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. TO24B0108TN5964918N(F.No.10951), dated 16.07.2024

PROPOSED QUARRY LEASE DETAILS			
SURVEY NOS	34/1B1, 35/2B, 35/3 AND 35/4		
VILLAGE	NALMUKKAL		
TALUK	MARAKKANAM		
DISTRICT	VILUPPURAM		
EXTENT	4.75.00 ha		
CLUSTER EXTENT	10.65.0 ha		
PROPOSED PRODUCTION	ROUGH STONE : 8,89,700 m ³		
QUANTITY FOR FIVE YEARS	GRAVEL : 96,210 m ³		
LAND	PATTA LAND		

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

Category of the Project: B1 Cluster Mining, Total Cluster Area – 10.65.0 Ha Baseline Monitoring Period – March 2024 to May 2024

APPLICANT

THIRU.V. NAGARAJAN

S/O. VARADHARAJ GOUNDER

NO.65, MARAKKANAM ROAD, PERUMUKKAL VILLAGE,

MARAKKANAM TALUK, VILUPPURAM DISTRICT- PIN CODE- 604301

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 CONTACT: 97502 23535, 94446 54520

Email: infoglobalmining@gmail.com, globalminingsolutionssalem@gmail.com

SEPTEMBER- 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.V.Nagarajan S/o. Varadharaj Gounder, 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 4.75.00 Ha., & Cluster extent of 10.65.0 Ha., located at Nalmukkal Village, Marakkanam 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 Nalmukkal 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 5th 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 4.75.00 Ha., & Cluster extent of 10.65.0 Ha located at Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State.

For: M/s. Global Mining Solutions

Name: M.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. TO24B0108TN5964918N (F.No.10951), dated 16.07.2024 of Draft EIA/EMP report for the proposed Stone Quarry over a lease extent of 4.75.00 Ha., & Cluster extent of 10.65.0 Ha., located at Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu Stat for the production of 8,89,700 m³ of Rough Stone and 96,210 m³ 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: M.Manikandan EIA Coordinator – Mining

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DECLARATION BY EXPERTS

Declaration by Experts contributing to the proposed Stone Quarry over a lease extent of 4.75.00 Ha. & Cluster extent of 10.65.0 Ha. located at Nalmukkal Village, Marakkanam 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

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and Date
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</u> <u>2024</u> .	R.Dhams
2	WP	<i>Abirami Kaliaperumal</i>	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</u> 2024	K. Anni
3	SHW	Ramadoss N	Assessment of waste generated from the project, suggested waste management practices. <u>Period: March 2024 to May</u> <u>2024</u>	CE RONA
4	SE	Sarasvathy K	BaselineSEstudies.Datacompilation and assessment.Impact of the project on SEstatusofthearea.Formulation of CER plan.Period:March 2024 to May2024	N. 8-24
5	EB	Saravanan S	Baseline data collection of related to ecology of the area. <u>Period: March 2024 to May</u> <u>2024</u>	anaronae
6	HG	Ravinthiran N	<i>Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area.</i> <u>Period: March 2024 to May 2024</u>	an itter walk

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</u> <u>2024</u>	T Siilalte
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</u> <u>2024</u>	R.Dhams
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</u> <u>2024</u>	R.Dhams
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</u> <u>2024</u>	forashant
11	SC	Shisupal Sing	Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil. <u>Period: March 2024 to May</u> <u>2024</u>	Orsuppy Sng.4.
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</u> <u>2024</u>	7

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<u>COMPLIANCE TO</u> TERMS OF REFERENCE

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S.No	ToR Points	Reply	Pg. No
	aa Specific Conditions:		
1.1	After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant. Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC, standard conditions stipulated by MoEF & CC and with the Specific and Standard Conditions.	A revised mining plan with a restricted depth of 33 m below ground level is to be submitted at the time of the final EIA.	-
	i) Considering the water bodies situated around the project site, Terms of reference is accorded for the restricted depth of 33m below the ground level. The proponent shall furnish the revised mining plan accordingly.		
2	SEAC Conditions - Site Specific	· · · · · · · · · · · · · · · · · · ·	
2.1	 A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members 	Agreed	-

	 (iii) The `Standard Operating Procedures' (SoP) executing the planned activities. 		
2	The proponent shall make necessary application to produce the NOC from the Competent Authority under the provisions of the Central Electricity Authority Notification No. CEA-PS- 16/1/2021-CEI Division dt 08.07.2023 at the time of lease execution.	Agreed	-
3	Since waterbodies are situated nearby, the PP shall carry out the scientific studies to assess the hydrogeological condition of the quarry to determine impacts of the mining operation on the ground water conditions in the waterbodies.	The hydrogeological study from a reputed institute is in progress; however, the final EIA submission report will be incorporated into Chapter 3.	129
4	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations.	Complied.	Complied. Enclosed as Annexure 10.
5	The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	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 0.86.00 Ha will be under greenbelt and plantation.	-
6	The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.	Complied. The details are given in Chapter 3.	111
7	The PP shall prepare the EMP for the entire project life of mine, i.e, 10 years and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	Agreed. Will be complied.	-

8	The proponent shall furnish the affidavit regarding the existence of a 'pit' in the proposed mine leasehold area.	Agreed. Will be complied.	-
9	The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures.	Agreed. Will be complied.	-
3	SEAC Standard Condition		
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: (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 (vii) 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. 	The applied lease is not fresh, there is a quarry pit exists in the S.F. No. S.F. No. 35/3, which was operated by unknown person. AD Mine letter will incorporated in the final EIA & EMP.	-
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.	Complied.	Enclosed as Annexure 5
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	Complied.	Enclosed as Annexure 10.

	occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.		
4	The PP shall submit a detailed 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.	The study is under progress. It will be incorporated in the final EIA & EMP.	-
5	The Project Proponent shall carry out Bio-diversity study through reputed institution and the same shall be included in the EIA report.	Complied. The biodiversity report of the study area to be incorporated at the time of final EIA submission.	111
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.	-
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	The details to be incorporated at the time of final EIA Submission.	-
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	The applied lease is not fresh, there is a quarry pit exists in the S.F. No. S.F. No. 35/3, which was operated by unknown person. AD Mine letter will incorporated in the final EIA & EMP.	-
14	 Quantity of minerals mined out. Highest production achieved in any one year. Detail of approved depth of mining. Actual depth of the mining achieved earlier. Name of the person already mined in that leases area. 	The applied lease is not fresh, there is a quarry pit exists in the S.F. No. S.F. No. 35/3, which was operated by unknown person. AD Mine letter will incorporated in the final EIA & EMP.	-

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	 If EC and CTO already obtained, the copy of the same shall be submitted. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches 		
15	All comer 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 is 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.	131
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	This is an existing quarry. The condition will be complied after commencement of the mining operation.	-
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 0.86.00 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 21,37,500 m ³ and Gravel 1,42,500 m ³ . The mineable reserves of rough stone 10,15,275 m3 and Gravel 96,210 m3.	65

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	191
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 3.	129
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).	88
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.	154 & 187

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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.	139
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.	118
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 famishedto the effect that the proposed mining activities could be considered.	No proximity to Critically polluted areas.	-
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.	139
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.	183
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 0.86.00 ha. Green belt development plan provided.	139
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 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	Accepted. The photographs showing green belt will be provided once it is completed.	-
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.	183

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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.	170
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.	127
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	122
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	-
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	184

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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.	The applied lease is not fresh, there is a quarry pit exists in the S.F. No. S.F. No. 35/3, which was operated by unknown person. AD Mine letter will incorporated in the final EIA & EMP.	-
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	-
4.0 C	luster Management Committee		
1	Cluster management committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	There are four 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 quarry.	-
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	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.	-

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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.	-

Impa	ect study of mining		
12	Detailed study shall be carried out in reg the proposed mine lease area covering t per precise area communication order institutions on the following,	the entire mine lease period as	-
а	Soil health & soil biological, physical land chemical features	Complied. The details are given in Chapter 3 of the Draft EIA report.	89
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 2 excavator, 6 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 2400 number of plants will be planted in and around the lease area.	75
d	Possibilities of water contamination and impact on aquatic ecosystem health	The total water requirement is 8.0 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	-

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		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.	
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	Vada Penniyaru River is located at a distance of 10.9 km in Southeast direction of lease area. Due	-

Aquia		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.			
_	culture &Agro-Biodiversity				
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-B	-		
14	Impact on soil flora & vegetation around the project site.	Complied. The details are given in Chapter 3.	111		
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Complied. The details are given in Chapter 3.	112		
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.	112		
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.	112		
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 4.	112		
Fores	Forests				
19	The project proponent shall detailed study on impact of mining on Reserve Forests free ranging wildlife.	There is Kilsevur R.F. located at a distance of 4.04 km (NW), Kumalampattu R.F located at a distance of 7.17 km (S) 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.	85		

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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.	111
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.	There is Kilsevur R.F. located at a distance of 4.04 km (NW), Kumalampattu R.F located at a distance of 7.17 km (S) and no other reserved forest located in the buffer zone. There is no, National Parks, Corridors and Wildlife pathways.	-
Wate	r Environment	· · · ·	
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	The hydrogeological study from a reputed institute is in progress; however, the final EIA submission report will be incorporated into Chapter 7.	182
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 8.	184
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	Complied. The details are incorporated in Chapter 3.	114

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.	156	
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 3 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 10.	188	
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.	85	
Energ				
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.	141	
Climate Change				
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	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.	138
	Closure Plan		
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.	183
ЕМР	•	· · ·	
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.	187
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.	193
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.	170
Disas	ster 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.	183
Othe			
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.N0.22-65/2017- 1A.11I dated: 30.09.2020 and20.10.2020 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	-
Stand	ard Terms of Reference for (Mining of min	erals)	
1.1	An EIA-EMP Report shall be prepared for peak capacity (MTPA)operation in an ML/project area ofha 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.	137
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided.	Agreed	-

1 /	A Study area man of the same read]
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.	118
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.	118
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.	Contour map, Physiography and Drainage is given Chapter-3.	129
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 eloboration in form of lengthe, quantity and quality of water to be diverted	Drainage map is given Chapter-3.	129

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.	77
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.	72
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	Details given chapter-3	129
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.	118

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.	118
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.	Flora & fauna of 10 km Radial Buffer Area of Project Site is given page chapter-3.	112
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,	Details given under description of the environment chapter-3.	88

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	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 laborartory and NABET accreditation of the consultant to be provided.		
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.	63
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.	182
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.	160
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.	111
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- 3.	122
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.	129

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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	129
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	129
1.24	Detailed water balance should be provided. The breakup 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.	128
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-10	188
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.	-
1.27	PP to evaluate the greenhouse emission gases from the mine operation and corresponding carbon absorption plan.	Greenhouse emission gases details given chapter-4	188
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.	170

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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-4.	159
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.	74
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	160
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.	193
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.	Final Mine Closure Plan and post mining land use details given in chapter-7	183

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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-10.	193
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	212
1.38	Corporate Environment Responsibility:	CSR details given chapter-11	212
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.	191
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.	191
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 Managament Cell and its responsibilities to be clearly spell out in EIA/ EMP report	EMP cell details given Chapter- 10.	191
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 the general public and commitments made by the proponent and the time bound action proposed with budgets	Noted	-

	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 alloted/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 acrreditation) 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,s 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.V.Nagarajan Lessee, has obtained Precise Area communication letter from the Assistant Director, Department of Geology and Mining, Viluppuram to quarry out 8,89,700 m³ of Rough Stone and 96,210 m³ of Gravel. Over an extent of 4.75.00 ha., located at the Survey No. S.F.No.34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam 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.

	Table 1.1 Cluster Mines Details					
S.No	Name of the Quarry Owner	S.F. Nos, Taluk, Village & Extent (Ha)	Lease Period	Remarks		
		Abandoned Quarry				
		Nil				
		Existing Quarry				
1.	Thiru.N. Gopinath,	S. F.No: 33/5 (0.545 Ha),	Lease period of	Existing		
	S/o.Natarajan,	37/3(1.14 Ha), 37/4(0.685	21.03.2022 to	Rough stone		
	No.19, Nattamaikarar	Ha), 37/5(0.40 Ha),	20.03.2027	& Gravel		
	Street, Polambakkam	37/6(0.31 Ha), 37/7(0.27		Quarry		
	Village, Cheyyur Village,	Ha)				
	Kanchipuram District	Marakkanam Taluk,				
		Nalmukkal Village,				
		Villupuram District				

2.	Thiru.D.Durai	S.F.Nos 27/6	Lease period of	Existing
	S/o, Dhanapal Gounder,	(0.40.5 Ha),	06.12.2022 to 05.12.2027	Rough stone
	Keelarungunam Village,	27/7 (0.39 Ha), 27/8 (0.405	03.12.2027	& Gravel
	Perumukkal Post,	Ha) Marakkanam Taluk,		Quarry
	Marakkanam Taluk,	Nalmukkal Village,		
	Viluppuram District	Villupuram District		
3.	Thiru. Ravichandiran	S.F. Nos. 26/1B1(0.77 Ha),	Lease period of	Existing
	S/o. Varatharaj Gounder,	27/3A(0.145 Ha),	29.12.2022 to 28.12.2027	Rough stone
	No.63/19, Perumukkal	27/3B(0.435 Ha)	20.12.2027	& Gravel
	Village & Post,	Marakkanam Taluk,		Quarry
	Marakkanam Taluk,	Nalmukkal Village,		
	Viluppuram District	Villupuram District		
Area	of total Existing Quarry	5.90.00 Ha		
		Proposed Quarry		
1.	Thiru.V.Nagarajan	S.F.No.34/1B1 (2.43 Ha),	-	Proposed
	S/o. Varadharaj Gounder,	35/2B(0.28 Ha), 35/3(0.88		
	No.65, Marakkanam Road,	Ha) and 35/4(1.16 Ha),		
	Perumukkal Village,	Marakkanam Taluk,		
	Marakkanam Taluk,	Nalmukkal Village,		
	Viluppuram District.	Villupuram District		
	Pin Code- 604301			
Are	ea of Proposed Quarry	4.75.00 Ha		<u>.</u>

As per EIA notification, 2006 and its subsequent amendments the proposed Thiru.V.Nagarajan 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 10.65.00 Ha which is >5 Ha. Satellite image of Quarries in Cluster is shown in Fig 1.1.

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Figure.1.1 Satellite Image showing cluster quarries

The ToR for preparation of EIA/EMP was approved vide ToR Identification No. TO24B0108TN5964918N, dated 16.07.2024. This report has been prepared in line with the approved TOR for production of maximum excavation of 8,89,700 m³ of Rough Stone, 96,210 m³ 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.No.34/1B1, 35/2B, 35/3 and 35/4 over an extent of 4.75.00 Ha., in Nalmukkal Village, Marakkanam 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**

SI. No.	Description	Status/Remarks
1.	Sector	Non-coal mining
2.	Category of the project	B1
3.	Proposed mineral	Rough Stone and Gravel quarry
4.	Type of Lease	Existing Quarry
5.	Extent of the lease	4.75.00 Ha
6.	Proposed depth of mining	38m BGL
7.	Method of mining	Opencast Semi-mechanized.
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years
10.	Proposed production quantity for five years	Rough Stone: 8,89,700 m ³ Gravel: 96,210 m ³

(b) Profile of the project proponent

The proposed lessee Thiru.V.Nagarajan 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 owned patta land, please refer **Annexure no –6**.

(c) **Project proponent details**

Name of the proponent	: Thiru.V.Nagarajan S/o. Varadharaj
Status of the Proponent	: Individual
Address	Thiru.V.Nagarajan S/o. Varadharaj, S/o. Varadharaj Gounder, No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District. Pin Code- 604301

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 45°. The quarry operation involves shallow jackhammer drilling, slurry blasting, excavation, loading and transportation.

1.3.1 SIZE AND LOCATION OF THE PROJECT

	Table 1.2 Proposed project details		
SI. No.	Feature	Description	
1	Type of land	Owned Patta land	
2	Extent of lease area	4.75.00 Ha	
3	Type of lease	Existing Quarry	
4	Geological Resource	Rough Stone – 21,37,500 m3 Gravel - 1,42,500 m3	
5	Mineable Resource	Rough Stone – 10,15,275m3 Gravel – 96,210 m3	
6	Proposed production quantity for five years	Rough Stone – 8,89,700 m3 Gravel – 96,210 m3	
7	Proposed depth of mining	38m BGL	

(a) Size of the project

(b) Location of the project

The proposed project site is located in Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State and its Latitude: 12°13'05.24"N to 12°13'14.52"N and Longitude: 79°46'07.17"E to 79°46'16.18"E. with Survey of India Topo Sheet No. 57- P/16.

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 Socioeconomic 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. TO24B0108TN5964918N, dated 16.07.2024in 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.
- \blacksquare To identify the activities of mining that have bearing on the environment
- 4 To Assess the impact of proposed project activity
- **4** To suggest preventive mitigation measures
- To prepare an Environmental Management Plan (EMP) including environmental monitoring.
- 4 To Prepare Disaster Management Plan.

1.4.2 STATUS OF LITIGATIONS

This is 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/96/2021 dated 02.02.2024. 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/96/2021, dated 06.03.2024. 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, Dept. of Geology & Mining, Viluppuram vide Rc.No.A/G&M/96/2021, dated 06.03.2024. 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 vide patta no.425, 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. No. 34/1B1, 35/2B, 35/3 and 35/4 over an extent of 4.75.00 Ha., in Nalmukkal Village, Marakkanam 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 10.65.0 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/96/2021 dated 06.02.2024.

	Table 2.1 500m Radius Cluster Mines Details			
S.No	Name of the Quarry			Remarks
	Owner	&		
		Extent (Ha)		
		Abandoned Quarry		
		Nil		
		Existing Quarry		
1.	Thiru.N. Gopinath,	S.F.No: 33/5 (0.545 Ha),	Lease period of	Existing
	S/o.Natarajan,	37/3(1.14 Ha),	21.03.2022 to	Rough stone
	No.19, Nattamaikarar Street,	37/4(0.685 Ha),	20.03.2027	& Gravel
	Polambakkam Village,	37/5(0.40 Ha), 37/6(0.31		Quarry
	Cheyyur Village,	Ha), 37/7(0.27 Ha)		
	Kanchipuram District	Marakkanam Taluk,		
		Nalmukkal Village,		
		Villupuram District		

2.	Thiru.D.Durai	S.F.Nos 27/6	Lease period of	Existing
	S/o, Dhanapal Gounder,	(0.40.5 Ha),	06.12.2022 to 05.12.2027	Rough stone
	Keelarungunam Village,	27/7 (0.39 Ha), 27/8	03.12.2027	& Gravel
	Perumukkal Post,	(0.405 Ha) Marakkanam		Quarry
	Marakkanam Taluk,	Taluk, Nalmukkal Village,		
	Viluppuram District	Villupuram District		
3.	Thiru. Ravichandiran	S.F. Nos. 26/1B1(0.77	Lease period of	Existing
	S/o. Varatharaj Gounder,	Ha), 27/3A(0.145 Ha),	29.12.2022 to 28.12.2027	Rough stone
	No.63/19, Perumukkal	27/3B(0.435 Ha)	20.12.2027	& Gravel
	Village & Post, Marakkanam	Marakkanam Taluk,		Quarry
	Taluk,	Nalmukkal Village,		
	Viluppuram District	Villupuram District		
Area	a of total Existing Quarry	5.90.00 Ha		
		Proposed Quarry		
1.	Thiru.V.Nagarajan	S.F.No.34/1B1 (2.43 Ha),	-	Proposed
	S/o. Varadharaj Gounder,	35/2B (0.28 Ha),		
	No.65, Marakkanam Road,	35/3(0.88 Ha) and		
	Perumukkal Village,	35/4(1.16 Ha),		
	Marakkanam Taluk,	Marakkanam Taluk,		
	Viluppuram District.	Nalmukkal Village,		
	Pin Code- 604301	Villupuram District		
A -		4 75 00 11-		
AI	rea of Proposed Quarry	4.75.00 Ha		

The proposed production is 8,89,700 m³ of Rough Stone, 96,210m³ of Gravel by open cast mechanized mining method.

