingee and Kalrayan Hills are the two hills in the district. Teak wood, rose wood and sandal wood trees are grown in the hills. In the Kalrayan Hills and Gingee areas some medicinal plants are also grown. In the social forest areas, trees raised are mainly for firewood and paper making. Babul, Eucalyptus and Casuarina are grown in the district. In some pockets of the district, cashew is also grown.

## **6.2 Agriculture:**

The district receives the maximum rainfall during the north east monsoon season and it belongs to the North eastern agro-climatic zone and 76 per cent of the land holders own less than one hectare of land in this district. The major crops grown in the district are paddy, groundnut, sugarcane, kambu, gingelly, cotton and tapioca. Almost 50% of the total area is under agriculture. Paddy occupies the maximum area of 1.66 lakh ha, followed by groundnut (0.84 lakh ha), pulses (0.52 lakh ha), sugarcane (0.46 lakh ha) and kambu, (0.20 lakh ha). Maize, gingelly and cotton are grown in an area of about 10,000 ha each. The area of kambu, ragi, maize and pulses has increased comprehensively. The area of paddy and sugarcane is more or less constant over the years. The oilseed crops like groundnut, sunflower and castor have increased markedly over the years. It is the home of four sugar mills and modern rice mills. Handloom industry also flourishes in the district because of cotton cultivation.



### 6.3 Horticulture :

Tapioca and cashew are the most important horticultural crops accounting for the major area under horticulture in the district. The major development activities in respect of horticultural development happening around the district are Net house structure, nursery and vegetable production, pandal for vegetable production, plant protection package for vegetables, plastics crates for vegetable handling and transport, farm waste shredder/vegetable waste shredder, cashew high density planting, borewell with casing pipe, banana bunch cover, humic acid/effective e-Microbes, production of disease free planting materials, grapes bird net, tractor mounted steam boiler, support system for crops, banana, gloriosa, banana corm injector, mango harvester, Enterprising Farmers Associations, Community fencing, Support for betelvine and Support for senna cultivation.

### 6.4 Mining:

Hilly, undulating 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 Tiruvakkarai, Kunnam, Semangalam, Sirunavoor, Karasanur, Perumbakkam and Eraiyr 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, Eeriyr of Chinnasalem taluk, Thirukkanangur, Kaduvanur, Gudaram of Sankarapuram taluk, Ulagiyanallur and Sithallur of Kallakurichi taluk, Kuzhundiram pattu of Tirukoilur taluk are being mined for Black Granite.

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, Sivanarthangal, T. Keeranur, Keelvalai and Veerapandi of Tirukoilur taluk, Pangaram and Rayarpalayam of Kallakurichi, Katchirayapalayam of Chinnasalem taluk, Gingeeputhur and Nangathur of Villupuram taluk, Poondi and Ulagalampoondi of Vikkiravanadi taluk, Tirupair and Kalsirunagalur of Ulundurpet taluk, Mallapuram, La. Kudalur, Aliabath, Manalur and Moongithuraipattu of Sanakarapuram taluk and Pappanthangal, Valathi, Kammanthangal, Mazhavanthangal, So. Kuppam, Kaplampadi, Avalurpet, Keelmalai, Perumbugai and Kaividanthangal of Gingee Taluk.

The Cuddalore sandstone derivative of Red Earth sediments lying in the eastern part of the district near Thiruvakkarai, Thollamur & Kadagampattu of Vanur taluk and Sengadu, Vaduganathakuppam of Villupuram taluk are being mined. The sand dunes (stabilised and Palaeo) near the coastal stretch of Urani, Vadaagaram, Marakkanam, Keelputhupattu of Marakkanam taluk are being mined for Silica Sand. All along the track of rivers Pennaiyar River, Gadilam River, Malattar River, Pennar River, Sankaraparani River, Gomukhi River, Manimukta River, Pambaiyar and Varaganadhi sand is being mined mainly for construction purposes.

## **7. Surface Water and Ground Water Scenario:**

### **Surface Water Scenario:**

The major rivers flowing through the district are (i) Pennaiyar River flows from northwest to east in the district forms part of Pennaiyar river basin (ii) Gadilam River flowing through Thirukoilur Taluk, (iii) Malattar River joins Gadilam before flowing into the Bay of Bengal (iv) Varaga Nathi originate in Gingee Taluk and flows through Villupuram Taluk (v) Gomukhi the of main tributary of Manimuktha River joins into Vellar River in Cuddalore District (vi) Manimukta River originates in

Kalrayan hills and drains the southern part of the district (vii) Pambaiyar and the Varaganadhi originate in the uplands of the district and join Bay of Bengal. All these rivers are ephemeral (only seasonal) in nature and carry only floodwater during monsoon period and none of them are perennial. These rivers cannot be used for irrigation purpose to the expected level because of low precipitation. The monsoon rainfall is erratic and only during stormy days heavy precipitation occurs. The drainage pattern is mostly parallel to sub parallel and drainage density is very low. There are small reservoirs across rivers namely Gomukhi, Vedur and Manimuktha.

### **Ground water scenario**

#### **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 charnockites whereas in unconsolidated sedimentary rocks the groundwater occurs in phreatic, semi-confined conditions in Vanur sandstone, Kadapperi kuppam formation and Turuvai limestone.

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 17 m 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 southeastern 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 northeastern parts of the district and range of >5 - 10 m bgl were recorded in two isolated pockets in the southwester 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 ground water 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 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 part 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.

### **Ground water resources**

The ground water resources have been computed jointly by Central Ground Water Board and State Ground Water Resources Data Centre (PWD, WRO, Govt. of Tamil Nadu) as on 31<sup>st</sup> March 2004. The computation has been done using GEC1997 methodology. The salient features of the computations are furnished below.

### **Ground Water 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  $25^\circ\text{C}$ ) 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, nitrate concentration is above permissible limits of 100 mg/l. The incidence of high total hardness is attributed to the composition of litho units constituting the aquifers in the district, whereas nitrate pollution is most likely due to use of fertilizers and other improper waste disposal.

Sodium Adoption Ratio 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.

### **Status of Ground Water Development**

Ground water development is very high in the district. There are number of dug wells and dug cum bore wells in the hard rock areas while tube wells are common in the sedimentary areas. The average draft of dug wells in hard rock areas is of the order of 1.2 ha.m./year. The extraction of ground water by shallow tube wells in the eastern part of the district is of the order of 2.5 ha.m./year. The average command area for dug well and bore well in the district is 2 ha and 3 ha respectively.

The hard rock areas in select pockets with valley fills and lineaments are having appreciable ground water potential. At many pockets, the command areas are the main potential ground water zones, The yield prospects are good in select pockets of Villupuram, Sankarapuram and Kallakurichi areas where as it is very poor in Tirukoilur, Ulundurpet, Gingee and Tindivanam taluks. The massive granites in Gingee and Tindivanam taluks do not favour even bore wells. The augmentation of well yield by

horizontal and extension bores is successful in part of Kallakurichi and Tirukoilur areas.

The crystalline sedimentary contact zones have thick limestone capping followed by productive granular zones, which are tapped, by number of cavity wells of 40 to 60 m bgl depth giving 7 to 10 lps discharge. The tube wells can yield about 70 to 200 m<sup>3</sup>/hr and can sustain pumping for 10 hrs a day.

(Viluppuram district groundwater brochure, Central Ground Water Board)

#### **8. Rainfall of the Viluppuram District and climatic condition:**

This district falls under tropical climate. The average temperature varies from 26°C to 41°C. The humidity is also high in the order of 80%. The wind speed is high during the months of July and August. The wind speed ranges from 7.4 to 12.6 km/hr, which increases from 100 to 120 km/hr during cyclone period. District receives rainfall from southwest monsoon (June - September), northeast monsoon (October - December) and non-monsoon periods (January - May). The rainfall is generally heavy during low-pressure depressions and cyclones during the northeast monsoon period. The district receives the maximum rainfall during the north east monsoon season. The normal annual rainfall is higher towards coast. District does not get heavy rainfall with the exception of Marakkanam and Vanur blocks, In Kandamangalam and Koliyaur blocks, the rainfall is moderate it is scarce in Kallakurichi and Sankarapuram.

The rainfall data for the last ten years pertaining to Villupuram District is tabulated as follows:

**Rainfall pattern data of Villupuram District for past six years (Data Source: District Meterological Dept.)**

<b>Month</b>	<b>Normal</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
January	9.72	0.33	42.94	0.00	3.72	0.00
February	8.63	11.94	0	0.00	0.00	14.44
<b>Winter</b>	<b>18.35</b>	<b>12.28</b>	<b>42.94</b>	<b>0.00</b>	<b>3.72</b>	<b>14.44</b>
March	8.68	15.22	8.28	0.00	0.00	0.00
April	11.25	0.00	0.00	0.00	90.16	0.00
May	27.25	10.78	46.2	90.86	68.61	116.56
<b>Summer</b>	<b>47.18</b>	<b>26.00</b>	<b>54.48</b>	<b>90.86</b>	<b>158.77</b>	<b>116.56</b>
June	54.7	39.03	76.78	44.94	15.83	80.69
July	72.3	26.00	74.72	118.48	75.54	50.11
August	108.36	87.4	194.52	69.44	115.83	179.36
September	121.3	116.14	107.74	67.00	84.17	124.72
<b>S.W. Monsoon</b>	<b>356.66</b>	<b>268.58</b>	<b>453.76</b>	<b>299.86</b>	<b>291.37</b>	<b>434.88</b>
October	252.11	167.33	223.4	86.50	78.67	211.42
November	317.8	156.18	178.96	12.17	558.66	129.90
December	68.2	17.88	130.29	74.29	299.06	73.22
<b>N.E. Monsoon</b>	<b>638.11</b>	<b>341.39</b>	<b>532.65</b>	<b>172.96</b>	<b>936.39</b>	<b>414.54</b>
<b>Total</b>	<b>1060.30</b>	<b>648.25</b>	<b>1083.83</b>	<b>563.68</b>	<b>1390.25</b>	<b>980.42</b>

**9. Details of Mining Lease  
Name of the Mineral: Rough stone**

Sl. No.	Name of the Mineral	Name of the Lessee	Address & Contact No. of Lessee	Mining lease grant order No. & Date	Area of Mining lease (ha)	Period of Mining lease (Initial)		Period of Mining lease (1 <sup>st</sup> / 2 <sup>nd</sup> renewal)		Date of commencement of Mining Operation	Status (Working / Non Working for dispatch etc.)	Captive / Non-Captive	Obtained Environmental Clearance (Yes/No) If Yes Letter no with date of grant of EC	Location of the Mining Lease (Latitude & Longitude)	Method of Mining (Openair/ Under ground)
						From	To	From	To						
1.	Rough stone	T.Muthuramzhan	No. Thennavan, Mansalar Village, Sankarapuram Taluk, Viluppuram District.	B/G&M/2020/2010 dt. 31.08.2016	1.50.0	31.08.2016	30.08.2021	-	06.02.2017	Working	Non Captive	Yes, letter No. SE/IAA-TN/E No. 2682/EC/1(sy)172/2014 dated 13.03.2015	12°00'30"N to 12°00'26"N 78°55'28"E to 78°55'23"E	Open cast	
2.	Rough stone	RSubramanian	S/o. Rameshbabu, 15/3, Kamakotai Village, Yempair Post, Kallakurichi Taluk, Viluppuram	B/G&M/371/11 dt. 26.11.2011	1.20.0	23.01.2012	22.01.2022	-	Nil	Non working	Non Captive	No.	(12°00'27.7"N 78°55'21.8"E)	Open cast	
3.	Rough stone	K.Natchiarappan	S/o Karuppanan Gounder, Vellakulam, Keelavari Post, Thidivanam Taluk	B/G&M/1213/13 dt. 31.12.2015	2.23.0	31.12.2015	30.12.2020	-	25.02.2016	Non working	Non Captive	Yes, letter No. SE/IAA-TN/E No. 3439/EC/1(sy)2347/2015 dated 21.12.2015	12°11'56"N to 12°11'46"N 79°45'33"E to 79°45'26"E	Open cast	
4.	Rough stone	K. Shanmugam	S/o. Kannaiya Gounder, Nallur Village & Post, Vemur Taluk, Viluppuram District.	A/G&M/522/2014 dated 09.09.2016	1.95.5	09.09.2016	08.09.2021	-	Nil	Non working	Non Captive	Yes, letter No. SE/IAA-TN/E No. 4167/EC/1(sy)3177/2015 dated 21.03.2016	12°08'58.60"N to 12°09'04.64"N 79°44'38.34"E to 79°44'54"E	Open cast	
5.	Rough stone & Earth	K. Anandavelu	S/o. Kesavan, No. 96, Emiyur Village, Vanur Taluk, Viluppuram District	A/G&M/977/2012 dt. 28.07.2017.	1.08.0	28.07.2017	18.03.2020	-	18.09.2017	Working	Non Captive	Yes, letter No. SE/IAA-TN/E No. 2699/EC/1(sy)1702/2014 dated 19.03.2015	12°04'28"N to 12°04'24"N 79°38'39"E to 79°38'43"E	Open cast	
6.	Rough stone & Earth	A. Ganesan,	S/o. Appudurai, 190, Kadaiveedu,	A/G&M/822/2016 dated 22.08.2016	2.62.5	28.07.2017	18.03.2020	-	16.05.2018	Working	Non Captive	Yes, letter No. SE/IAA-	12°04'12"N to 12°04'19"N	Open cast	

7.	Rough stone	P. Ramesh	S/o Pratchetharan, Vanur block, Viluppuram District	B/G&M/2007/10 dt. 26.07.2014.	2.52.0	26.07.2014	25.07.2019	-	30.09.2015	Working	Non Captive	Yes, letter No. SEIAA- TN/F.No. 1316/E C/1(a)/588/2013 dated 18.07.2013.	79°38'39"E to 79°38'51"E (12°04'16"N 79°38'39"E) 12°22'34"N to 12°22'58"N 79°16'86"E to 79°16'77"E	Open east
8.	Rough stone	V. Gurushekar	S/o. Vellaiya Gounder, No. 471A, East Street, Tirukoilur	B/G&M/196/09 dt. 25.05.2009	1.50.0	19.06.2009	18.06.2019	-	22.06.2009	Non Working	Non Captive	Yes, letter No. SEIAA- TN/F.No. 4898/E C/1(a)/332/201 6 dated 25.07.2016	11°55'22.78"N to 11°55'26.97"N 79°09'25.55"E to 79°09'31.92"E	Open east
9.	Rough stone & Earth	R. Anjurajan	S/o. Ramaswamy, No. 41, Tirukaran Street, Nerukunnam, Chennai-107.	A/G&M/263/13 dated 25.03.2015	1.46.5	25.03.2015	24.03.2020	-	04.05.2015	Non Working	Non Captive	Yes, letter No. SEIAA- TN/F.No. 1769/E C/1(a)/1631/201 4 dated 19.02.2015	(11°55'25.41"N 79°09'26.09"E) 12°03'23"N to 12°03'27"N 79°40'31"E to 79°40'38"E (12°03'27.55"N 79°40'32.65"E)	Open east
10.	Rough stone	Tmt. S.Nandhini	W/o. Sunkar, No. 14, 3 <sup>rd</sup> Street, Jeyppuram, Tiruchevanur Taluk	A/G&M/601/15 dated 31.12.2015	3.32.5	31.12.2015	30.12.2020	-	08.03.2016	Working	Non Captive	Yes, letter No. SEIAA- TN/F.No. 4000/E C/1(a)/2536/201 5 dated 21.12.2015	12°03'25.80"N to 12°03'33.90"N 79°40'05.88"E to 79°40'13.76"E (12°03'20.53"N 79°40'10.84"E)	Open east
11.	Rough stone	G. Selvakumar	S/o. Govindaraj Ennaur Village, Kalkavurichi Taluk	B/G&M/369/2017 dt. 08.10.2018	1.50.0	08.10.2018	07.10.2023	-	04.12.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F.No. 9072/E C No. 16/2017, dated 04.02.2018	11°49'47"N to 11°49'51"N 78°58'13"E to 78°58'19"E (11°49'47"N 78°58'13"E)	Open east

12.	Rough stone	R. Subramaniam	S/o. Ramasamy, 153, Kottakattai, Ennepattur Post, Kallakurichi Taluk, Vilupputam District.	B/G&M/2018/10 dt. 16.12.2010.	1.96.0	10.01.2011	09.01.2011	-	23.01.2011	Non Working	Non Captive	-	11°53'01.58"N 79°03'39.54"E	Open east
13.	Rough stone & Earth	C. Balambagan	S/o. Chandan, Sourathi Street, Masilam Village, Tindivanam Taluk	B/G&M/398/2016 dt. 24.09.2017	0.75.0	24.09.2017	23.09.2022	-	19.03.2018	Working	Non Captive	Yes, letter No. DEIAA-3716 No. DIA/IN/MI N/5779/2017/DE IAA/2017, dated 01.08.2017	12°07'55.50"N to 12°07'59.47"N  79°36'24.94"E to 79°36'28.56"E  (12°07'56.09"N 79°36'24.94"E)	Open east
14.	Rough stone	E. Scidhar	S/o Elumalai, No. 1019, Pillaiyar Koil Street, Devikapuram Village, Arani Taluk, Tiruvannamalai District	B/G&M/237/10 dt. 10.05.2010	5.83.0	16.08.2010	15.08.2020	-	01.07.2011	Non Working	Non Captive	-	12°26'10.85"N to 12°26'03.38"N  79°21'48.29"E to 79°21'36.79"E  (12°26'3.38"N 79°21'42.94"E)	Open east
15.	Rough stone & Earth	C. Selvam,	S/o. Chellapa Madaiyar, Sangeethanangala in Road, Anandapuram, Chingee Taluk	B/G&M/470/2013 dt. 18.07.2014	0.63.0	18.07.2014	17.07.2019	-	07.01.2019	Working	Non Captive	Yes, letter No. SEIAA- TN/F.No.2602/E C/1(0)/454/201 4 dated 25.06.2014	12°07'21"N to 12°07'27"N  79°22'40"E to 79°22'45"E  (12°07'21"N 79°22'40"E)	Open east
16.	Rough stone & Earth	A.S. Srinivasan	S/o. Sengodan, Athar & Post, Rasipuram Taluk, Namakkal District.	B/G&M/459/13 dt. 06.02.2015	3.35.0	06.02.2015	05.02.2020	-	Nil	Non Working	Non Captive	Yes, letter No. SEIAA- TN/F.No.1882/E C/1(0)/1459/201 4 dated 02.07.2014	11°37'09"N to 11°37'01"N  (78°55'02"E to 78°54'53"E)	Open east
17.	Rough stone	A. Muthusamy	S/o. Arthasari Gounder, Kattukottai, Paranginadaiam, Mulligaiyody Post, Sankarapuram Taluk, Vilupputam	B/G&M/2012/10 dt. 31.12.2010.	1.00.0	14.02.2011	13.02.2021	-	21.07.2016	Non Working	Non Captive	-	-	Open east



18.	Rough stone & Earth	V. Sankar	District	S/o Vivekanandam, 14, Jeyapattam Colony, Tundivanam Town & Taluk, Viluppiram District	B/G&M/330/2016 dated 30.09.2016	3.66.5	20.09.2016	19.09.2021	-	-	28.09.2016	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.5616/1 3/VEC.No.3694/2 016 dated 06.09.2016	12°03'32"N to 12°03'40"N 79°40'16"E to 79°40'23"E  (12°03'34"N 79°40'16"E)	Open cast
19.	Rough stone	A. Ramesh	S/o. Alangaramooperi, Malakottalam, Kallakunchi Taluk	B/G&M/2019/2010 dt. 03.07.2016	2.00.0	03.07.2016	02.07.2026	-	-	31.01.2017	Non Working	Non Captive	Yes, letter No.SELAA- TN/F.No.3683/E C/1(a)/1739/201 4 dated 13.03.2015	12°03'43"N to 12°03'50"N 78°57'08"E to 78°57'13"E  (12°03'729"N 78°57'148"E)	Open cast	
20.	Rough stone & Earth	V. Chandrasekaran	S/o Vellaiyan, 2/4, School Street, Kattupayur Village, Tirukoilar Taluk	B/G&M/334/2014 dt. 09.09.2016	1.02.5	09.09.2016	08.09.2021	-	-	22.12.2016	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.4736/E C/ 1(a)/3196/2016 dated 11.07.2016	11°57'9.50"N to 11°57'14.14"N 79°10'16.12"E to 79°10'18.84"E  (11°57'9.50"N 79°10'16.12"E)	Open cast	
21.	Rough stone & Earth	P. Deivasingamani	S/o Prathyan, T.Nallalan Village, Perumokkal Post, Tundivanam Taluk.	B/G&M/1898/12 dt. 11.04.2015	1.03.0	11.04.2015	10.04.2020	-	-	26.05.2015	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.2831/E C/ 1(a)/1752/2014 dated 19.03.2015	12°11'51"N to 12°11'55"N 79°45'08"E to 79°45'15"E  (12°11'34"N 79°45'8"E)	Open cast	
22.	Rough stone	A. Balaraman	S/o. Aranakudi Gounder, Keesavini Village & Post, Tundivanam Taluk, Viluppiram	B/G&M/365/11 dt. 25.11.2011.	1.10.0	26.12.2011	25.12.2021	-	-	27.01.2012	Non Working	Non Captive	No	12°11'35.31"N 79°45'29.14"E	Open cast	

22



23.	Rough stone & Earth	T. Rajendran	District S/o Thandipani Naithi, 8/66, Siven Kovil Street, Elavampurkottai Village & Post, Uttankurpet Taluk.	B/G&M/975/2015 dt. 22.08.2016.	1.97.5	22.08.2016	21.08.2021	-	28.09.2016	Working	Non Captive	Yes, letter No SEIAA-TN/F.No.5148/EC/1(a)/3197/2016 dated 05.07.2016	11°39'59.60"N to 11°40'06.64"N 79°12'16.58"E to 79°12'22.80"E (11°39'59.60"N 79°12'18.64"E)	Open east
24.	Rough stone & Earth	S. Arulnathan	S/o. Subraman, 252, Kulakkarai, Ulagalurpoondi, Vikkaravandi Taluk.	B/G&M/1059/2015 dt. 23.01.2017	1.14.5	23.01.2017	22.01.2022	-	25.01.2018	Working	Non Captive	Yes, letter No SEIAA-TN/F.No.5825/1(a)/EC.No.3879/2016 dated 14.11.2016	12°02'42.84"N to 12°02'48.45"N 79°28'49.08"E to 79°28'52.37"E (12°02'43.45"N 79°28'49.08"E)	Open east
25.	Rough stone & Earth	Tmt.R. Sujatha	W/o. (late) L. Rameshpabu, No.5, Shankar Nagar, Thepputhi, Sirtoli Taluk, Nagerpalinam District.	B/G&M/1053/2015 dt. 14.10.2016 & B/G&M/436/2018 Dated 19.11.2018	4.22.5	14.10.2016	13.10.2021	-	24.08.2017	Working	Non Captive	Yes, letter No SEIAA-TN/F.No.5061/1(a)/EC.No.3611/2016 dated 24.08.2016	11°40'02"N to 11°40'12"N 79°12'23"E to 79°12'35"E (11°40'03"N 79°12'24"E)	Open east
26.	Rough stone & Earth	K. Paramasivam	S/o Kanosa Gounder, No.290/5, Mariamman Koil Street, Chokkumthangal, Keelavini Post, Marakkannur Taluk	B/G&M/1137/15 dt.03.03.2016	1.06.5	03.03.2016	02.03.2021	-	04.05.2016	Working	Non Captive	Yes, letter No SEIAA-TN/F.No.4827/1(a)/EC.No.2829/2016 dated 17.02.2016	12°13'06"N to 12°13'11"N 79°45'26"E to 79°45'30"E (12°13'07"N 79°45'26"E)	Open east
27.	Rough stone & Earth	E. Pavadasreyan	S/o. Etriyappan, Maryammam Kovil Street, Kovadi, Tindivanam Taluk	B/G&M/1137/15 dt.14.05.2015	0.75.0	14.05.2015	13.05.2020	-	19.08.2015	Working	Non Captive	Yes, letter No SEIAA-TN/F.No.3109/EC/1(a)/2148/2014 dated 01.04.2015	12°11'39"N to 12°11'43"N 79°45'10"E to 79°45'14"E (12°11'40"N 79°45'10"E)	Open east