2.2 NEED FOR THE PROJECT

The need of the proposed Rough Stone quarry of Thiru.V.Nagarajan.

Table 2.1a Salient features of the project			
S.No.	Type of Detail	Description	
1	Sector	1(a) Non coal mining	
2	Fresh/Existing project	Proposed	
3	Category	B1	

4	Nature of mineral	Existing Quarry
5	Life of the mine	10 years
6	Production Quantity for five years	Rough Stone: 8,89,700 m ³ Gravel: 96,210 m ³
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 10 Nos.
9	Ultimate pit depth	38 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.

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

This project site is located in Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State. The Nearest Railway line is Viluppuram to Chennai line which is about 10 km on North West side of the area. The National Highway ((NH-179B) Chennai – Tiruvannamalai is about 9.3 km on north west side of the area. The State Highway (SH-134) Tindivanam – Marakkanam about 2.0 Km on south west side of the area. The general location is given in Figure 2.1. The specific location is given in Figure 2.2.

FIGURE 2.1 LOCATION MAP

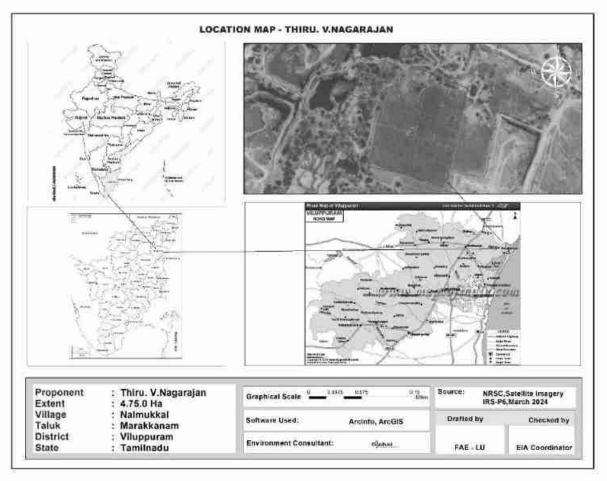
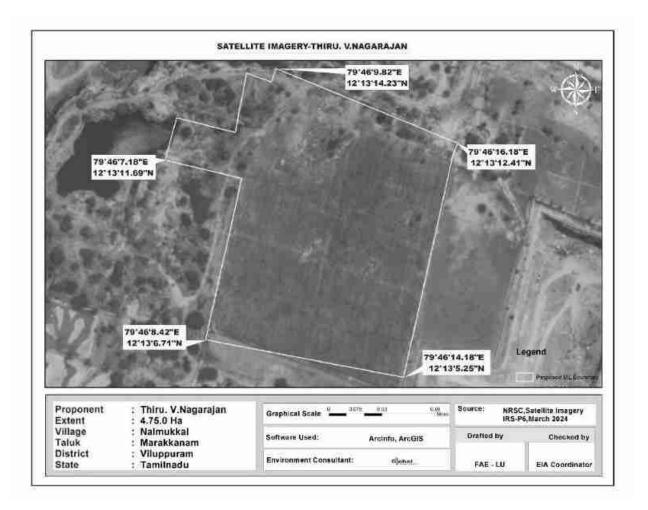


Table 2.2 Co-Ordinates of the Project Site					
Corners	Co- ordinates		Dista	Distance between the	
	Latitude	Longitude		CO	rners
1	12° 13' 06.70"N	79° 46' 08.42"E	1-2	=	136.8m
2	12° 13' 10.99"N	79° 46' 09.64"E	2-3	=	77.6m
3	12° 13' 11.68"N	79° 46' 07.17"E	3-4	=	22.0m
4	12° 13' 12.34"N	79° 46' 07.46"E	4-5	=	20.8m
5	12° 13' 13.00"N	79° 46' 07.60"E	5-6	=	59.0m
6	12° 13' 12.66"N	79° 46' 09.52"E	6-7	=	49.2m
7	12° 13' 14.23"N	79° 46' 09.82"E	7-8	=	21.2m
8	12° 13' 14.04"N	79° 46' 10.49"E	8-9	=	15.2m
9	12° 13' 14.52"N	79° 46' 10.61"E	9-10	=	180.2m

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10	12° 13' 12.41"N	79° 46' 16.18"E	10-11 =	15.2m
11	12° 13' 11.96"N	79° 46' 15.97"E	11-12 =	20.0m
12	12° 13' 11.31"N	79° 46' 15.92"E	12-13 =	61.6m
13	12° 13' 09.35"N	79° 46' 15.46"E	13-14 =	132.0m
14	12° 13' 05.24"N	79° 46' 14.18"E	14-1 =	179.8m

FIGURE 2.2 GOOGLE IMAGE SHOWING PROJECT SITE



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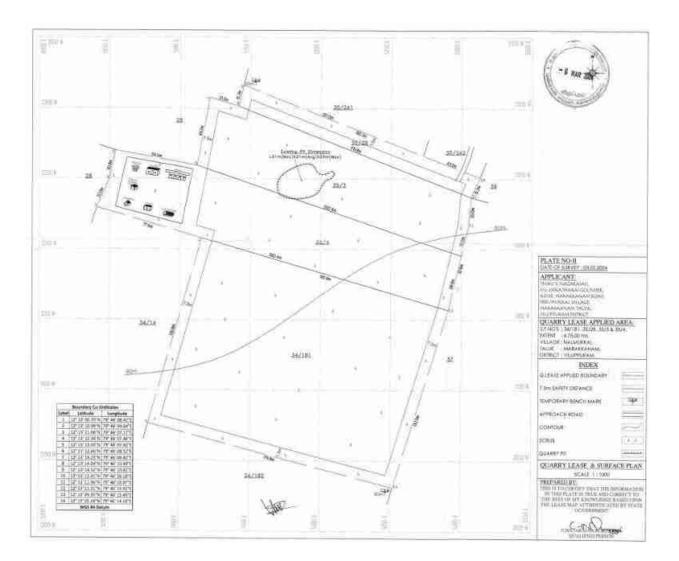


FIGURE 2.3 SURFACE PLAN OF THE PROJECT AREA

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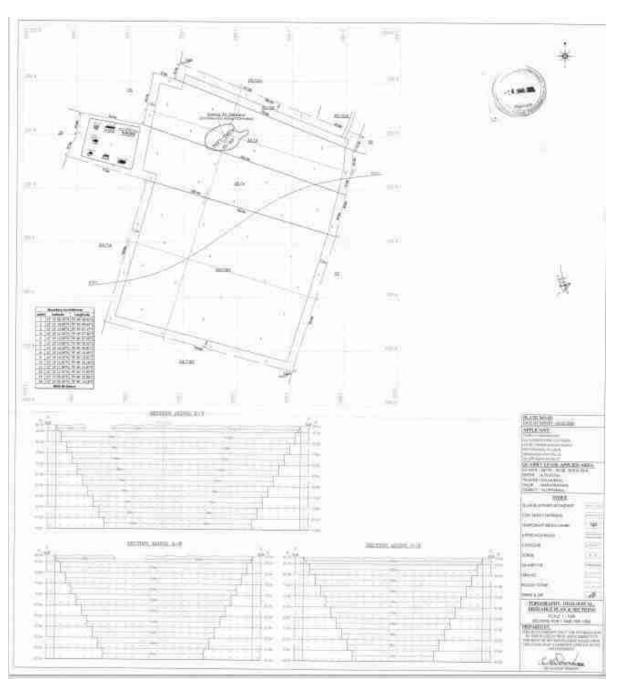


FIGURE - 2.4 GEOLOGY MAP OF PROJECT AREA

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2.3.1 LAND USE OF THE PROJECT AREA

The proposed Mine Lease area is patta land and the Land use pattern of the project site is given below Table 2.3.

Table 2.3 Current Land Use Pattern			
S. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1	Quarrying Pit	0.06.50	3.86.00
2	Infrastructure	Nil	0.02.00
3	Roads	Nil	0.01.00
4	Green Belt	Nil	0.86.00
5	Unutilized	4.68.50	Nil
	Total	4.75.00	4.75.00

2.3.2 LAND USE AT MINE CLOSURE STAGE

Table 2.4 Land Use at Mine Closure Stage		
S. No.	Land Use	Area in use during the quarrying period (Hect)
1	Area left for water body	3.86.00
2	Green Belt	0.86.00
3	Remaining area	0.03.0
Total		4.75.00

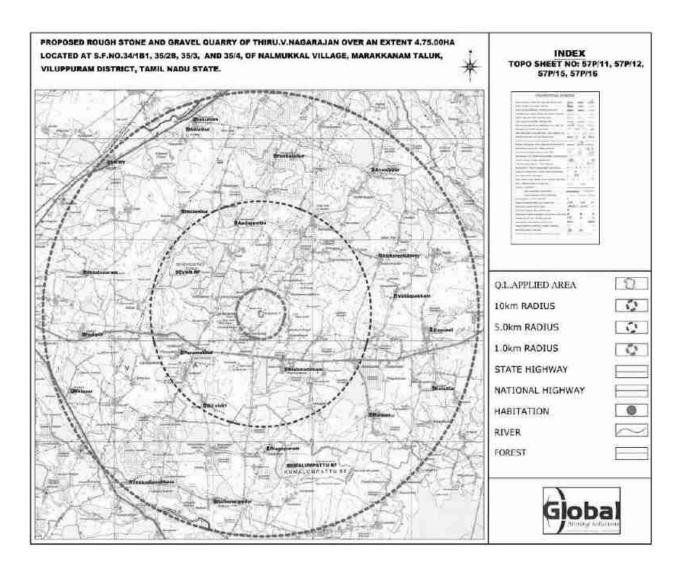
2.3.3 SALIENT FEATURES OF THE LEASE AREA

Sr.No	Salient Features	Description
1	Nearest Roadway	 There is an existing road from the area leads to Ariyanthangal - Senalur Village Road on North side of the area. The Nearest Railway line is Viluppuram to Chennai line which is about 10 km on north west side of the area. National Highway ((NH-179B) Chennai - Tiruvannamalai 9.3 km on north west side of the area. The State Highway ((SH-134) Tindivanam - Marakkanam is about 2.0 Km on south west side of the area.
2	Nearest Village	Nalmukkal Village – 1.32 km - South
3	Nearest Railway station	Viluppuram – 10 m – NW
4	Nearest Airport	Puducheery – 28.53 km – S

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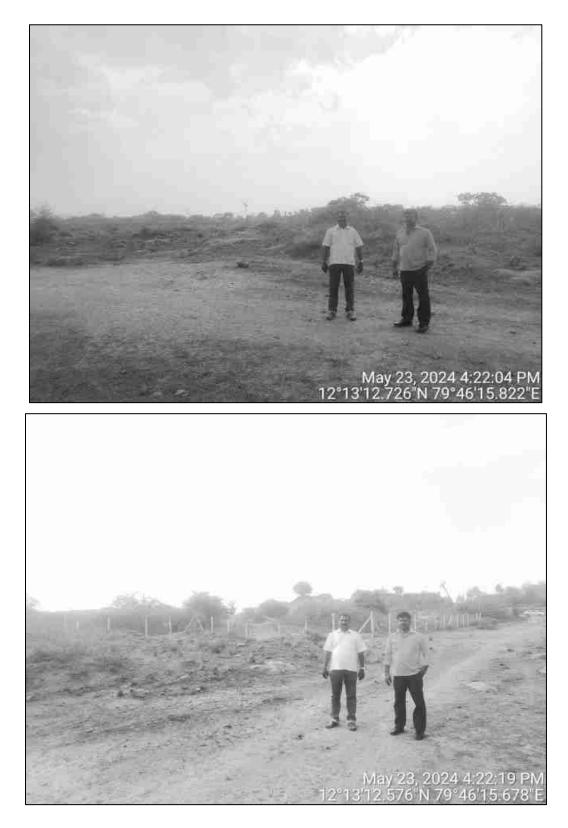
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Figure 2.5 Topo Map showing existing site features



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FIGURE 2.6 PROJECT SITE PHOTOGRAPHS



2.4 <u>SIZE OR MAGNITUDE OF OPERATION(INCL.ASSOCIATED ACTIVITIES</u> <u>REQUIRED BY OR FOR THE PROJECT):</u>

The proposed production is rough stone 8,89,700 m³ and 96,210 m³ Gravel by Opencast Semi-Mechanized mining method. Available Geological Resources of Rough stone 21,37,500 m3 and Gravel 1,42,500 m3. Cost of the project is Rs. 565.95 lakhs including land cost. Capital cost for EMP is Rs. 132.58 lakhs and recurring cost for the EMP is Rs. 54.54 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:

S.No	Particular	Status			
1	Mining Plan	The project proponent has prepared mining plan under			
	Approval Status	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/96/2021,			
		dated 06.03.2024.			
2	Environment	ToR Letter Received vide file no			
	Clearance Status	TO24B0108TN5964918N, dated 16.07.2024.			
3	Grant of Consent	After 30 days from grant of EC (Duration as per TNPCB)			
	to Establish (CTE)				
4	Grant of Consent	After 30 days from grant of EC (Duration as per TNPCB)			
	to Operate (CTO)				

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

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	Nov	Dec	Jan
		2024	2024	2024	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 16.07.2024. 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/96/2021, dated 06.03.2024.

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 8.0KLD 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

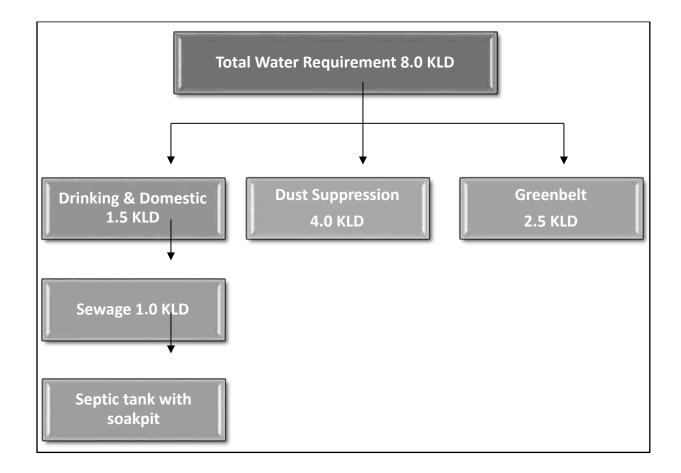


Table - 2.7 Water Requirement

S. No	Particular	Water Requirement (KLD)	
1	Dust suppression	4.0	
2	Drinking/Domestic	1.5	
3	Greenbelt/Plantation	2.5	
Total		8.0	

2.6.3 POWER REQUIREMENT

Total Fuel requirement is 727.795 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 43 persons which out of which 29 persons (Mines manager, Foreman, Mining Mate, etc.,) and other are drivers and workman's categories. Beside this, 14 workmen will be drivers and workmen. Preference will be given to the locals as per their eligibility.

S.No	Description	Employment potential	
1	Mines Manager	1 No.	
2	Foreman / Mate	3 Nos.	
3	Operator	18 Nos.	
4	Mechanic	1 No.	
5	Driver	6 Nos.	
6	Labours	14 Nos	
	Total	43 Nos	

2.6.5 EXTENT OF MECHANIZATION

Table 2.8 Machineries involved in the project					
S.No.	Particulars	capacity	Motive Power	Nos	
1.	Jack hammer	32mm dia	Compressed air	16	
2.	Compressor	1 psi	Diesel drive	4	
3.	Excavator with Bucket and Rock Breaker	0.90 m ³	Diesel drive	2	
4.	Tippers	5/10 Ts	Diesel drive	6	

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 in the ML area.

2.6.6 GEOLOGY AND TOPOGRAPHY

Topography

The mine lease area of 4.75.00 Ha is covered in the Survey of India Toposheet 57 P/16 and is bounded by Latitude: 12°13'14.52"N to 12°13'14.52"N and Longitude: 79°46'07.17"E to 79°46'16.18"E. No major river is found nearby the lease applied area. Water table is found at a depth of 68 m. 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 90 m (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.

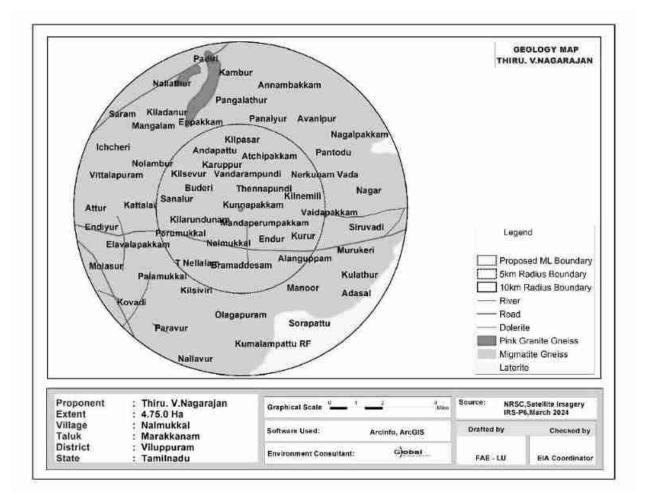
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2.6.7 Regional Geology

The Core and 10 Km buffered zone geological features (Figure 2.28) shows that the Villupuram District is mostly underlain by the lithologies of southern granulite Terrain Super Group (SGT) with age ranging from Neoarchaean to Mesoproterozoic except coastal belt in the eastern part of the district. The calc granulite with limestone of Khondalite Group is occurs at north of Mugaiyur. The Charnockite Group contain 3 lithologies such as Charnockite, banded magnetite quartzite and pyrixene granulite. The Charnockite occur at north of Valatti and covers large area from Vikravandi to Ollakur. The linear bands of pyroxene granulite are occurring mostly in the NW parts of the district near valatti and few patches occur at west of Odiyattur. The Migmatite Group contains biotite gneiss which cover large area in the central and NW parts of the district such as west of Muttatur and Mugaiyur and in and around valatti. The grey hornblende biotite gneiss occurs as linear band at east of Vikravandi. The hornblende biotite gneiss occurs in the larger area of the district from Mugaiyur to north of Gingee. The Migmatite gneiss occur at south of Olakkur and NW of Odiyattur. The bands of pink migmatite are occurs at NE of Gingee and NW of Valatti. The Archaean to Paleoproterozoic in age Closepet Granite within the biotite gneiss of Migmatite Group at west of Valatti. The Proterozoic epidote hornblende gneiss is occurring in and around Gingee with shearing activity. The Mesoproterozoic in age basic intrusive like dolerite dykes are intruded into rocks of Southern Granulite Terrain and these dykes are tendering into NW-SE to E-W direction.

The late carboniferous-early premian in age,boulder conglomerate bad of Talchir Formation is occurs in linear belt at northern part of the district near Olakkur and Ongur.The Late Cretaceous period contains Pondicherry Group which contain sandstone-shale sequence and divided into Vanur and Nesal Formations and occurs in the eastern part of the district. The Cenozoic laterites occurs at west of Marakkanam.The early palaeocene age contains Pondicherry Group and it is divided into Karasur and Manaveli Formations which contains lithologies such as limestone and clay and occurs at east of vanur. The Miocene-Pliocene period are marked by deposites of thick sediments sequence and classified into Panamparai Formation and Cuddalore Formation and contains lithologies such as sandstone, conglomerate and mottled sandstone.