28.	Rough stone	S. Srinivasan	S/o. Sanjeevi, No.9, Walaab Nagar, Mannakkam Road, Thidivanam Tank.	B/G&M/2005/70dL 23.09.2014	0.72.0	23.09.2014	23.09.2019	-	-	02.12.2009	Non working	Non Captive	Yes, letter No.SELAA- TN/F.No.1862/ EC/ I(a) / 1139A/2013 dated 27.02.2014	12°12'24"N to 12°12'19"N 79°44'55"E to 79°44'59"E (12°12'19"N to 79°44'55"E)	Open cast
29.	Rough stone & Earth	P. Srinivasan	S/o. Pattabi Reddyar, No.142, Mosque Street, C/Pallavaram, Chennai	B/G&M/280/13 dt.13.11.2015	1.61.5	13.11.2015	12.11.2020	-	-	29.06.2016	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.2951/ EC/ I(a) / 1768/2014 dated 19.03.2015	12°13'58"N to 12°14'03"N 79°45'17"E to 79°45'23"E (12°13'58"N to 79°45'20"E)	Open cast
30.	Rough stone & Earth	M. Krishnamoorthi	S/o.Mirugayam, No.1, Palayakara Street, Thiruvakkur.	A/G&M/422/013 dated 15.10.2016	0.80.0	15.10.2016	14.10.2021	-	-	22.03.2017	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.3424/ I(a) / EC.No. 3557/2016 dated 10.08.2016	12°22'3.89"N to 12°22'7.58"N 79°39'32.17"E to 79°39'35.05"E (12°22'24.38"N to 79°39'32.17"E)	Open cast
31.	Rough stone & Earth	A. Selvaraj	S/o.Arunugam, No.135, 7 <sup>th</sup> Cross Road, Housing Board, Gopalapuram, Measoor Village, Thidivanam Taluk, Vilappuram District.	B/G&M/1187/13 dt.24.04.2015	1.07.5	24.04.2015	23.04.2020	-	-	18.05.2015	Non Working	Non Captive	Yes, letter No.SELAA- TN/F.No.2779/ EC/ I(a) / 1747/2014 dated 13.03.2015	12°13'22"N to 12°13'28"N 79°44'03"E to 79°44'07"E (12°13'22"N to 79°44'04"E)	Open cast
32.	Rough stone & Earth	G. AnandKumar Jun	S/o.Gajraj Jun, No.5, Radhakrishnan Street, Venkattu Nagar, Peradicheeray	A/G&M/528/08 dated 15.03.2015	1.05.5	16.03.2015	15.03.2020	-	-	13.04.2015	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.1206/ EC/ I(a) / 1244/2013 dated 08.05.2014	12°02'00"N to 79°38'52"E	Open cast
33.	Rough stone & Earth	T.Aravindan	S/o.Thirukeran, Perumattukal Village, Thidivanam Tank	B/G&M/693/2012 dt.08.02.2016	2.12.0	08.02.2016	07.02.2021	-	-	30.10.2016	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.2763/ EC/ I(a) / 1738/2014 dated 13.03.2015	12°13'15"N to 12°13'09"N 79°45'22"E to 79°45'18"E (12°13'12"N to 79°45'16"E)	Open cast

34.	Rough stone	S. Raghuraman	S/o. Subramanian, 8, Mettu Street, Eraniyur Village & Post, Vanur Taluk, Viluppuram District.	A/G&M/590/2013 dated 20.02.2016	1.13.0	20.02.2016	19.02.2021	-	10.03.2016	Working	Non Captive	Yes, letter No.SEIAA-TM/F.No.4512/EC/1(a) /2778/2015 dated 19.01.2016	12°02'10.25"N to 12°02'14.44"N 79°38'52.17"E to 79°38'59.91"E (12°02'10.25"N to 79°38'52.17"E)	Open east
35.	Rough stone & Earth	M.Katiraman	W/o. Marokaran, 4/53, Marayamm Kovil Street, Sivambangal, Chennai-69.	A/G&M/1461/2013 dated 14.06.2016	2.57.5	14.06.2016	13.06.2021	-	06.03.2017	Working	Non Captive	Yes, letter No.SEIAA-TM/F.No.3101/EC/1(a) /1804/2014 dated 27.03.2015	12°04'11"N to 12°04'43"N 79°38'54"E to 79°38'59"E (12°04'32"N to 79°38'37"E)	Open east
36.	Rough stone & Earth	C. Ganesan	S/o. Chinnaiya Gounder, 168, Mettu Street, Karasur Village, V. Parungudi Pesi, Vanur Taluk	A/G&M/168/2015 dated 22.08.2016	4.27.5	22.08.2016	21.08.2021	-	15.12.2016	Working	Non Captive	Yes, letter No.SEIAA-TM/F.No.5069/EC/1(a) /3326/2016 dated 15.07.2016	12°03'20"N to 12°03'27"N 79°39'58"E to 79°40'10"E (12°03'20"N to 79°39'58"E)	Open east
37.	Rough stone & Earth	V. Gnanaguru	S/o. Velayutham, Elavalapakkam Village, Perumokkal, Tindivanam Taluk	B/G&M/1207/2012 dt.21.06.2014	1.28.0	21.06.2014	20.06.2019	-	29.04.2015	Working	Non Captive	Yes, letter No.SEIAA-TM/F.No.2327/EC/1(a) /1251/2014 dated 09.05.2014	12°13'37"N to 12°13'42"N 79°44'11"E to 79°44'15"E (12°13'33"N to 79°44'11"E)	Open east
38.	Rough stone & Earth	T.Kappasamy	S/o. Thoppalan No.667, Marokkunan Road, Demmalessan Village, Tindivanam Taluk	B/G&M/531/14 dt.31.12.2015	0.99.5	31.12.2015	30.12.2020	-	26.02.2016	Working	Non Captive	Yes, letter No.SEIAA-TM/F.No.3365/EC/1(a) /2338/2015 dated 02.11.2015	12°11'43"N to 12°11'49"N 79°45'39"E to 79°45'42"E (12°11'47"N to 79°45'39"E)	Open east
39.	Rough stone	D. Marupandyan	S/o. Dornani, Chokkantharudal, Gingee Taluk	B/G&M/2008/19 dt. 30.12.2016.	2.00.0	30.12.2016	29.12.2021	-	21.08.2017	Non Working	Non Captive	Yes, letter No.SEIAA-TM/F.No.5048/EC/1(a) /3722/2016 dated 16.03.2016	12°15'17"N to 12°15'20"N 79°27'02"E to 79°27'11"E (12°15'17"N to 79°27'02"E)	Open east

40.	Rough stone	Tim R. Dhannakamani	W/o. Ravi, Thiruvpathiaramman Kovil Street, Vembu Village and Post, Viluppuram Taluk and District	B/G&M/2005/2010 dt. 13.04.2010	3.00.0	07.06.2010	06.06.2020	-	11.06.2010	Working	Non Captive		12°07'55.87"N 79°26'40.90"E	Open east
41.	Rough stone	R. Dhannakamani	W/o. J.Kavi, Thiruvpathiaramman Kovil Street, Vembu Village, Viluppuram Taluk.	B/G&M/2001/2010 dt. 31.08.2016	2.21.5	31.08.2016	30.08.2021	-	06.03.2017	Non Working	Non Captive	Yes, letter No.SELAA- TN/F.No.1424/ EC/1(a) /637/2013 dated 01.08.2013	12°02'51.37"N to 12°02'57.60"N 79°27'30.49"E to 79°27'57.29"E (12°02'57"N 79°27'55"E)	Open east
42.	Rough stone	K. Murugavel	S/o. Kali Gounder, Nanganthur Village, Arniyur Via, Viluppuram Taluk.	B/G&M/2000/10 dt. 16.12.2010.	0.50.0	31.01.2011	30.01.2021	-	26.12.2011	Non Working	Non Captive	No	12°07'36.16"N 79°24'43.73"E	Open east
43.	Rough stone	P. Elanchezhian	S/o. Pannarvelu, Vadakkannal post, Kallakurichi Taluk, Viluppuram District	B/G&M/198/09 dt.25.05.09	2.00.0	23.06.2009	22.06.2019	-	10.05.2010	Working	Non Captive	Yes, letter No. SELAA- TN/F No-4872 / 100 / EC.No.3486/201 6 dated 29.07.2016	11°45'23.82"N to 11°45'27.08"N 78°51'24.54"E to 78°51'31.13"E (11°45'23.82"N 78°51'24.54"E)	Open east
44.	Rough stone	V Ravi	S/o. Veerasamy, Perumkkal Village, Tandiyanam Taluk.	B/G&M/2003/10 dt. 23.09.2014.	0.37.5	23.09.2014	22.09.2019	-	01.02.2019	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.1757/ 1(a) / EC.No.866/2013 dated 12.11.2013	12°03'19"N to 12°03'16"N 79°46'07"E to 79°46'04"E (12°03'16"N 79°46'06"E)	Open east
45.	Rough stone	P.Ravichandran	S/o Periyasamy, I/13, Thiruvpathiaramman Kovil Street, Thiruvakkari Village, Vanur Taluk, Viluppuram District.	A/G&M/513/13 dated 30.05.2014	1.42.5	30.05.2014	29.05.2019	-	27.06.2014	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.1962/ EC/1(a) 1192/2013 dated 15.04.2014	12°01'52"N to 12°01'49"N 79°38'54"E to 79°39'01"E (12°01'52"N 79°38'55"E)	Open east

46.	Rough stone & Earth	K. Gnanasekaran	S/o. Kamudi comoder, Mettu Street, Korassur Village, Vanur Taluk, Viluppuram District.	A/G&M/483/2015 dated 24.09.2017	1.24.5	24.09.2017	23.09.2022	-	-	13.12.2017	Working	Non Captive	Yes, letter No. SE/IAA- TN/F No. 3425 / 1(Q)/ EC No. 3920/201 6 dated 19.06.2017	12°03'36"N to 12°03'40"N 79°40'07"E to 79°40'12"E (12°03'324.73" N 79°40'15.34"E)	Open east
47.	Rough stone	D. Nairayanaswa my	S/o Dorchinnnooth y, 25. Enilaran Street, Mariyammam Kovil Street, Cuddalore District.	A/G&M/702/2017 dt. 27.08.2018	2.53.0	27.08.2018	26.08.2023	-	-	18.09.2018	Working	Non Captive	Yes, letter No. DE/IAA- TN/F No. 12681 / EC No. 11/2018 dated 05.07.2018	12°03'51"N to 12°03'58"N 79°42'32"E to 79°42'40"E (12°03'55"N 79°42'32"E)	Open east
48.	Rough stone & Earth	M. Jaffer saif	S/o. Mohamed Ravuthar, Pansyapuram Village, Viluppuram Taluk.	B/G&M/848/2016 dt. 27.09.2018.	1.53.0	27.09.2018	26.09.202 3	-	-	22.10.2018	Working	Non Captive	Yes, letter No. DE/IAA- TN/F No. 7427 / EC No. 14/2017 dated 04.12.2018	11°39'53.90"N to 11°40'00.33"N 79°12'18.51"E to 79°12'23.14"E (11°39'55.69"N 79°12'18.51"E)	Open east
49.	Rough stone	T. Ambazhagan	S/o. Thangavel, Nathamadu Street, Olakoor & Post, Tincivayam Taluk, Viluppuram District	B/G&M/364/17 dt. 28.02.2019.	0.99.0	28.02.2019	27.02.2024	-	-	Nil	Non Working	Non Captive	Yes, letter No. DE/IAA- TN/F No. 8096 / EC No. 31/2017 dated 04.12.2018	12°01'48"N to 12°01'54"N 79°38'49"E to 79°38'55"E (12°01'49.67"N 79°38'54.89"E)	Open east
50.	Rough stone	A. Sathishkumar	S/o Arunugam, Mettu Street, Thuruvai, Ravvelupakkam Post, Vanur Taluk.	B/G&M/1142/2017 dt. 08.03.2019.	1.00.0	08.03.2019	07.03.2024	-	-	Nil	Non Working	Non Captive	Yes, letter No. DE/IAA- TN/F No. 15706 / EC No. 12/2018 dated 04.12.2018	12°01'49"N to 12°01'55"N 79°38'51"E to 79°38'55"E (12°01'49.40"N 79°38'53.69"E)	Open east
51.	Rough stone	C. Prabhu	S/o. Chakravarthi, Indira Nagar, Kiliyannur Village & Post, Vanur Taluk, Viluppuram	B/G&M/1141/2017 dt. 08.03.2019.	1.00.0	08.03.2019	07.03.2024	-	-	09.05.2019	Working	Non Captive	Yes, letter No. DE/IAA- TN/F No. 15708 / EC No. 13/2018 dated 04.12.2018	12°01'49"N to 12°01'55"N 79°38'51"E to 79°38'55"E (12°01'49.40"N 79°38'53.69"E)	Open east

52.	Rough stone & Earth	S. Ranginathan	S/o. Subramania Gounder, No.135, Pondy Road, Mannakkam, Viluppuram District	B/G&M/260/15 dt. 15.02.2019	2.13.0	15.02.2019	14.02.2024	-	08.04.2019	Working	Non Captive	Yes, letter No. DEIAA- TN/F No. 18539 / EC No. 22/2018 dated 04.12.2018	12°11'27.47"N to 12°31'34.31"N 79°45'41.19"E to 79°45'46.59"E (12°11'29.96"N 79°45'41.19"E)	Open cast
53.	Rough stone	H. ChinnaKannan	S/o. Hanikrishnan, Erayur Village, Vanur Taluk, Viluppuram District	A/G&M/362/2017 dated 28.02.2019	2.81.5	28.02.2019	27.02.2024	-	08.03.2019	Working	Non Captive	Yes, letter No. DEIAA- TN/F No. 7699 / EC No. 7/2017 dated 04.02.2018	12°04'07"N to 12°04'14"N 79°39'32"E to 79°39'41"E	Open cast
54.	Rough stone & Earth	S. Raguraman	S/o. Subramanya Reddyar, Theakodipakkam Village, Vanur Taluk, Viluppuram District	A/G&M/778/2017 dt. 15.02.2019	2.54.5	15.02.2019	14.02.2024	-	28.03.2019	Working	Non Captive	Yes, letter No. DEIAA- TN/F No. 15201 / EC No. 14/2018 dated 05.07.2018	12°08'33"N to 12°08'40"N 79°43'28"E to 79°43'36"E (12°08'37.02"N 79°43'28.16"E)	Open cast
55.	Rough stone & Earth	M. Babu	No. 2, Mullam Road, Indira Nagar, Tindivanam	B/G&M/1159/2017 dt. 08.08.2018	3.94.0	08.08.2018	08.08.2023	-	19.08.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F No. 15483 / EC No. 17/2018 dated 05.07.2018	12°13'13.96"N to 12°13'24.92"N 79°45'15.51"E to 79°45'22.51"E (12°13'16.44"N 79°45'16.04"E)	Open cast
56.	Rough stone	Mannikam	S/o. Kaki, Nangathur Village, Vilekavandi Taluk, Viluppuram District	B/G&M/363/17 dt. 08.03.2018	1.00.0	08.03.2018	07.03.2023	-	15.03.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F No. 7527 / EC No. 13/2017 dated 04.02.2018	12°07'34"N to 12°07'37"N 79°24'44"E to 79°24'50"E (12°07'34"N 79°24'44"E)	Open cast
57.	Rough stone & Earth	D. Ramesh	S/o. Devanji Perumakkal Village & Post, Mannakkam Taluk, Viluppuram District	B/G&M/100/2018 dt. 28.02.2019	1.76.0	28.02.2019	27.02.2024	-	16.05.2019	Working	Non Captive	Yes, letter No. DEIAA- TN/F No. 18540 / EC No. 23/2017 dated 04.12.2018	12°11'07.87"N to 12°11'11.80"N 79°45'42.90"E to 79°45'51.85"E	Open cast

58.	Rough stone & Earth	K. Marudharam	Manager, OM Sakthi Constructions, Thollanur Villages, Vanur Taluk	A/G&M/1048/2017 dt. 16.08.2018	2.06.0	16.08.2018	15.08.2023	-	31.08.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F.No.14175/ EC.No.13/2018 dated 05.07.2018	(12°11'09.72"N 79°45'42.90"E) to (12°03'28"N to 12°03'36.50"N) to (12°03'35.29"E to 79°40'39.92"E) to (12°03'29.79"N 79°40'35.29"E)	Open east
59.	Rough stone & Earth	G. Raja,	S/o. Gopal, Sivasaj Street, Tharunbarmalai, Chennai.	A/G&M/90/2018 dt. 16.08.2018	2.42.5	16.08.2018	15.08.2023	-	Nil	Non Working	Non Captive	Yes, letter No. DEIAA- TN/F.No.15627/ EC.No.18/2018 dated 05.07.2018	(12°03'13.14"N to 12°03'21.15"N 79°40'16.66"E) to (12°03'17.09"N 79°40'16.66"E)	Open east
60.	Rough stone	T. Vasudevan	S/o. Thangavel, Ernaiyur Village, Vanur Taluk, Villupuram District	A/G&M/181/2018 dt. 15.02.2019	4.83.5	15.02.2019	14.02.2024	-	06.03.2019	Working	Non Captive	Yes, letter No. DEIAA- TN/F.No.18345/ EC.No.19/2018 dated 04.12.2018	(12°04'09"N to 12°04'19"N) to (79°38'34"E to 79°38'45"E) to (12°04'16.98"N 79°38'34.04"E)	Open east
61.	Rough stone	S. Sankar	S/o Sampantham, S. Kollar Village, Kovvachipuram Taluk, Villupuram District.	B/G&M/366/17 dt. 08.03.2018	3.00.0	28.03.2018	27.03.2023	-	04.06.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F.No.8297/ EC.No.19/2017 dated 04.02.2018	(11°58'25"N to 11°58'32"N) to (79°14'24"E to 79°14'33"E) to (11°58'25"N 79°14'26"E)	Open east
62.	Rough stone	S. Revanth	W/o. Selvaraj B1, Krishna Apartment, Kuvurai Village, Kallakurchi.	B/G&M/365/17 dt. 08.03.2018	2.16.0	13.03.2018	12.03.2023	-	28.03.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F.No.7596/ EC.No.12/2017 dated 04.02.2018	(12°03'46"N to 12°03'53"N) to (79°58'28"E to 79°58'33"E) to (12°03'47.31"N 79°58'29.29"E)	Open east
63.	Rough stone & Earth	D. Manokar	S/o. Dharmothirun, Anna Nagar, Ernaiyur Village, Vanur Taluk	A/G&M/176/2018 dt. 15.02.2019	1.90.5	15.02.2019	14.02.2024	-	03.04.2019	Working	Non Captive	Yes, letter No. DEIAA- TN/F.No.18212/ EC.No.18/2018 dated 04.12.2018	(12°03'46"N to 12°03'53"N) to (79°58'28"E to 79°58'33"E) to (12°03'47.31"N 79°58'29.29"E)	Open east



64.	Rough stone	G. Tumbisvelvan	S/o (late) M. Ganesh, Gounder, Meluvampathi Village, Melmalayannur Post, Gingee Taluk.	B/G&M/193/09 dt. 03.09.09, & B/G&M/950/2017 dt. 09.08.2018	0.81.0	12.10.2009	11.10.2019	-	06.02.2019	Working	Non Captive	Yes, letter No. DEJAA- TM/F No. 18587/ EC No. 26/2018 dated 04.12.2018	12°20'20.51"E to 12°20'20.04"E, 79°20'40.65"N to 79°20'48.88"N (12°20'20.13"E to 79°20'40.65"N)	Open east
65.	Rough stone & Earth	K. Balaramanugan	S/o Kuppusamy, Karasmar & Post, Vannur Taluk.	A/G&M/138/2017 dt. 27.08.2018	2.12.0	27.08.2018	26.08.2023	-	13.11.2018	Working	Non Captive	Yes, letter No. DEJAA- TM/F No. 15355/ EC No. 15/2018 dated 05.07.2018	12°03'18"N to 12°03'25"N to 79°40'05"E to 79°40'10"E (12°03'18"N to 79°40'05"E)	Open east
66.	Rough stone & Earth	E. Jayasankar	S/o Elumalai, No.198, Vinayakar Koil Street, Erediyur Village, Vannur Taluk, Vilupparain District	A/G&M/180/2018 dt. 15.02.2019	3.37.5	15.02.2019	14.02.2024	-	06.03.2019	Working	Non Captive	Yes, letter No. DEJAA- TM/F No. 18349/ EC No. 20/2018 dated 04.12.2018	12°04'02"N to 12°04'13"N to 79°38'35"E to 79°38'42"E (12°04'02"N to 79°38'35.07"E)	Open east
67.	Rough stone & Earth	K. Mujeevar Ragnan	S/o. Kaljalin Selvam Main Road, Elivanasarkottai, Ulundurpet.	B/G&M/174/2015 dt. 10.10.2017.	1.40.5	10.10.2017	09.10.2022	-	07.12.2017	Working	Non Captive	Yes, letter No. SELAA- TM/F No. 5134 / (to Y EC No. 3912/20) 6 dated 07.06.2017	11°39'48"N to 11°39'54"N to 79°12'17"E to 79°12'22"E (11°39'49.6"N to 79°12'18"E)	Open east
68.	Rough stone & Earth	M. Moorthi	S/o. Muman, Manurusamy Kovil Street, Thiruvakkur Village, Vannur Taluk.	A/G&M/203/2018 dt. 15.02.2019	3.93.5	15.02.2019	14.02.2024	-	14.03.2019	Working	Non Captive	Yes, letter No. DEJAA- TM/F No. 18543/ EC No. 24/2018 dated 04.12.2018	12°02'42.77"N to 12°02'53.80"N to 79°39'50.80"E to 79°39'57.78"E (12°02'46.77"N to 79°39'50.80"E)	Open east
69.	Rough stone & Earth	N. Venkatesh	S/o, Nataraj, No. 158, Kurinj Nagar, Velliscannambalam, Cuddalore.	B/G&M/1013/2017 dt. 30.02.2019	2.30.5	30.02.2019	29.02.2024	-	20.04.2019	Working	Non Captive	Yes, letter No. DEJAA- TM/F No. 17579/ EC No. 17/2018 dated 04.12.2018	12°13'32"N to 12°13'38"N to 73°44'15"E to 73°44'51"E (12°13'32"N to 73°44'15"E)	Open east
70.	Rough stone & Earth	V. Sadasivappan	No.18, Anjal Nagar, West Tambaram,	A/G&M/95/2018 dt. 16.08.2018	2.30.5	16.08.2018	15.08.2023	-	18.09.2018	Working	Non Captive	Yes, letter No. DEJAA- TM/F No. 15439/	12°13'31.97"N to 12°03'41.75"N to 79°40'06.13"E to	Open east



71.	Rough stone & Earth	S. Thirumangai	Chemmi-600 045	S/o. Sivaprakasam, Vinayagar Kovi Street, Karirkammam, Puducherry.	A/C&M/269/2018 dt. 15.02.2019	2.92.0	15.02.2019	14.02.2024	-	-	22.04.2019	Working	Non Captive	Yes, letter No. DEIAA- TM/F No. 18382/ EC No. 21/2018 dated 04.12.2018	79°40'16.50"E (12°03'32.44"N to 79°40'06.13"E)	Open east
72.	Rough stone & Earth	V Nagaraj		S/o. Vayupuri, No. 3/32A, South Street, Okayur Post, Kalkariceli Taluk, Viluppuram District.	B/G&M/118/2018 dt. 25.01.2019.	1.36.5	25.01.2019	24.01.2024	-	-	25.02.2019	Working	Non Captive	Yes, letter No. DEIAA- TM/F No. 17233/ EC No. 14/2018 dated 04.12.2018	79°38'34.83"E 11°39'40.39"N to 11°03'46.71"N	Open east
73.	Rough stone & Earth	D. Selvakumar,		S/o. Dandapani, Mallam Village, Tindivanam Taluk.	B/G&M/70/2014 dt. 17.07.2014	1.08.0	17.07.2014	16.07.2019	-	-	16.02.2015	Working	Non Captive	Yes, letter No. SEIAA- TM/F No. 2639/ EC/1(a)/1391/2014 dated 25.06.2014	(12°02'31.21"N to 79°38'34.83"E)	Open east
74.	Rough stone	N. Eliangovani,		S/o. Nachiyappan, Devapandian Village, Senkarapuram Taluk.	B/G&M/200/09 Dt. 27.05.2009	3.00.0	07.09.2009	06.09.2019	-	-	29.09.2009	Working	Non Captive	Yes, letter No. SEIAA- TM/F No. 4757/ 100/EC No. 3281/2015 dated 11.07.2016	(12°07'51"N to 79°36'24"E)	Open east
75.	Rough stone	E. Arjuna,		S/o. Kuppusamy, Gt., Melaiyansankuppam Village, Meehavanthangal Post, Gingee taluk, Viluppuram District	B/G&M/21/2010 dt. 18.02.2010	1.50.0	12.07.2010	11.07.2020	-	-	17.12.2012	Non Working	Non Captive	No	(11°56'32.79"N to 11°56'59.55"N)	Open east
76.	Rough stone	D. Ramachandran		S/o. Duraisamy, Thimmasandal Village, Arur post, Senkarapuram Taluk.	B/G&M/199/09 dt. 27.05.09	3.00.0	31.08.2009	30.08.2019	-	-	16.09.2009	Working	Non Captive	Yes, letter No. SEIAA- TM/F No. 4725/ 1(a)/EC No. 3331/2016 dated 15.07.2016	(11°56'00.9"N to 11°56'59.94"N)	Open east

77.	Rough stone	A. Sivanmuthu,	S/o. Anburtham, Mettu Street, Vadamerkunam post, Tiruvannam Taluk.	B/G&M/185/09 Dt. 11.06.2009	1.54.0	24.08.2009	23.08.2019	-	-	12.10.2009	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.4826/ 1(a)/EC.No.3347 /2016 dated 15.07.2016	(11°56'0.09"N 79°51'57.68"E) 12°13'08"N to 12°13'14"N 79°45'57"E to 79°46'03"E (12°13'10"N 79°45'57"E)	Open east
78.	Rough stone	Tmt.Sathambee	W/o. K.S. Masnan, 59, Dessurpettai Salai, Krisnavipuram, Gingee, Viluppuram District	B/G&M/206/10 dt. 25.01.2011.	3.00.0	28.02.2011	27.02.2021	-	-	30.06.2017	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.2484/ 1(a)/EC.No.3590 /2015 dated 19.08.2016	12°26'16"N to 12°26'21"N 79°23'05"E to 79°23'11"E	Open east
79.	Rough stone	P. Ramalingam,	S/o. Perumal, Pallyandur village Viluppuram Taluk Viluppuram District.	B/G&M/207/10 dt. 12.05.2010.	3.72.0	16.08.2010	15.08.2020	-	-	17.09.2010	Working	Non Captive	Yes, letter No.DELAA- TN/F.No.18617/ 1(a)/EC.No.282 018 dated 04.12.2018	12°11'36.91"N 79°45'21.21"E	Open east
80.	Rough stone	Tmt. K. Parimala	W/o. Senthil Selvan, Maruzan Kott Street, Kalathampattu Post, Gingee Taluk, Viluppuram District	B/G&M/225/2010 dt. 30.03.2010	2.50.0	16.04.2010	15.04.2020	-	-	23.04.2010	Non Working	Non Captive	No	12°13'25.45"N 79°18'46.08"E	Open east
81.	Rough stone & Earth	V.Kumar	S/o. Velayutham, Elvalapakkam Village, Perumukkal, Tiruvannam Taluk.	B/G&M/361/2012 dt.21.06.2014	2.33.0	21.06.2014	20.06.2019	-	-	21.07.2014	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.2328/ EC/1(a) 1337/2014 dated 30.05.2014	12°14'54"N to 12°14'46"N 79°48'48"E to 79°48'41"E (12°14'46"N 79°44'45"E)	Open east
82.	Rough stone & Earth	Tmt.L.Savithri	W/o. Loganathan, Emiyur Village & post, Vannur taluk.	A/G&M/360/13 dated 30.05.2014	0.99.0	30.05.2014	29.05.2019	-	-	12.06.2014	Non Working	Non Captive	Yes, letter No.SELAA- TN/F.No.1650/ EC/1(a) 1169/2013 dt. 20.03.2014	12°04'05"N to 12°04'08"N 79°39'33"E to 79°39'40"E (12°04'07"N 79°39'33"E)	Open east
83.	Rough stone	S. Kamaladevi	W/o. Suresh, Eyyal Village & post, Gingee Taluk, Viluppuram District.	B/G&M/192/09 dt. 11.06.2009.	3.00.0	23.06.09	22.06.2019	-	-	18.03.2010	Non Working	Non Captive	No	12°24'38.17"N 79°22'26.58"E	Open east

84.	Rough stone	B. Sakthivel	S/o. Helasabramanyan Vadakurumbur, Ulundurpet Taluk, Villupuram District	B/G&M/367/17 dt. 08.03.2018.	2.94.0	08.03.2018	07.03.2023	-	12.03.2018	Working	Non Captive	Yes, letter No. DIA/TN/MIN/ 6526/2017/DIAAA 2017, Ec. No. 1, Dated. 01.08.2017	11°39'37"N to 11°39'44"N 79°12'09"E to 79°12'15"E (11°39'37"N 79°12'10"E)	Open cast
85.	Rough stone	K. Ashokkumar	S/o Kannasamy, Nallalam Koostrod, Perumukkal Village, Tiruvananthapuram Taluk.	B/G&M/1224/12 dt. 16.04.2015	0.95.0	16.04.2015	15.04.2020	-	23.10.2015	Working	Non Captive	Yes, letter No. SEJAA-TN/F No. 2677 / EC/ 1(a) 1546/2014 dated 14.08.2014	12°13'13"N to 12°13'08"N 79°46'36"E to 79°46'44"E	Open cast

55

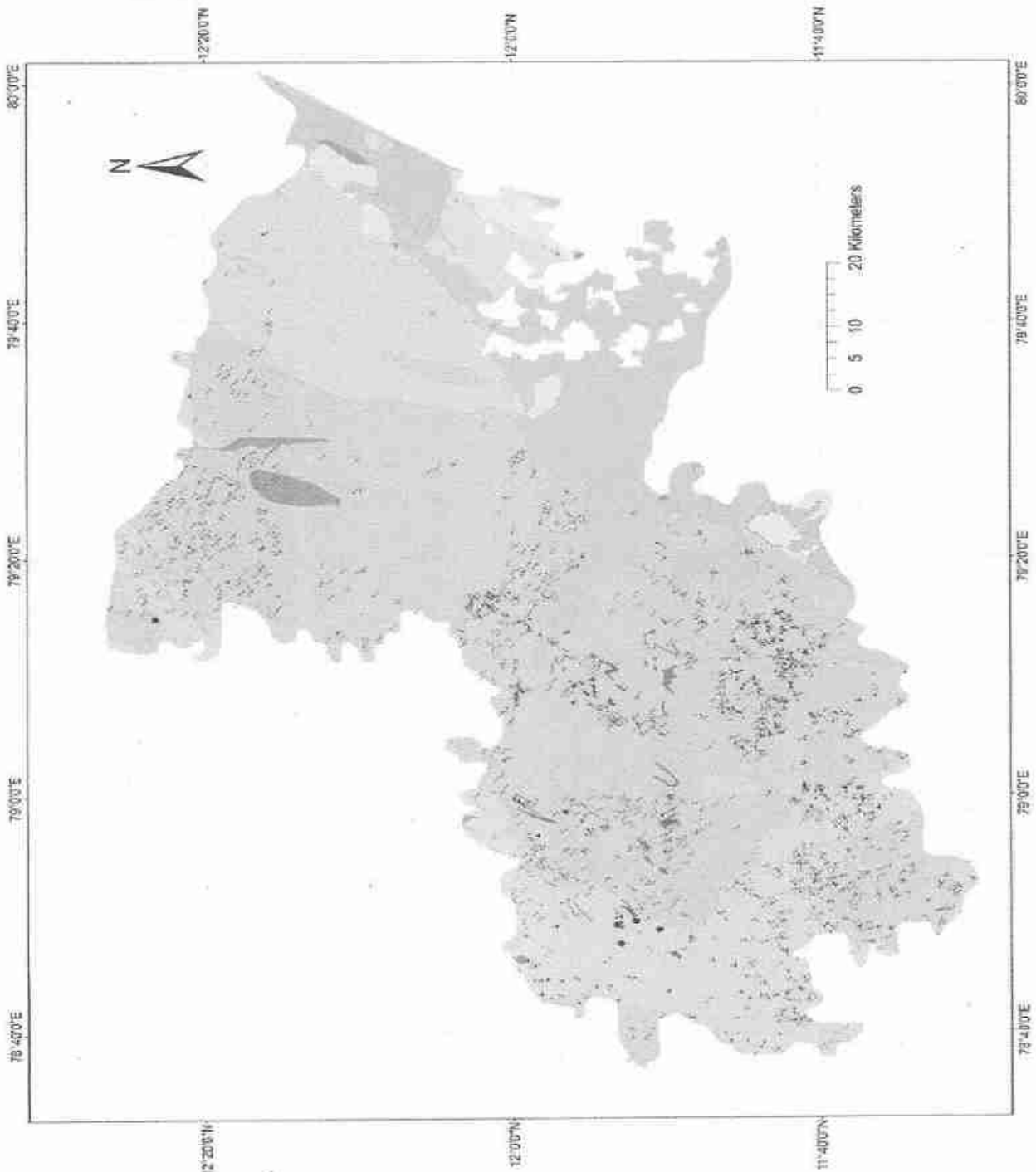
10) Details of Revenue received in last three years;

Year	Rough Stone S.F. (Rs.)
2016-17	46173110
2017-18	44466900
2018-19	54766668

11) Details of Production of Minor Mineral in last three years.

Year	Rough Stone Production (in Cu.Mt)
2016-17	1018368
2017-18	939555
2018-19	932678

# MINERAL MAP OF VILLUPURAM DISTRICT



37

**13. List of Letter of Intent (LOI) Holders in the District along with its validity:-**

Sl. No.	Name of the Mineral	Name of the Lessee	Address & Contact No. of letter of Intent Holder	Letter of Intent Grant Order No. & Date	Area of Mining lease to be allotted	Validity of Lot	Use (Captive/ Non-Captive)	Location of the Mining Lease (Latitude & Longitude)
1	2	3	4	5	6	7	8	9
1.	Rough stone & Gravel	V Ramesh	S/o. Venkatapathy, No.5, Thangaraj Street, HILL Colony, Pammal, Chennai - 75.	B/G&M/463/2018 dt.18.01.2019	3.53.0	-	Non Captive	12°03'10.49"N to 12°03'20.70"N 79°40'08.70"E to 79°40'16.98"E (12°03'11.13"N 79°40'09.94"E)
2.	Rough stone & Earth	Santhosh Blue Metals, Prop. S.V. Venkatesh	No.173, Sarkar Thoppu, Tindivanam.	B/G&M/357/2018 dt.04.01.2019	2.06.0	-	Non Captive	12°03'30"N to 12°03'36"N 79°40'23"E to 79°40'30"E (12°03'33"N 79°40'23"E)
3.	Rough stone & Earth	D. Dhandapani	S/o. Duraisamy, Erariyur Village, Vanur Taluk, Viluppuram District.	B/G&M/423/2018 dt.18.01.2019	1.49.5	-	Non Captive	12°04'07.16"N to 12°04'13.93"N 79°38'59.73"E to 79°39'03.75"E (12°04'07.45"N 79°39'00.95"E)
4.	Rough stone & Earth	Sri Balaji Blue Metals & M.Sand	No.33/8, Mailam Road, Indira Nagar, Tindivanam	B/G&M/462/2018 dt.15.02.2019	2.85.5	-	Non Captive	12°13'05.47"N to 12°13'13.31"N 79°47'04.29"E to 79°47'10.26"E (12°13'06.53"N 79°47'04.83"E)
5.	Rough stone	K. Balasubramanian	S/o. Karuppaiva, 28/4B, Raja Nagar, Kallakurichi - 606 202.	B/G&M/1143/2017 dt.17.01.2018	2.00.0	-	Non Captive	12°03'41.93"N to 12°03'48.98"N 78°57'09.17"E to 78°57'15.01"E (12°03'43.97"N 78°57'09.17"E)

6.	Rough stone & Gravel	A. Aridass	School Street, Kadagampattu, Vanur Taluk, Viluppuram District.	A/G&M/337/2018 dt.30.01.2019	1.77.0	-	Non Captive	12°03'55.01"N to 12°04'01.91"N 79°38'24.85"E to 79°38'32.27"E (12°03'56.29"N 79°38'24.85"E)
7.	Rough stone & Earth	K. Gnanasekaran	S/o.Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District.	A/G&M/277/2018 dt.04.01.2019	2.68.0	-	Non Captive	12°03'20.03"N to 12°03'27.36"N 79°40'15.44"E to 79°40'23.75"E (12°03'24.73"N 79°40'15.44"E)

**14. Mineral Reserve :  
Name of the Mineral: Rough stone**

Sl. No.	Name of the Mineral	Name of the Lessee	Address & Contact No. of Lessee	Mining lease grant order No. & Date	Area of Mining lease (ha)	Period of Mining lease (Year)		Date of commencement of Mining Operation	Status (Working / Non Working / Temp working for dispatch etc.)	Captive / Non-Captive	Obtained Environmental Clearance (Yes/No) If Yes Letter no with date of grant of EC	Location of the Mining Lease (Latitude & Longitude)	Total Quantity in CBM
						From	To						
1.	Rough stone	T. Muthamizhan	S/o. Theivasan, Maralur Village, Sankarapuram Taluk, Viluppuram District.	B/G&M/2020/2019 dt. 31.08.2016.	1.50.0	31.08.2016	30.08.2021	06.02.2017	Working	Non-Captive	Yes, letter No. SEIAA-TN/F.No.2682/EC/1(a)/1724/2014 dated 13.03.2015	12°00'30"N to 12°00'26"N 78°55'28"E to 78°55'23"E (12°00'27.7"N 78°55'21.8"E)	RS 45305
2.	Rough stone	RSatramanian	S/o. Ramasamy, 15/3, Kanukottai Village, Yernapar Post, Kallakurichi Taluk, Viluppuram District.	B/G&M/371/11 dt. 26.11.2014	1.26.0	23.01.2012	22.01.2022	Nil	Non working	Non-Captive	No	11°50'21.78" N 79°07'10.51"E	RS 67289
3.	Rough stone	K. Nandhappan	S/o. Karappanna Gounder, Vellakulam, Keeisiviri Post, Thidivanam Taluk.	B/G&M/1213/13 dt. 31.12.2015	2.23.0	31.12.2015	30.12.2020	25.02.2016	Non working	Non-Captive	Yes, letter No. SEIAA-TN/F.No.3439/EC/1(a)/2547/2015 dated 21.12.2015	12°11'56"N to 12°11'46"N 79°45'33"E to 79°45'26"E (12°09'11.47"N 79°45'29"E)	RS 85355
4.	Rough stone	K. Shanmugam	S/o. Kamalaya Gounder, Nallavur Village & Post, Vanur Taluk, Viluppuram District.	A/G&M/522/2014 dated 09.09.2016	1.95.5	09.09.2016	08.09.2021	Nil	Non working	Non-Captive	Yes, letter No. SEIAA-TN/F.No.4167/EC/1(a)/3177/2015 dated 21.03.2016	12°08'58.60"N to 12°09'04.04"N 79°44'38.34"E to 79°44'54"E (12°09'04.63"N 79°44'38.34"E)	RS 27417
5.	Rough stone & Earth	K. Anandavela	S/o. Kesavan, No.96, Eravur Village, Vanur Taluk, Viluppuram District.	A/G&M/977/2012 dt. 28.07.2017.	1.08.0	28.07.2017	18.03.2020	18.09.2017	Working	Non-Captive	Yes, letter No. SEIAA-TN/F.No.2699/EC/1(a)/702/2014 dated 19.03.2015	12°04'28"N to 12°04'24"N 79°38'39"E to 79°38'43"E (12°04'24"N 79°38'39"E)	RS 94425 E 8382

40



5.	Rough stone & Earth	A. Ganessan,	S/o. Appadurai, 190, Kadaveelbi, Eranyur & post, Vinur taluk, Viluppuram District	A/G&M/MS22/2016 dated 22.08.2016	2.62.5	28.07.2017	18.03.2020	-	-	16.05.2018	Working	Non Captive	Yes, letter No. SEIAA- TN/F.No.5064/E C/1(a)/3324/201 6 dated 15.07.2016.	12°04'12"N to 12°04'19"N 79°38'39"E to 79°38'51"E (12°04'16"N 79°38'39"E) to 12°22'84"N to 12°22'58"N 79°16'89"E to 79°16'77"E	RS:45609 E:20538
7.	Rough stone	P. Ramesh	S/o. Ponchitharam, 289, Main Road, Kaplampadi Village, Gingee Taluk, Viluppuram District.	B/G&M/2007/10 dt. 26.07.2014.	2.51.0	26.07.2014	25.07.2019	-	-	30.09.2015	Working	Non Captive	Yes, letter No. SEIAA- TN/F.No.1316/E C/1(a)/588/2013 dated 18.07.2013.	12°22'84"N to 12°22'58"N 79°16'89"E to 79°16'77"E	RS:215665
8.	Rough stone	V. Ganasekaran	S/o. Vellaaya Gounder, No. 47/1A, East Street, Tirukoilur	B/G&M/196/09 dt. 25.05.2009	1.50.0	19.06.2009	18.06.2019	-	-	22.06.2009	Non Working	Non Captive	Yes, letter No. SEIAA- TN/F.No.4898/E C/1(a)/3392/201 6 dated 25.07.2016	11°55'22.78"N to 11°55'26.97"N 79°09'25.55"E to 79°09'31.92"E (11°55'25.41"N 79°09'26.09"E)	RS:27560
9.	Rough stone & Earth	R. Abagarajan	S/o. Ramaswamy, No.41, Perkarai Street, Nerkandram, Chennai-107.	A/G&M/263/13 dated 25.03.2015	1.46.5	25.03.2015	24.03.2020	-	-	04.05.2015	Non Working	Non Captive	Yes, letter No. SEIAA- TN/F.No.1769/E C/1(a)/1631/201 4 dated 19.02.2015	12°03'24"N to 12°03'27"N 79°40'31"E to 79°40'38"E (12°03'27.55"N 79°40'32.65"E)	RS:72906 E:15340
10.	Rough stone	Tmt. S. Nambini	W/o. Sankar, No.14, 3 <sup>rd</sup> Street, Jeyapuram, Tindivanam Taluk	A/G&M/601/15 dated 31.12.2015	3.32.5	31.12.2015	30.12.2020	-	-	08.03.2016	Working	Non Captive	Yes, letter No. SEIAA- TN/F.No.4000/E C/1(a)/2546/201 5 dated 21.12.2015	12°03'25.80"N to 12°03'33.90"N 79°40'05.88"E to 79°40'13.76"E (12°03'20.53"N 79°40'10.84"E)	RS:370455
11.	Rough stone	G. Selvakumar	S/o. Govindaraj, Erampur Village, Kallakurichi Taluk	B/G&M/369/2017 dt. 08.10.2018.	1.50.0	08.10.2018	07.10.2023	-	-	04.12.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F.No.9072/E	11°49'47"N to 11°49'51"N 78°58'13"E	RS:236090

44

12.	Rough stone	R. Subramanian	S/o. Ramasamy, 15/3, Kattakottai, Erusappur Post, Kallukurichi Taluk, Viluppuram District	B/G&M/2018/10 dt. 16.12.2010.	1.96.0	10.01.2011	09.01.2021	-	-	25.01.2011	Non-Working	Non-Captive	-	C.No. 16/2017, dated 04.02.2018	to 78°58'19"E (11°49'47"N 78°58'13"E) 11°53'01.58" N 79°03'39.54"E	RS:154465
13.	Rough stone & Earth	C. Balanurugan	S/o. Chandran, Samathi Street, Malin Villages, Tiruvivanam Taluk	B/G&M/398/2016 dt. 24.09.2017	0.79.0	24.09.2017	23.09.2022	-	-	19.03.2018	Working	Non-Captive	Yes, letter No. DEIAA-534, No. DIA/TN/M/5779/2017/DIE EAA/2017, dated 01.08.2017	12°07'55.50" N to 12°07'59.47" N 79°36'24.94"E to 79°36'28.56"E (12°07'56.09"N 79°36'24.94"E)	RS:50100 E:15687	
14.	Rough stone	E. Sridhar	S/o Elamalai, No.1019, Pillayar Koil Street, Devikapuram Village, Arani Taluk, Tiruvannamalai District	B/G&M/1470/2010 dt. 10.05.2010	5.00.0	16.08.2010	15.08.2020	-	-	01.07.2011	Non-Working	Non-Captive	-	12°26'10.85" N to 12°26'03.38" N 79°21'48.29"E to 79°21'36.79"E (12°26'3.38"N 79°21'42.94"E)	RS:592898	
15.	Rough stone & Earth	C. Selvam,	S/o Chelappu Muthiyar, Sangeeethamangalin Road, Atandapuram, Gingee Taluk.	B/G&M/1470/2013 dt. 18.07.2014	0.60.0	18.07.2014	17.07.2019	-	-	07.01.2019	Working	Non-Captive	Yes, letter No. SEIAA-TN/F No.2602/E, C/1(a)/1484/2014 dated 25.06.2014	12°07'21"N to 12°07'27"N 79°22'40"E to 79°32'45"E (12°07'21"N 79°22'40"E)	RS:21493 E:1773	
16.	Rough stone & Earth	A.S. Srinivasan	S/o Seengodan, Athur & Post, Rossapuram Taluk, Namakkal District	B/G&M/459/13 dt. 06.02.2015	3.35.0	06.02.2015	05.02.2020	-	-	Nil	Non-Working	Non-Captive	Yes, letter No. SEIAA-TN/F No.1882/E, C/1(a)/1459/2014 dated 02.07.2014	11°17'09"N to 11°17'01"N (78°55'02"E to 78°54'53"E)	RS:330000 E:23373	

48

17.	Rough stone	A. Mathiasamy	S/o. Arthaneni Gounder, Kattakotta, Paranginatham, Mulligappady Post, Sankarapuram Taluk, Viluppuram District.	B/G&M/2012/10 dt. 31.12.2010.	1.00.0	14.02.2011	13.02.2021	-	21.07.2016	Non Working	Non Captive	-	-	
18.	Rough stone & Earth	V.Sankar	S/o Vivekanandhi, 14, Jayapuram Colony, Thiduvanni Town & Taluk, Viluppuram District.	A/G&M/360/2016 dated 20.09.2016	3.00.5	20.09.2016	19.09.2021	-	28.09.2016	Working	Non Captive	Yes, letter No.SEIAA- TNF.No.5616/1 d/EC.No.3694/2 016 dated 06.09.2016	12°03'32"N to 12°03'40"N 79°40'16"E to 79°40'23"E  (12°03'34"N 79°40'16"E)	RS:161930 E:5416
19.	Rough stone	A.Ramesh	S/o. Alagarasampar, Malikottalam, Kolakurichi Taluk	B/G&M/2019/2010 dt. 03.07.2016.	2.00.0	03.07.2016	02.07.2026	-	31.01.2017	Non Working	Non Captive	Yes, letter No.SEIAA- TNF.No.2683/E C/1001739/2014 dated 13.03.2015	12°03'43"N to 12°03'39"N 78°57'08"E to 78°57'13"E  (12°03'32"N 78°57'148"E)	RS:45660
20.	Rough stone & Earth	V. Chandraasakaran	S/o. Velluvani, 2/4, School Street, Kattupayur Village, Tirukshir Taluk.	B/G&M/334/2014 dt. 09.09.2016.	1.02.5	09.09.2016	08.09.2021	-	22.12.2016	Working	Non Captive	Yes, letter No.SEIAA- TNF.No.4736/E C/1003195/2016 dated 11.07.2016	11°57'9.50"N to 11°57'14.14" N 79°10'16.12"E to 79°10'18.80"E  (11°57'9.50"N 79°10'16.12"E	RS:70235 E:13684
21.	Rough stone & Earth	P.Detvinsigarnau	S/o.Pattuvan, T.Nallaijan Village, Perumakkal Post, Thiduvanni Taluk.	B/G&M/1898/12 dt.11.04.2015	1.03.0	11.04.2015	10.04.2020	-	26.05.2015	Working	Non Captive	Yes, letter No.SEIAA- TNF.No.2831/E C/1001752/2014 dated 19.03.2015	12°11'51"N to 12°11'53"N 79°45'08"E to 79°45'15"E	RS:61305 E:20060