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



2.6.8 Local Geology

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^oE – S45^oW with dipping towards SE80^o.

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

AGE ROCK TYPE Recent - Gravellysoil Unconformity

Archaean

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.

Dolerite dyke Charnockite. Peninsular

Gneissic complex and Calc Gneiss

2.7.1 PROCESS DESCRIPTION

PROPOSED METHOD OFMINING

Opencast mechanized method with 5.0 m height 5.0m width and overall, 45° slope of the bench. It is proposed to excavate 8,89,700 m³ of Rough Stone and 96,210 m³ 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 slope angle will be at around 45° with the horizontal.

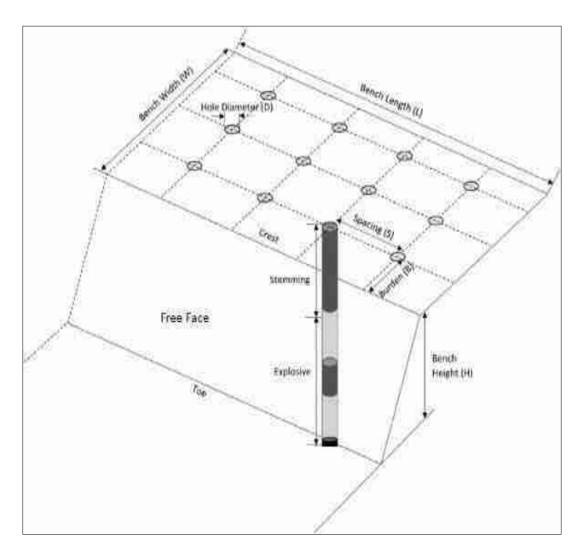
DEVELOPMENT OF MINING FACES

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 up to maximum depth of 38 m 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 6-7 Tonnes per Kg of explosives. Small dia 25 mm 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 6 nos will be used.

FIGURE 2.10 FLOW CHART OF THE QUARRY OPERATION

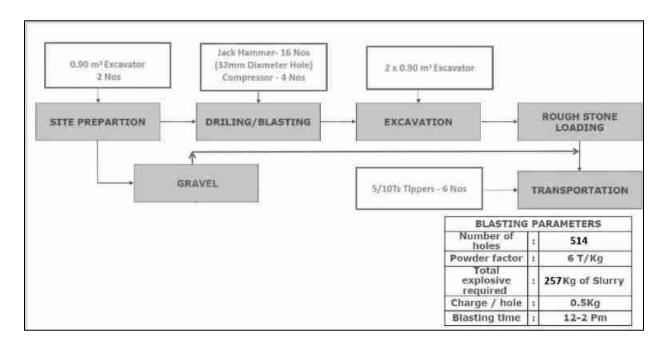


TABLE - 2.9 MINING DETAILS

SI. No	Description	Details	Remarks
1.	Method of Mining	Opencast method of Semi Mechanized Mining with 5.0 m height 5.0 m width and overall 45 ^o slope of the bench. Hydraulic excavator will be used for the excavation and 5/10T tippers will be used for the Hauling.	Excavator - 2 Nos. Tippers - 6 Nos.
2.	Mineral Use	The excavated Rough Stone will be used for construction industries for Government & Public sector projects besides catering for domestic housing and infrastructure projects in and around the district.	-
3.	Proposed Depth of mining for the first five years	38m (BGL)	The water table in the area is around 65m BGL

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4.	Proposed	8,89,700m ³ of Rough Stone,	Five years
	Production	96,210m ³ of Gravel formation	
	quantity		
5.	Safety Zone	Out of 4.75.00 Ha, 0.86.00 Ha will be	Around 2400 nos. of saplings will be
		maintained as a Safety Zone during	planted in this safe
		mining operations.	area.
6.	Water	8 KLD	Procured by the
	requirement		outside water.
7.	Energy	727.795 KL of HSD	All the equipment will be diesel-operated.
	requirement	(Entire Project Life)	
			No electricity is
			needed for mining
			operations.
8.	Manpower		This project will give
		Total manpower	employment opportunities to 43
			people.
9.	Shift	General Shift	8.00 AM – 5.00 PM
10.	Project Cost	Rs. 132,58,000/-	Including Fixed Asset
			+ Operational & EMP
			cost
11.	EMP Cost	433.95 Lakhs	5 years
12.	CER Cost	Rs. 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 2.10.

	Table 2.10 Summary of production for 5 Years							
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel in m ³	Mineable reserve of rough stone in m ³
		Ι	68	154	3	31416	31416	-
I XY		II	90	174	5	78300	-	78300
	XY-AB	III	85	164	5	69700	-	69700
		IV	38	154	5	29260	-	29260
				otal			31416	177260
		I	5	154	3	2310	2310	-
	XY-AB	II	5	174	5	4350	-	4350
	AT-AD	III	5	164	5	4100	-	4100
		IV	47	154	5	36190	-	36190
II		I	61	164	3	30012	30012	-
	XY-CD	II	61	155	5	47275	-	47275
	XI-CD	III	61	145	5	44225	-	44225
		IV	61	135	5	41175	-	41175
				otal			32322	177315
		I	66	164	3	32472	32472	-
		II	62	155	5	48050	-	48050
III	XY-CD	III	57	145	5	41325	-	41325
111		IV	52	135	5	35100	-	35100
		V	86	125	5	53750	-	53750
		r		otal		1	32472	178225
	XY-CD	V	22	125	5	13750	-	13750
		VI	98	115	5	56350	-	56350
IV	XY-AB	V	80	144	5	57600	-	57600
		VI	75	134	5	50250	-	50250
				otal		ſ		177950
		VI	5	115	5	2875	-	2875
	XY-CD	VII	98	105	5	51450	-	51450
v		VIII	93	95	5	44175	-	44175
v	XY-AB	VII	70	124	5	43400	-	43400
		VIII	65	114	5	37050	-	37050
				otal				178950
			Grand To	otal			96210	889700

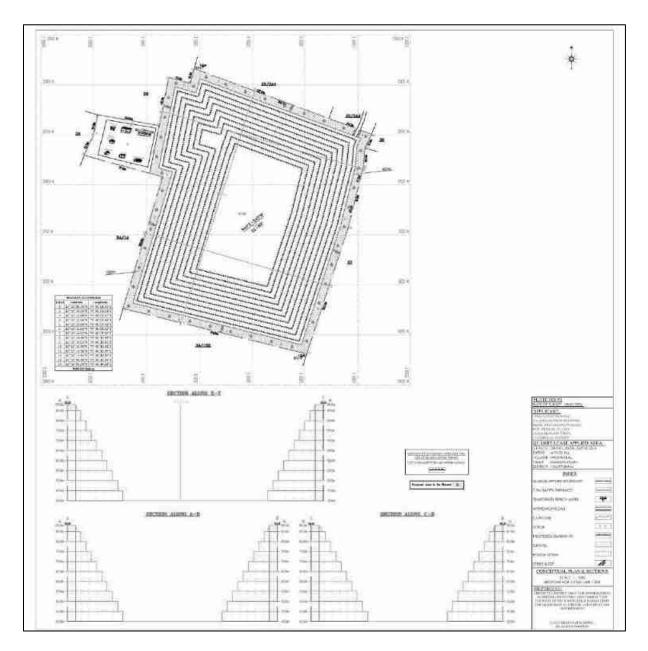
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2.7.3 <u>CONCEPTUAL PERIOD</u>

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 2.11 and Land Use pattern is given as Table 2.11 The conceptual plan is given as Figure 2.11.

TABLE 2.11 Ultimate Pit Dimension						
Pit No.	Pit No. Length (max) (m) Width (Avg) (m) Depth (max) (m)					
Ultimate	Ultimate Pit dimension at the end of Mining Plan Period as per approved Mining Plan					
Ι	227	170	38m BGL			
	Ultimate Pit dimension at the end of the lease period					
Ι	227	170	48m BGL			

FIGURE 2.11 CONCEPTUAL PLAN



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

<u>Drilling</u>

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

<u>Blasting</u>

- 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

<u>Drilling</u>

- 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.

<u>Blasting</u>

- 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 0.86.00 Ha. Trees like Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc., will be planted around the mine lease area. A total of 2400 trees are planned to be planted. Spacing will be 3m x 3m.

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.

CHAPTER 3 DESCRIPTION OF THE ENVIRONMENT

3.1. STUDY AREA, PERIOD COMPONENTS AND METHODALOGY

The project area is located in Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State over an extent of 4.75.00 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.

	Table 3.1 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			

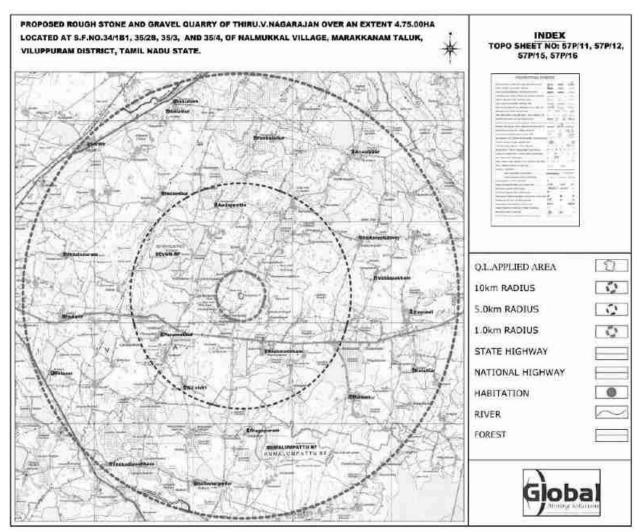
ENVIRONMENTAL SETTING OF THE STUDY AREA

2	Areas which are important or sensitiv	e for ecological rea	sons		
		Water bodies	Distance	Direction	
		Odai	230m	NE	
	Watlands, water sources or other	Odai	300m	N	
		Tank	230m	SW	
		Brammadesam Lake	2.22 km	S	
А	Wetlands, water courses or other	Endur Lake	2.53 km	SE	
	water bodies,	Kilsevur Lake	3.40 km	NW	
		Puthupakkam Lake	3.59 km	SE	
		Aalangakuppam Lake	5.03 km	E	
		Nolambur Lake	5.42 km	NW	
		Puthunagar Lake	8.24 km	S	
		Nallavur Lake	8.32 km	S	
В	Coastal zone, biospheres,	Nil within 10km radius			
		Kilsevur R.F 4.04 km (NW)			
C	Mountains, forests	Kumalampattu R.F 7.17 km (S)			
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within 15km ra	ndius		
4	Inland, coastal, marine or underground waters	Nil within 15km ra	idius		
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				
7	Defense installations	Nil within 15km radius			
8	Densely populated or built-up area	Tindivanam – 13.09 km (W)			
9	Areas occupied by sensitive man- made land uses (hospitals, schools, places of worship, community facilities)	Tindivanam – 13.0	09 km (W)		

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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 & Land cover
- 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	Prima	ary data	
	al Component	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
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
В	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.

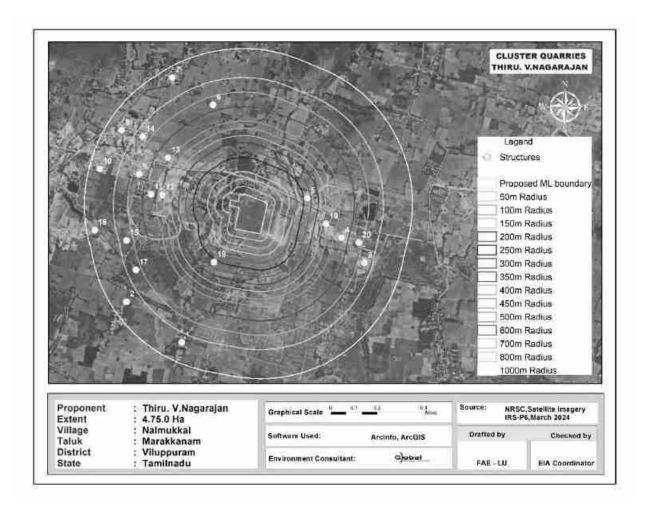
- Respirable Dust Sampler with attachment for gaseous Pollutants, Envirotech APM 460.
- Fine Particulate Matter (FPS) Sampler APM 550
- Sound Level Meter Model Envirotech SLM 100
- Digital D.O. Meter Model 831 E (CPCB Kit)
- Weather Monitoring Station Model Enviro WM 271
- Water Level Indicator and
- 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.

3.3. BASE MAP OF ALL ENVIRONMENTAL COMPONENTS

(ENUMERATION OF THE STRUCTURES LOCATED WITHIN 1.0 KM RADIUS FROM THE PROPOSED QUARRY SITE)

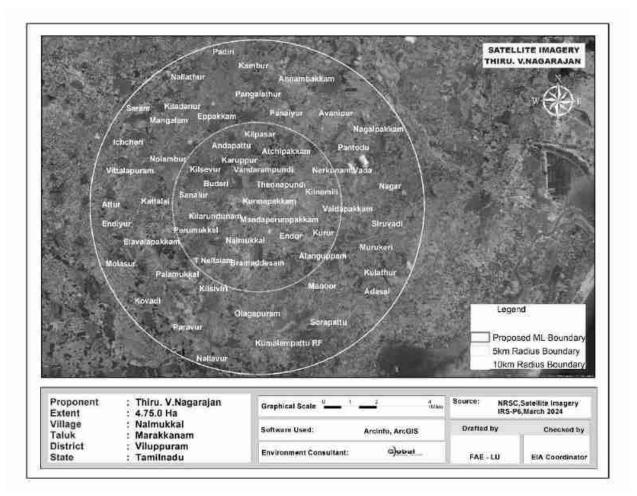
A site survey has been conducted to identify and list structures located within a 1 Km radius from the proposed Quarry and are detailed below. There are permanent structures within a 1 km radius from the project site. The PP has obtained a letter from Village Administrative Office (VAO), Nalmukkal stating that there are no structures situated within 300 Km radius.

FIG 3.2 GOOGLE 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.

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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)

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

Rainfall received from 2017 to 2021 is given below.

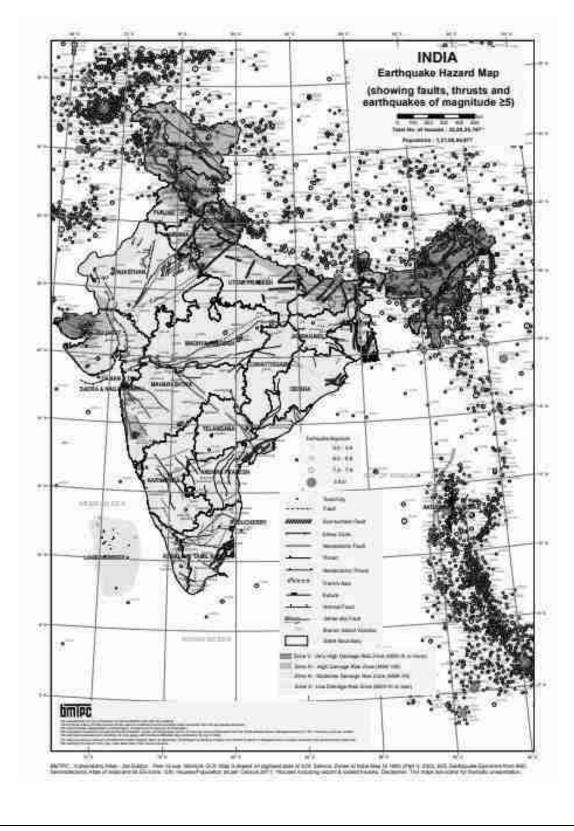
Relative Humidity

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.

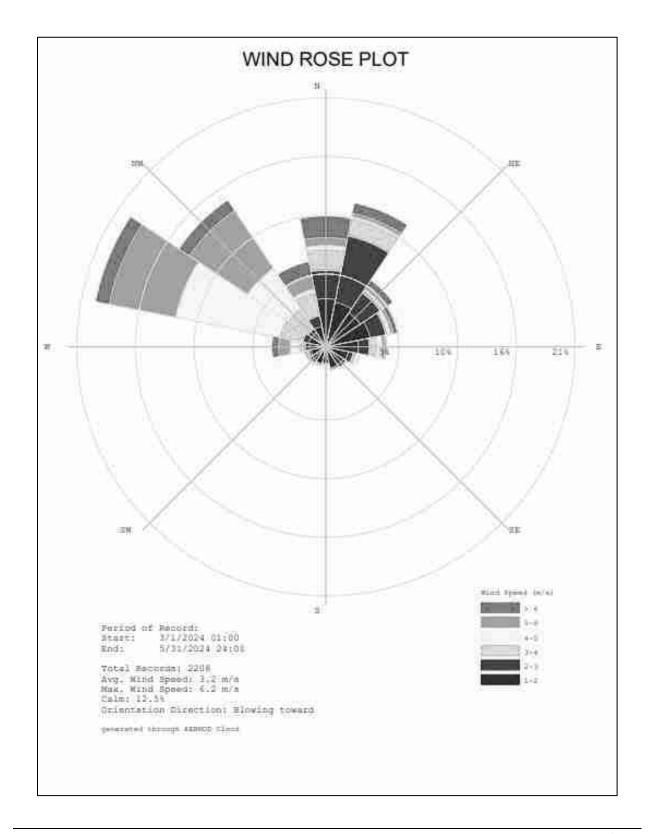




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FIG 3.4 WIND ROSE PLOT DURING MARCH TO MAY 2024



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 24.4°C and 27.1°C during summer.

3.3.2 AMBIENT AIR MONITORING DATA

Ambient air quality 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.

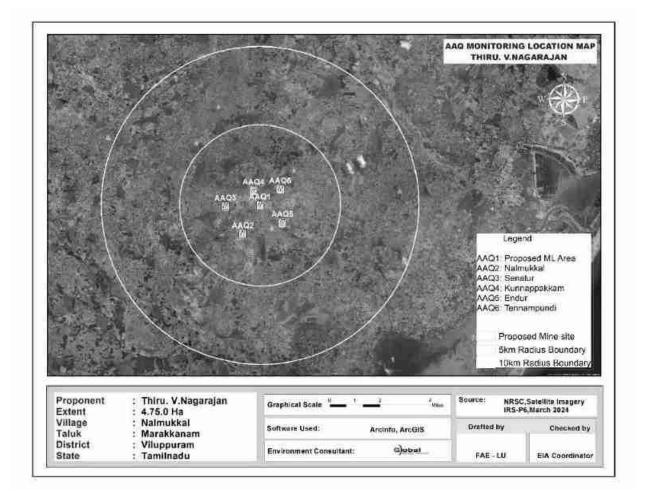
The regional climatologically data, was used as a guideline to know the predominant wind direction during study period. The locations were identified keeping in view predominant wind directions prevailing during study period, sensitive receptors, human settlements, and mining activities around.

The levels of Respirable Particulate Matter (PM10), Fine Particulates (PM2.5), Sulphur Dioxide (SO2) and Oxides of Nitrogen (NOx) were monitored for establishing the baseline status. PM10 were sampled with the help of Respirable Dust Samplers on filter papers and SO2 & NOx 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.

Т	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°13'10.17"N 79°46'10.51"E			
2	AAQ 2	Nalmukkal	2.13 km, SW	12°12'12.58"N 79°45'32.6"E			
3	AAQ 3	Senalur	2.20 km, W	12°12'34.19"N 79°46'57.62"E			

Т	Table 3.3: Details Of Ambient Air Quality Monitoring Locations						
S. No.	Station Code	Locations	Distance & Direction	Coordinates			
4	AAQ 4	Kunnappakkam	1.02 km, NW	12°13'09.47"N 79°45'00.38"E			
5	AAQ 5	Endur	1.80 Km, NW	12°13'39.51"N 79°45'58.18"E			
6	AAQ6	Tennampundi	1.65 Km, NE	12°13'44.03"N 79°46'54.41"E			

FIG 3.5 BASE MAP OF 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 $\mu g/m^3$.

Station ID	Min	Max	Avg.					
Particulate matter PM- _{2.5 (} µg/m ³)								
AAQ-1	41.2	67.3	54.25					
AAQ-2	38.1	59.2	48.65					
AAQ-3	36.2	51.2	43.70					
AAQ-4	36.1	56.7	46.40					
AAQ-5	36.3	53.2	44.75					
AAQ-6	42.2	53.5	47.85					
	CPCB NAAQS 2009 fo	r PM _{2.5} - 60 µg/m ³						
	Particulate matter	r PM- 10 (µg/m³)						
AAQ-1	19.20	32.3	25.75					
AAQ-2	18.2	30.4	24.30					
AAQ-3	17.38	25.3	21.34					
AAQ-4	16.64	25.1	20.87					
AAQ-5	18.10	26.2	22.15					
AAQ-6	19.70	25.1	22.40					
	PCB NAAQS 2009 for	r PM 10 - 100 µg/m ³						
	Sulphur Di-oxide	as SO ₂ (µg/m³)						
AAQ-1	4.4	7.5	5.95					
AAQ-2	3.7	7.2	5.45					
AAQ-3	4.1	5.8	4.95					
AAQ-4	3.2	5.4	4.30					
AAQ-5	3.7	6.8	5.25					
AAQ-6	3.2	5.8	4.50					
	CPCB NAAQS 2009 for SO ₂ – 80 µg/m ³							
	Oxide of Nitrogen as NO ₂ (µg/m ³)							
AAQ-1	6.5	9.9	8.20					
AAQ-2	6.1	9.1	7.60					
AAQ-3	5.5	8.2	6.85					
AAQ-4	5.7	7.9	6.80					
AAQ-5	5.8	8.9	7.35					
AAQ-6	6.2	9.5	7.85					
CPCB NAAQS 2009 for NO ₂ – 80 µg/m ³								

The results are summarized in graph and given as below Fig. 3.6



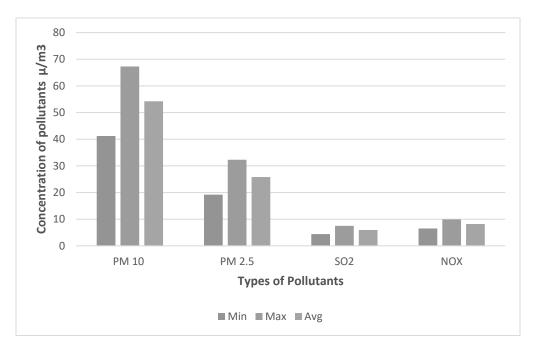
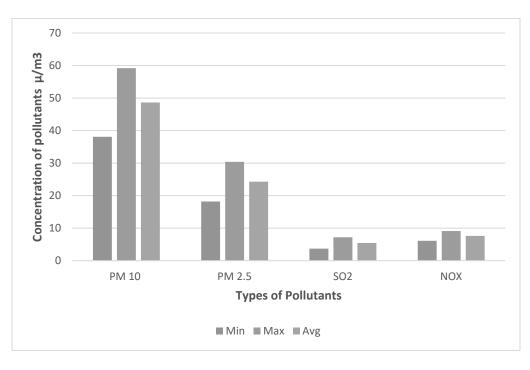


FIG 3.7 AMBIENT AIR QUALITY DATA A2 - NALMUKKAL VILLAGE



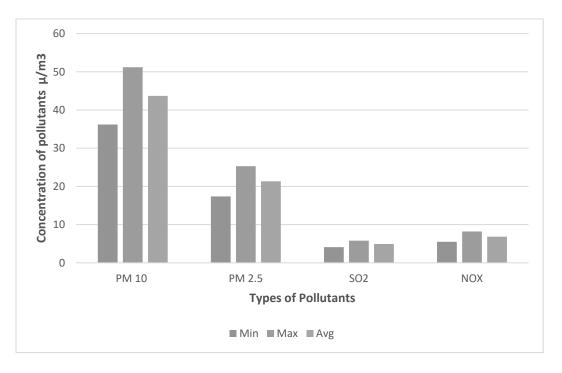


FIG 3.8 AMBIENT AIR QUALITY DATA A3 - SENALUR VILLAGE

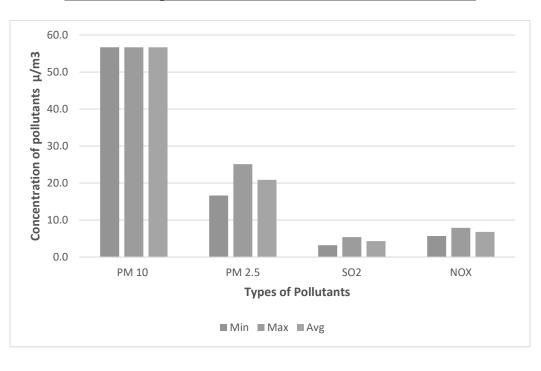


FIG 3.9 AAO DATA A4 - KUNNAPPAKKAM VILLAGE

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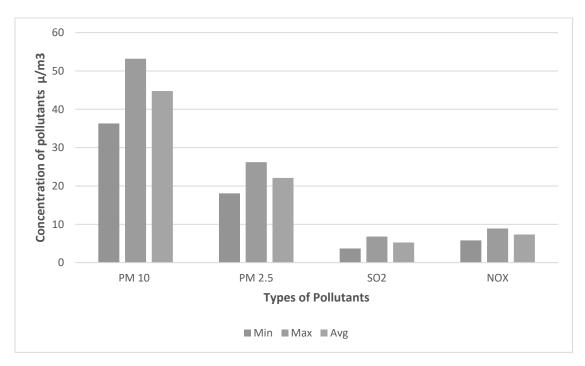
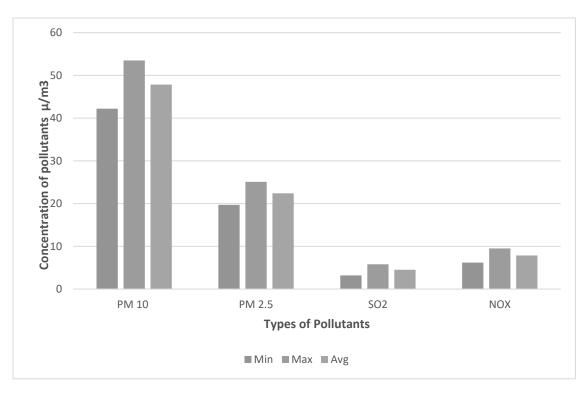


FIG 3.10 AMBIENT AIR QUALITY DATA A5 - ENDUR VILLAGE

FIG 3.11 AMBIENT AIR QUALITY DATA A6 - TENNAMPUNDI VILLAGE



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From the above results, it is observed that the ambient air quality with respect to PM_{10} , $PM_{2.5}$, SO_2 , and NO_2 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 Vada Penniyaru River is located at a distance of 10.9 km in Southeast 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 subsurface. 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 3.12.

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

S.NO	Location	Monitoring Locations	Latitude and longitude					
	Code							
Surface Water								
1	SW1	Kilarungunam village tank	12°12'47.57"N 79°44'18.24"E					
2	SW2	Atchipakkam village tank	12°14'35.78"N 79°46'58.16"E					
Groun	Ground Water							
1	GW1	Project site	12°13'10.17"N 79°46'10.51"E					
2	GW2	Nalmukkal	12°12'12.58"N 79°45'32.60"E					
3	GW3	Senalur	12°12'34.19"N 79°46'57.62"E					
4	GW4	Kunnappakkam	12°13'09.47"N 79°45'00.38"E					
5	GW5	Endur	12°13'39.51"N 79°45'58.18"E					
6	GW6	Tennampundi	12°13'44.03"N 79°46'54.41"E					

Table 3.5 Water Sampling Locations

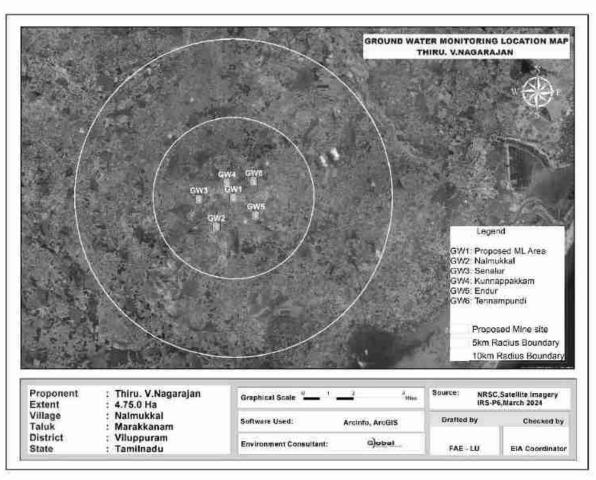
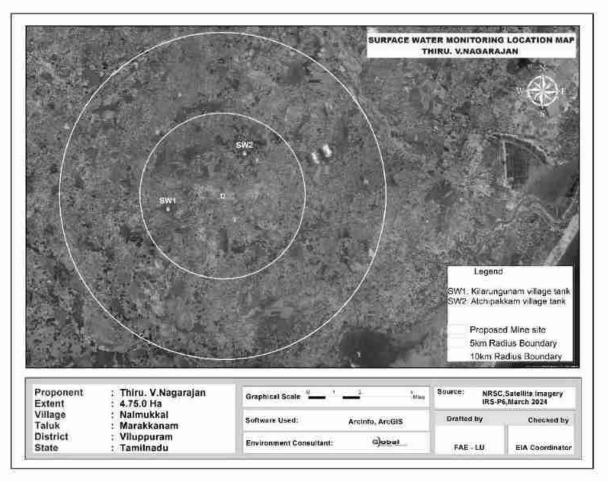


FIG 3.12 BASE MAP OF GROUND WATER SAMPLING LOCATIONS

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FIG 3.12a BASE MAP OF SURFACE WATER SAMPLING LOCATIONS



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Sr.No	Parameter	Unit	SW1	SW2	Surface water standard s (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 CaCO3	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 CaCO3	mg/l	101	11.9	-
10	Magnesium as CaCO3	mg/l	154	15.8	-
11	Total alkalinity as CaCO3	mg/l	263	36.4	-
12	Chloride as Cl-	mg/l	183	16.1	-
13	Free Residual chlorine as Cl-	mg/l	BDL (D.L - 0.2)	BDL (D.L - 0.2)	250
14	Sulphates as SO42-	mg/l	120	15.2	400
15	Iron as Fe	mg/l	0.12	0.09	1.0
16	Nitrate as NO3	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	

Table 3.6 Surface Water Analysis Results

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

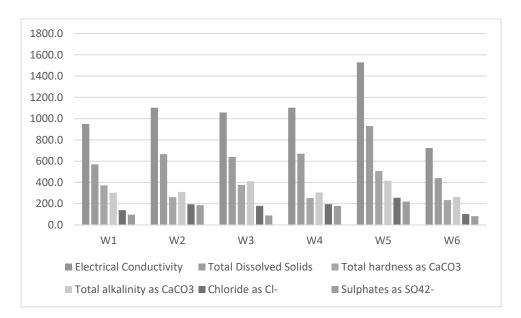
summarized below.

Table 3.7 Results of Ground Water sampling Analysis in 6 locations							Specification/Limit (As per IS:10500: 2012)	
							Desirabl	Permissibl
	W1	W2	W3	W4	W5	W6	е	е
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeabl e	Agreeable
Turbidity	<1	<1	<1	<1	<1	<1	Agreeabl e	Agreeable
							6.5 - 8.5	No
pH at 25 °C	7.17	7.12	7.12	7.48	6.98	6.97		Relaxation
Electrical Conductivity	949.9	1103	1058	1103	1529	723.7	1	5
Total Dissolved Solids	570	666	640	670	930	440	500	2000
Total hardness as CaCO3	372	261	376	253	507	234	1	15
Calcium as Ca	106	82.4	63.4	76.0	109	64.9	200	600
Magnesium as Mg	25.7	13.3	52.3	15.2	56.1	17.1	200	600
Calcium as CaCO3	265	206	158	190	273	162	75	200
Magnesium as CaCO3	107	55	218	63.4	234	71.3		
Total alkalinity as CaCO3	303	311	412	307	416	263		
Chloride as Cl-	139	194	180.0	196	256	102.0	250	1000
Free Residual chlorine as Cl-	BDL (D.L - 0.2)	30	100					
Sulphates as SO42-	97.0	186	89.2	179.0	220	82.6	45	No Relaxation
Iron as Fe	0.05	0.06	0.02	0.05	0.04	0.02	200	400
Nitrate as NO3	2.39	2.14	1.69	3.64	4.85	3.26	1	No Relaxation
Fluoride as F	0.26	0.32	0.44	0.41	0.36	0.42	0.1	0.3
Manganese as Mn	BDL (D.L - 0.05)	Not Specified	Not Specified					

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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 3.13 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 3.14

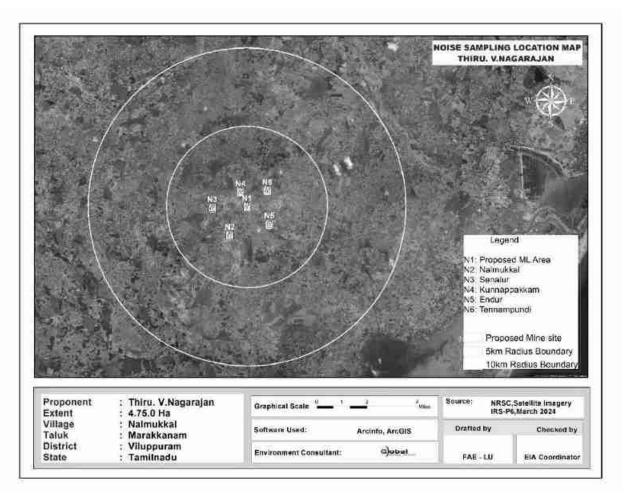


FIG 3.14 BASE MAP OF NOISE MONITORING LOCATIONS

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	39.3	38.0		70			
2	Nalmukkal	50.5	41.8					
3	Senalur	48.3	39.8	75				
4	Kunnappakkam	50.9	42.2	75				
5	Endur	46.8	40.8					
6	Tennampundi	45.5	42.0					

The results are plotted as below.

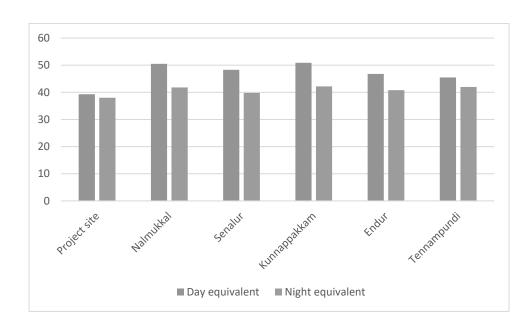


FIG 3.15 DAY AND NIGHT EQUIVALENT VALUES IN 6 LOCATIONS

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 Nalmukkal, Senalur, Kunnappakkam, Endur and Tennampundi Villages. The locations are shown in figure below.

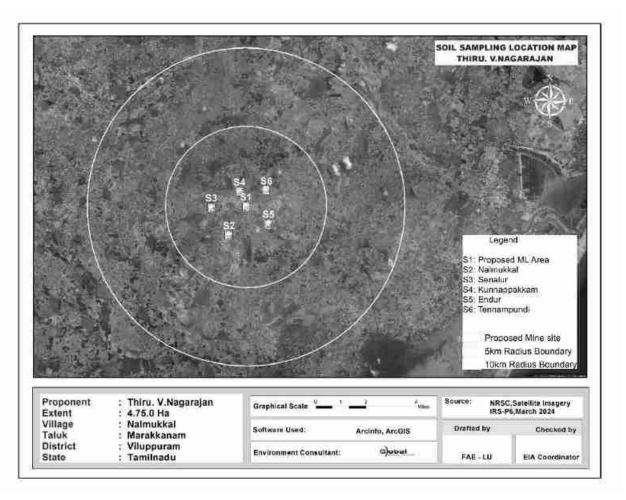


FIG 3.16 BASE MAP OF SOIL SAMPLING LOCATIONS

The results are summarized in the table below.

	Table 3.9 Results of Soil Sample Analysis							
S. No	Parameter	Unit	S1	S2	S 3	S 4	S 5	S6
1	pH at 25 °C	-	5.94	7.68	7.03	6.99	8.14	8.73
2	Electrical Conductivity	µmhos/ cm	70.24	492.7	100.8	150.7	214	509.8
3	Dry matter content	%	91.06	88.49	90.4	85.94	88.09	91.15
4	Water Content	%	8.94	11.51	9.6	14.06	11.91	8.85
5	Organic Matter	%	1.63	2.3	1.71	1.59	0.68	0.8
6	Soil texture	-	SILT LOAM	SILTY CLAY LOAM	SILT LOAM	SILTY CLAY	SILTY CLAY LOAM	SILTY CLAY LOAM
7	Grain Size Distribution	%	36.95	4.89	41.47	6.56	4.27	5.78
	i. Sand							

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8	ii. Silt	%	53.74	66.25	50.41	43.6	62.07	55.84
9	iii. Clay	%	9.31	28.86	8.12	49.84	33.66	38.38
10	Phosphorous as P	mg/kg	1.21	0.59	1.03	1.22	0.74	0.82
11	Sodium as Na	mg/kg	845	921	976	732	610	1002
12	Potassium as K	mg/kg	412	652	724	456	795	669
13	Nitrogen and Nitregenous Compounds	mg/kg	212	260	312	405	168	340
14	Total Soluble Sulphate	%	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)
15	Porosity	%	12.5	13.1	11.9	12.6	13.6	13.2
16	Water Holding Cabacity	Inches/ foot	42	45.6	44	49	46	48

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 in to 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.

Table 3.10 Flora in Core Zone					
S.No.	S.No. Scientific name Vernacular/ name		Type of flora		
1	Calotropis gigantea Erukku				
2	Cassia auriculata	Aavarai	Shrubs		
3	Achyranthes aspera	Nayuruvi			

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Buffer zone

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

Table 3.11 Flora in Buffer zone				
S.No.	Scientific name	Vernacular/English name	Type of flora	
1	Azadirachta indica	Neem		
2	Carica papaya	Рарауа		
3	Mangifera indica	Mango		
4	Acacia leucophloea	Velamaram		
5	Acacia nilotica	Karu- velamaram		
6	Moringa oleifera	Murungai		
7	Tamarindus indica	Puli	Trees	
8	Tectona grandis	Theku	nees	
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		
16	Cassia auriculata	Aavarai		
17	Ricinus communis	Aamanakku	Shrubs	
18	Tecoma stans	Arali		
19	Aloe vera	Kathalai		
20	Catharanthus roseus	Nithyakalyani	Harba	
21	Acalypha indica	Kuppaimeni	Herbs	
22	Coccinia grandis	Kovai		
23	Cissus quadrangularis	Pirandai	Climbora	
24	Jasminum angustifolium	malli	Climbers	
25	Ziziphus oenoplia	Ilandai		
26	Cymbopogon	Kanam		
27	Cyperus rotundus	Kora grass	Grasses	
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.