43

22.	Rough stone	A. Balaraman	S/o. Annakkutti Gounder, Keelaviri Villnge & Post, Tindivanam Taluk, Viluppuram District	B/G&M/365/11 dt. 25.11.2011.	1.10.0	26.12.2011	25.12.2021	-	27.01.2012	Non Working	Non Captive	No	(12°11'54"N 79°45'8"E)	RS.15856
23.	Rough stone & Earth	T. Rajendiran	S/o. Thandapani Naichu, 8/65, Sivun Kovi Street, Elavanasurkottai Village & Post, Uthandurpet Taluk.	B/G&M/975/2015 dt. 22.08.2016.	1.97.5	22.08.2016	21.08.2021	-	28.09.2016	Working	Non Captive	Yes, letter No. SELAA-TN/F.No.5148/E C/ I(a)/3197/2016 dated 06.07.2016	(11°39'59.60" N to 11°40'06.64" N 79°12'16.58" E to 79°12'22.80"E (11°39'59.60" N 79°12'18.64"E )	RS.116185 E:5884
24.	Rough stone & Earth	S. Arulkannan	S/o. Subramani, 252, Kuliakkanni, Ulagalampoonai, Vikkiranvandi Taluk.	B/G&M/1059/2015 dt. 23.01.2017	1.14.5	23.01.2017	22.01.2022	-	25.01.2018	Working	Non Captive	Yes, letter No. SELAA-TN/F.No.5825 / I(a) /EC.No. 3879/2016 dated 14.11.2016	(12°02'42.84" N to 12°02'48.45" N 79°28'49.08" E to 79°28'52.37"E (12°02'43.45" N 79°28'49.08"E )	RS.94010 E:15480
25.	Rough stone & Earth	Tmt. R. Sujatha	W/o. (late) L. Rameshbabu, No.5, Shankar Nagar, Thenpathi, Siruli Taluk, Nagapattinam District	B/G&M/1053/2015 dt. 14.10.2016 & B/G&M/436/2018 Dated 19.11.2018	4.22.5	14.10.2016	13.10.2021	-	24.08.2017	Working	Non Captive	Yes, letter No. SELAA-TN/F.No.5061 / I(a) /EC.No. 3611/2016 dated 24.08.2016	(11°40'02"N to 11°40'12"N 79°12'23"E to 79°12'35"E (11°40'03"N 79°12'24"E)	RS.254672 E:61926

44

26.	Rough stone & Earth	K. Prasannaiah	S/o. Kanesshi Gounder, No.290/5, Mariamman Koil Street, Chokkanthangal, Keelaviri Post, Marukkannur Taluk	B/G&M/674/2013 dt.03.03.2016	1.06.5	03.03.2016	02.03.2021	-	04.05.2016	Working	Non Captive	Yes, letter No.SEJAA-TNF/No.4827/1(a)/EC.No.2829/2016 dated 17.02.2016	12°13'06"N to 12°13'11"N 79°45'26"E to 79°45'30"E (12°13'07"N to 79°45'26"E)	RS:80640 E:6564
27.	Rough stone & Earth	E. Pavandairayan	S/o. Ettiappan, Marayannur Kowli Street, Kovvadi, Thidivanam Taluk	B/G&M/1137/13 dt.14.05.2015	0.75.0	14.05.2015	13.05.2020	-	19.08.2015	Working	Non Captive	Yes, letter No.SEJAA-TNF/No.3109/EC/1(a)/2148/2014 dated 01.04.2015	12°11'39"N to 12°11'43"N 79°45'10"E to 79°45'14"E (12°11'40"N to 79°45'10"E)	RS:57700 E:16248
28.	Rough stone	S. Srinivasan	S/o. Sanjeevi, No.9, Wahab Nagar, Marukkannur Road, Thidivanam Taluk	B/G&M/2005/108 dt.23.09.2014	0.72.0	23.09.2014	22.09.2019	-	02.12.2009	Non Working	Non Captive	Yes, letter No.SEJAA-TNF/No.1802/EC/1(a)/1139A/2013 dated 27.02.2014	12°12'24"N to 12°12'19"N 79°44'55"E to 79°44'59"E (12°12'19"N to 79°44'55"E)	RS:51745
29.	Rough stone & Earth	P. Srinivasan	S/o. Puthi Reddiyar, No.142, Mosque Street, C.Palavaram, Chennai	B/G&M/290/13 dt.13.11.2015	1.61.5	13.11.2015	12.11.2020	-	29.06.2016	Working	Non Captive	Yes, letter No.SEJAA-TNF/No.2951/EC/1(a)/1768/2014 dated 19.03.2015	12°13'58"N to 12°14'03"N 79°45'17"E to 79°45'23"E (12°13'58"N to 79°45'23"E)	RS:128380 E:20247
30.	Rough stone & Earth	M. Krishnamoorthi	S/o. Marugaiyan, No.1, Palyakara Street, Thiruvakkasai	A/G&M/422/2013 dated 15.10.2016	0.80.0	15.10.2016	14.10.2021	-	22.03.2017	Working	Non Captive	Yes, letter No.SEJAA-TNF/No.5424/1(a)/EC.No.3557/2016 dated 10.08.2016	12°2'23.90"N to 12°2'27.58"N 79°39'32.17"E to 79°39'35.05"E (12°2'24.38"N to 79°39'32.17"E)	RS:56054 E:10386
31.	Rough stone & Earth	A. Selvaraj	S/o. Arunagam, No.135, 7 <sup>th</sup> Cross Road, Housing Board, Gopalapuram,	B/G&M/1187/13 dt.24.04.2015	1.07.5	24.04.2015	23.04.2020	-	18.05.2015	Non Working	Non Captive	Yes, letter No.SEJAA-TNF/No.2779/EC/1(a)	12°13'22"N to 12°13'28"N 79°44'03"E to 79°44'07"E	

45

32.	Rough stone & Earth	O. Aravind Kumar Jain	Minor Village, Tindivanam Taluk, Viluppuram District	A/G&M/528/18 dated 16.03.2015	1.05.5	16.03.2015	15.03.2020	-	13.04.2015	Working	Non Captive	Yes, letter No.SEIAA-TN/F.No.1206/EC/1(a) /1244/2013 dated 08.05.2014	(12°13'22"N to 79°44'09"E)	RS:29350 E:4028
33.	Rough stone & Earth	T.Aravindan	S/o. Tirubazan, Perammukkal Village, Tindivanam Taluk.	B/G&M/693/2012 dt.08.02.2016	2.12.0	08.02.2016	07.02.2021	-	30.10.2016	Working	Non Captive	Yes, letter No.SEIAA-TN/F.No.2763/EC/1(a) /1738/2014 dated 13.03.2015	12°13'15"N to 12°13'09"N 79°45'22"E to 79°45'16"E (12°13'12"N to 79°45'16"E)	RS:145135 E:30624
34.	Rough stone	S.Raguraman	S/o. Subramaniam, & Metru Street, Enayur Village & Post, Vanur Taluk, Viluppuram District.	A/G&M/590/2013 dated 20.02.2016	1.13.0	20.02.2016	19.02.2021	-	10.03.2016	Working	Non Captive	Yes, letter No.SEIAA-TN/F.No.4512/EC/1(a) /2778/2015 dated 19.01.2016	12°02'10.25" N to 12°02'14.44" N 79°38'52.17" E to 79°38'59.91"E (12°02'10.25" N to 79°38'52.17"E)	RS:28714
35.	Rough stone & Earth	M.Kalinyarasi	W/o. Manokaran, 4/53, Mariyaman Street, Sivanthangal, Chennai-69.	A/G&M/1461/2013 dated 14.06.2016	2.57.5	14.06.2016	13.06.2021	-	06.03.2017	Working	Non Captive	Yes, letter No.SEIAA-TN/F.No.3101/EC/1(a) /1804/2014 dated 27.03.2015	12°04'31"N to 12°04'43"N 79°38'54"E to 79°38'59"E (12°04'32"N to 79°38'57"E)	RS:110810 E:49335
36.	Rough stone & Earth	C. Ganesan	S/o. Chinnaiya Gounder, 168, Metru Street, Kamsur Village, V. Parangal Post, Vanur Taluk	A/G&M/168/2015 dated 22.08.2016	4.27.5	22.08.2016	21.08.2021	-	15.12.2016	Working	Non Captive	Yes, letter No.SEIAA-TN/F.No.5069/EC/1(a) /3326/2016 dated 15.07.2016	12°03'20"N to 12°03'27"N 79°39'58"E to 79°40'10"E (12°03'20"N to 79°39'58"E)	RS:35740 E:6848

119

37.	Rough stone & Earth	V.Gnanaguru,	S/o. Velayutham, Elavadayakkam Village, Perumakkal, Thindivanam Taluk	B/G&M/207/2012 dt. 21.06.2014	1.28.0	21.06.2014	20.06.2019	-	29.04.2015	Working	Non Captive	Yes, letter No. SEIAA-TN/F.No.2327 / EC/1(a) /251/2014 dated 09.05.2014	12°13'37"N to 12°13'32"N 79°44'11"E to 79°44'15"E (12°13'33"N, 79°44'11"E)	RS:120530 E:24954
38.	Rough stone & Earth	T. Kuppusamy	S/o. Thoppalan No.667, Marakkannur Road, Brammadiccann Village, Thindivanam Taluk	B/G&M/531/14 dt. 31.12.2015	0.99.5	31.12.2015	30.12.2020	-	26.02.2016	Working	Non Captive	Yes, letter No. SEIAA-TN/E.No.3363 / EC/1(a) /2318/2015 dated 02.11.2015	12°11'43"N to 12°11'49"N 79°45'39"E to 79°45'42"E (12°11'47"N, 79°45'39"E)	RS:43050 E:8820
39.	Rough stone	D. Murugappandiyan	S/o. Darmaraj, Chakkamuthandal, Gingee Taluk.	B/G&M/2008/10 dt. 30.12.2016	2.00.0	30.12.2016	29.12.2021	-	21.08.2017	Non Working	Non Captive	Yes, letter No. SEIAA-TN/E.No.5048 / EC/1(a) /3722/2016 dated 16.09.2016	12°15'17"N to 12°15'20"N 79°27'02"E to 79°27'11"E (12°15'17"N, 79°27'02"E)	RS:144805
40.	Rough stone	Trot R. Dharmalakshmi	W/o. Ravi, Thirupathiamman Koil Street, Venbit Village and Post, Virupparan Taluk and District	B/G&M/205/2010 dt. 13.04.2010	3.00.0	07.06.2010	06.06.2020	-	11.06.2010	Working	Non Captive		12°07'55.87" N to 79°26'40.90" E	RS:313652
41.	Rough stone	R. Dharmalakshmi	W/o. J. Ravi, Thirupathiamman Koil Street, Venbit Village, Virupparan Taluk.	B/G&M/290/2010 dt. 31.08.2016	2.21.5	31.08.2016	30.08.2021	-	06.03.2017	Non Working	Non Captive	Yes, letter No. SEIAA-TN/F.No.1424 / EC/1(a) /6372/013 dated 01.08.2013	12°02'51.37" N to 12°02'57.60" N 79°27'50.49" E to 79°27'57.29"E (12°02'57"N, 79°27'55"E)	RS:179930
42.	Rough stone	K. Murugavel	S/o. Kali Gounder, Nanganthur Village, Annaiyur Via, Virupparan Taluk.	B/G&M/2008/10 dt. 16.12.2010	0.50.0	31.01.2011	30.01.2021	-	26.12.2011	Non Working	Non Captive	No	12°07'36.16" N to 79°24'43.73" E	RS:16872
43.	Rough stone	P. Elambarthiyam	S/o. Parmeeswaram, Vidikkattanthudal post, Kallikoriichi	B/G&M/198/09 dt. 25.05.09	2.00.0	23.06.2009	22.06.2019	-	10.05.2010	Working	Non Captive	Yes, letter No. SEIAA-TN/F.No.4872 /	11°45'23.82" N to 11°43'27.08" N	RS:44275

47

44.	Rough stone	V.Ravi	Talak, Viluppuram District	B/G&M/2003/10 dt. 23.09.2014.	0.37.5	23.09.2014	22.09.2019	-	01.02.2019	Working	Non Captive	Yes. letter No.SEIAA- TN/F.No.1757/ I(a) / EC.No.866/2013 dated 12.11.2013	78°51'24.54"E to 78°51'31.13"E (11°45'23.82" N 78°51'24.54"E ) 12°13'19"N to 12°13'16"N	RS.23700
45.	Rough stone	P.Ravechandran	S/o. Periyasamy, Perumbakkal Village, Tindivanam Taluk.	A/G&M/083/2013 dated 30.05.2014	1.52.2	30.05.2014	29.05.2019	-	27.06.2014	Working	Non Captive	Yes. letter No.SEIAA- TN/F.No.1962 / EC/I(a) 1192/2013 dated 15.04.2014	12°01'52"N to 12°01'49"N 79°38'54"E to 79°39'01"E (12°01'52"N 79°38'55"E)	RS:67895 E:10350
46.	Rough stone & Earth	K. Gramesharani	S/o.Kannadi coumler, Mettu Street, Karasur Village, Vamar Taluk, Viluppuram District.	A/G&M/083/2013 dated 24.09.2017	1.24.5	24.09.2017	23.09.2022	-	13.12.2017	Working	Non Captive	Yes. letter No.SEIAA- TN/F.No.3425 / I(a) / EC.No.3926/2016 dated 19.06.2017	12°03'56"N to 12°03'40"N 79°40'07"E to 79°40'12"E (12°03'32.473"N 79°40'15.44"E)	RS:47100
47.	Rough stone	D.Naraswasamy	S/o.Dachinaveerthi Y. 25, Frickar Street, Marayamman Kovil Street, Coimbatore District.	A/G&M/702/2017 dt. 27.08.2018	2.53.0	27.08.2018	26.08.2023	-	18.09.2018	Working	Non Captive	Yes. letter No.DEIAA- TN/F.No.12681 / EC.No.11/2018 dated 05.07.2018	12°05'51"N to 12°06'00"N 79°42'32"E to 79°42'40"E (12°05'55"N 79°42'32"E)	RS:144425
48.	Rough stone & Earth.	M.Jaffer saib	S/o. Mohamed Kovuthar, Panayapuram Village.	B/G&M/848/2016 dt. 27.09.2018.	1.55.0	27.09.2018	26.09.2023	-	22.10.2018	Working	Non Captive	Yes. letter No.DEIAA- TN/F.No.7427 / EC.No.14/2017	11°59'53.90" N to 11°40'00.33" N	RS:56417 E:11874



49.	Rough stone	T. Anbazhagan	Viluppuram Taluk.	S/o. Thangavel, Nathamedu Street, Olakoor & Post, Tindivanam Taluk, Viluppuram District	B/G&M/364/17 dt. 28.02.2019;	0.99.0	28.02.2019	27.02.2024	-	-	Nil	Non Working	Non Captive	Yes, letter No. DEIAA-TN/F No.8096/EC.No.31/2017 dated 04.12.2018	12°13'36.27" N to 12°01'48" N 79°44'16.52" E to 79°38'49" E (11°39'55.69" N to 79°12'18.51"E )	RS:32211
50.	Rough stone	A. Sathishkumar	Viluppuram Taluk.	S/o. Arunigam, Mettin Street, Thuruvai, Royapodupakkam Post, Vamar Taluk-	B/G&M/142/2017 dt. 08.03.2019;	1.00.0	08.03.2019	07.03.2024	-	-	Nil	Non Working	Non Captive	Yes, letter No. DEIAA-TN/F No.15706/EC.No.12/2018 dated 04.12.2018	12°01'48"N to 12°01'54"N 79°38'49"E to 79°38'55"E (12°01'49.67" N to 79°38'54.89"E )	RS:51890
51.	Rough stone	C. Prabu	Viluppuram Taluk.	S/o. Chakravarthi, Indira Nagar, Kiliyamar Village & Post, Vamar Taluk, Viluppuram	B/G&M/141/2017 dt. 08.03.2019;	1.00.0	08.03.2019	07.03.2024	-	-	09.05.2019	Working	Non Captive	Yes, letter No. DEIAA-TN/F No.15708/EC.No.13/2018 dated 04.12.2018	12°01'49"N to 12°01'55"N 79°38'51"E to 79°38'55"E (12°01'49.40" N to 79°38'53.69"E )	RS:104810
52.	Rough stone & Earth	S. Rangarathnam	Viluppuram Taluk.	S/o. Subramania Gounder, No. 135, Pandy Road, Marakkaman, Viluppuram District	B/G&M/260/15 dt. 15.02.2019	2.13.0	15.02.2019	14.02.2024	-	-	08.04.2019	Working	Non Captive	Yes, letter No. DEIAA-TN/F No.18559/EC.No.22/2018 dated 04.12.2018	12°11'27.47" N to 12°11'34.31" N 79°45'41.19" E to 79°45'46.59" E (12°11'29.96" N to 79°45'41.19"E )	Rx:106902 E:9207

53.	Rough stone	H. Chinnakannan	S/o. Hari Krishnan, Emayar Village, Vannur Taluk, Viluppuram District	A/G&M/362/2017 dated 28.02.2019	2.81.5	28.02.2019	27.02.2024	-	08.03.2019	Working	Non Captive	Yes letter No. DEJAA- TNF No. 7599 / EC No. 7/2017 dated 04.02.2018	12°04'07"N to 12°04'14"N 79°39'32"E to 79°39'41"E	RS:412160
54.	Rough stone & Earth	S. Raguvaran	S/o. Subramanya Reddyar, Thakkodipakkam Village, Vannur Taluk, Viluppuram District	A/G&M/778/2017 dt. 15.02.2019	2.54.5	15.02.2019	14.02.2024	-	28.03.2018	Working	Non Captive	Yes letter No. DEJAA- TNF No. 15201 / EC No. 14/2018 dated 05.07.2018	12°08'33"N to 12°08'40"N 79°43'28"E to 79°43'36"E (12°08'37.02" N to 79°43'28.16" E)	RS:109143 E:10166
55.	Rough stone & Earth	M.Babu	No.2, Maniam Road, Indira Nagar, Tindivanam	B/G&M/1159/2017 dt. 09.08.2018	3.94.0	09.08.2018	18.08.2023	-	19.08.2018	Working	Non Captive	Yes letter No. DEJAA- TNF No. 15483 / EC No. 17/2018 dated 05.07.2018	12°13'13.96" N to 12°13'24.92" N 79°46'15.51" E to 79°46'22.51"E (12°13'16.44" N to 79°46'16.04" E)	RS:211615 E:32120
56.	Rough stone	Minnikann	S/o. Kali, Nangathur Village, Vikkravandi Taluk, Viluppuram District	B/G&M/383/17 dt. 08.03.2018	1.00.0	08.03.2018	07.03.2023	-	15.03.2018	Working	Non Captive	Yes letter No. DEJAA- TNF No. 7527 / EC No. 13/2017 dated 04.02.2018	12°07'34"N to 12°07'37"N 79°24'44"E to 79°24'50"E (12°07'34"N to 79°24'44"E)	RS:137823
57.	Rough stone & Earth	D. Ramesh	S/o. Devaraj Perumakkal Village & Post, Marakkannam Taluk, Viluppuram District	B/G&M/100/2018 dt. 28.02.2019	1.76.0	28.02.2019	27.02.2024	-	16.05.2019	Working	Non Captive	Yes letter No. DEJAA- TNF No. 18540 / EC No. 23/2017 dated 04.12.2018	12°11'07.87" N to 12°11'11.80" N 79°43'42.90" E to 79°45'51.85"E (12°11'09.72" N to 79°45'42.90"E)	RS:114505 E:29241

58.	Rough stone & Earth	R.Muralidharan	Manager, OM Sakthi Constructions, Thollanur Village, Vannar Taluk.	A/G&M/1648/2017 dt. 16.08.2018	2.06.0	16.08.2018	15.08.2023	-	-	31.08.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F No.14175 / EC No. 132018 dated 05.07.2018	12°03'28"N to 12°03'36.50" N 79°40'35.29" E to 79°40'39.92"E (12°03'29.79" N 79°40'35.29" E )	RS.235220 E.20040
59.	Rough stone & Earth	G. Raja,	S/o. Gopal, Sivaraj Street, Thiruvencruz, Chennai.	A/G&M/992018 dt. 16.08.2018	2.42.5	16.08.2018	15.08.2023	-	-	Nil	Non Working	Non Captive	Yes, letter No. DEIAA- TN/F No.15627 / EC No.182018 dated 05.07.2018	12°03'13.14"N to 12°03'21.15"N 79°40'16.66" E to 79°40'24.21"E (12°03'17.09" N 79°40'16.66" E )	RS.206255 E.20042
60.	Rough stone	T. Vasudevan	S/o. Thangavel, Erayar Village, Vannar Taluk, Viluppuram District.	A/G&M/181/2018 dt. 15.02.2019	4.83.5	15.02.2019	14.02.2024	-	-	06.03.2019	Working	Non Captive	Yes, letter No. DEIAA- TN/F No. 18345 / EC No. 19/2018 dated 04.12.2018	12°04'09"N to 12°04'19"N 79°38'34"E to 79°38'45"E (12°04'16.98" N 79°38'34.04"E )	RS.404793
61.	Rough stone	S. Sankar	S/o. Sempathan, S. Kallar Village, Kandachapuram Taluk, Viluppuram District.	B/G&M/366/17 dt. 08.03.2018	3.00.0	28.03.2018	27.03.2023	-	-	04.06.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F No.8297 / EC No. 10/2017 dated 04.02.2018	11°58'25"N to 11°58'32"N 79°14'24"E to 79°14'33"E (11°58'25"N 79°14'26"E )	RS.191318
62.	Rough stone	S. Revathi	W/o. Selvaraj B1, Krishna Apartment, Kavurai Village, Kallakurichi.	B/G&M/365/17 dt. 08.03.2018	2.16.0	15.03.2018	12.03.2023	-	-	28.03.2018	Working	Non Captive	Yes, letter No. DEIAA- TN/F No.7596 / EC No.12/2017 dated 04.02.2018	12°11'48.13" N 79°45'16.40" E	RS.151034

63.	Rough stone & Earth	D. Manokar	S/o. Dharmothirun, Anna Nagar, Enayur Village, Vamar Taluk.	A/G&M/176/2018 dt. 15.02.2019	1.90.5	15.02.2019	14.02.2024	-	03.04.2019	Working	Non Captive	Yes, letter No.D/EIAA- TN/F.No.18212/ EC.No.18/2018 dated 04.12.2018	12°03'46"N to 12°03'53"N 79°38'28"E to 79°38'33"E (12°03'47.31" N 79°38'29.29" E )	RS:22030 E:26970
64.	Rough stone	G. Tamilselvan	S/o. (late) M. Ganesan, Gounder, Madammasatta Village, Melmalayamur Post, Gingee Taluk.	B/G&M/193/09 Dt. 03.09.09. & B/G&M/950/2017 Dt. 09.08.2018	6.81.0	12.10.2009	11.10.2019	-	06.02.2019	Working	Non Captive	Yes, letter No.D/EIAA- TN/F.No.18587/ EC.No.26/2018 dated 04.12.2018	12°20'20.51"E to 12°20'20.04"E 79°20'40.65"N to 79°20'48.88"N (12°20'20.13" E 79°20'40.55" N)	RS:35567
65.	Rough stone & Earth	K. Balaramugan	S/o. Kurpusamy, Karasur & Post, Vamar Taluk.	A/G&M/158/2017 dt. 27.08.2018	2.12.0	27.08.2018	26.08.2023	-	13.11.2018	Working	Non Captive	Yes, letter No.D/EIAA- TN/F.No.15355/ EC.No.15/2018 dated 05.07.2018	12°03'18"N to 12°03'26"N 79°40'05"E to 79°40'10"E (12°03'18"N 79°40'06"E)	RS:198055 E:10544
66.	Rough stone & Earth	E. Jayasankar	S/o. Elumalai, No.198, Vinayakar Koil Street, Enayur Village, Vamar Taluk, Viluppuram District	A/G&M/180/2018 dt. 15.02.2019	3.37.5	15.02.2019	14.02.2024	-	06.03.2019	Working	Non Captive	Yes, letter No.D/EIAA- TN/F.No.18349/ EC.No.20/2018 dated 04.12.2018	12°04'02"N to 12°04'13"N 79°38'35"E to 79°38'47"E (12°04'03.46" N 79°38'35.07" E)	RS:378010
67.	Rough stone & Earth	K. Magesapur Ragnan	S/o. Kaipulla, Selam Main Road, Elavanasukkotai, Ulundurpet.	B/G&M/179/2015 dt. 10.10.2017.	1.40.5	10.10.2017	09.10.2022	-	07.12.2017	Working	Non Captive	Yes, letter No.S/EIAA- TN/F.No.5134 /I(a)/ EC.No.3912/2016 dated 07.06.2017	11°39'48"N to 11°39'54"N 79°12'17"E to 79°12'22"E 11°39'49.67"N 79°12'18"E	RS:24600 E:2790
68.	Rough stone & Earth	M. Moorthi	S/o. Muniam, Marmarsamy Kovil Street, Thiruvakkanni	A/G&M/203/2018 dt. 15.02.2019	3.93.5	15.02.2019	14.02.2024	-	14.03.2019	Working	Non Captive	Yes, letter No.D/EIAA- TN/F.No.18543/ EC.No.24/2018	12°2'42.77"N to 12°2'53.80"N 79°39'50.80"E to	RS:355330 E:26818