	Table 3.12 Fauna in buffer zone					
S.No.	Scientific name	Common name	Type of fauna	Schedule to which the species belong		
1	Canis familiaris	Common dog		IV		
2	Felis catus domesticus	Domestic cat		IV		
3	Golunda ellioti	Indian bush rat	Mammals	IV		
4	Funambuus palmarum	Squirrel	Mariniais	IV		
5	Lepus nigricollis	Indian hare		IV		
6	Bos indicus	Domestic cow		IV		
7	Common Crow	Corvus splendens		V		
8	House Sparrow	Passer domesticus	Birds	IV		
9	Common Myna	Acridotheres tristis		IV		
10	Streptopelia chinensis	Pigeon		IV		
11	Calotes versicolar	Lizard		IV		
12	Ptyas mucosa	Snake	Amphibia	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°13'05.24"N to 12°13'14.52"N and Longitude: 79°46'07.17"E to 79°46'16.18"E.

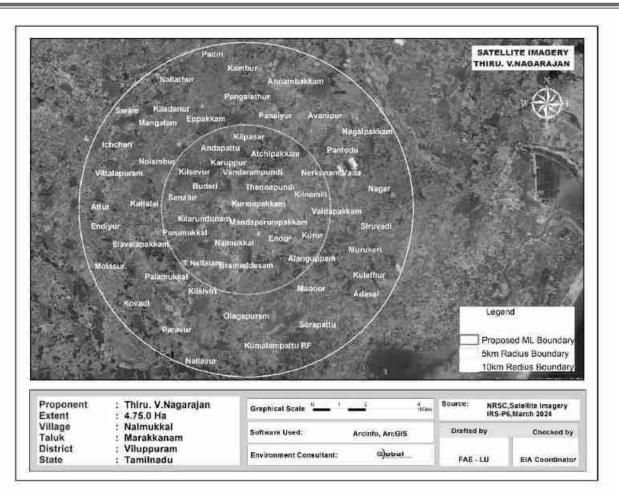


Figure No. 3.17: Remote Sensing Satellite Image

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. 3.13given 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.

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

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

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 Nalmukkal 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.

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 for area and representation of each category in the study area. The total area of LULC in the study area is calculated as 322 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.

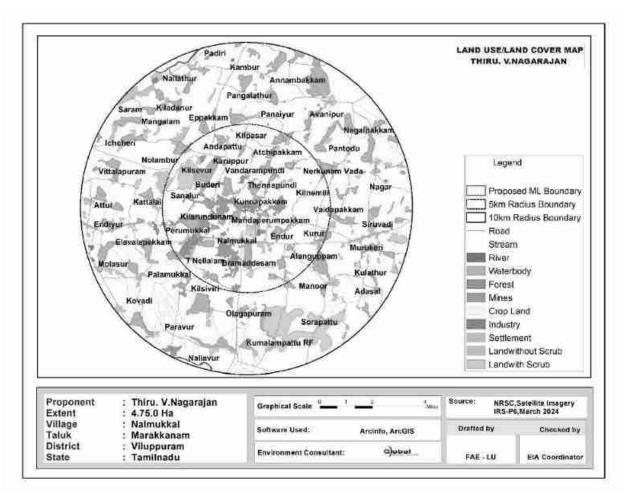


FIG 3.18 LAND USE/LAND COVER MAP OF THE STUDY AREA

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. Marakkanam 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 247.3 Sq.km representing 76.80 % 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 11.02 sq.km representing 3.42 % 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 2.37 sq.km representing 0.74 % 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 35.45 sq.km and 11.01 %.

<u>Mining area</u>

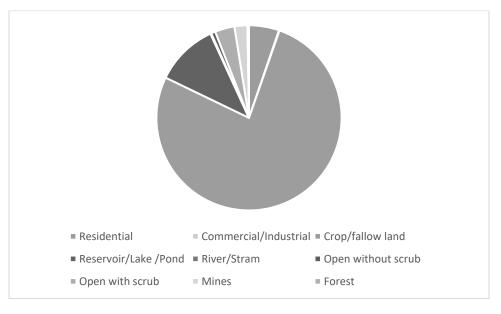
Mining area seen in the study area distributed all over the study area. Major domestic income from mining business. Spatial extent of mining is estimated at 7.28 sq.km 2.26 %.

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

S.	1st Level	Area in	Percentage	2nd Level	Area in	Percentage
No	Classification	(sq.km)	(%)	Classification	(sq.km)	(%)
1	Built-up or	17.23	5.35	Residential	16.94	5.26
	habitation	17.25	5.55	Commercial/Industrial	0.29	0.09
2	Agriculture	247.3	76.80	Crop/fallow land	247.3	76.80
3	Water bodies	35.96	11.17	Reservoir/Lake /Pond	35.45	11.01
		55.50	11.17	River/Stram	0.51	0.16
4	Waste Land	13.39	4.16	Open without scrub	2.37	0.74
		13.35		Open with scrub	11.02	3.42
5	Mines	7.28	2.26	Mines	7.28	2.26
6	Forest	0.85	0.26	Forest	0.85	0.26
	Total	322	100		322	100



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.

3.11.1 DETAILS OF VILLAGES

The profile of the villages located in the study area is given in Fig 3.19 below.

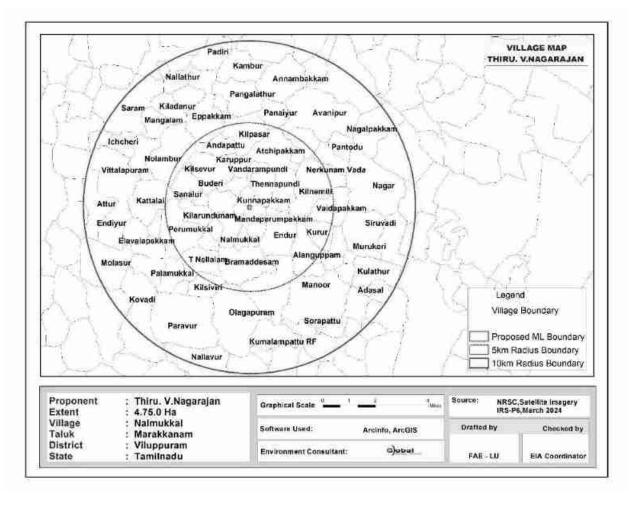


FIG 3.19 VILLAGE MAP OF THE STUDY AREA

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DETAILS OF VILLAGES

The project is located in MarakkanamTaluk, Villupuram District. The total population is 106478 which comprise of 53580 males and 52898 females. There are 36 rural villages and one urban area in the study area. List of villages are given below.

	Table 3.15 Vil	lage detai	ls in study area	
S.No.	Village/Town Name	Radius	Taluk Name	District Name
1	Kilpasar			
2	Atchipakkam			
3	Sendamangalam			
4	Andapattu			
5	Kilsevur			
6	Karuppur		Tindivanam	
7	Kilmannur			
8	Kilnemili			
9	Buderi			
10	Tennampundi	1-5km		
11	Kunnappakkam	I-JKIII		
12	Senalur			
13	Perumukkal			
14	Kilarungunam			
15	Mandaperumpakkam			
16	Endur		Marakanam	
17	Kurur			
18	Alanguppam			Villupuram
19	Alagaipakkam			
20	Bramaddesam			
21	Ongur			
22	Olakkur Kilpadi			
23	Padiri			
24	Kambur			
25	Kalavoi Vada			
26	Annambakkam			
27	Kadavambakkam			
28	Kadur S	6-10km	Tindivanam	
29	Nallathur			
30	Nangunam			
31	Saram			
32	Pallipakkam			
33	Avanipur			
34	Kiladanur			
35	Eppakkam			
36	Panaiyur			

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	ANAM TALOR, VILOFFORA		
37	Nagalpakkam		
38	Nolambur		
39	Ichcheri	7	
40	Vittalapuram		
41	Naramagani		
42	Attur		
43	Kattalai		
44	Endiyur		
45	Janakipettai		
46	Guruvammapettai		
47	Elavalapakkam		
48	Molasur		
49	Nerkunam Then		
50	Kovadi		
51	Ommandur		
52	Nagalpakkam		
53	Rayanallur		
54	Nallur		
55	Nagar		
56	Nerkunam Vada		
57	Asappur		
58	Kulapakkam Vada		
59	Kodipakkam Vada		
60	Alathur		
61	Chokkantangal		
62	Ariyantangal		
63	Vepperi	Marakanam	
64	T Nellalam	Malakallalli	
65	Murukeri		
66	Singanandai		
67	Vanniper		
68	Palamukkal		
69	Kulathur		
70	Sattamangalam		
71	Kilsiviri		
72	Manoor		
73	Adasal		
74	Adavallikuttam		
75	Omipper		
76	Sorapattu		
77	Olagapuram		
78	Peravur	Vanur	
79	Talaiganikuppam		
80	Kumalampattu R F		

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Table 3.16 Population profile of the study area					
Particulars	No of Population	Percentage (%)			
A. Population break-up by Gender					
Male Population	53580	50			
Female Population	52898	50			
Total	106478	100			
B. Pe	opulation break-up by Caste	9			
Scheduled Caste	43384	40			
Scheduled Tribes	1861	2			
Others	61233	58			
Total	106478	100			
	C. Literacy Level				
Male Literate Population	37714	35			
Female Literate Population	28514	27			
Male Illiterate	15866	15			
Female Illiterate	24384	23			
Total	106478	100			
D	. Occupational structure				
Main workers	37737	-			
Marginal workers	17377	-			
Total Workers	55114	52			
Total non-workers	51364	48			
Total	106478	100			

The above table shows that the male and female population ratios are almost equal. Among the total population 2 % belong to Scheduled Tribes, 40 % are Scheduled Caste and the balance 58 % people belong to other castes. Among the total population 62 % of the people are literate. Among the total population,35 % are literate males and 27 % are literate females. This shows that the male literates are higher than the female literates. The results are plotted in figures below.

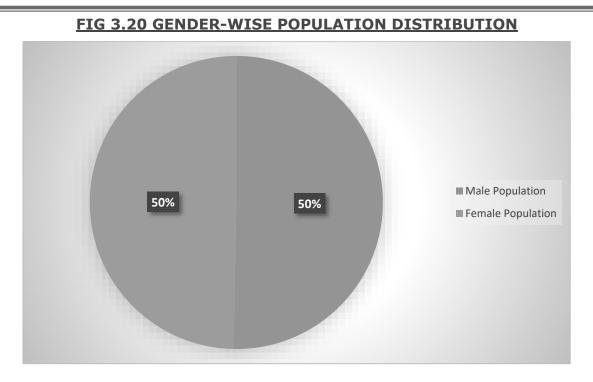


FIG 3.21 GENDER WISE LITERACY DISTRIBUTION

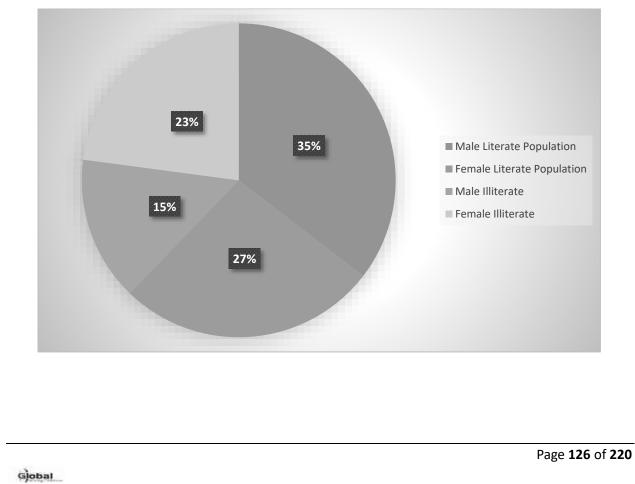
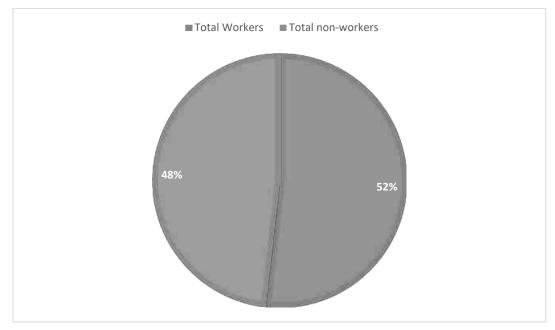


FIG 3.22 OCCUPATIONAL STRUCTURE WITHIN BUFFER ZONE



Infrastructure facilities in the study area

Education

Table 3.17 Educational infrastructure -10 km radius from proposed mine lease				
S. No.	Particulars	Available in village (Nos)		
1	Govt. Primary School	Marakkanam - 30		
2	Govt. Middle School	26		
3	Govt. Secondary School	18		
4	Govt. Senior Secondary School	15		
5	Govt. Arts and Science Degree College	39		
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 30 Primary Schools functioning in these 26 urban areas. Among them 80 villages have 15 primary school, 27 villages have 10 primary schools & 23 villages have more than 12 primary school.

Healthcare

In the study area, the following facilities are available.

Table 3.	Table 3.18 Medical Infrastructure-10 km radius from proposed mine lease				
S.No.	Particulars	Available in village (Nos)			
1	Community Health Centre	10			
2	Primary Health Centre	6			
3	Primary Health Sub Centre	25			
4	Maternity And Child Welfare Centre	16			
5	TB Clinic	10			
6	Hospital Allopathic	0			

Other Infrastructure

The other infrastructure facilities available are given below.

Та	Table 3.19 Other Infrastructure-10 km radius from proposed mine lease							
S.No.	Particulars	Available in village						
1	Tap Water-Treated	45						
2	Covered Well	15						
3	Hand Pump	18						
4	Tube Wells/Borehole	16						
5	Post office	9						
6	Public bus services	30						
7	Commercial Bank	16						
8	Cooperative bank	24						

Sample Survey

The expert visited 5 villages in the study area namely Nalmukkal, Senalur, Kunnappakkam, Endur and Tennampundi 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 Nalmukkal. 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 Nalmukkal which is about 820m from the lease area. Major schools with higher secondary and senior secondary schools are located in Nalmukkal. The major Nalmukkal Union located in the area is Villupuram. Facilities like petrol pump stations, ATM facility are available in Nalmukkal.

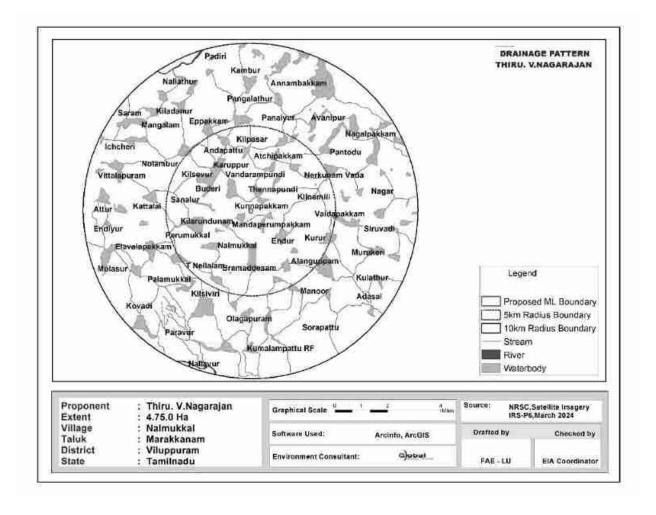
3.3.9 HYDROGEOLOGY OF THE STUDY AREA

There is Vada Penniyaru River is located at a distance of 10.9 km in Southeast 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 Nalmukkal Village, Marakkanam 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. 23 10 KILOMETER RADIUS OF THE DRAINAGE MAP



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PHYSIOGRAPHY AND DRAINAGE

Physiography: The area applied for quarry lease is 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 Southeast side of the area, the altitude of the area is above 90 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 3.20. There is Vada Penniyaru River is located at a distance of 10.9 km in Southeast direction of lease area of the proposed site.

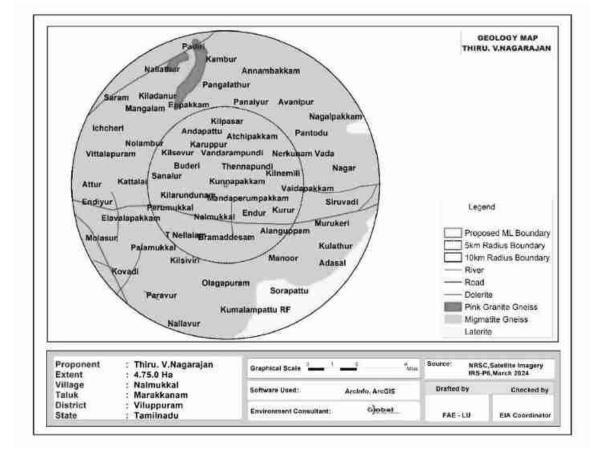
GEOLOGY, GEOMORPHOLOGY AND SOIL

Geology:

The Core and 10 Km buffered zone geological features (Figure 3.21) shows that the Villupuram District is mostly underlain by the lithologies of southern granulite Terrain Super Group (SGT) with age ranging from Neoarchaean to Mesoproterozoic except coastal belt in the eastern part of the district. The calc granulite with limestone of Khondalite Group is occurs at north of Mugaiyur. The Charnockite Group contain 3 lithologies such as Charnockite, banded magnetite quartzite and pyrixene granulite. The Charnockite occur at north of Valatti and covers large area from Vikravandi to Ollakur. The linear bands of pyroxene granulite are occurring mostly in the NW parts of the district near valatti and few patches occur at west of Odiyattur. The Migmatite Group contains biotite gneiss which cover large area in the central and NW parts of the district such as west of Muttatur and Mugaiyur and in and around valatti. The grey hornblende biotite gneiss occurs as linear band at east of Vikravandi. The hornblende biotite gneiss occurs in the larger area of the district from Mugaiyur to north of Gingee. The Migmatite gneiss occur at south of Olakkur and NW of Odiyattur. The bands of pink migmatite are occurs at NE of Gingee and NW of Valatti. The Archaean to Paleoproterozoic in age Closepet Granite within the biotite gneiss of Migmatite Group at west of Valatti. The Proterozoic epidote hornblende gneiss is occurring in and around Gingee with shearing activity. The Mesoproterozoic in age

basic intrusive like dolerite dykes are intruded into rocks of Southern Granulite Terrain and these dykes are tendering into NW-SE to E-W direction.

The late carboniferous-early premian in age,boulder conglomerate bad of Talchir Formation is occurs in linear belt at northern part of the district near Olakkur and Ongur.The Late Cretaceous period contains Pondicherry Group which contain sandstone-shale sequence and divided into Vanur and Nesal Formations and occurs in the eastern part of the district. The Cenozoic laterites occurs at west of Marakkanam.The early palaeocene age contains Pondicherry Group and it is divided into Karasur and Manaveli Formations which contains lithologies such as limestone and clay and occurs at east of vanur. The Miocene-Pliocene period are marked by deposites of thick sediments sequence and classified into Panamparai Formation and Cuddalore Formation and contains lithologies such as sandstone, conglomerate and mottled sandstone.

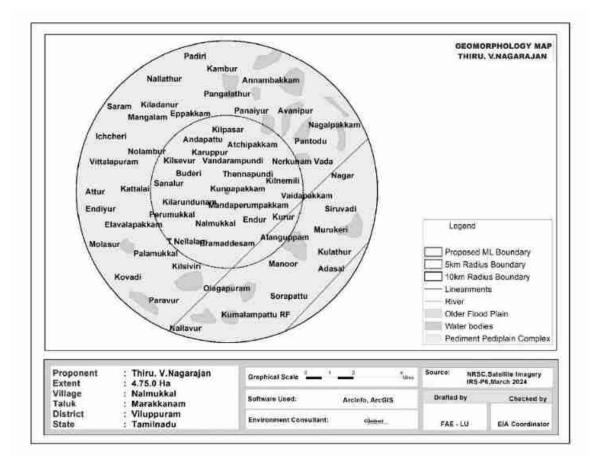


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FIGURE 3. 24 10 KILOMETER RADIUS OF THE GEOLOGY MAP

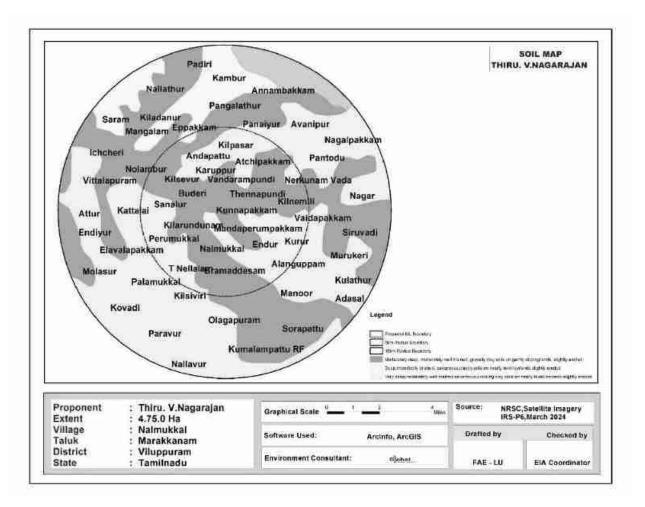
Geomorphology: The Core and 10 Km buffered zone geomorphological features (Figure 3.22)shows that the viluppuraml district forms part of the upland plateau region of Tamil Nadu with many hill ranges, hillocks and undulating terrain with a gentle slope towards east. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are 1) Structural hills, 2) Bazada zone, 3) Valleyfill, 4) Pediments, 5) Shallow Pediments and (6) Deep Pediments. A number of hill ranges are located in the eastern and north-eastern parts of the district, whereas the southern, western and northern parts of the district are plain to undulating, dotted with a few isolated hillocks. The important hill ranges in the district are Karuvakshi Malai. 292 m (prom: 185 m), Athima Malai. 273 m (prom: 108 m), Kadaiya Malai. 263 m (prom: 132 m), Velliampattu Malai. 200 m (prom: 126 m), Palayam Malai. 161 m (prom: 68 m), Papa Malai. 304 m (prom: 174 m).

FIGURE 3. 25 10 KM RADIUS OF THE STUDY AREA GEOMORPHOLOGY MAP



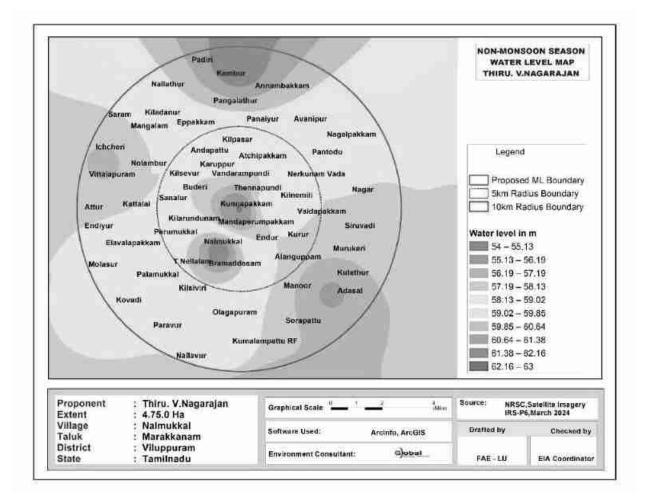
Soil: The soil types in the study area are mostly Calcareous black soil, Red loamy soil, clayey soil and Calcareous clayey soil (Figure 3.23.). Calcareous black soil (177.25 sq.km) was distributed over the study area. Red loamy soil is found in north, east, west and central part of the study area (108.43 sq.km). Clayey soil is found in north-western part of the study area (34.93 sq.km).

FIGURE 3.26 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.



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FIGURE 3.27 NON-MONSOON WATER LEVEL MAP OF THE STUDY AREA

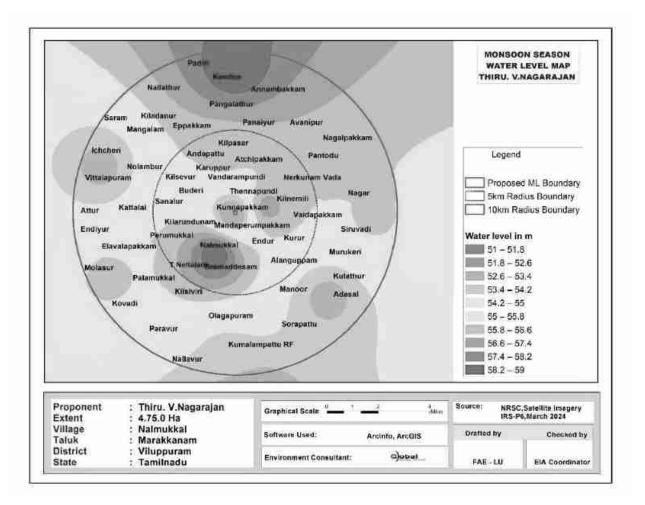


FIGURE 3.28 MONSOON WATER LEVEL MAP OF THE STUDY AREA

FIELD INVESTIGATION

The temporary seasonal streams water flow from center to outer most area. There is Vada Penniyaru is located at a distance of 10.9km in North east direction.

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.

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 PROJECT.

This is a proposed Rough Stone Quarry & Gravel Quarry of S.F.No. 34/1B1, 35/2B, 35/3 and 35/4 over an extent of 4.75.00 Ha in Nalmukkal Village, Marakkanam 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 8,89,700 m³ of Rough Stone and 96,210 m³ gravel formation up to a depth of 38 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 4.75.00 Ha boundary barrier except in eastern direction. It is proposed to be altered by effective quarrying operation such as excavation (3.86.0 Ha), Infrastructure (0.02.0), Road (0.01.0 Ha) and green belt will be developed in the safety zone of 0.86.0 Ha. The ultimate depth of quarrying is proposed with maximum depth of 38m BGL and will not intersect the ground water table.

4.2 MEASURES FOR MINIMIZING AND /OR OFFSETTING ADVERSE IMPACTS

IDENTIFIED

Aspect		Impact		Mitigation				measures		
Topography	The area is almo	st plain top	ography covered	The major impact due to this			o this pr	s project on land environment		
	by rough ston	e and G	ravel formation.	. is the change in land use.			se. Min	Mining activity will be carried		
	Quarrying activi	ty will lea	ad to change in	οι	ut upto a	depth of 38	m Belov	w ground leve	el. At the end	
	geological setting	g of the are	ea i.e., Due to the	of	f mining	period, the	quarrie	d pit will act	t as a wate	
	quarrying activit	y in the mi	ne lease area will	reservoir to store the rain water.						
	leads to affect	the aesthe	etic view on the	La	and Use a	t the end of	mine w	ill be as follow	NS.	
	environment. Fu	rther, due	to the movement					Area in use during		
	of heavy vehicles in and around the mine				Land Use		t	the quarrying period		
	lease area will lea	ads to affec	t the surrounding					(Hect)		
	agricultural land	s, ecology	and biodiversity,		Area left	t for water b	ody	/ 3.86.00		
	human habitations due to the emissions from			Green Belt			0.86.00			
	vehicles like SO ₂ , NO _x , PM ₁₀ , PM _{2.5} , etc., The				Remaining area			0.03.00		
	existing land use	e pattern is	given as under.	Total			4.75.00			
			Area in use							
		Present	during the	At the mine closure stage 3.86.00 Ha of lease are					ase area wil	
	Land Use	Area	quarrying	be left as rain water harvesting pond 0.86.00Ha will be developed with green belt.				.00Ha will be		
		(Hect)	period							
			(Hect)			-				
	Quarrying Pit	0.06.50	3.86.00	G	reenbelt s	hall be deve	loped a	d around the mine lease area		
	Infrastructure	Nil	0.02.00	and the details has been giv			n given	ven below.		
	Roads	Nil	0.01.00			No.	Spacing	Survival		
	Green Belt	Nil	0.86.00				of			
	Unutilized	4.68.50	Nil				trees			
	Total	4.75.00	4.75.00		I	Pungai,	2400			
		•	J		II	Vagai,	-	- 3m x 3m	80%	
					11	vayai,	-			

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	The ultir	mate pit di	mension c	f the mine lease	III	Vembu,	-			
	area is g	given below	ν.		IV	Manjal	-			
					V	konrai,	-			
						Naval,				
	Ultim	ate Pit di	mension	at the end of		Puvarasu,				
		Minin	g plan Pe	riod		etc				
					T	otal	2400			
	Pit	Length	Width	Depth						
	No.	(max)	(Avg)	(max)						
		(m)	(m)	(m)		•			ne lease area	
	т	227	170	20 m Palaw		-			ads the dust	
	I 227 170 38 m Below			emissions arise from the vehicles will be controlled. At the end of mining period, fencing will be provided						
	ground level									
					around the mine lease area to arrest the entry of					
	leads to area.	the dum	ping failur	ematically it will e in the mining						
Drainage	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.				ar 38m (BGL). The ground water table is reported as 68 m at In the proposed mining plan only 38m below ground leve					

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	The management of the back has been as the second s	The proposed to group units a double of 20m balance
Soil Quality	In monsoon seasons due to the excavation of	It is proposed to quarry upto a depth of 38m below
and	minerals soil erosion and sediment deposition	ground level and the nearby water table is 68m. So, the
Agriculture	will occur in the nearby water bodies.	mining activity will not affect the ground water. To
		prevent the soil erosion during monsoon season, garland
		drain will be constructed with silt traps.
Visual	Quarrying activities and rock extraction	The reclamation of the post mined quarry surface is
impact on	generally cause several environmental	aimed at restoring the ecological balance taking into
surrounding	effects on the surrounding areas. The	account geological parameters but also local flora and
environment	alteration of landscape due to activities like	climate. Further the ultimate depth of mining is 38m. In
	excavation, drilling or blasting, in particular,	the post mining stage, the quarried out pit will be used
	often generates a visual impact on the	for rainwater harvesting.
	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.	

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.

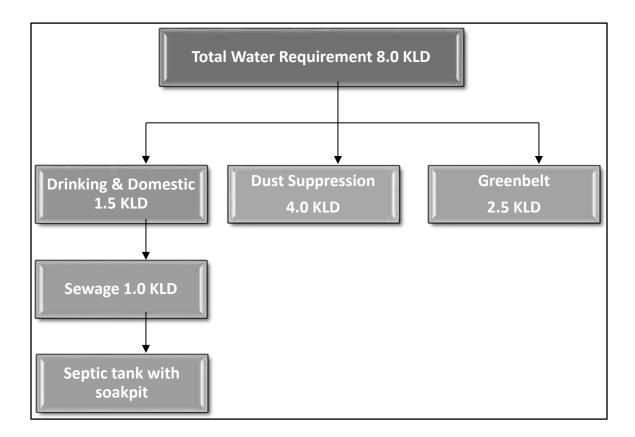
Vada Penniyaru is located at a distance of 10.9km in North east direction. Water table is found at a depth of 68m.

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 8.0KLD 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 68 m. The mining will go up to the maximum depth of 38 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.

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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 Villupuram District, Marakanam Taluk is given below.

TABLE 4.1 Ground Water Level Status in Villupuram District									
S. No.	Assess Met Assess Met Annual Ground Unit (Firka) Annual Ground water availabil ity ity		consu mption	Existing gross ground water consumption for domestic and industrial water supply	Existin g gross ground water consu mption for all uses	Stage of ground water developm ent	Category		
1	Marakan am	1572.03	1898.95	46.96	1945.91	124 %	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 **VEGETATIONVEGETATION 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 0.86.00 Ha. Trees like Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indiaca will be planted around the mine lease area. A total of 2400 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.

	Table 4.2 Impacts and mitigation measures for Fauna			
S.No.	Impact	Mitigation measure		
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			
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 equipments 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 equipments 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 8,89,700m³ of Rough Stone and 96,210m³ gravel by the open-cast mechanised 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 in homogeneity 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 twicea-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 (SO₂), Oxides of Nitrogen (NOx) 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 8,89,700m³ of Rough Stone and 96,210m³ 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 1.28 μ g/m³ of PM 2.5 & 2.42 μ g/m³ of PM10 within the mine area and surrounding cluster area 1.87 μ g/m³ of PM 2.5 & 3.20 μ g/m³ of PM10, 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_{10} 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.V.Nagarajan S/o. Varadharaj Gounder is quantified and presented below:

Quantity, TPA	Rough Stone: 889700m ³ Gravel: 96210 m ³
Operational Hours Per Year	2400
Activity Rate, t/hr.	396.41362
Emission of dust, g/t.	0.16
Emission of dust, g /hr.	51.41276
Area of influence, m ²	625
Uncontrolled emission rate g/s/m ²	0.0000143626
Controlled emission rate, PM10 g/s/m ²	0.000001436263
Controlled emission rate, PM2.5 g/s/m ²	0.000095750

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

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

Quantity, m ³	 Existing Quarries: Thiru. Ravichandiran Quarry (Extent - 1.35 Ha) - Rough Stone (1,02,475 m3) & Gravel quarry (6328 m³). Existing quarry of Thiru.D. Durai Quarry (Extent - 1.85.00 Ha)- Rough Stone (1,87,420 m³) & Gravel quarry (24616 m³). Existing quarry of Thiru.N. Gobinath Quarry (Extent - 3.35.0 Ha)- Rough Stone (6,22,300 m³) & Gravel quarry (53148 m³). 	
Operational Hours Per Year	2400	
Activity Rate, t/hr.	390.2151	
Emission of dust, g/t.	0.20	
Emission of dust, g /hr.	57.638785	
Area of influence, m ²	625	
Uncontrolled emission rate g/s/m ²	0.00072569	
Controlled emission rate, PM10 g/s/m ²	0.000725690	
Controlled emission rate, PM2.5 g/s/m ²	0.0000483793	

(I)	Line Source –	Transport of Rough Stone & Gravel from Pit to Boundary	
\			

Quantity, TPA	Rough Stone: 889700 m ³ Gravel: 96210 m ³	
Operational Hours Per Year	2400	
Capacity of each Dumper (T)	10	
Total No. of Tippers/ year	19718	
Lead length/trip, Km	0.16	
Total VKT/Year	63947	
Emission Kg/VKT	0.25	
Total emission Kg/Year	18314.02	
Uncontrolled emission rate g/s/m	2.39377	
Controlled emission rate, PM10 g/s/m	0. 239377	
Controlled emission rate, PM2.5 g/s/m	0.14013	

Line Source - Transport of Rough Stone & Gravel (Cluster)

Quantity, m ³	Existing Quarries:
	 Thiru. Ravichandran Quarry (Extent - 1.35 Ha) Rough Stone (1,02,475 m3) & Gravel quarry (6328 m³). Existing quarry of Thiru. D. Durai Quarry (Extent 1.85.00 Ha)- Rough Stone (1,87,420 m³) & Gravel quarry (24616 m³). Existing quarry of Thiru. N. Gobinath Quarry (Extent - 3.35.0 Ha)- Rough Stone (6,22,300 m³) & Gravel quarry (53148 m³).
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	99628
Lead length/trip, Km	0.9
Total VKT/Year	11200
Emission Kg/VKT	0.24
Total emission Kg/Year	224561
Uncontrolled emission rate g/s/m	1209484
Controlled emission rate, PM10 g/s/m	0.1209484
Controlled emission rate, PM2.5 g/s/m	0.0354143

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 %

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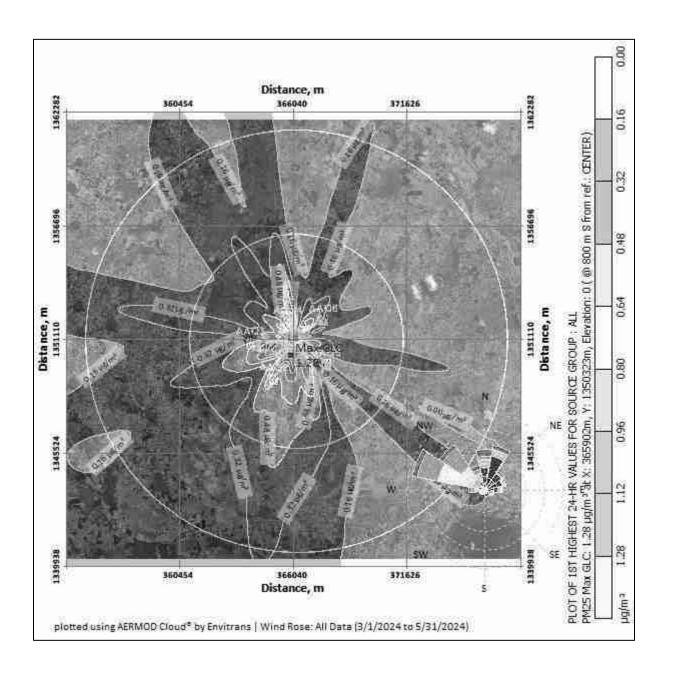


FIG 4.2 Isopleth of GLC Prediction for PM_{2.5}

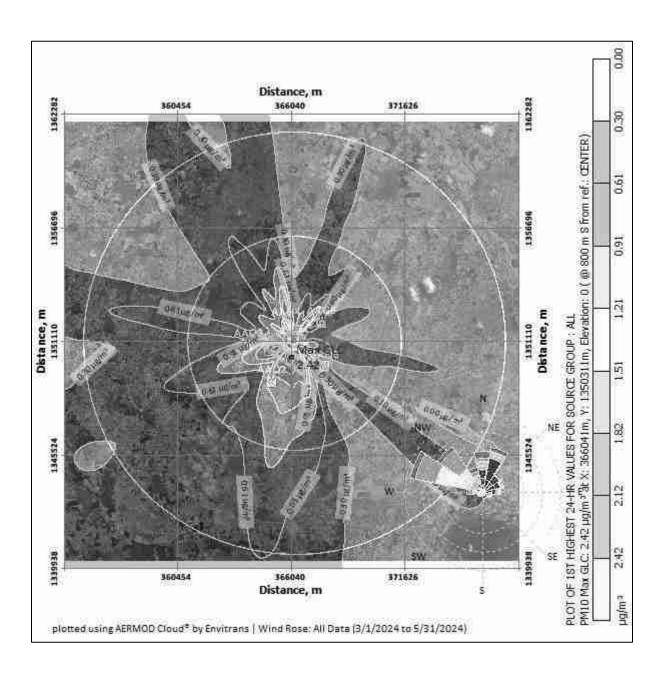


FIG 4.3 Isopleth of GLC Prediction for PM₁₀

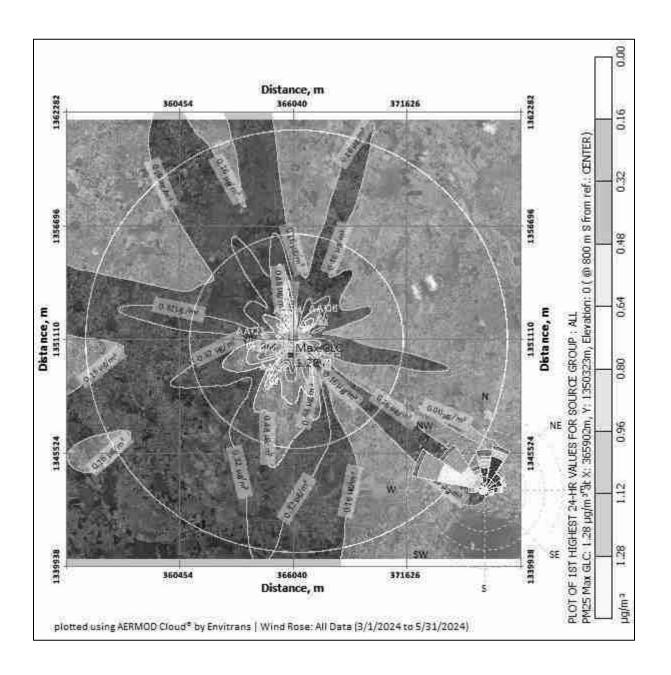


FIG 4.4 Isopleth of GLC Prediction –Cumulative for PM_{2.5}

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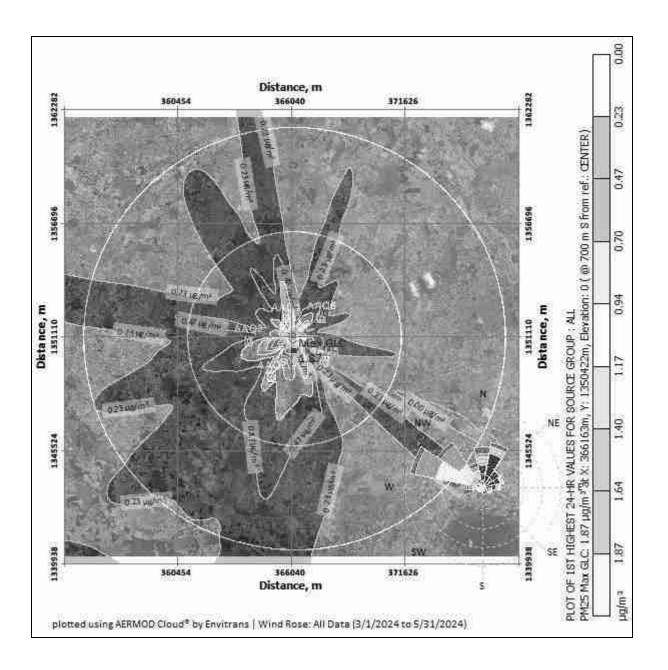


FIG 4.5 Isopleth of GLC Prediction –Cumulative for PM₁₀

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 - 4.7 to 4.8.