69.	Rough stone & Earth	N. Venkatesh	Village, Vanur Taluk	B/G&M/1013/2017 dt.30.02.2019	2.30.5	30.02.2019	29.02.2024	-	-	20.04.2019	Working	Non Captive	Yes, letter No. DEIAA-TNF/No.17579/EC.No.17/2018 dated 04.12.2018	79°39'57.78"E (12°2'46.77"N 79°39'50.80"E) to 12°13'32"N to 12°13'38"N 79°44'15"E to 79°44'51"E (12°13'32"N 79°44'15"E)	RS.195530 E.33669
70.	Rough stone & Earth	V.Sudayappan	No.18, Arul Nagar, West Tambaram, Chennai-600 045.	A/G&M/95/2018 dt. 16.08.2018	2.30.5	16.08.2018	15.08.2023	-	-	18.09.2018	Working	Non Captive	Yes, letter No. DEIAA-TNF/No.15429/EC.No.16/2018 dated 05.07.2018	12°13'33.97"N to 12°03'41.75"N 79°40'06.13"E to 79°40'16.50"E (12°03'32.44"N 79°40'06.13"E)	RS.277000 E.12934
71.	Rough stone & Earth	S. Thirunavugan	S/o. Sivaprasasam, Vinayagar Kovil Street, Kadurkaman, Pudukcherry.	A/G&M/269/2018 dt.15.02.2019	2.92.0	15.02.2019	14.02.2024	-	-	22.04.2019	Working	Non Captive	Yes, letter No. DEIAA-TNF/No.18382/EC.No.21/2018 dated 04.12.2018	12°02'30"N to 12°02'38"N 79°38'33"E to 79°38'40"E (12°02'31.21"N 79°38'34.83"E)	RS.240645 E.30336
72.	Rough stone & Earth	V.Nagaraj	S/o. Vinayapuri, No.3/32A, South Street, Okavur Post, Kaikuriyetti Taluk, Vilupparuan District.	B/G&M/118/2018 dt. 25.01.2019	1.36.5	25.01.2019	24.01.2024	-	-	25.02.2019	Working	Non Captive	Yes, letter No. DEIAA-TNF/No.17233/EC.No.14/2018 dated 04.12.2018	11°39'40.39" N to 11°039'46.71" N 79°11'58.95"E to 79°12'05.54"E (12°02'31.21" N 79°38'34.83" E)	RS.72405 E.6796
73.	Rough stone & Earth	D.Selvakumar,	S/o.Dandapani, Maniam Village, Tandiyanan Taluk.	B/G&M/70/2014 dt.17.07.2014	1.08.0	17.07.2014	16.07.2019	-	-	16.02.2015	Working	Non Captive	Yes, letter No. SEIAA-TNF/No.2639/EC/1(a)/139/2014 dated 25.06.2014	12°07'50"N to 12°07'55"N 79°36'24"E to 79°36'28"E (12°07'51"N 79°36'24"E)	RS.64000 E.21960

74.	Rough stone	N. Elangovan.	S/o. Nachiyappan, Devayapalathur Village, Sankarapettai Taluk.	B/G&M/2009/09 Dt. 27.05.2009	3.00.0	07.09.2009	06.09.2019	-	29.09.2009	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.4757 / I(a)/EC.No.3281 /2015 dated 11.07.2016	11°56'52.79" N to 11°56'59.55" N 78°52'47.46"E to 78°52'59.26"E (11°56'52.79" N 78°52'52.26"E )	RS:72461
75.	Rough stone	K. Arjunan.	S/o. Kuppusamy Gr. Malayarasankuppam Village, Muzhivaantharigal Post, Gingee taluk, Vilupparan District	B/G&M/24 /2010 dt. 18.02.2010	1.50.0	12.07.2010	11.07.2020	-	17.12.2012	Non Working	Non Captive	No	12°05'55.99" N 79°17'11.65"E	RS:63044
76.	Rough stone	D Ramachandran	S/o. Duraisamy, Thirunamudal Village, Arur post, Sankarapuram Taluk.	B/G&M/199/09 dt. 27.05.09	3.00.0	31.08.2009	30.08.2019	-	16.09.2009	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.4725 / I(a)/EC.No.3331 /2016 dated 15.07.2016	11°56'0.09"N to 11°56'59.94" N 78°51'57.68"E to 78°52'01.04"E (11°56'0.09"N 78°51'57.68"E )	RS:79553
77.	Rough stone	A. Sivanathan,	S/o. Anbazhagan, Madu Street, Vadukkuman post, Tiruvivanam Taluk.	B/G&M/185/09 Dt. 11.06.2009	1.64.0	24.08.2009	23.08.2019	-	12.10.2009	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.4826 / I(a)/EC.No.3347 /2016 dated 15.07.2016	12°13'08"N to 12°13'14"N 79°45'57"E to 79°46'03"E (12°13'10"N 79°45'57"E )	RS:80015
78.	Rough stone	Tmt. Satharebee	W/o. K. S. Mothban, 59, Desurpattai Sela, Krishnapuram, Gingee, Vilupparan District	B/G&M/2006/10 dt. 25.01.2011.	3.00.0	28.02.2011	27.02.2021	-	30.06.2017	Working	Non Captive	Yes, letter No.SELAA- TN/F.No.2484 / I(a)/EC.No.3590 /2015 dated 19.08.2016	12°26'16"N to 12°26'21"N 79°23'05"E to 79°23'11"E	RS:155980
79.	Rough stone	P. Ramalingam,	S/o. Perumal, Pallyndar village Vilupparan Taluk Vilupparan District.	B/G&M/207/10 dt. 12.05.2010.	3.72.0	16.08.2010	15.08.2020	-	17.09.2010	Working	Non Captive	Yes, letter No.DEJAA- TN/F.No.18617 / I(a)/EC.No.28/2 018 dated 04.12.2018	12°11'36.91" N 79°45'21.21"E	RS:55102

80.	Rough stone	Tmt. K. Parmala	W/o. Senthamil Selvan, Marigan Kool Street, Kalathampattu Post, Gingee Taluk, Villupuram District	B/G&M/25/2010 dt. 30.03.2010	2.50.0	16.04.2010	15.04.2020	-	23.04.2010	Non Working	Non Captive	No	12°13'28.43" N 79°18'46.08"E	RS:30566
81.	Rough stone & Earth	V. Kumar	S/o. Velayutham, Elavalapakkam Vilages, Perumakkal, Tindivanam Taluk	B/G&M/96/2012 dt. 21.06.2014	2.33.0	21.05.2014	20.06.2019	-	21.07.2014	Working	Non Captive	Yes, letter No. SEIAA- TMF No. 2328 / EC/ 16Y/ 1357/2014 dated 30.05.2014	12°14'54"N to 12°14'46"N 79°44'48"E to 79°44'41"E (12°14'46"N 79°44'45"E)	RS:252260 E:54491
82.	Rough stone & Earth	Tmt. L. Savithri	W/o. Loganathan, Enaiyur Village & post, Vanur taluk.	A/G&M/360/13 dated 30.05.2014	0.99.0	30.05.2014	29.05.2019	-	12.06.2014	Non Working	Non Captive	Yes, letter No. SEIAA- TMF No. 1650 / EC/ 16Y/ 1169/2013 dated 20.03.2014	12°04'05"N to 12°04'08"N 79°39'33"E to 79°39'41"E (12°04'6"N 79°39'33"E)	RS:34640 E:5983
83.	Rough stone	S. Kannabadevi	W/o. Sarasingh, Eyyil Village & post, Gingee Taluk, Villupuram District.	B/G&M/192/09 dt. 11.06.2009	3.00.0	23.06.09	22.06.2019	-	18.03.2010	Non Working	Non Captive	No	12°24'38.17" N 79°22'26.58"E	RS:231055
84.	Rough stone	B. Sakthivel	S/o. Eslesubramanian Vadakarumbur, Uthandiperi Taluk, Villupuram District	B/G&M/367/17 dt. 08.03.2018	2.94.0	08.03.2018	07.03.2023	-	12.03.2018	Working	Non Captive	Yes, letter No. DIA/TN/MIN/ 6526/2017/SEIAA 2017.IIc.No.1. Dated:01.08.2017	11°39'37"N to 11°39'44"N 79°12'09"E to 79°12'15"E (11°39'37"N 79°12'10"E)	RS:180180
85.	Rough stone	K. Ashokkumar	S/o. Kannasamy, Nallalam Kootroad, Perumakkal Village, Tindivanam Taluk	B/G&M/1224/12 dt. 16.04.2015	0.95.0	16.04.2015	15.04.2020	-	23.10.2015	Working	Non Captive	Yes, letter No. SEIAA- TMF No. 2677 / EC/ 16Y/ 1546/2014 dated 14.08.2014	12°13'13"N to 12°13'08"N 79°46'36"E to 79°46'44"E	RS:79075 E:24804

**List of Letter of Intent (LOI) Holders in the District along with Mineral Resources:**

Sl. No.	Name of the Mineral	Name of the Lessee	Address & Contact No. of letter of Intent Holder	Letter of Intent Grant Order No. & Date	Area of Mining lease to be allotted	Validity of LoI	Use (Captive/ Non-Captive)	Location of the Mining Lease (Latitude & Longitude)	Total resources in cbm
1	2	3	4	5	6	7	8	9	10
1.	Rough stone & Gravel	V.Ramesh	S/o. Venkatapathy, No.5, Thangaraj Street, HLL Colony, Pamnal, Chennai - 75.	B/G&M/463/2018 dt.18.01.2019	3.53.0	-	Non Captive	12°03'10.49"N to 12°03'20.70"N 79°40'08.70"E to 79°40'16.98"E (12°03'11.13"N 79°40'09.94"E)	1295840 M <sup>3</sup> of RS & 64792 M <sup>3</sup> of Gravel
2.	Rough stone & Earth	Santhosh Blue Metals, Prop. S. V. Venkatesh	No.173, Sarkar Thoppu, Tindivanam.	B/G&M/357/2018 dt.04.01.2019	2.06.0	-	Non Captive	12°03'30"N to 12°03'36"N 79°40'23"E to 79°40'30"E (12°03'33"N 79°40'23"E)	914130 M <sup>3</sup> of RS & 40628 M <sup>3</sup> of E
3.	Rough stone & Earth	D. Dhandapani	S/o. Duraisamy, Eraiyur Village, Vanur Taluk, Viluppuram District.	B/G&M/423/2018 dt.18.01.2019	1.49.5	-	Non Captive	12°04'07.16"N to 12°04'13.93"N 79°38'59.73"E to 79°39'03.75"E (12°04'07.45"N 79°39'00.95"E)	569040 M <sup>3</sup> of RS & 28452 M <sup>3</sup> of E
4.	Rough stone & Earth	Sri Balaji Blue Metals & M.Sand	No.33/8, Mailam Road, Indira Nagar, Tindivanam	B/G&M/462/2018 dt.15.02.2019	2.85.5	-	Non Captive	12°13'05.47"N to 12°13'13.31"N 79°47'04.29"E to 79°47'10.26"E (12°13'06.53"N 79°47'04.83"E)	1284120 M <sup>3</sup> of RS & 85608 M <sup>3</sup> of E
5.	Rough stone	K. Balasubramanian	S/o. Karupaiya, 28/4B, Raja Nagar, Kallakurichi - 606 202.	B/G&M/1143/2017 dt.17.01.2018	2.00.0	-	Non Captive	12°03'41.93"N to 12°03'48.98"N 78°57'09.17"E to 78°57'15.01"E (12°03'43.97"N 78°57'09.17"E)	803600 M <sup>3</sup> of RS



6.	Rough stone & Gravel	A. Aridass	School Street, Kadagampattu, Vanur Taluk, Viluppuram District.	A/G&M/337/2018 dt.30.01.2019	1.77.0	-	Non Captive	12°03'55.01"N to 12°04'01.91"N 79°38'24.85"E to 79°38'32.27"E (12°03'56.29"N 79°38'24.85"E)	1180270 M <sup>3</sup> of RS & 33722 M <sup>3</sup> of Gravel
7.	Rough stone & Earth	K. Gnanasekaran	S/o.Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District.	A/G&M/277/2018 dt.04.01.2019	2.68.0	-	Non Captive	12°03'20.03"N to 12°03'27.36"N 79°40'15.44"E to 79°40'23.75"E (12°03'24.73"N 79°40'15.44"E)	1206000 M <sup>3</sup> of RS & 53600 M <sup>3</sup> of E

### 15) Quality/ Grade of Mineral available in the district

#### Rough Stone

Good exposures of charnockite series of rock are available in the district and it is mainly quarried as Roughstone. Charnockite is bluish grey fine to medium grained massive rock which consists of potash feldspar, plagioclase, quartz and hypersthene. Charnockite series of rock available in the district meets out the engineering, physical and chemical parameters specified by NHAI for the purpose of construction of roads and bridges.

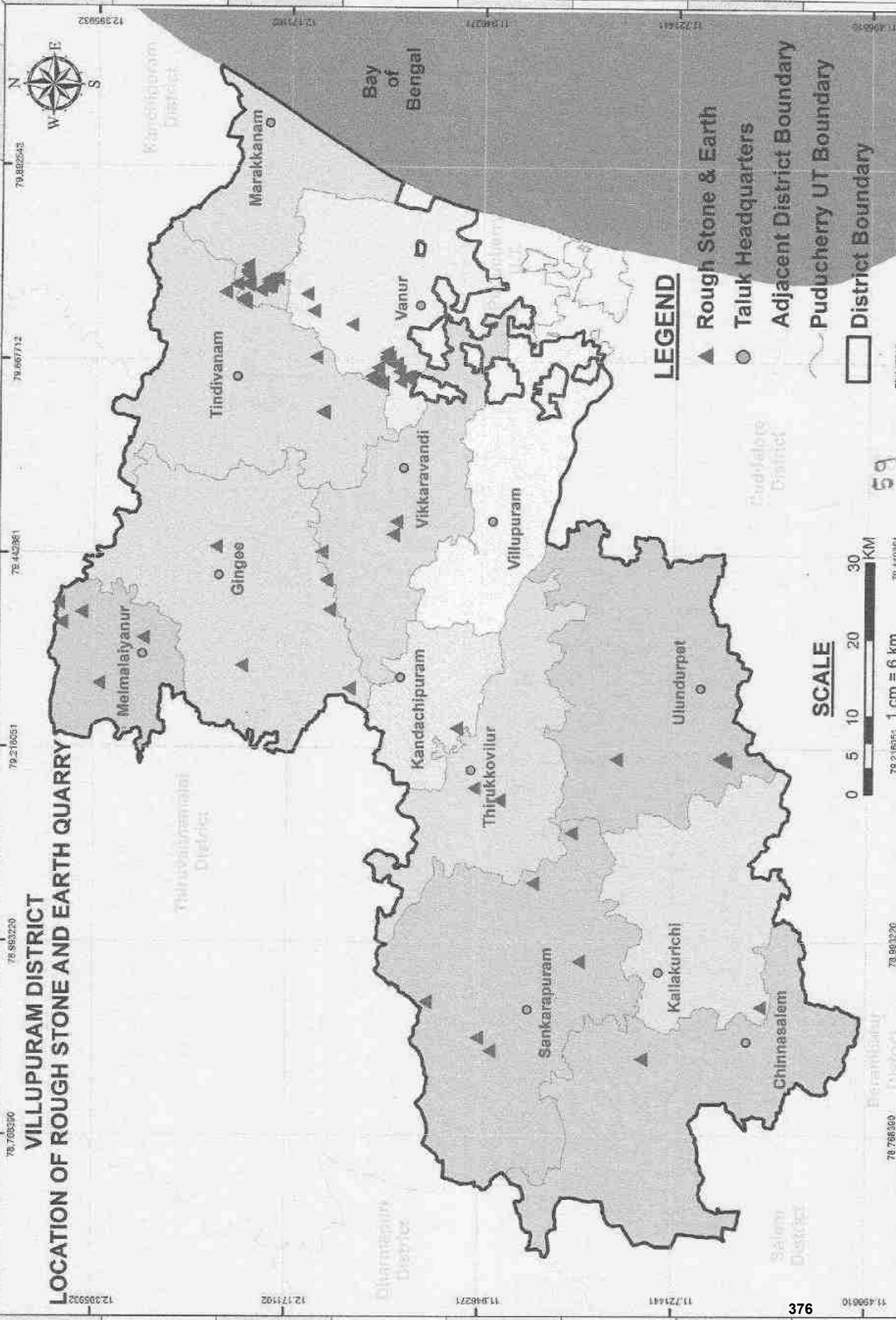
### 16. Use of Mineral

#### Rough stone:

The massive charnockite series of rocks are having strong physical properties and therefore it can be crushed and sorted into various sizes for use in concrete, coated with bitumen for road construction and other civil works.

### 17. Demand and Supply of the Minerals in the last three years

<b>Rough stone</b>			
<b>Year</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Demand (Cub.m)	782595.08	753676.27	928248.61
Supply (Cub.m)	782595.08	753676.27	928248.61



**VILLUPURAM DISTRICT**  
**LOCATION OF ROUGH STONE AND EARTH QUARRY**

**LEGEND**

- ▲ Rough Stone & Earth
- Taluk Headquarters
- Adjacent District Boundary
- - - Puducherry UT Boundary
- District Boundary

**SCALE**



59

19. Details of the area where there is a cluster of mining leases :

Sl. No.	Cluster area	Number of mining leases	Location (Latitude and Longitude)
1	Thiruvakkarai	7	1 12°01'52"N to 12°01'49"N 79°38'54"E to 79°39'01"E (12°01'52"N - 79°38'55"E)
			2 12°02'00"N - 79°38'52"E
			3 12°02'10.25"N to 12°02'14.44"N 79°38'52.17"E to 79°38'59.91"E (12°02'10.25"N - 79°38'52.17"E)
			4 12°2'23.90"N to 12°2'27.58"N 79°39'32.17"E to 79°39'35.05"E (12°2'24.38"N - 79°39'32.17"E)
			5 12°02'30"N to 12°02'38"N 79°38'33"E to 79°38'40"E (12°02'31.21"N - 79°38'34.83"E)
			6 12°01'49"N to 12°01'55"N 79°38'51"E to 79°38'55"E (12°01'49.40"N 79°38'53.69"E)
			7 12°01'48"N to 12°01'54"N 79°38'49"E to 79°38'55"E (12°01'49.67"N - 79°38'54.89"E)
2	Thollamur	10	1 12°03'230"N to 12°03'27"N 79°40'31"E to 79°40'38"E (12°03'27.55"N - 79°40'32.65"E)
			2 12°03'25.80"N to 2°03'33.90"N 79°40'05.88"E to 79°40'13.76"E (12°03'20.53"N 79°40'10.84"E)
			3 12°03'20"N to 12°03'27"N 79°39'58"E to 79°40'10"E (12°03'20"N 79°39'58"E)
			4 12°03'32"N to 12°03'40"N 79°40'16"E to 79°40'23"E (12°03'34"N - 79°40'16"E)
			5 12°03'36"N to 12°03'40"N 79°40'07"E to 79°40'12"E (12°03'32.44"N 79°40'15.44"E)
			6 12°13'331.97"N to 12°03'41.75"N 79°40'06.13"E to 79°40'16.50"E (12°03'32.44"N - 79°40'06.13"E)
			7 12°03'13.14"N to 12°03'21.15"N 79°40'16.66"E to 79°40'24.21"E (12°03'17.09"N - 79°40'16.66"E)
			8 12°03'28"N to 12°03'36.50"N 79°40'35.29"E to 79°40'39.92"E (12°03'29.79"N - 79°40'35.29"E)
			9 12°03'18"N to 12°03'26"N 79°40'05"E to 79°40'10"E (12°03'18"N - 79°40'06"E)

			10	12°2'42.77"N to 12°2'53.80"N 79°39'50.80"E to 79°39'57.78"E (12°2'46.77"N - 79°39'50.80"E)
3	Eraiyrur	8	1	12°04'07"N to 12°04'14"N 79°39'32"E to 79°39'41"E
			2	12°04'05"N to 12°04'08"N 79°39'33"E to 79°39'40"E (12°04'6"N 79°39'33"E)
			3	12°04'31"N to 12°04'43"N 79°38'54"E to 79°38'59"E (12°04'32"N 79°38'57"E)
			4	12°04'12"N to 12°04'19"N 79°38'39"E to 79°38'51"E (12°04'16"N 79°38'39"E)
			5	12°04'28"N to 12°04'24"N 79°38'39"E to 79°38'43"E (12°04'24"N - 79°38'39"E)
			6	12°04'09"N to 12°04'19"N 79°38'34"E to 79°38'45"E (12°04'16.98"N 79°38'34.04"E)
			7	12°04'02"N to 12°04'13"N 79°38'35"E to 79°38'42"E (12°04'03.46"N 79°38'35.07"E)
			8	12°03'46"N to 12°03'53"N 79°38'28"E to 79°38'33"E (12°03'47.31"N 79°38'29.29"E)
4	T.Nallalam	6	1	12°11'36.91"N - 79°45'21.21"E
			2	12°11'35.31"N - 79°45'29.14"E
			3	12°11'48.13"N - 79°45'16.40"E
			4	12°11'51"N to 12°11'55"N 79°45'08"E to 79°45'15"E (12°11'54"N - 79°45'8"E)
			5	12°11'39"N to 12°11'43"N 79°45'10"E to 79°45'14"E (12°11'40"N - 79°45'10"E)
			6	12°11'56"N to 12°11'46"N 79°45'33"E to 79°45'26"E (12°11'47"N 79°45'29"E)
5	Keelারণunam	4	1	12°13'36.27"N - 79°44'16.52"E
			2	12°13'37"N to 12°13'32"N 79°44'11"E to 79°44'15"E (12°13'33"N 79°44'11"E)
			3	12°13'15"N to 12°13'09"N 79°45'22"E to 79°45'16"E (12°13'12"N - 79°45'16"E)
			4	12°13'32"N to 12°13'38"N 79°44'15"E to 79°44'21"E (12°13'32"N- 79°44'15"E)

**20. Details of Eco Sensitive Area:**

Oussudu Lake Birds Sanctuary over an extent of 331.78.5 hectares falls in S.F.No.106 of Poothurai Village and S.F.No.1/1 of Perambai Village of Vanur Taluk, Viluppuram District.

**21. Impact on the Environment (Air, Water, Noise, Soil Flora & Fauna, Land use, Agriculture, Forest etc.,) due to Mining Activity**

Generally, the Environmental impacts can be categorized as either primary or secondary. Primary impacts are those, which are attributed directly by the project, secondary impacts are those, which are indirectly induced and typically include the associated investment and changed pattern of social and economic activities by the proposed action.

The impact has been ascertained for the project assuming that the pollution due to mining activity has been completely spelled out under the baseline environmental status for the entire ROM which is proposed to exploit from the mines.