	Table 4.3 Concentrations of PM2.5 after Project Implementation				
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m ³
1	Project site	25.75	1.28	27.03	
2	Nalmukkal	24.30	1.12	25.42	
3	Senalur	21.34	0.96	22.3	60
4	Kunnappakkam	20.87	0.80	21.67	60
5	Endur	22.15	0.48	22.63	
6	Tennampundi	22.40	0.32	22.72	
٦	Table 4.3a Cluster	Concentrations	of PM2.5 after P	roject Implemen	tation
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m ³
1	Project site	25.75	1.87	27.62	
2	Nalmukkal	24.30	1.64	25.95	
3	Senalur	21.34	1.40	22.74	60
4	Kunnappakkam	20.87	1.17	22.04	60
5	Endur	22.15	0.94	23.09	
6	Tennampundi	22.40	0.70	23.10	
	Table 4.3b Con	centrations of F	PM10 after Projec	t Implementatio	on
SL.		Background	Predicted	Post Project	Statutor
No	Location	Concentrati	incremental	Concentration	y Limits
		on	Concentration		in µg/m³
1	Project site	54.25	2.42	56.67	
2	Nalmukkal	48.65	2.12	50.77	
3	Senalur	43.70	1.82	45.52	100
4	Kunnappakkam	46.40	1.51	47.91	
5	Endur	44.75	1.21	45.96	

47.85

0.61

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Tennampundi

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	Table 4.3c Cluster Concentrations of PM10 after Project Implementation					
SL. No	Location	Background Concentrati on	Predicted incremental Concentration	Post Project Concentration	Statutor y Limits in µg/m ³	
1	Project site	54.25	3.20	57.45		
2	Nalmukkal	48.65	2.80	51.45		
3	Senalur	43.70	2.00	45.70	100	
4	Kunnappakkam	46.40	1.60	48.00		
5	Endur	44.75	1.20	45.95]	
6	Tennampundi	47.85	0.80	48.65		

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_{10} are in the range of 45.52 µg/m³ to 56.67 µg/m³ and for $PM_{2.5}$ are in the range of 21.67 µg/m³ to 27.03 µg/m³ and PM_{10} are surrounding area range of 45.70 µg/m³ to 57.45 µg/m³ and for $PM_{2.5}$ are in the range of 21.67 µg/m³ to 27.03 µg/m³ 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 Nalmukkal Village, Senalur Village, Kunnappakkam Village, Endur Village and Tennampundi Village, the values are given below.

	TABLE 4.4 Noise Levels in Monitoring Locations					
S. No.	Location	Distance and direction from Mine lease area	Day Equivalent (in dBA)	Night Equivalent (dBA)		
1	Project site	Core Zone	39.3	38.0		
2	Nalmukkal	2.13 km, SW	50.5	41.8		
3	Senalur	2.20 km, W	48.3	39.8		
4	Kunnappakkam	1.02 km, NW	50.9	42.2		
5	Endur	1.80 Km, NW	46.8	40.8		
6	Tennampundi	1.65 Km, NE	45.5	42.0		

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 six 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 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

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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.
- 4 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.
- ♣ 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. 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 43 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).

Т	Table 4.5 Impacts on humans due to various mining activities				
S.No.	Type of activity	Impact			
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 guarry 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 horses. The said hazardous waste are very negligible quantity, it will be properly collected in the source level, stored in impervious storage yards and disposed of 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.

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/96/2021, dated 06.03.2024.

- 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.

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.

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CHAPTER 6

ENVIRONMENTAL MONITORING PROGRAMME

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

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.
- 4 Monitoring the noise generation in and around the project areas.
- 4 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.

	Table 6.1 Environmental Monitoring Schedule				
SI.No.	Description of Parameters	Parameters	Frequency		
1	Air	Air Quality for SPM, PM-10, PM- 2.5, SO ₂ and NO _x	24-hour average samples Once in a 3 month.		
2	Water	General, Physical, and chemical parameters	Once per season		
3	Noise	L _{eq} , L _{max} , L _{min} , L _{eq} Day & L _{eq} 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_2 , NO_x , PM_{10} and $PM_{2.5}$. 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 <u>TECHNICAL ASPECTS OF MONITORING THE EFFECTIVENESS OF</u> <u>MITIGATION MEASURES</u>

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 <u>REPORTS TO BE GENERATED</u>

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.

	Table 6.2 Important Records to be maintained by PP			
S.No.	Particulars			
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.

SI. No	Budget planned for	Capital Cost Amount (INR)	Recurring Cost/Annum Amount (INR)
1	Air Environment	13,28,000	14,490,00
2	Noise Environment	50,000	22,410,00
3	Water Environment	2,48,000	2,45,000
4	Implementation of EC, Mining Plan & DGMS Condition	19,55,000	12,87,00
5	Green Belt	6,20,000	72,000
6	Additional Key EMP Expenses	90,57,000	1,60,000
	Total	132,58,000/-	54,54,000

Table 6.3 - Environmental Management Plan Budget

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) <u>Objectives</u>

Risk assessment is a method in 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 potentially 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.

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

	Table 7.2 Cluster Mines Details						
S.No	Name of the Quarry Owner	S.F. Nos, Taluk, Village & Extent (Ha)	Lease Period	Remarks			
		a. Abandoned Quarry					
	Nil						
		b. Existing Quarry					
1.	Thiru.N. Gopinath, S/o.Natarajan, No.19, Nattamaikarar Street, Polambakkam Village, Cheyyur Village, Kanchipuram District	 T. F.No: 33/5 (0.545 Ha), 37/3(1.14 Ha), 37/4(0.685 Ha), 37/5(0.40 Ha), 37/6(0.31 Ha), 37/7(0.27 Ha) Marakkanam Taluk, Nalmukkal Village, Villupuram District 	Lease period of 21.03.2022 to 20.03.2027	Existing Rough stone & Gravel Quarry			
2.	Thiru.D.Durai S/o, Dhanapal Gounder, Keelarungunam Village, Perumukkal Post, Marakkanam Taluk, Viluppuram District	S.F.Nos 27/6 (0.40.5 Ha), 27/7 (0.39 Ha), 27/8 (0.405 Ha) Marakkanam Taluk, Nalmukkal Village, Villupuram District	Lease period of 06.12.2022 to 05.12.2027	Existing Rough stone & Gravel Quarry			
3.	Thiru. Ravichandiran S/o. Varatharaj Gounder, No.63/19, Perumukkal Village & Post, Marakkanam Taluk, Viluppuram District	S.F. Nos. 26/1B1(0.77 Ha), 27/3A(0.145 Ha), 27/3B(0.435 Ha) Marakkanam Taluk, Nalmukkal Village, Villupuram District	Lease period of 29.12.2022 to 28.12.2027	Existing Rough stone & Gravel Quarry			
Area	a of total Existing Quarry	5.90.00 Ha					

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	c. Proposed Quarry				
1.	Thiru.V.Nagarajan	S.F.No.34/1B1 (2.43 Ha),	- Proposed		
	S/o. Varadharaj Gounder,	35/2B (0.28 Ha),			
	No.65, Marakkanam Road,	35/3(0.88 Ha) and			
	Perumukkal Village,	35/4(1.16 Ha),			
	Marakkanam Taluk,	Marakkanam Taluk,			
	Viluppuram District.	Nalmukkal Village,			
	Pin Code- 604301 Villupuram District				
A	rea of Proposed Quarry	4.75.00 Ha			

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.V.Nagarajan S/o. Varadharaj Gounder is quantified and presented below:

Quantity, TPA	Rough Stone: 889700 m ^{3,} Gravel: 96210 m ³
Operational Hours Per Year	2400
Activity Rate, t/hr.	396.41362
Emission of dust, g/t.	0.16
Emission of dust, g /hr.	51.41276
Area of influence, m ²	625
Uncontrolled emission rate g/s/m ²	0.0000143626
Controlled emission rate, PM10 g/s/m ²	0.000001436263
Controlled emission rate, PM2.5 g/s/m ²	0.000095750

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

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Quantity, m ³	 Existing Quarries: Thiru. Ravichandiran Quarry (Extent - 1.35 Ha) - Rough Stone (1,02,475 m3) & Gravel quarry (6328 m³). Existing quarry of Thiru.D. Durai Quarry (Extent - 1.85.00 Ha)- Rough Stone (1,87,420 m³) & Gravel quarry (24616 m³). Existing quarry of Thiru.N. Gobinath Quarry (Extent - 3.35.0 Ha)- Rough Stone (6,22,300 m³) & Gravel quarry (53148 m³). 	
Operational Hours Per Year	2400	
Activity Rate, t/hr.	390.2151	
Emission of dust, g/t.	0.20	
Emission of dust, g /hr.	57.638785	
Area of influence, m ²	625	
Uncontrolled emission rate g/s/m ²	0.00072569	
Controlled emission rate, PM10 g/s/m ²	0.000725690	
Controlled emission rate, PM2.5 g/s/m ²	0.0000483793	

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

(II) Line Source – Transport of Rough Stone & Gravel from Pit to Boundary

Quantity, TPA	Rough Stone: 889700 m ³ Gravel: 96210 m ³
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	19718
Lead length/trip, Km	0.16
Total VKT/Year	63947
Emission Kg/VKT	0.25
Total emission Kg/Year	18314.02
Uncontrolled emission rate g/s/m	2.39377
Controlled emission rate, PM10 g/s/m	0. 239377
Controlled emission rate, PM2.5 g/s/m	0.14013

Quantity, m ³	Existing Quarries:
	 Thiru. Ravichandran Quarry (Extent - 1.35 Ha) Rough Stone (1,02,475 m3) & Gravel quarry (6328 m³). Existing quarry of Thiru. D. Durai Quarry (Extent 1.85.00 Ha)- Rough Stone (1,87,420 m³) & Gravel quarry (24616 m³). Existing quarry of Thiru. N. Gobinath Quarry (Extent - 3.35.0 Ha)- Rough Stone (6,22,300 m³) & Gravel quarry (53148 m³).
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	99628
Lead length/trip, Km	0.9
Total VKT/Year	11200
Emission Kg/VKT	0.24
Total emission Kg/Year	224561
Uncontrolled emission rate g/s/m	1209484
Controlled emission rate, PM10 g/s/m	0.1209484
Controlled emission rate, PM2.5 g/s/m	0.0354143

Line Source – Transport of Rough Stone & Gravel (Cluster)

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 %

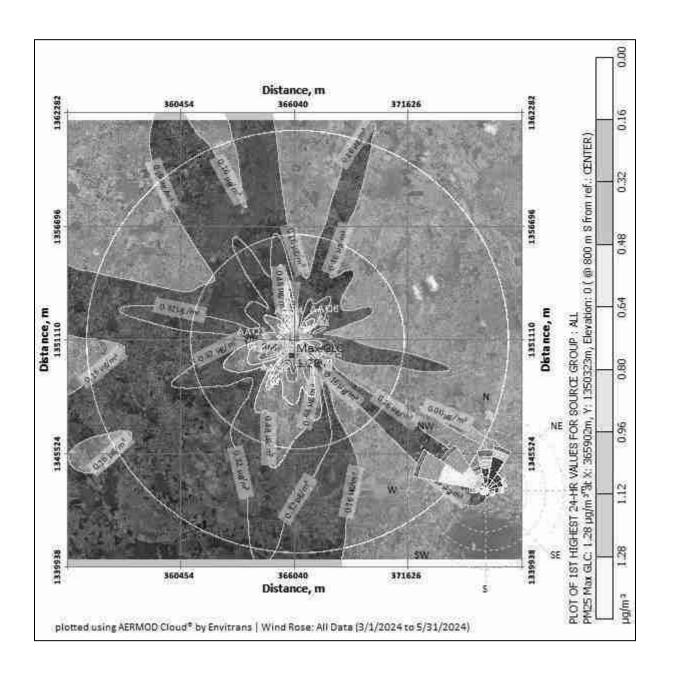


FIG 7.1 Isopleth of GLC Prediction for PM_{2.5}

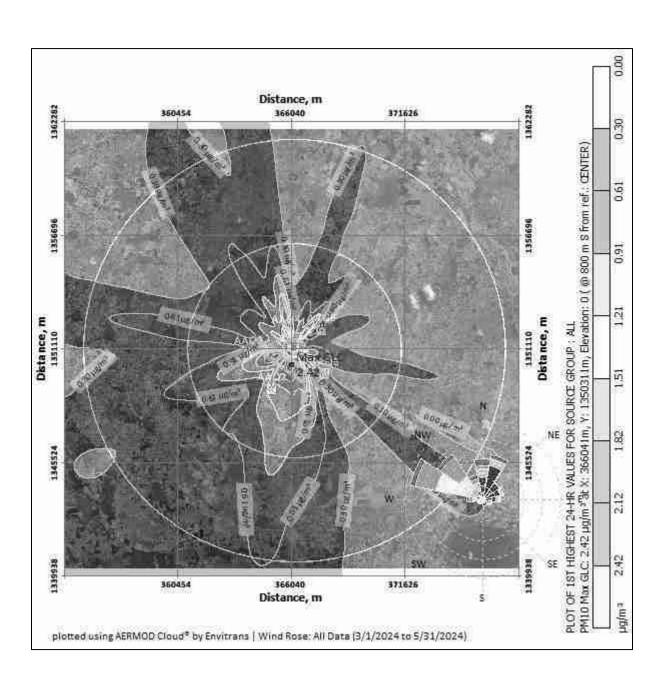


FIG 7.2 Isopleth of GLC Prediction for PM₁₀

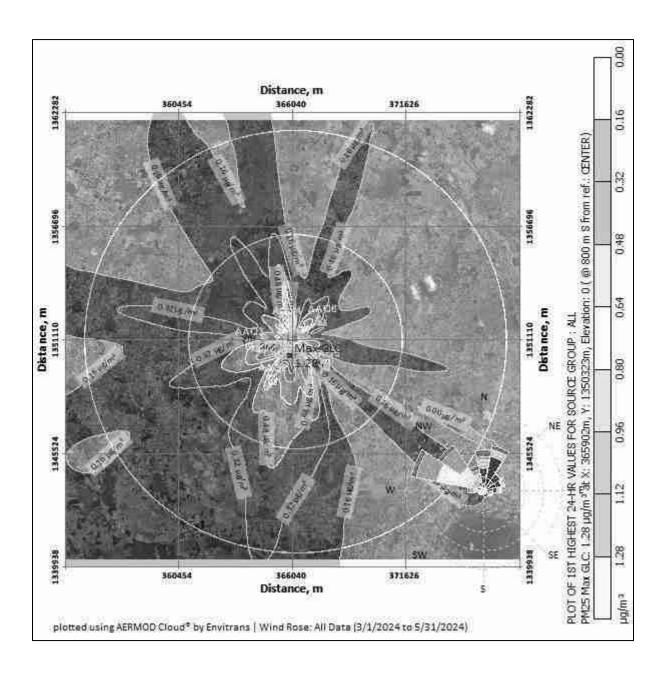


FIG 7.3 Isopleth of GLC Prediction –Cumulative for PM_{2.5}

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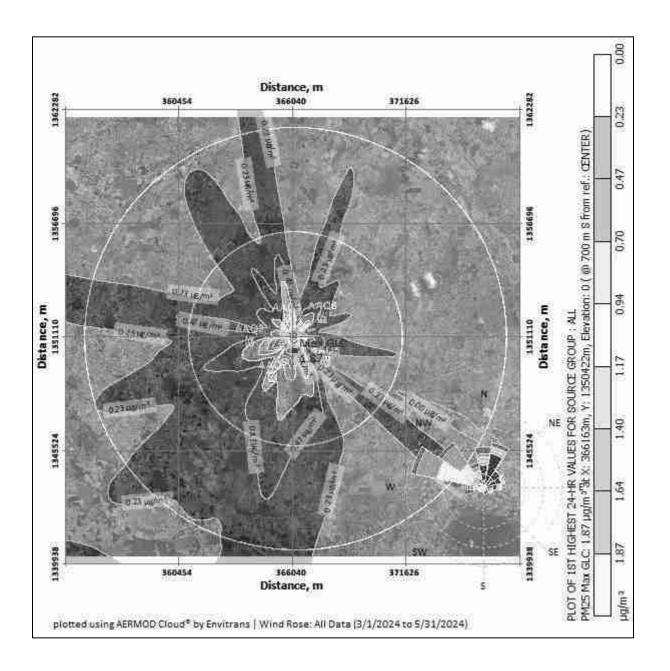


FIG 7.4 Isopleth of GLC Prediction –Cumulative for PM₁₀

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 - 4.7 to 4.8.