**Air:**

Mining Operations are carried out by opencast semi mechanized/ Mechanized method, dust particles are generated due to various activities like, Excavation, Loading, handling of mineral and transportation. The air quality in the mining area depends upon the nature and concentration of emissions and meteorological conditions.

The major air pollutants due to mining activity includes:-

- Particulate Matter (Dust) of various sizes.
- Gases, such as, Sulphur Dioxide, Oxides of Nitrogen, Carbon Monoxide etc., from vehicular exhaust.
- Dust is the single Air pollutant observed in the open cast mines. Diesel operating drilling machines, small amount of blasting and movement of machinery/ vehicles produce NO<sub>x</sub>, SO<sub>2</sub> and CO emissions, usually at low

levels. Dust can be of significant nuisance surrounding land users and potential health risk in some circumstances.

### **Water Impact**

The mining operation leads to intersect the water table cause ground water depletion. Due to the interruption surface water sources like River, Nallah, Odai etc., surface water system, Drainage pattern of the area is altered.

### **Noise**

Noise pollution is mainly due to operation of Machineries and occasional plying of machineries. These activities will create Noise pollution in the surrounding area.

### **Land Environment**

The topography of the area will change, due to the Topographical changes the entire Eco system will be altered.

### **Flora and Fauna**

The impact on biodiversity is difficult to quantify because of its diverse and dynamic characteristics.

Mining activities generally result in the deforestation, land degradation, water, air and noise pollution which directly or indirectly affect the faunal and floral status of the project area.

However, occurrence and magnitude of these impacts are entirely dependent upon the project location, mode of operation and technology involved.

## **22. Remedial Measure to mitigate the impact of Mining on the Environment**

### **Air**

Mitigated measures suggested for air pollution controls are based on the baseline ambient air quality of the area

The following measures are proposed to adopted in the mines such as,

- Dust generation shall be reduced by using sharp teeth of shovels.
- Wet drilling shall be carried out to contain the dust.
- Controlled blasting techniques shall be adopted.
- Water spraying on haul roads, service roads and overburden dumps will help in reducing considerable dust pollution.
- Proper and regular maintenance of mining equipment's have to be considered.
- Transport of material in trucks covered with tarpaulin.
- The mine pit water can be utilized for dust suppression in and around mine areas.
- Information on wind direction and meteorology will be considered while planning, so that pollutants, which cannot be fully suppressed by engineering technique, will be prevented from reaching the nearby agriculture area.
- Comprehensive green belt around overburden dumps has to be carried out to reduce to fugitive dust emissions in order to create clean and healthy environment.

#### **Water**

- Construction of garland drains to divert surface run-off into the mining area.
- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Retaining walls with weep hole will be constructed around the mine boundaries to arrest silt wash off.
- The mined out pits shall be converted into the water reservoir at the end of mine life. This will help in recharging ground water table by acting as a water harvesting structure.
- Periodic analysis of mine pit water and ground water quality in nearby villages.



- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits.

## **Noise**

### **Mitigation measures**

- Periodic maintenance of machinery, equipment's shall be ensured to keep the noise generated at minimum.
- Development of thick green belt around mining area and haul roads to reduce the noise.
- Provision of earplugs to workers exposed to high noise generating activities. Workers and operators at work site will be provided with earmuffs.
- Conducting periodical medical checkup of all workers for any noise related health problems.
- Proper training to personnel to create awareness about adverse noise level effects.
- Periodic noise monitoring at suitable locations in the mining area and nearby habitations to assess efficacy of adopted control measures.
- During the blasting, optimum Spacing, Burden and charging of holes will be made under the supervision of competent qualified mines foreman, Mate as approved by Director of Mines safety.

## **Biological Environment**

### **MITIGATION MEASURES:**

- Development of gap filling saplings in the safety barrier left around the quarry area.
- Carrying out thick greenbelt with local flora species predominantly with long canopy leaves on the inactive mined out upper benches.
- Development of dense poly-culture plantation using local flora species in the mining area at conceptual stage.
- Adoption of suitable air pollution control measures as suggested above.
- Transport of materials in trucks covered with tarpaulin.

- Construction of garland drains and settling tank to arrest silt wash off from lease area.
- Construction of retention walls around lower boundary of mining area to arrest silt washoff and roll down boulders.
- Retaining walls with weep hole will be constructed around the mine Boundaries to arrest silt wash off.

**23. Reclamation of Mined out area (Best Practice already implemented in the district, requirement as per Rules and Regulation, Proposed reclamation plan)**

In rough stone quarry lease permitted area the shallow holes of 32mm diameter and 1.5 feet depth will be drilled and conventional low power explosives such as Slurry Explosives, ordinary safety fuse only will be used for rough stone. Hence, ground vibration and noise pollution will be minimal and restricted within the quarry workings.

**24. Risk Assessment and Disaster Management Plan**

**Risk Assessment**

While designing Disaster Management plans for a particular region, different vulnerabilities for that region has to be assessed first to streamline different developmental plans.

**VULNERABILITY ANALYSIS**

The major rivers flowing through this District are as follows,

- Gedilam River - Flows through Tirukoilur and Ulundurpet Taluks.
- Malattar River - Joins Gedilam before flowing into the Bay of Bengal
- Pennaiyar River - Flows through Sankarapuram, Tirukoilur and Viluppuram Taluks.

bb

- Sankarabarani River - Originates in Gingee Taluk, flows through Viluppuram.

The rivers are seasonal and could not be used for irrigation purpose to the expected level because of low precipitation in most of the days of a year. The North East Monsoon which sets in during October and November brings forth heavy rainfall in major parts of this district causing heavy floods and cyclone in the coastal areas from Marakkanam, Tirukoilur, Viluppuram, Ulundurpet, Tindivanam and Vanur Taluks. The vulnerable villages to natural calamities in each taluk and the flood prone areas in each taluk are detailed below with their maps.

#### **LIST OF VILLAGES VULNERABLE TO NATURAL CALAMITIES**

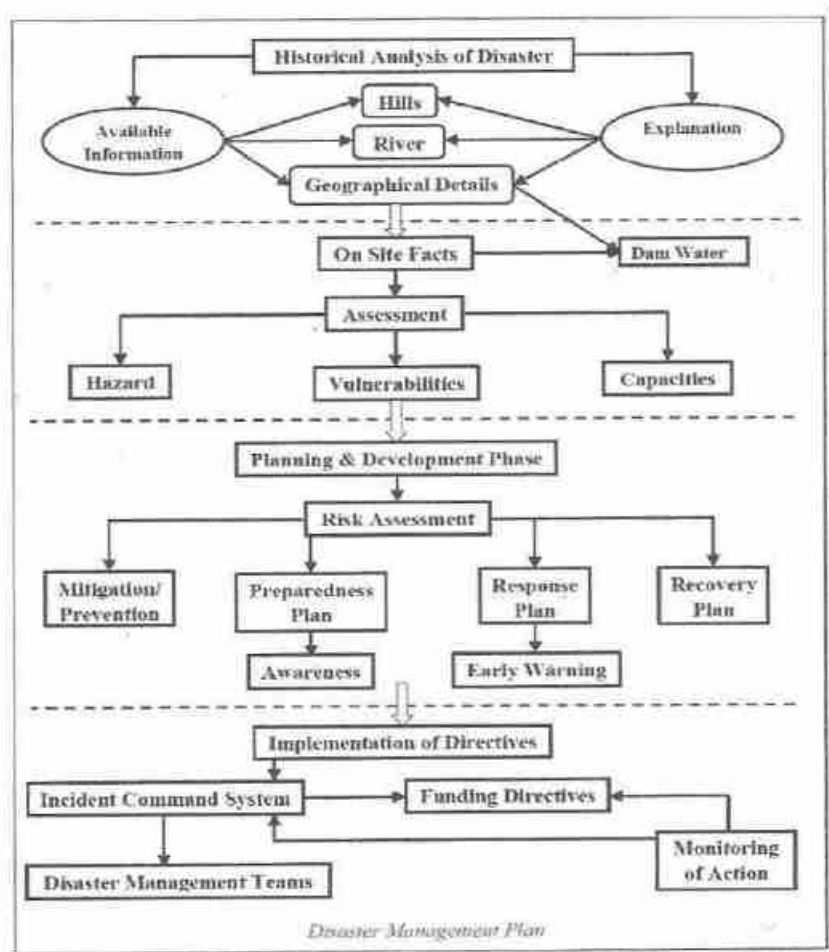
1. Since Marakkanam and Vanur blocks are facing Bay of Bengal, they face the risk of Tsunami directly.
2. Based on the history of rainfall and calamities way back a decade, the following 166 places are identified as vulnerable locations with regard to Flood and Cyclone.

#### **ABSTRACT OF LIST OF VILLAGES VULNERABLE**

Sl. No	Name of the Taluk	Highly Vulnerable	Vulnerable	Moderately Vulnerable	Low Vulnerability	Total No. of Vulnerable Location
1	VILUPPURAM	0	0	0	21	21
2	VIKRAVANDI	0	0	0	27	27
3	VANUR	0	0	0	7	7
4	TINDIVANAM	0	0	0	17	17
5	GINGEE	0	0	0	4	4
6	MELMALAIYANUR	0	0	0	0	0
7	MARAKKANAM	0	8	21	24	53
8	TIRUKOILUR	0	1	3	5	9
9	ULUNDURPET	3	0	1	5	9
10	KANDACHIPURAM	0	0	0	0	0

11	KALLAKURICHI	0	0	0	2	2
12	SANKARAPURAM	0	0	0	0	0
13	CHINNASALEM	0	0	0	0	0
14	WRO VPM	0	0	0	1	1
15	WRO KK	1	4	0	15	20
<b>TOTAL</b>		<b>4</b>	<b>13</b>	<b>25</b>	<b>128</b>	<b>170</b>

### District Disaster Management Plan



68

### **District Disaster Management Plan (DDMP)**

The objective of the District Disaster Management Plan (DDMP) is to devise a set of guidelines for District level disaster preparedness, prevention, mitigation and monitoring which will grow into becoming a well - defined protocol for disaster management that will be updated periodically. Every line department in the District will need to prepare their own Disaster Management Plans. The Emergency Support functions of various departments will be listed out in the plan. An inventory of resources in the district will be listed out. All of this will converge into the state plan and mesh into one another. While the District Disaster Management Plan will form the framework for the entire district, it will be fine-tuned further by requirements of individual district units and emergency situation.

### **District Disaster Management Plan.-**

- 1) Comprehensive flood protection strategies with reference to Gedilam river, Gomuki, Manimukthar River and 19 coastal habitations in the district prone to flood.
- 2) Building self-reliant coastal communities and empower them to manage their livelihoods in a sustainable manner.
- 3) Long term comprehensive pre and post disaster management programs linked to developmental activities.
- 4) De-centralize the decision making authority to the field level line department officials.
- 5) Participatory Management.
- 6) Increasing the awareness of long-term impact of relief program on development potential.
- 7) Emphasis on quality management of Relief measures.
- 8) Enhance the resilience of farmers to face the Vagaries of monsoon in rainfed areas.
- 9) To maintain the database capturing all the past experiences like Tsunami, Flood, Cyclone, Drought in the district.

- 10) To convene the meeting of District Disaster Management Authority for every quarter to discuss the preparedness of the line departments to meet any disasters.
- 11) Provide information about the rainfall, heat wave and other natural calamity to the public through District Emergency operation centre thereby to reduce the loss of lives and property.
- 12) Proper Operation and Maintenance of VHF sets and Early Warning Systems installed in coastal habitations
- 13) Creating awareness through Mock Drills, communication drills regularly and periodically in association with line departments like Education, Health, Police, Fire and Rescue, SDRF, NDRF and SIRD trained CBDRM trainers.
- 14) Motivate the public about the importance of Water conservation works such as rain water harvesting, desilting of tanks and channels and kudimaramathu.
- 15) Effective implementation of G.O(Ms) No: 540 on Eviction of encroachments through Water Conservation and Water Management Committee and Encroachment Eviction Committee.
- 16) To avoid the construction of the buildings in low lying areas and to insist the Builders on the need to raise the construction site sufficiently thereby preventing the inundations during monsoons.
- 17) To reduce the direct disaster economic loss through Disaster Risk governance by identifying the vulnerable locations for various disaster and make the officials to realise their roles, their Hazard, Risk assessment and precautionary measures.
- 18) As a measure to reduce the damage to critical infrastructure and basic services, enabling the Highways, Police, Revenue, Fisheries and Fire & Rescue departments with latest equipments to handle disasters and vehicular traffic restoration immediately, and ensure that all infrastructure is built to withstand earthquake and floods and adequate engineering safety.

- 19) Effective utilization of Search, Rescue and Evacuation equipments of all the line departments.
- 20) Identify the list of swimmers, climbers and snake catchers for each of the vulnerable locations and update them in the district website.
- 21) To Develop local Disaster Risk Strategy through Sensitisation of all local body officials like Municipal Commissioners, Executive officers, Town panchayats and block development officers, Village level functionaries like VAO, VA and Panchayat clerk on their roles and responsibilities during disaster and understand the risk.
- 22) Sensitization of the officials of health department, Noon meal and anganwadi workers across the district on disaster management in particular Coastal areas.
- 23) Providing training to the Evacuation, Search and Rescue, Early warning, First aid and Shelter & Maintenance committee members in all 19 Coastal habitations.
- 24) Sensitise all the private institutions, hospitals, theatres, shopping malls and educational institutions on the need for a disaster contingency plan to tackle any major disaster.
- 25) To form the Inter Departmental Zonal Teams to oversee the preparatory works of pre and post disaster.
- 26) To Enhance international cooperation in relief operations by sharing the local technical and the traditional expertise.
- 27) To Successfully implement of Community based disaster risk management Project.
- 28) To identify all the Blackspots in the National Highways and make them accident free zones in the district.
- 29) To identify the places where fatal accidents occurred and provide them with Rubble strips, providing Barricades caution Boards etc, to alert the drivers of vehicles.
- 30) To provide double speed Brakers in all the sub - roads connecting the National Highways to reduce accidents.



- 31) To identify the major junctions in the National Highways and send proposals for Bridges construction like Road over Bridge /Road under Bridge as per their need.
- 32) To Create awareness among the explosive license owners by sensitizing them on the directions of sale and manufacturing procedures, the impact on lives and on economy in case of any explosive accident.
- 33) To issue proper instructions to Tamil Nadu Electricity Board to monitor the use of electric fencing if any used in the agricultural lands and sensitize the public to reduce their use.
- 34) A plan to increase the capacity of the Vidur Reservoir from existing 14.061 M.Cum to its original 17.136 M Cum by desiltation of 30,80,000 cu.m. that may cost around Rs.22.94 Cr. Proposal is under progress. This will be helpful to irrigate the entire 3200 acres ayacut and feed 8 Tanks.
- 35) A plan to increase the capacity of the Gomuki Nadhi Project Dam from existing 12.95 M.Cum to its original 15.86 M Cum by desiltation of 29,10,000 cu.m. that may cost around Rs.27.14 Cr. Proposal is under progress. This will be helpful to irrigate the entire 10860 acres ayacut and feed 37 Tanks.
- 36) A plan to increase the capacity of the Manimuktha Nadhi Project Dam from existing 18.27 M.Cum to its original 20.88 M Cum by desiltation 26,10,000 cu.m. that may cost around Rs.24.34 Cr. Proposal is under progress. This will be helpful to irrigate the whole 5493 acres ayacut and feed 5 Tanks.
- 37) A plan to increase the capacity of the Malattar River Project from existing 750 M to its original 347 Km Cum by desiltation 2225.81 Ha. that may cost around Rs.9.00 Cr. Proposal is under progress. This will be helpful to irrigate the actual 5000 acres ayacut and feed 13 Tanks.



- 38) A plan to increase the capacity of the Sornavur Anicut designed discharge of this anicut 5098.88 Cu.M that may cost around Rs.9.75 Cr. Proposal is under progress. This will be helpful to irrigate the actual 6053 acres ayacut and feed 8 Tanks.
- 39) Implementing Rain Water Harvesting techniques through Pit and Power Sump creation in the upcoming New Law College Buildings and New formation bifurcated Three Taluk Offices viz, Marakkanam, Melmalaiyanur, Kandachipuram (New Public Buildings)
- 40) To Maintain surface water quality and protect surface water bodies.
- 41) To Train local volunteers in Rain Water Harvesting at reduced costs. Encourage the use of any roofing material for the collection of rain water for household purpose.
- 42) Rainwater Harvesting process has an inherent tendency to arrest seawater ingress in coastal areas. They have also enhanced the yield of open wells, bore well and pumbs. It also improves the ground water quality by elimination of harmful chemicals and salts.

**25. Details of the occupational Health issues:**

**RNTCP Tuberculosis Register Case**

Sl. No.	Year	Total Case
1	2014	4931
2	2015	4527
3	2016	4669
4	2017	4534
5	2018	4647

Silicosis : -- Nil--

**26. Plantation and Green Belt development in respect of leases already granted in the district.**

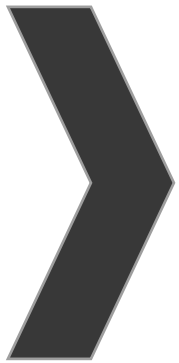
It is necessary to develop Green Belt in and around the polluted site with suitable species to reduce the air pollution effectively. Implementation of afforestation program is of paramount importance. In addition to augmenting existing vegetation, it also checks soil erosion, make the ecosystem more complex and functionally more stable and make the climate more conducive.

**27. Any other information**

**-NIL-**

*hplwjs*  
*27/5/19*  
**Assistant Director  
Geology and Mining,  
Viluppuram.**

*mmmm*  
*27/5/2019*  
**District Collector  
Viluppuram.**



# ANNEXURE-8





# Shrient Analytical and Research Labs Pvt. Ltd

416/15, Dhargas Road, West Tambaram, Chennai- 600045  
Phone Number +91 82208 36377 Email: - [info@shrientanalytical.com](mailto:info@shrientanalytical.com)  
[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No.	SARL/24/1763	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1763	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	05.03.2024	Test Completed on	16.03.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	68.6	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	32.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	13.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



# Shrient Analytical and Research Labs Pvt. Ltd

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[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No.	SARL/24/1764	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1764	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	05.03.2024	Test Completed on	16.03.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	5.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

**For Shrient Analytical and Research Labs Pvt. Ltd**

*S. Paul*  
**Verified**



*J. Gnanaprakasam*  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
**Technical Manager**

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**LAB SERVICES FOR:-** Food, Water, Milk, Environment, Academic & Industrial Segment.  
CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1765	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1765	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	06.03.2024	Test Completed on	16.03.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	72.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	34.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	14.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/24/1766	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1766	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	06.03.2024	Test Completed on	16.03.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Feb  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R





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## TEST REPORT

Report No.	SARL/24/1767	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1767	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	07.03.2024	Test Completed on	16.03.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.6	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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Please Contact:

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## TEST REPORT

Report No.	SARL/24/1768	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1768	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	07.03.2024	Test Completed on	16.03.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1769	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1769	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	08.03.2024	Test Completed on	16.03.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	64.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	30.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1770	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1770	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	08.03.2024	Test Completed on	16.03.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.2	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

**For Shrient Analytical and Research Labs Pvt. Ltd**

8 Feb  
**Verified**



J. P.  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1771	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1771	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	09.03.2024	Test Completed on	16.03.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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Please Contact:

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1772	Report Date.	16.02.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1772	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	09.03.2024	Test Completed on	16.03.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	46.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	21.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	8.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/24/1773	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1773	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	10.03.2024	Test Completed on	16.03.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	48.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Feb  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1774	Report Date.	16.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1774	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	10.03.2024	Test Completed on	16.03.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	49.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1787	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1787	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	12.03.2024	Test Completed on	23.03.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	55.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1788	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1788	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	12.03.2024	Test Completed on	23.03.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Feb  
Verified



\*\*\*END OF THE REPORT\*\*\*

J. K.  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R

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## TEST REPORT

Report No.	SARL/24/1789	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1789	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	13.03.2024	Test Completed on	23.03.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1790	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1790	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	13.03.2024	Test Completed on	23.03.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

**For Shrient Analytical and Research Labs Pvt. Ltd**

*S. Paul*  
**Verified**



*J. Gnanaprakasam*  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



# Shrient Analytical and Research Labs Pvt. Ltd

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Phone Number +91 82208 36377 Email: - [info@shrientanalytical.com](mailto:info@shrientanalytical.com)  
[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No.	SARL/24/1791	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1791	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	14.03.2024	Test Completed on	23.03.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	60.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	28.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

Please Contact:

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## TEST REPORT

Report No.	SARL/24/1792	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1792	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	14.03.2024	Test Completed on	23.03.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	57.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1793	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1793	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	15.03.2024	Test Completed on	23.03.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Feb  
Verified



J. K.  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.  
CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1794	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1794	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	15.03.2024	Test Completed on	23.03.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	55.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.0	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Feb  
Verified



J. G.  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R





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## TEST REPORT

Report No.	SARL/24/1795	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1795	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	16.03.2024	Test Completed on	23.03.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	67.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	32.0	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.8	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	13.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1796	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1796	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	16.03.2024	Test Completed on	23.03.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	55.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.0	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Feb  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1797	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1797	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	17.03.2024	Test Completed on	23.03.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	76.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	36.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	16.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1798	Report Date.	23.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1798	Sample Received on	18.03.2024
Sample Collected by	LABORATORY	Test Commenced on	18.03.2024
Sample Collected on	17.03.2024	Test Completed on	23.03.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
Verified



J. K.  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

Please Contact:

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No.	SARL/24/1801	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1801	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	19.03.2024	Test Completed on	30.03.2024
Temperature	36°C	Relative Humidity	29%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	79.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	37.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	16.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/24/1802	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1802	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	19.03.2024	Test Completed on	30.03.2024
Temperature	36°C	Relative Humidity	29%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	47.4	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	21.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	5.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Feb  
Verified



J. K.  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1803	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1803	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	20.03.2024	Test Completed on	30.03.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	80.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	38.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	17.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1804	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1804	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	20.03.2024	Test Completed on	30.03.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	49.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/24/1805	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1805	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	21.03.2024	Test Completed on	30.03.2024
Temperature	34°C	Relative Humidity	43%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1806	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1806	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	21.03.2024	Test Completed on	30.03.2024
Temperature	34°C	Relative Humidity	43%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1807	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1807	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	22.03.2024	Test Completed on	30.03.2024
Temperature	36°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	59.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1808	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1808	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	22.03.2024	Test Completed on	30.03.2024
Temperature	36°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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Please Contact:

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## TEST REPORT

Report No.	SARL/24/1809	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1809	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	23.03.2024	Test Completed on	30.03.2024
Temperature	37°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.8	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1810	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1810	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	23.03.2024	Test Completed on	30.03.2024
Temperature	37°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	48.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	8.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1811	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1811	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	24.03.2024	Test Completed on	30.03.2024
Temperature	38°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Feb  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1812	Report Date.	30.03.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1812	Sample Received on	25.03.2024
Sample Collected by	LABORATORY	Test Commenced on	25.03.2024
Sample Collected on	24.03.2024	Test Completed on	30.03.2024
Temperature	38°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1825	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1825	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	26.03.2024	Test Completed on	06.04.2024
Temperature	37°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	45.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	21.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1826	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1826	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	26.03.2024	Test Completed on	06.04.2024
Temperature	37°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
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## TEST REPORT

Report No.	SARL/24/1827	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1827	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	27.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	49.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



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**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1828	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1828	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	27.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	48.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	8.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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Please Contact:

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## TEST REPORT

Report No.	SARL/24/1829	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1829	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	28.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	22%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	55.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1830	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1830	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	28.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	22%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	58.4	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1831	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1831	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	29.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	61.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	29.0	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/24/1832	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1832	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	29.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1833	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1833	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	30.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	75.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	36.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	15.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1834	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1834	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	30.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.0	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
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## TEST REPORT

Report No.	SARL/24/1835	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1835	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	31.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	70.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	33.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	13.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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**Verified**



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**J. GNANAPRAKASAM**  
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## TEST REPORT

Report No.	SARL/24/1836	Report Date.	06.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1836	Sample Received on	01.04.2024
Sample Collected by	LABORATORY	Test Commenced on	01.04.2024
Sample Collected on	31.03.2024	Test Completed on	06.04.2024
Temperature	38°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	48.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	21.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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Please Contact:

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## TEST REPORT

Report No.	SARL/24/1849	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1849	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	02.04.2024	Test Completed on	13.04.2024
Temperature	40°C	Relative Humidity	20%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	75.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	36.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	15.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1850	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1850	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	02.04.2024	Test Completed on	13.04.2024
Temperature	40°C	Relative Humidity	20%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.4	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.8	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
Verified



J. G  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1851	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1851	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	03.04.2024	Test Completed on	13.04.2024
Temperature	40°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	69.2	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	32.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	13.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1852	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1852	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	03.04.2024	Test Completed on	13.04.2024
Temperature	40°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1853	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1853	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	04.04.2024	Test Completed on	13.04.2024
Temperature	40°C	Relative Humidity	24%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	62.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	29.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1854	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1854	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	04.04.2024	Test Completed on	13.04.2024
Temperature	40°C	Relative Humidity	24%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	48.4	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1855	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1855	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	05.04.2024	Test Completed on	13.04.2024
Temperature	41°C	Relative Humidity	18%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1856	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1856	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	05.04.2024	Test Completed on	13.04.2024
Temperature	41°C	Relative Humidity	18%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1857	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1857	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	06.04.2024	Test Completed on	13.04.2024
Temperature	40°C	Relative Humidity	20%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	49.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1858	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1858	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	06.04.2024	Test Completed on	13.04.2024
Temperature	40°C	Relative Humidity	20%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	47.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.0	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.0	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	8.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1859	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1859	Sample Received on	08.04.2024
Sample Collected by	LABORATORY	Test Commenced on	08.04.2024
Sample Collected on	07.04.2024	Test Completed on	13.04.2024
Temperature	40°C	Relative Humidity	22%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	46.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	21.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1860	Report Date.	13.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1860	Sample Received on	11.03.2024
Sample Collected by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on	07.04.2024	Test Completed on	16.03.2024
Temperature	40°C	Relative Humidity	22%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1873	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1873	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	09.04.2024	Test Completed on	20.04.2024
Temperature	36°C	Relative Humidity	34%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1874	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1874	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	09.04.2024	Test Completed on	20.04.2024
Temperature	36°C	Relative Humidity	34%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1875	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1875	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	10.04.2024	Test Completed on	20.04.2024
Temperature	37°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1876	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1876	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	10.04.2024	Test Completed on	20.04.2024
Temperature	37°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1877	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1877	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	11.04.2024	Test Completed on	20.04.2024
Temperature	38°C	Relative Humidity	29%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	58.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1878	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1878	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	11.04.2024	Test Completed on	20.04.2024
Temperature	38°C	Relative Humidity	29%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.6	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1879	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1879	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	12.04.2024	Test Completed on	20.04.2024
Temperature	37°C	Relative Humidity	37%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1880	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1880	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	12.04.2024	Test Completed on	20.04.2024
Temperature	37°C	Relative Humidity	37%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1881	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1881	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	13.04.2024	Test Completed on	20.04.2024
Temperature	37°C	Relative Humidity	36%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	81.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	38.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.8	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	17.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1882	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1882	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	13.04.2024	Test Completed on	20.04.2024
Temperature	37°C	Relative Humidity	36%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1883	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1883	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	14.04.2024	Test Completed on	20.04.2024
Temperature	37°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	74.6	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	35.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	15.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. G  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/24/1884	Report Date.	20.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1884	Sample Received on	15.04.2024
Sample Collected by	LABORATORY	Test Commenced on	15.04.2024
Sample Collected on	14.04.2024	Test Completed on	20.04.2024
Temperature	37°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	47.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	21.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	5.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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Please Contact:

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1897	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1897	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	16.04.2024	Test Completed on	27.04.2024
Temperature	38°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	70.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	33.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	14.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

Please Contact:

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## TEST REPORT

Report No.	SARL/24/1898	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1898	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	16.04.2024	Test Completed on	27.04.2024
Temperature	38°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

*S. Paul*  
Verified



*J. Gnanaprakasam*  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1899	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1899	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	17.04.2024	Test Completed on	27.04.2024
Temperature	40°C	Relative Humidity	24%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	73.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	35.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	15.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1900	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1900	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	17.04.2024	Test Completed on	27.04.2024
Temperature	40°C	Relative Humidity	24%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1901	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1901	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	18.04.2024	Test Completed on	27.04.2024
Temperature	40°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	60.2	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	28.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1902	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1902	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	18.04.2024	Test Completed on	27.04.2024
Temperature	40°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1903	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1903	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	19.04.2024	Test Completed on	27.04.2024
Temperature	40°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	57.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1904	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1904	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	19.04.2024	Test Completed on	27.04.2024
Temperature	40°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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Please Contact:

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1905	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1905	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	20.04.2024	Test Completed on	27.04.2024
Temperature	42°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	57.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	10.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

*S. Paul*  
Verified



*J. Gnanaprakasam*  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/24/1906	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1906	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	20.04.2024	Test Completed on	27.04.2024
Temperature	42°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.0	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1907	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1907	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	21.04.2024	Test Completed on	27.04.2024
Temperature	41°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.4	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1908	Report Date.	27.04.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1908	Sample Received on	22.04.2024
Sample Collected by	LABORATORY	Test Commenced on	22.04.2024
Sample Collected on	21.04.2024	Test Completed on	27.04.2024
Temperature	41°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1921	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1921	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	23.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.8	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1922	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1922	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	23.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	55.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.0	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	10.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1923	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1923	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	24.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	22%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

*S. Paul*  
Verified



*J. Gnanaprakasam*  
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## TEST REPORT

Report No.	SARL/24/1924	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1924	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	24.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	22%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

*S. Paul*  
Verified



*J. Gnanaprakasam*  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

Please Contact:

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1925	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1925	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	25.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.2	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1926	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1926	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	25.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	57.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1927	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1927	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	26.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	24%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	58.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1928	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1928	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	26.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	24%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	47.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

*S. Paul*  
Verified



*J. Gnanaprakasam*  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1929	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1929	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	27.04.2024	Test Completed on	04.05.2024
Temperature	39°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	71.6	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	34.0	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	14.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1930	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1930	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	27.04.2024	Test Completed on	04.05.2024
Temperature	39°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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## TEST REPORT

Report No.	SARL/24/1931	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1931	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	28.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	75.2	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	35.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	15.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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## TEST REPORT

Report No.	SARL/24/1932	Report Date.	04.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1932	Sample Received on	29.04.2024
Sample Collected by	LABORATORY	Test Commenced on	29.04.2024
Sample Collected on	28.04.2024	Test Completed on	04.05.2024
Temperature	40°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.0	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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Please Contact:

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## TEST REPORT

Report No.	SARL/24/1945	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1945	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	30.04.2024	Test Completed on	11.05.2024
Temperature	41°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	76.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	36.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	16.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1946	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1946	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	30.04.2024	Test Completed on	11.05.2024
Temperature	41°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	47.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	21.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	5.8	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1947	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1947	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	01.05.2024	Test Completed on	11.05.2024
Temperature	43°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	78.2	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	37.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	16.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1948	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1948	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	01.05.2024	Test Completed on	11.05.2024
Temperature	43°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.8	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1949	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1949	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	02.05.2024	Test Completed on	11.05.2024
Temperature	43°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	55.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1950	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1950	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	02.05.2024	Test Completed on	11.05.2024
Temperature	43°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

**For Shrient Analytical and Research Labs Pvt. Ltd**

*S. Pal*  
**Verified**



*J. Gnanaprakasam*  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1951	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1951	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	03.05.2024	Test Completed on	11.05.2024
Temperature	42°C	Relative Humidity	22%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.2	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
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J. Gnanaprasam  
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J. GNANAPRAKASAM  
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## TEST REPORT

Report No.	SARL/24/1952	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1952	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	03.05.2024	Test Completed on	11.05.2024
Temperature	42°C	Relative Humidity	22%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	49.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

Please Contact:

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No.	SARL/24/1953	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1953	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	04.05.2024	Test Completed on	11.05.2024
Temperature	42°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1954	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1954	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	04.05.2024	Test Completed on	11.05.2024
Temperature	42°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	49.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No.	SARL/24/1955	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1955	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	05.05.2024	Test Completed on	11.05.2024
Temperature	42°C	Relative Humidity	24%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

*S. Paul*  
Verified



*J. Gnanaprakasam*  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1956	Report Date.	11.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1956	Sample Received on	06.05.2024
Sample Collected by	LABORATORY	Test Commenced on	06.05.2024
Sample Collected on	05.05.2024	Test Completed on	11.05.2024
Temperature	42°C	Relative Humidity	24%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	47.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. G  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R





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## TEST REPORT

Report No.	SARL/24/1969	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1969	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	07.05.2024	Test Completed on	18.05.2024
Temperature	41°C	Relative Humidity	29%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.4	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1970	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1970	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	07.05.2024	Test Completed on	18.05.2024
Temperature	41°C	Relative Humidity	29%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	10.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1971	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1971	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	08.05.2024	Test Completed on	18.05.2024
Temperature	24°C	Relative Humidity	88%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Verified



J. Gnanaprakasam  
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## TEST REPORT

Report No.	SARL/24/1972	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1972	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	08.05.2024	Test Completed on	18.05.2024
Temperature	24°C	Relative Humidity	88%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	48.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.6	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1973	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1973	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	09.05.2024	Test Completed on	18.05.2024
Temperature	39°C	Relative Humidity	31%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1974	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1974	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	09.05.2024	Test Completed on	18.05.2024
Temperature	39°C	Relative Humidity	31%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1975	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1975	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	10.05.2024	Test Completed on	18.05.2024
Temperature	39°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1976	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1976	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	10.05.2024	Test Completed on	18.05.2024
Temperature	39°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	58.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1977	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1977	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	11.05.2024	Test Completed on	18.05.2024
Temperature	38°C	Relative Humidity	36%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	69.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	32.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	13.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1978	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1978	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	11.05.2024	Test Completed on	18.05.2024
Temperature	38°C	Relative Humidity	36%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	46.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	20.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	5.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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## TEST REPORT

Report No.	SARL/24/1979	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1979	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	12.05.2024	Test Completed on	18.05.2024
Temperature	39°C	Relative Humidity	33%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	74.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	35.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	15.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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# Shrient Analytical and Research Labs Pvt. Ltd

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Phone Number +91 82208 36377 Email: - [info@shrientanalytical.com](mailto:info@shrientanalytical.com)  
[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No.	SARL/24/1980	Report Date.	18.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1980	Sample Received on	13.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Collected on	12.05.2024	Test Completed on	18.05.2024
Temperature	39°C	Relative Humidity	33%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	49.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1993	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1993	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	14.05.2024	Test Completed on	25.05.2024
Temperature	38°C	Relative Humidity	35%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	71.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	34.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	14.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1994	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1994	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	14.05.2024	Test Completed on	25.05.2024
Temperature	38°C	Relative Humidity	35%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	49.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	22.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1995	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1995	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	15.05.2024	Test Completed on	25.05.2024
Temperature	35°C	Relative Humidity	44%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	73.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	34.9	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	14.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1996	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1996	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	15.05.2024	Test Completed on	25.05.2024
Temperature	35°C	Relative Humidity	44%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1997	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1997	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	16.05.2024	Test Completed on	25.05.2024
Temperature	29°C	Relative Humidity	65%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	60.8	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	28.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/1998	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1998	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	16.05.2024	Test Completed on	25.05.2024
Temperature	29°C	Relative Humidity	65%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	55.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

*S. Paul*  
Verified



*J. Gnanaprakasam*  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/1999	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-1999	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	17.05.2024	Test Completed on	25.05.2024
Temperature	34°C	Relative Humidity	47%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	58.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	27.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

Please Contact:

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## TEST REPORT

Report No.	SARL/24/2000	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2000	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	17.05.2024	Test Completed on	25.05.2024
Temperature	34°C	Relative Humidity	47%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	60.6	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	28.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/2001	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2001	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	18.05.2024	Test Completed on	25.05.2024
Temperature	36°C	Relative Humidity	40%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.4	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

*S. Paul*  
**Verified**



*J. Gnanaprakasam*  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
**Technical Manager**

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/24/2002	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2002	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	18.05.2024	Test Completed on	25.05.2024
Temperature	36°C	Relative Humidity	40%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	47.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.2	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2003	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2003	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	19.05.2024	Test Completed on	25.05.2024
Temperature	34°C	Relative Humidity	49%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	49.6	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No.	SARL/24/2004	Report Date.	25.05.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2004	Sample Received on	20.05.2024
Sample Collected by	LABORATORY	Test Commenced on	20.05.2024
Sample Collected on	19.05.2024	Test Completed on	25.05.2024
Temperature	34°C	Relative Humidity	49%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	50.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2030	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2030	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	21.05.2024	Test Completed on	01.06.2024
Temperature	36°C	Relative Humidity	41%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2031	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2031	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	21.05.2024	Test Completed on	01.06.2024
Temperature	36°C	Relative Humidity	41%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	53.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	10.0	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



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Authorized Signatory  
J. GNANAPRAKASAM  
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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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## TEST REPORT

Report No.	SARL/24/2032	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-Semangalam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2032	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	22.05.2024	Test Completed on	01.06.2024
Temperature	36°C	Relative Humidity	42%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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Please Contact:

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## TEST REPORT

Report No.	SARL/24/2033	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-Karasanur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2033	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	22.05.2024	Test Completed on	01.06.2024
Temperature	36°C	Relative Humidity	42%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	51.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.5	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2034	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2034	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	23.05.2024	Test Completed on	01.06.2024
Temperature	36°C	Relative Humidity	45%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.2	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.4	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2035	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2035	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	23.05.2024	Test Completed on	01.06.2024
Temperature	36°C	Relative Humidity	45%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	56.9	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	26.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.3	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2036	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-Ambuzhukkai
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2036	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	24.05.2024	Test Completed on	01.06.2024
Temperature	30°C	Relative Humidity	68%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	24.8	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.9	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2037	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-Kondalamkuppam
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2037	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	24.05.2024	Test Completed on	01.06.2024
Temperature	30°C	Relative Humidity	68%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	54.5	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	25.6	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.7	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	12.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2038	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2038	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	25.05.2024	Test Completed on	01.06.2024
Temperature	36°C	Relative Humidity	40%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	70.1	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	33.3	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	8.5	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	13.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2039	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2039	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	25.05.2024	Test Completed on	01.06.2024
Temperature	36°C	Relative Humidity	40%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	52.7	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	23.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	7.1	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

### For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
**Verified**



J. Gnanaprakasam  
**Authorized Signatory**  
**J. GNANAPRAKASAM**  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2040	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2040	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Temperature	38°C	Relative Humidity	33%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	72.2	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	33.1	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	9.2	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	14.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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Please Contact:

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## TEST REPORT

Report No.	SARL/24/2041	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District,
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-Eraiyyur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2041	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Temperature	38°C	Relative Humidity	33%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM <sub>10</sub> )	IS:5182: Part 23:2006	µg/m <sup>3</sup>	48.3	100
2	Particulate Matter less than 2.5micron size (PM <sub>2.5</sub> )	IS 5182 (Part 24):2019	µg/m <sup>3</sup>	21.7	60
3	Sulphur dioxide (SO <sub>2</sub> )	IS:5182: Part 02:2001	µg/m <sup>3</sup>	6.0	80
4	Nitrogen Dioxide (NO <sub>2</sub> )	IS:5182: Part 06:2006	µg/m <sup>3</sup>	10.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m <sup>3</sup>	BDL (D.L – 1.1)	-

Remarks: Limits: \*National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paal  
Verified



J. Gnanaprakasam  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2054	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	NOISE LEVEL DATA

Customer Reference	As per work order	Sampling Method	SARL/IOP/023
Sample Reference No	SARL/N/CHE-2054	Date of Monitoring	25.05.2024/ 26.05.2024
Sample Collected by	LABORATORY		

Time in hrs	N1	N2	N3	N4	N5	N6
06.00	41.3	40.8	44.7	44.2	44.9	41.3
07.00	43.3	41.7	44.3	45.5	46.7	42.2
08.00	45.0	45.8	45.8	46.3	48.1	46.3
09.00	49.6	48.1	51.2	51.4	46.5	48.6
10.00	54.6	54.2	53.3	53.4	51.2	54.7
11.00	56.1	54.7	52.4	48.3	47.3	55.2
12.00	55.0	52.3	53.0	47.5	48.1	52.8
13.00	52.6	54.2	52.3	54.3	50.0	54.7
14.00	50.4	50.7	51.8	54.7	47.4	51.2
15.00	51.0	50.3	51.2	52.4	47.8	50.8
16.00	57.5	54.3	44.0	54.2	45.1	54.8
17.00	55.0	55.5	43.4	52.8	47.3	56.0
18.00	56.6	52.4	45.8	48.8	45.8	52.9
19.00	51.5	50.7	47.4	45.8	44.2	51.2
20.00	46.3	42.4	43.9	44.0	44.9	42.9
21.00	45.8	41.7	42.4	43.5	42.3	42.2
22.00	42.7	41.2	43.0	42.2	42.9	41.7
23.00	41.8	40.7	42.2	40.8	44.0	41.2
24.00	41.5	40.5	41.1	41.7	41.1	41.0
01.00	42.1	40.0	40.4	41.3	42.8	40.5
02.00	42.8	40.8	40.5	40.5	40.7	41.3
03.00	46.8	42.1	40.8	40.0	39.8	42.6
04.00	44.6	42.2	41.1	42.7	41.1	42.7
05.00	43.6	41.3	40.0	43.9	43.1	41.8

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## TEST REPORT

Report No. SARL/24/2054

Report Date. 01.06.2024

	N1	N2	N3	N4	N5	N6
DAY EQUIVALENT	52.9	51.6	49.6	50.8	47.3	52.1
NIGHT EQUIVALENT	43.6	41.2	41.2	41.8	42.1	41.7
DAY & NIGHT EQUIVALENT	51.4	50.0	48.1	49.3	46.1	50.5

Remarks:

### LOCATIONS:

- N1-PROPOSED MINE LEASE AREA
- N2-Ambuzhukkai
- N3-Kondalamkuppam
- N4-Semangalam
- N5-Karasanur
- N6-Eraiyr

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



\*\*\*END OF THE REPORT\*\*\*

  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2048
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Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	SOIL
Sample Mark	S1-PROPOSED MINE LEASE AREA

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-2048	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	8.16
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	192
3	Dry matter content	IS 15106: 2002	%	86.78
4	Water Content	IS 15106: 2002	%	13.22
5	Organic Matter	IS 2720: Part 22: 1972	%	0.62
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	212
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	3.08
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	40.55
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	56.37
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	0.45
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	1026
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	535
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	22.2
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.6

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/24/2049	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District		
Sample Description	SOIL		
Sample Mark	S2-Ambuzhukkai		

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-2049	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.76
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	220
3	Dry matter content	IS 15106: 2002	%	90.43
4	Water Content	IS 15106: 2002	%	9.57
5	Organic Matter	IS 2720: Part 22: 1972	%	0.91
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	346
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	4.76
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	47.92
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	47.32
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	47.32
9	Phosphorus as P	IS 10158: 1982	mg/kg	0.49
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	608
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	238
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	20.9
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.3

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2050
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Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	SOIL
Sample Mark	S3-Kondalamkuppam

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-2050	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.47
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	286
3	Dry matter content	IS 15106: 2002	%	89.55
4	Water Content	IS 15106: 2002	%	10.45
5	Organic Matter	IS 2720: Part 22: 1972	%	0.45
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	286
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	CLAY LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	5.16
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	36.78
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	58.06
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	0.91
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	794
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	390
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	31.8
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.5

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2051	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District		
Sample Description	SOIL		
Sample Mark	S4-Semangalam		

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-2051	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	5.78
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	192
3	Dry matter content	IS 15106: 2002	%	97.65
4	Water Content	IS 15106: 2002	%	2.35
5	Organic Matter	IS 2720: Part 22: 1972	%	0.71
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	402
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	SILT LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	4.22
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	42.93
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	52.85
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	0.58
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	610
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	340
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	29
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.1

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No.	SARL/24/2052
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Report Date.	01.06.2024
--------------	------------

Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	SOIL
Sample Mark	S5-Karasanur

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-2052	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	6.75
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	90.67
3	Dry matter content	IS 15106: 2002	%	92.23
4	Water Content	IS 15106: 2002	%	7.77
5	Organic Matter	IS 2720: Part 22: 1972	%	0.55
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	168
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	SANDY CLAY LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	5.71
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	43.49
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	40.80
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	0.79
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	1009
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	652
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	30.6
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.9

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

Please Contact:

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## TEST REPORT

Report No.	SARL/24/2053	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District		
Sample Description	SOIL		
Sample Mark	S6-Eraiyur		

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-2053	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	6.97
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	391.7
3	Dry matter content	IS 15106: 2002	%	80.77
4	Water Content	IS 15106: 2002	%	19.23
5	Organic Matter	IS 2720: Part 22: 1972	%	0.54
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	270
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	CLAY LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	2.86
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	57.45
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	39.69
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	0.67
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	825
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	339
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	23.4
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.6

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



  
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J. GNANAPRAKASAM  
Technical Manager

\*\*\*END OF THE REPORT\*\*\*

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## TEST REPORT

Report No.	SARL/2024/2042	Report Date.	01.06.2024
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Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	WATER
Sample Mark	W1-PROPOSED MINE LEASE AREA

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-2042	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
<b>A.</b>	<b>Physical parameters</b>				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 <sup>th</sup> Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 <sup>th</sup> Edition 4500 – H+ B: 2023	-	6.76	6.50-8.50
4	Electrical Conductivity	APHA 24 <sup>th</sup> Edition 2510 B: 2023	(µS/cm)	1648	-
<b>B.</b>	<b>Chemical parameters</b>				
5	Total Dissolved Solids	APHA 24 <sup>th</sup> Edition 2540-C: 2023	mg/L	990	2000
6	Total hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2340 C: 2023	mg/L	452	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	80.4	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	60.2	100
9	Calcium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Ca B: 2023	mg/L	201	-
10	Magnesium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Mg B: 2023	mg/L	251	-
11	Total alkalinity (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2320 B: 2023	mg/L	438	600
12	Chloride (as Cl)	APHA 24 <sup>th</sup> Edition 4500 Cl- B: 2023	mg/L	245	1000



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## TEST REPORT

Report No. SARL/2024/2042

Report Date. 01.06.2024

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO42-)	APHA 24th Edition 4500 SO42- E: 2023	mg/L	190	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.05	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	2.44	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.44	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: \*Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



\*\*\*END OF THE REPORT\*\*\*

  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No. SARL/2024/2043

Report Date. 01.06.2024

Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	WATER
Sample Mark	W2-Ambuzhukkai

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-2043	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
<b>A.</b>	<b>Physical parameters</b>				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 <sup>th</sup> Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 <sup>th</sup> Edition 4500 – H+ B: 2023	-	6.72	6.50-8.50
4	Electrical Conductivity	APHA 24 <sup>th</sup> Edition 2510 B: 2023	(µS/cm)	1320	-
<b>B.</b>	<b>Chemical parameters</b>				
5	Total Dissolved Solids	APHA 24 <sup>th</sup> Edition 2540-C: 2023	mg/L	792	2000
6	Total hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2340 C: 2023	mg/L	516	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	95.6	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	66.5	100
9	Calcium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Ca B: 2023	mg/L	239	-
10	Magnesium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Mg B: 2023	mg/L	277	-
11	Total alkalinity (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2320 B: 2023	mg/L	434	600
12	Chloride (as Cl)	APHA 24 <sup>th</sup> Edition 4500 Cl- B: 2023	mg/L	212	1000



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## TEST REPORT

Report No. SARL/2024/2043

Report Date. 01.06.2024

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO42-)	APHA 24th Edition 4500 SO42- E: 2023	mg/L	107	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.03	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	2.36	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.49	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: \*Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



\*\*\*END OF THE REPORT\*\*\*

  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

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## TEST REPORT

Report No. SARL/2024/2044

Report Date. 01.06.2024

Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	WATER
Sample Mark	W3-Kondalamkuppam

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-2044	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
<b>A.</b>	<b>Physical parameters</b>				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 <sup>th</sup> Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 <sup>th</sup> Edition 4500 – H+ B: 2023	-	6.96	6.50-8.50
4	Electrical Conductivity	APHA 24 <sup>th</sup> Edition 2510 B: 2023	( $\mu$ S/cm)	1782	-
<b>B.</b>	<b>Chemical parameters</b>				
5	Total Dissolved Solids	APHA 24 <sup>th</sup> Edition 2540-C: 2023	mg/L	1070	2000
6	Total hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2340 C: 2023	mg/L	476	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	116.4	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	44.4	100
9	Calcium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Ca B: 2023	mg/L	291	-
10	Magnesium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Mg B: 2023	mg/L	185	-
11	Total alkalinity (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2320 B: 2023	mg/L	526	600
12	Chloride (as Cl)	APHA 24 <sup>th</sup> Edition 4500 Cl- B: 2023	mg/L	314	1000



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## TEST REPORT

Report No. SARL/2024/2044

Report Date. 01.06.2024

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO42-)	APHA 24th Edition 4500 SO42- E: 2023	mg/L	239	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.05	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	3.7	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.59	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: \*Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



\*\*\*END OF THE REPORT\*\*\*

  
Authorized Signatory  
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## TEST REPORT

Report No.	SARL/2024/2045	Report Date.	01.06.2024
------------	----------------	--------------	------------

Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	WATER
Sample Mark	S4-Semangalam

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-2045	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
<b>A.</b>	<b>Physical parameters</b>				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 <sup>th</sup> Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 <sup>th</sup> Edition 4500 – H+ B: 2023	-	7.19	6.50-8.50
4	Electrical Conductivity	APHA 24 <sup>th</sup> Edition 2510 B: 2023	(µS/cm)	696.1	-
<b>B.</b>	<b>Chemical parameters</b>				
5	Total Dissolved Solids	APHA 24 <sup>th</sup> Edition 2540-C: 2023	mg/L	420	2000
6	Total hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2340 C: 2023	mg/L	165	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	39.4	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	16.0	100
9	Calcium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Ca B: 2023	mg/L	98.5	-
10	Magnesium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Mg B: 2023	mg/L	66.5	-
11	Total alkalinity (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2320 B: 2023	mg/L	180	600
12	Chloride (as Cl)	APHA 24 <sup>th</sup> Edition 4500 Cl- B: 2023	mg/L	145	1000



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## TEST REPORT

Report No. SARL/2024/2045

Report Date. 01.06.2024

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO42-)	APHA 24th Edition 4500 SO42- E: 2023	mg/L	75.6	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.08	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	1.52	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.32	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: \*Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
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\*\*\*END OF THE REPORT\*\*\*

  
Authorized Signatory  
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## TEST REPORT

Report No. SARL/2024/2046

Report Date. 01.06.2024

Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	WATER
Sample Mark	W5-Karasanur

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-2046	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
<b>A.</b>	<b>Physical parameters</b>				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 <sup>th</sup> Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 <sup>th</sup> Edition 4500 – H+ B: 2023	-	7.06	6.50-8.50
4	Electrical Conductivity	APHA 24 <sup>th</sup> Edition 2510 B: 2023	(µS/cm)	1027	-
<b>B.</b>	<b>Chemical parameters</b>				
5	Total Dissolved Solids	APHA 24 <sup>th</sup> Edition 2540-C: 2023	mg/L	616	2000
6	Total hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2340 C: 2023	mg/L	402	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	67.2	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	56.2	100
9	Calcium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Ca B: 2023	mg/L	168	-
10	Magnesium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Mg B: 2023	mg/L	234	-
11	Total alkalinity (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2320 B: 2023	mg/L	374	600
12	Chloride (as Cl)	APHA 24 <sup>th</sup> Edition 4500 Cl- B: 2023	mg/L	170	1000



# Shrient Analytical and Research Labs Pvt. Ltd

416/15, Dhargas Road, West Tambaram, Chennai- 600045  
Phone Number +91 82208 36377 Email: - [info@shrientanalytical.com](mailto:info@shrientanalytical.com)  
[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No. SARL/2024/2046

Report Date. 01.06.2024

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO42-)	APHA 24th Edition 4500 SO42- E: 2023	mg/L	83.2	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.04	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	2.4	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.36	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: \*Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



\*\*\*END OF THE REPORT\*\*\*

  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

Please Contact:

For any Technical Issues & Complaints: [vimalnath@shrientanalytical.com](mailto:vimalnath@shrientanalytical.com)

Terms and conditions:

(1) The test items will not be retained for more than 15 days from the date of issue of test report. (2) The results relate only to the items tested (3) The test report shall not be reproduced except in full without the written approval of the laboratory (4) Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4. (5) The correctness of the information related to sample(s) in the Test Request Form/Customer letterhead/Email is the customer's responsibility. The laboratory reports the said information in the test report and is not liable for the same.



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[www.shrientanalytical.com](http://www.shrientanalytical.com)

## TEST REPORT

Report No. SARL/2024/2047

Report Date. 01.06.2024

Customer Name & Address	Rough stone & Gravel Quarry of Thiru.D.Gnanaguru extent of 2.22.5Ha at SF.Nos. 99/1, 99/3A, 100/1, 100/2 & 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District
Sample Description	WATER
Sample Mark	W6-Eraiyur

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-2047	Sample Received on	27.05.2024
Sample Collected by	LABORATORY	Test Commenced on	27.05.2024
Sample Collected on	26.05.2024	Test Completed on	01.06.2024
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
<b>A.</b>	<b>Physical parameters</b>				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 <sup>th</sup> Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 <sup>th</sup> Edition 4500 – H+ B: 2023	-	6.84	6.50-8.50
4	Electrical Conductivity	APHA 24 <sup>th</sup> Edition 2510 B: 2023	(µS/cm)	2499	-
<b>B.</b>	<b>Chemical parameters</b>				
5	Total Dissolved Solids	APHA 24 <sup>th</sup> Edition 2540-C: 2023	mg/L	1498	2000
6	Total hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2340 C: 2023	mg/L	491	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	110.4	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	51.6	100
9	Calcium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Ca B: 2023	mg/L	276	-
10	Magnesium Hardness (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 3500 Mg B: 2023	mg/L	215	-
11	Total alkalinity (as CaCO <sub>3</sub> )	APHA 24 <sup>th</sup> Edition 2320 B: 2023	mg/L	366	600
12	Chloride (as Cl)	APHA 24 <sup>th</sup> Edition 4500 Cl- B: 2023	mg/L	598	1000



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## TEST REPORT

Report No. SARL/2024/2047

Report Date. 01.06.2024

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissibl e
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO42-)	APHA 24th Edition 4500 SO42- E: 2023	mg/L	360	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.09	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	4.32	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.52	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: \*Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

  
Verified



\*\*\*END OF THE REPORT\*\*\*

  
Authorized Signatory  
J. GNANAPRAKASAM  
Technical Manager

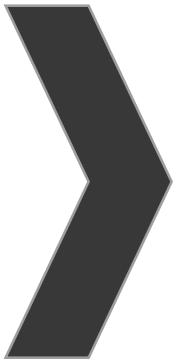
Please Contact:

For any Technical Issues & Complaints: [vimalnath@shrientanalytical.com](mailto:vimalnath@shrientanalytical.com)

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**ANNEXURE-9**





National Accreditation Board for  
Testing and Calibration Laboratories

**CERTIFICATE OF ACCREDITATION**

**SHRIENT ANALYTICAL & RESEARCH LABS PRIVATE  
LIMITED**

has been assessed and accredited in accordance with the standard

**ISO/IEC 17025:2017**

**"General Requirements for the Competence of Testing &  
Calibration Laboratories"**

for its facilities at

416/15, DHARGAS ROAD, PERUNGALATHUR, WEST TAMBARAM, CHENNAI, KANCHIPURAM, TAMIL  
NADU, INDIA

in the field of

**TESTING**

Certificate Number: TC-12339

Issue Date: 30/09/2023

Valid Until:

29/09/2025

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued  
satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website [www.nabl-india.org](http://www.nabl-india.org))

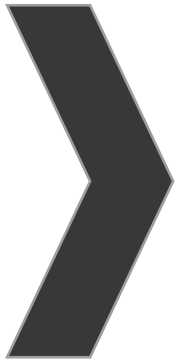
Name of Legal Entity: SHRIENT ANALYTICAL AND RESEARCH LABS PRIVATE LIMITED

Signed for and on behalf of NABL



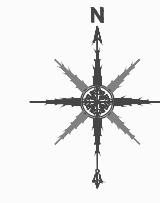
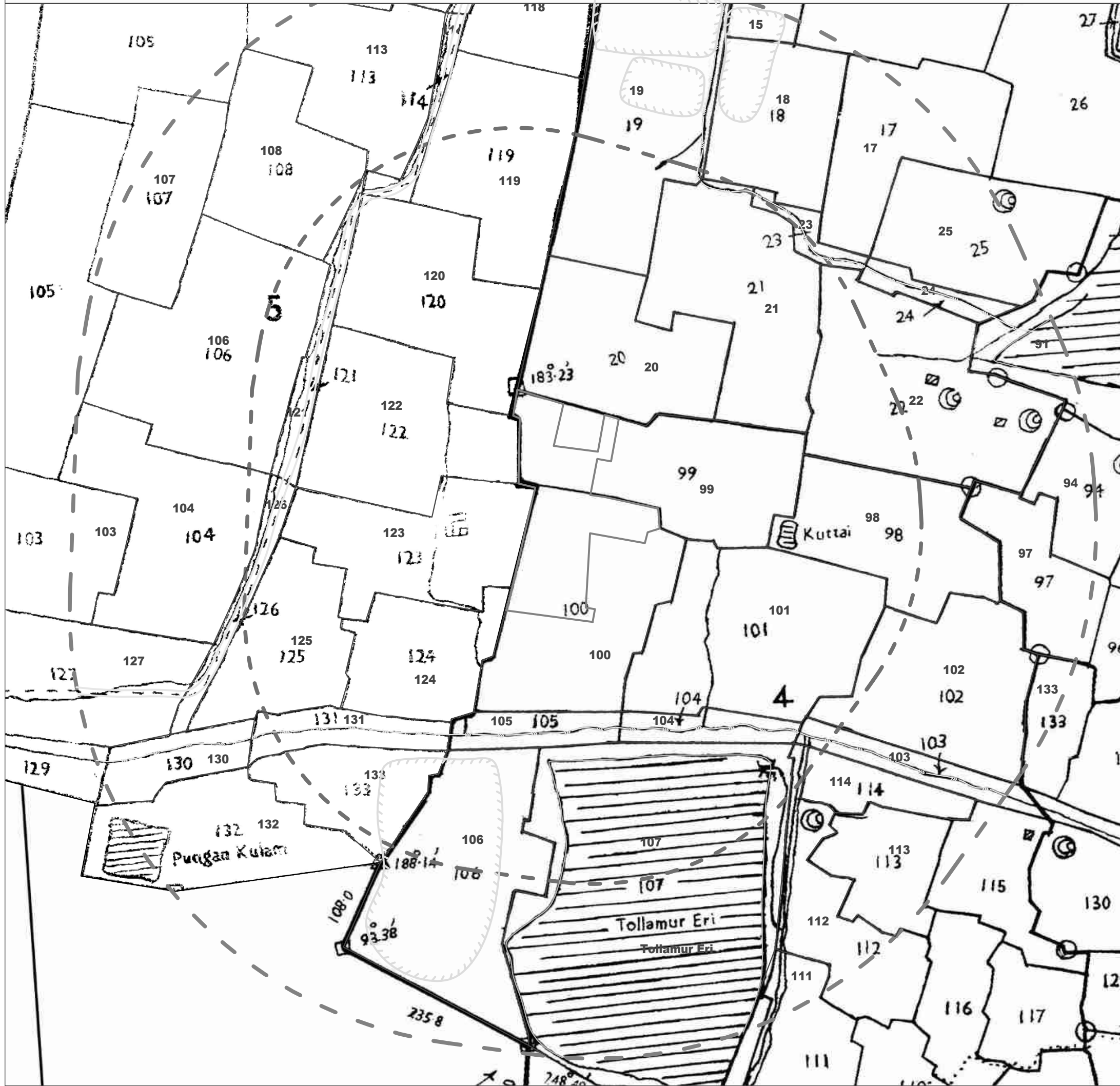
N. Venkateswaran  
Chief Executive Officer







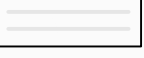



**ANNEXURE-10**



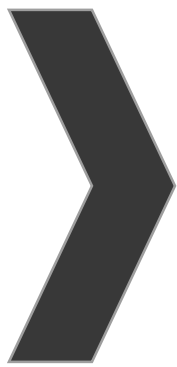


INDEX

- QUARRY LEASE APPLIED AREA 
- 300M RADIUS 
- 500M RADIUS 
- ERI 
- CART TRACK 
- ODAI 



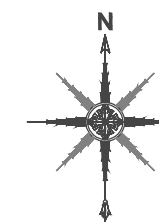




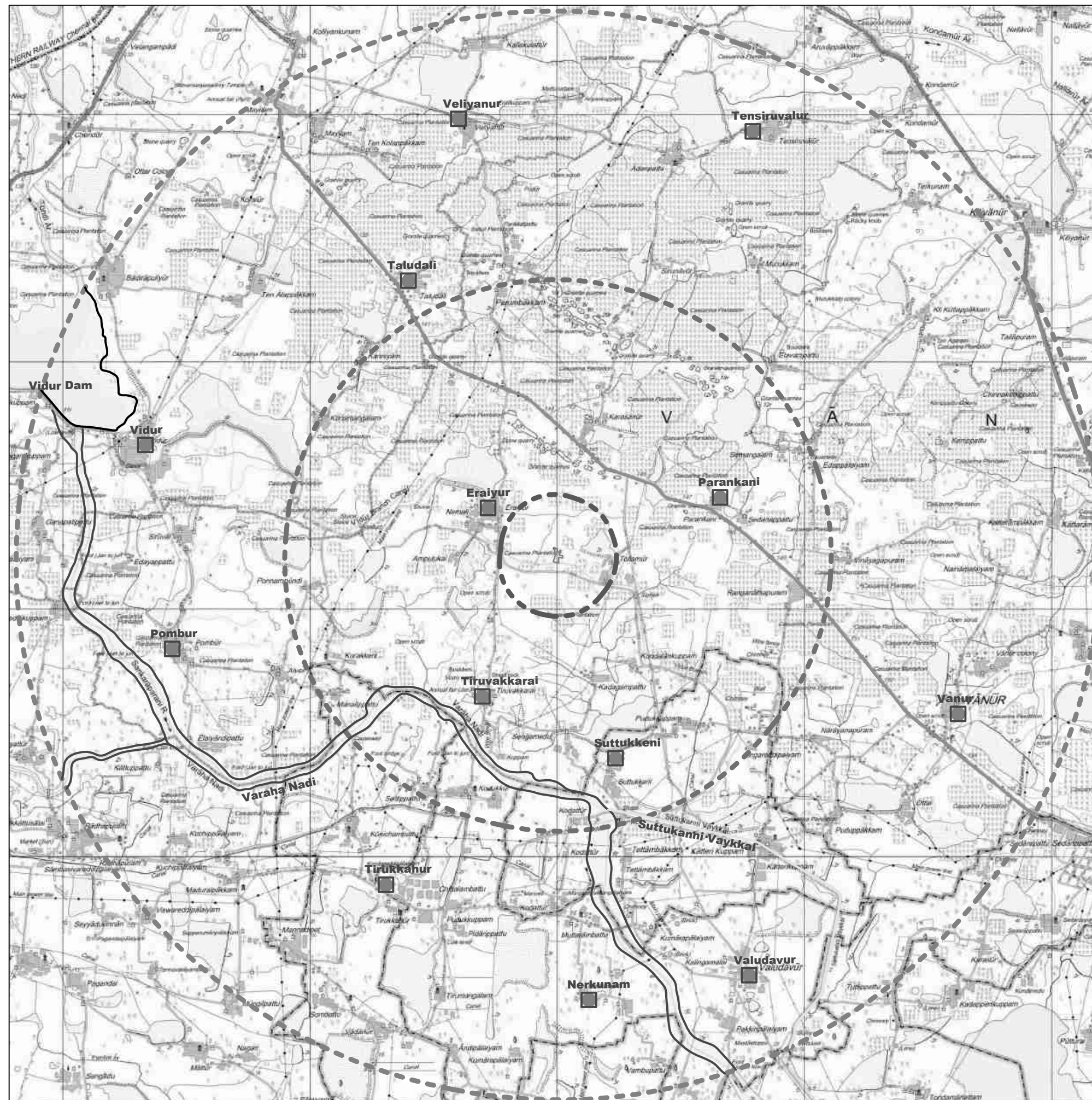
**ANNEXURE-11**



PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.D.GNANAGURU OVER AN EXTENT 2.22.5HA LOCATED AT S.F.NO.99/1, 99/3A, 100/1, 100/2 & 100/5A OF THOLLAMUR VILLAGE, VANUR TALUK, VILUPPURAM DISTRICT, TAMIL NADU STATE.

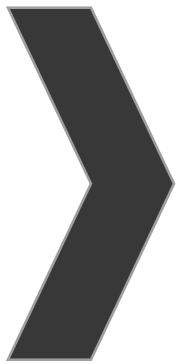


**INDEX**  
**TOPO SHEET NO:**  
**57 P / 12, 16 & 58 M / 9**



Q.LEASE APPLIED AREA	
10km RADIUS	
5.0km RADIUS	
1.0km RADIUS	
STATE HIGHWAY	
NATIONAL HIGHWAY	
HABITATION	
RIVER & Ar	
DAM	
CANAL	





**ANNEXURE-12**





தமிழ்நாடு தமில்நாடு TAMILNADU 30.4.2024

100/5 DR 081510

D. Gnanaguru  
Viluppuram

ம. ரோசி (எ) தமிழ்நாடு மு.தா.சு  
உரிமம் எண்: 6206-14/91  
கச்சேரி வீதி, ஒமலூர்  
சேலம் மாவட்டம்

**AFFIDAVIT TO SEIAA - TAMIL NADU**

Thiru.D.Gnanaguru, S/o. Dhanapal, No.219/1C, Iyyanar Kovil street, Tennamadevi Village, Vikkiravandi Taluk, Viluppuram District, I am applying for Environmental Clearance to SEIAA - Tamil Nadu for my proposed Rough Stone and Gravel Quarry lease over an extent of 2.22.5Ha located at the S.F.Nos. 99/1, 99/1A, 100/1, 100/2 and 100/5A of Thollamur Village, Vanur Taluk, Viluppuram District, Tamil Nadu State, do hereby solemnly declare and sincerely affirm that;

1. None of the following features are located within a 10 km radius from the proposed quarry site;
  - a. Protected areas notified under the Wildlife (Protection) Act, 1972 (NBWL).
  - b. Wild Life Sanctuary: Nil within 10km radius  
Oussudu Lake Birds Sanctuary – 11.5km (SE)
  - c. Critically polluted areas as notified by the central pollution control board constituted under Water (Prevention and Control of Pollution) Act 1974.



D. Gnanaguru

2. My proposal for Corporate Environment Responsibility (CER) activities is given as follows;

PROPOSED CER ACTIVITIES	PROJECT COST (INR)	CER COST 2.0% OF PROJECT COST (INR)
To implement various social development activities for the nearby Government school	73,25,000/-	1,46,500/-
<b>Revised CER budget allotted</b>	<b>5,00,000/-</b>	

I assure you that, I will complete the above proposed Corporate Environment Responsibility (CER) activities before the commencement of the quarrying operations.

3. Details of quarries located within a 500m radius from the applied mine lease area:

Sl.No	Name of the Lessee	Village & S. F. No.	Extent (Ha)	Lease Status
<b>a. Abandoned Quarries</b>				
Nil				
<b>b. Existing Quarries</b>				
1	Thiru.V.Ramesh, S/o.Vengatapathi, No.5, Thiyagarayar Street, HLL Colony, Pammal, Chennai - 75	Thollamur Village, Vanur Taluk, S.F.No: 16/11, 12, 17/1 & 18/3B	3.53.0 Ha	07.03.2022 to 06.03.2027
2	Tvl.Sree Thiruchendhur Murugan Blue Metals, Represented by its partner, Thiru.P.Subramani No.3-3/3-3, Main Road, Thoravi Village, Vikravandi Taluk, Viluppuram	Thollamur Village, Vanur Taluk, S.F.No: 20/1, 2A, 2B, 3, 4, 6, 99/2, 3B & 6	4.57.5 Ha	04.01.2022 to 03.01.2027



*D. Cruz*



c. Present Proposed Quarries				
1	Thiru.D.Gnanaguru S/o. Dhanapal, No.219/1C, Iyyanar Kovil street, Tennamadevi Village, Vikkiravandi Taluk, Viluppuram District	Thollamur Village S.F.No: 99/1, 99/3A, 100/1, 100/2 and 100/5A	2.22.5 Ha	Under Proposed Quarry

**The total lease within the 500m radius (Proposed + Existing) (1 no + 2 no) works out to 10.33.0 Ha including this lease area.**

4. There will be no hindrance/disturbance due to the proposed quarrying activities to the people living nearby my proposed quarry site.
5. There are no approved habitations within a 300m radius from the periphery of my proposed quarry lease.
6. I assure you that the greenbelt will be developed and maintained before commencing the quarrying operations as proposed in the EC application.
7. I assure you that the required life insurance policy for the employees engaged in the quarrying operations will be taken without fail.
8. The existing main road connecting the quarry road will be maintained in good condition and it will be utilized for the mineral transportation.
9. I assure you that I will not engage any child for labor in the quarrying operations and I am aware that engaging child labor is punishable under the law.
10. Personnel Protective Equipment (PPE) will be provided to all the employees engaged in the quarrying operations.
11. No permanent structures, such as temples, etc., are located within a 300 meter radius of the periphery of our quarry.
12. I will erect the wire fence with barbed wires all around the periphery of the quarry lease before the commencement of mining activities.



*D. Srinivasan*

- 13. The mining operations will be carried out in a systematic and scientific manner by employing a qualified statutory person as per the requirement of the Mines Act, Mines Rules, and other Guidelines issued by Govt.
- 14. I will inform DGMS before the commencement of mining activities.
- 15. To the best of our knowledge, I ensure to do the social and environmental commitments as mentioned in the mining plan.

**Notary Sign & Seal**

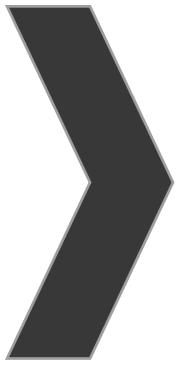
**Lessee Sign & Sea**



*D. Gnanaguru*  
D. Gnanaguru

*[Signature]*  
*30/4/2024*  
K. SITHESWARAN, B.L.,  
Advocate & Notary Public  
Opp. BDO Office, Omalur (Tk),  
SALEM (Dt) - 636 455.  
Regn. No: 10987/2015  
Cell: 94435 16211

*D. Gnanaguru*



**ANNEXURE-13**





தகுதி : V.S. சண்முகம்

தலைமை ஆசிரியர்  
உதவி பேரவை ஆரம்பப்பள்ளி  
சென்னை, வந்தர் வட்டம்

மையுதர் : திரு. D. ஜானகி

த/ம. ச. தளபதி  
219/உ அய்யனார் கோவை  
தென்மலை தேய்வாக்கிரவரம்பு  
அருட்புறம் மாவட்டம்

மொழி : சி. எம். ஆர் நிதியின் - பரிந்து  
சீரமைப்பு செய்த தகுதி - கோய.

உயர்,

நீங்கள் பரிந்து மேம்பாட்டுத் திட்டம்  
தலைமை ஆசிரியர் அமைத்தல், கல்வி அமைத்தல்,  
பரிந்து தரைக்கு Tiles போடுதல் மின் வசதி போடுதல்  
RO குடிநீர் வசதி செய்து தருதல், பரிந்து  
பிளாட் 2, மின் சார்பு, மின்சார, நுகர் கடை  
போலீஸ் பரிந்துவை சிறு கட்டுவலை அமைத்தல்  
போன்ற அமைப்புகளுக்கு சமர்ப்படுத்தல்கள்  
தேவையானவற்றை, பரிந்து உயர்ச்சிக்கு போடுதல்  
வசதிக்கான சீரமைப்பு செய்து தரும்படி பரிந்துரை  
கேட்டுக் கொள்கிறேன்.

மொ:  
உயர் : தலைமை

தலைமை  
பரிந்துரை  
தலைமை ஆசிரியர்  
உதவி பேரவை ஆரம்பப்பள்ளி  
சென்னை, வந்தர் வட்டம்

D. Curry