	Table 7.3 Concentrations of PM2.5 after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m ³	
1	Project site	25.75	1.28	27.03		
2	Ambuzhukkai	24.30	1.12	25.42		
3	Kondalamkuppam	21.34	0.96	22.30	60	
4	Semangalam	20.87	0.80	21.67	60	
5	Karasanur	22.15	0.48	22.63		
6	Eraiyur	22.40	0.32	22.72		

Table 7.3a Cluster Concentrations of PM2.5 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m ³
1	Project site	25.75	1.87	27.62	
2	Ambuzhukkai	24.30	1.64	25.94	
3	Kondalamkuppam	21.34	1.40	22.74	60
4	Semangalam	20.87	1.17	22.04	60
5	Karasanur	22.15	0.94	23.09	
6	Eraiyur	22.40	0.70	23.10	

Table 7.3b Concentrations of PM10 after Project Implementation

SL. No	Location	Background Concentrati on	Predicted incremental Concentration	Post Project Concentration	Statutor y Limits in µg/m ³
1	Project site	54.25	2.42	56.67	
2	Ambuzhukkai	48.65	2.12	50.77	
3	Kondalamkuppam	43.70	1.82	45.52	100
4	Semangalam	46.40	1.51	47.91	
5	Karasanur	44.75	1.21	45.96	
6	Eraiyur	47.85	0.61	48.46	

	Table 7.3c Cluster Concentrations of PM10 after Project Implementation					
SL. No	Location	Background Concentrati on	Predicted incremental Concentration	Post Project Concentration	Statutor y Limits in µg/m ³	
1	Project site	54.25	3.20	57.45		
2	Ambuzhukkai	48.65	2.80	51.45		
3	Kondalamkuppam	43.70	2.00	45.70	100	
4	Semangalam	46.40	1.60	48.00		
5	Karasanur	44.75	1.20	45.95		
6	Eraiyur	47.85	0.80	48.65		

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_{10} are in the range of 45.52 µg/m³ to 56.67 µg/m³ and for $PM_{2.5}$ are in the range of 21.67 µg/m³ to 27.03 µg/m³ and PM_{10} are surrounding area range of 45.70 µg/m³ to 57.45 µg/m³ and for $PM_{2.5}$ are in the range of 21.67 µg/m³ to 27.03 µg/m³ 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 four leases are provided below:

Table	7.4 -	- Impact c	on Traffic
-------	-------	------------	------------

Description	Rough Stone & Gravel Poduction Per day in tons	No. of Lorry Load per day
P1 (Proposed quarry)	657	65
P2 (Cluster quarry)	3320	332
	Total	397

The proposed projects will bring 397 trips per day including cluster quarries. 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 Vada Penniyaru is located at a distance of 10.9 km in North east 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 45° Slope is proposed. The depth of mining is proposed as 38m (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 38m (BGL) only, which will be achieved in 5 years. The ultimate pit dimension will be length 227 m x Width 170 m x Depth 38 m. 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.

CHAPTER 8

PROJECT BENEFITS

INTRODUCTION

Thiru.V.Nagarajan has proposed Rough stone and gravel quarry over an extent of 4.75.0 ha located at s.f.no. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam 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 Thiru.V.Nagarajan, will create direct employment opportunity for 43 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.

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. TO24B0108TN5964918N, dated 16.07.2024 for the proposed project, the `Environmental Cost Benefit Analysis' is not prescribed.

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.

	Table 10.1 Environmental Management Plan				
Environmental Mitigation Measures					
	Wet drilling to suppress the dust emission from drill machine				
	Regular water sprinkling on haulage road through fixed water sprinkler.				
	4.0 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.				
Air	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 access the impact due to the mining activities and the efficacy of the adopted air pollution control measures.				
	Afforestation for control of dust.				
	There is Vada Penniyaru is located at a distance of 10.9 km in south east direction. Adequate safety distance is left. No dumping of material or discharge will be done in or near the river or water body.				
Surface water	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.				

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Land At conceptual stage, the mining pits will be converted into Rain V Environment Harvesting pit. Remaining area will be converted into greenbelt area	
	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.
Ground Vibration and Fly Rock Control	Drilling and blasting will be carried under the supervision of qualified persons.
	Controlled blasting using delay detonators will be carried out to maintain the PPV value well within the prescribed standards of DGMS.
	Annual ambient noise level monitoring is carried out in the project area and in surrounding villages to access 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.
	Preventive maintenance of mining machinery and replacement of worn- out accessories to control noise generation.
Noise	Development of thick greenbelt all along the safety Zone (7.5 m and 10m) of the project area to attenuate the noise and the same will be maintained.
	Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
	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.
generation	Conduct ground water and surface water monitoring for parameters specified by CPCB
Water Consumption and Wastewater	Domestic wastewater generation of 1.0 KLD will be treated in septic tank with soak pit.
	Water required for this project will be sourced from vendors.
Ground Water The quarrying operation is proposed upto a depth of 38 m above of the ground Water level, Water table is found at a depth of 68 m, hence the project with the Ground water table during entire quarry period.	

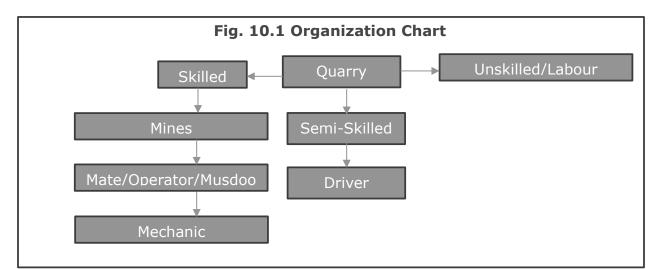
	No external dumping i.e., outside the project area. The entire material will be sold.
	Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.
	The periphery of Project area will be planted with thick plantation 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 op	
	During mining, thick plantation will be carried out on the mentioned safety zone areas.
Biological Environment	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.
- 4 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	3 Nos
		Operator	18 Nos
		Mechanic	1 No
2	Semi-Skilled	Diver	6 Nos
3	Un-skilled	Labours	14 Nos
		Total	43 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.V.Nagarajan S/o. Varadharaj Gounder 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.

SI. No	Budget planned for	Capital Cost Amount (INR)	Recurring Cost/Annum Amount (INR)
1	Air Environment	13,28,000	14,490,00
2	Noise Environment	50,000	22,410,00
3	Water Environment	2,48,000	2,45,000
4	Implementation of EC, Mining Plan & DGMS Condition	19,55,000	12,87,00
5	Green Belt	6,20,000	72,000
6	Additional Key EMP Expenses	90,57,000	1,16,000
Total		132,58,000/-	54,54,000

Table 10.2 - Environmental Management Plan Budget

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 433.95 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.

CHAPTER 11

SUMMARY& CONCLUSION

11.1 OVER ALL JUSTIFICATION FOR IMPLEMENTATION OF THE PROJECT INTRODUCTION

Thiru.V.Nagarajan S/o. Varadharaj Gounder has obtained Precise Area Communication Letter from Assistant Director, Department of Geology and Mining, Viluppuram to quarry out 8,89,700 m³ of Rough Stone and 96,210 m³ of Gravel from an extent of 4.75.00 Ha located in S.F. Nos. 34/1B1, 35/2B, 35/3 and 35/4 at Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the proposed "Rough Stone and Gravel Quarry of Thiru.V.Nagarajan S/o. Varadharaj Gounder 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. TO24B0108TN5964918N, dated 16.07.2024 This report has been prepared in line with the approved TOR for production of maximum excavation of 8,89,700 m³ of Rough Stone and 96,210 m³ 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	The applied lease is not fresh, there is a
		quarry pit exists in the S.F. No. 35/3, which
		was operated by unknown person.
5.	Extent of the lease	4.75.00 Ha
6.	Proposed depth of Mining	38m BGL
7.	Method of mining	Opencast Mechanized
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years

10.	Proposed production quantity for	Rough Stone: 8,89,700 m ³
	five years	Gravel: 96,210 m ³

The Lessee Thiru.V.Nagarajan S/o. Varadharaj Gounder 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**.

1.1.1 LOCATION

This project site is located in Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State with Latitude 12°13'05.24"N to 12°13'14.52"N and Longitude: 79°46'07.17"E to 79°46'16.18"E. with Survey of India Topo Sheet No.57- P/16. 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 <u>GEOLOGY</u>

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^oE –S45^oW with dipping towards SE80^o.

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 48m below ground level. The geological reserves are estimated to be 21,37,500 m3 of Rough Stone and 1,42,500 m3 in Gravel. The mineable reserve calculated by deducting 10m safety distance and bench loss. The mineable reserves are 10,15,275m3 of Rough Stone and 96,210m3 Gravel which will be recovered at the rate of 100% recovery upto a depth of 38 m Below ground level for the period of ten years.

- It is proposed to quarry out rough stone with 5m bench height, 5m width with 45° 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.

S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	Existing Quarry
3	Category	B1
4	Nature of mineral	Minor mineral
5	Production	Rough Stone: 8,89,700 m ³ Gravel: 96,210 m ³
6	Life	10 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	38m (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

S.No.	Nature of requirement	Description
1	Water requirement	Total water requirement of 8.0 KLD which will be
		procured from the outside agencies. Out of 1.5
		KLD drinking water requirement, Green belt
		development is 2.5 KLD and dust suppression is
		4.0 KLD.
2	Power requirement	No electricity is needed for mining operations, for
		office demands, it will be met from the state grid.

		Total Fuel requirement is 727.795 KL for entire					
		life of the project.					
3	Manpower requirement	Permanent employees – 29, temporary					
		employees – 14					
4	Financial requirement	The total project cost as per PFR will be INR					
		565.95 lakhs including Operational cost, Fixed					
		Asset cost and EMP cost					
5	Funds for Socio economic	INR 8 Lakhs is allocated. In addition, any					
	development	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							

		Water bodies	Distance	Direction	
		Odai	230m	NE	
		Odai	300m	N	
		Tank	230m	SW	
		Brammadesam Lake	2.22 km	S	
А	Wetlands, water courses or other	Endur Lake	2.53 km	SE	
	water bodies,	Kilsevur Lake	3.40 km	NW	
		Puthupakkam Lake	3.59 km	SE	
		Aalangakuppam Lake	5.03 km	E	
		Nolambur Lake	5.42 km	NW	
		Puthunagar Lake	8.24 km	S	
		Nallavur Lake	8.32 km	S	
В	Coastal zone, biospheres,	Nil within 10km ra	ndius		
		Kilsevur R.F 4.0	4 km (NW)		
C	Mountains, forests	Kumalampattu R.F 7.17 km (S)			
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within 15km ra	adius		
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 ra	adius		
7	Defense installations	Nil within 15km ra	adius		
8	Densely populated or built-up area	Tindivanam – 13.0	09 km (W)		
9	Areas occupied by sensitive man- made land uses (hospitals, schools, places of worship, community facilities)	Tindivanam – 13.09 km (W)			

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 Mayl 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 have been carried out in 6 locations and the results are given below.

	Table 11.2: Details Of Ambient Air Quality Monitoring Locations								
S. No.	Station Code	Locations	Distance & Direction	Coordinates					
1	AAQ 1	Project site	Core Zone	12°13'10.17"N 79°46'10.51"E					
2	AAQ 2	Nalmukkal	2.13 km, SW	12°12'12.58"N 79°45'32.6"E					
3	AAQ 3	Senalur	2.20 km, W	12°12'34.19"N 79°46'57.62"E					
4	AAQ 4	Kunnappakkam	1.02 km, NW	12°13'09.47"N 79°45'00.38"E					
5	AAQ 5	Endur	1.80 Km, NW	12°13'39.51"N 79°45'58.18"E					
6	AAQ6	Tennampundi	1.65 Km, NE	12°13'44.03"N 79°46'54.41"E					

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

Station ID	Min	Max	Avg.						
	Particulate matter	⁻ PM- _{2.5 (} µg/m ³)							
AAQ-1	41.2	67.3	54.25						
AAQ-2	38.1	59.2	48.65						
AAQ-3	36.2	51.2	43.70						
AAQ-4	36.1	56.7	46.40						
AAQ-5	36.3	53.2	44.75						
AAQ-6	42.2	53.5	47.85						
C	PCB NAAQS 2009 fo	r PM 2.5 - 60 μg/m ³							
	Particulate matter	r PM- ₁₀ (μg/m³)							
AAQ-1	19.20	32.3	25.75						
AAQ-2	18.2	30.4	24.30						
AAQ-3	17.38	25.3	21.34						
AAQ-4	16.64	25.1	20.87						
AAQ-5	18.10	26.2	22.15						
AAQ-6	19.70	25.1	22.40						
C	PCB NAAQS 2009 for								
	Sulphur Di-oxide	as SO ₂ (µg/m ³)							
AAQ-1	4.4	7.5	5.95						
AAQ-2	3.7	7.2	5.45						
AAQ-3	4.1	5.8	4.95						
AAQ-4	3.2	5.4	4.30						
AAQ-5	3.7	6.8	5.25						
AAQ-6	3.2	5.8	4.50						
	CPCB NAAQS 2009 fo								
	Oxide of Nitrogen	as NO ₂ (µg/m ³)							
AAQ-1	6.5	9.9	8.20						
AAQ-2	6.1	9.1	7.60						
AAQ-3	5.5	8.2	6.85						
AAQ-4	5.7	7.9	6.80						
AAQ-5	5.8	8.9	7.35						
AAQ-6	6.2	9.5	7.85						
	CPCB NAAQS 2009 for NO ₂ – 80 μg/m ³								

11.2.2 WATER ENVIRONMENT

Table :	11.3 Results	of Ground W	ater samplir	ng Analysis in	6 locations		IS:10500: 2012	
							Desir	Permis
	W1	W2	W3	W4	W5	W6	able	sible
	Agreeabl	Agreeabl	Agreeabl	Agreeabl	Agreeabl	Agreeabl	Agree	Agreea
Odour	е	е	е	е	е	е	able	ble
Turbidity	<1	<1	<1	<1	<1	<1	Agree able	Agreea ble
							6.5 -	No
							8.5	Relaxat
pH at 25 °C	7.17	7.12	7.12	7.48	6.98	6.97		ion
Electrical							1	5
Conductivity	949.9	1103	1058	1103	1529	723.7		
Total Dissolved							500	2000
Solids	570	666	640	670	930	440		
Total hardness as CaCO3	372	261	376	253	507	234	1	15
Calcium as Ca	106	82.4	63.4	76.0	109	64.9	200	600
Magnesium as Mg	25.7	13.3	52.3	15.2	56.1	17.1	200	600
Calcium as							75	200
CaCO3	265	206	158	190	273	162		
Magnesium as CaCO3	107	55	218	63.4	234	71.3		
Total alkalinity as CaCO3	303	311	412	307	416	263		
Chloride as Cl-	139	194	180.0	196	256	102.0	250	1000
Free Residual	BDL (D.L -	BDL (D.L -	BDL (D.L -	BDL (D.L -	BDL (D.L -	BDL (D.L -	30	100
chlorine as Cl-	0.2)	0.2)	0.2)	0.2)	0.2)	0.2)		
	,	,	,	,	,	,	45	No
Sulphates as	97.0	186	89.2	179.0	220	82.6		Relaxat
SO42-								ion
Iron as Fe	0.05	0.06	0.02	0.05	0.04	0.02	200	400
							1	No
	2.39	2.14	1.69	3.64	4.85	3.26		Relaxat
Nitrate as NO3								ion
Fluoride as F	0.26	0.32	0.44	0.41	0.36	0.42	0.1	0.3
							Not	Not
Manganese as	BDL (D.L -	BDL (D.L -	BDL (D.L -	BDL (D.L -	BDL (D.L -	BDL (D.L -	Specif	Specifi
Mn	0.05)	0.05)	0.05)	0.05)	0.05)	0.05)	ied	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 limits by CPCB	Night equivalent limits by CPCB						
1	Project site	39.3	38.0						
2	Nalmukkal	50.5	41.8						
3	Senalur	48.3	39.8	75	70				
4	Kunnappakkam	50.9	42.2	75	70				
5	Endur	46.8	40.8						
6	Tennampundi	45.5	42.0						

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	S 3	S4	S5	S 6		
1	pH at 25 °C	-	5.94	7.68	7.03	6.99	8.14	8.73		
2	Electrical Conductivity	µmhos/ cm	70.24	492.7	100.8	150.7	214	509.8		
3	Dry matter content	%	91.06	88.49	90.4	85.94	88.09	91.15		
4	Water Content	%	8.94	11.51	9.6	14.06	11.91	8.85		
5	Organic Matter	%	1.63	2.3	1.71	1.59	0.68	0.8		
6	Soil texture	-	SILT LOAM	SILTY CLAY LOAM	SILT LOAM	SILTY CLAY	SILTY CLAY LOAM	SILTY CLAY LOAM		
7	Grain Size Distribution i. Sand	%	36.95	4.89	41.47	6.56	4.27	5.78		
8	ii. Silt	%	53.74	66.25	50.41	43.6	62.07	55.84		
9	iii. Clay	%	9.31	28.86	8.12	49.84	33.66	38.38		
10	Phosphorous as P	mg/kg	1.21	0.59	1.03	1.22	0.74	0.82		
11	Sodium as Na	mg/kg	845	921	976	732	610	1002		
12	Potassium as K	mg/kg	412	652	724	456	795	669		
13	Nitrogen and Nitregenous Compounds	mg/kg	212	260	312	405	168	340		

14	Total Soluble Sulphate	%	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)
15	Porosity	%	12.5	13.1	11.9	12.6	13.6	13.2
16	Water Holding Cabacity	Inches/ foot	42	45.6	44	49	46	48

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

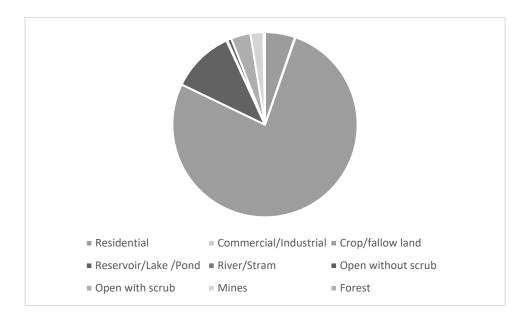
In the study area, commonly found animals like dogs, cats, bush rat, cows, birds like crow, Myna, Sparrow, etc were found.

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:

S.	1st Level	Area in	Percentage	2nd Level	Area in	Percentage
No	Classification	(sq.km)	(%)	Classification	(sq.km)	(%)
1	Built-up or	17.23	5.35	Residential	16.94	5.26
	habitation	17.25	5.55	Commercial/Industrial	0.29	0.09
2	Agriculture	247.3	76.80	Crop/fallow land	247.3	76.80
3	Water bodies	35.96	11.17	Reservoir/Lake /Pond	35.45	11.01
		55.50	11.17	River/Stram	0.51	0.16

4	Waste Land	13.39	4.16	Open without scrub	2.37	0.74
				Open with scrub	11.02	3.42
5	Mines	7.28	2.26	Mines	7.28	2.26
6	Forest	0.85	0.26	Forest	0.85	0.26
	Total	322	100		322	100



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 Nalmukkal, Senalur, Kunnappakkam, Endur and Tennampundi 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 Nalmukkal. 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 Nalmukkal which is about 820m from the lease area. Major schools with higher secondary and senior secondary schools are located in Nalmukkal. The major Nalmukkal Union located in the area is Villupuram. Facilities like petrol pump stations, ATM facility are available in Nalmukkal.

11.2.8 HYDROGEOLOGY OF THE LEASE AREA

There is Vada Penniyaru River is located at a distance of 10.9 km in Southeast direction of lease area, the hydrological and hydrogeological pattern of the study area is studied in detail using satellite imagery.

There is Vada Penniyaru River is located at a distance of 10.9 km in Southeast direction of 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 38 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 38 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, 3.86.00 Ha of lease area will be left as rain water harvesting pond. 0.86.00 Ha will be developed with green belt. For this, plants like Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indiaca are selected. A total of 2400 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 8.0 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 38m (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

Water bodies	Distance	Direction
Odai	230m	NE
Odai	300m	Ν
Tank	230m	SW
Brammadesam Lake	2.22 km	S
Endur Lake	2.53 km	SE
Kilsevur Lake	3.40 km	NW
Puthupakkam Lake	3.59 km	SE
Aalangakuppam Lake	5.03 km	E
Nolambur Lake	5.42 km	NW
Puthunagar Lake	8.24 km	S
Nallavur Lake	8.32 km	S

The major water bodies found in the buffer zone are.

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_{10} , $PM_{2.5}$. Other than these pollutants, gaseous emissions of sulfur dioxide (SO₂) and oxides of nitrogen (NO_x) 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 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 ENVIRONMENTAL 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 433.95 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 43 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 433.95lakhs 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.

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 Chettypatty, Kottamettupatty, Omalur, Salem, Tamilnadu-636455.

Declaration by Experts contributing to the proposed Rough Stone and Gravel Quarry over an extent 4.75.00 Ha, while total cluster area of 10.65.0 Ha at Nalmukkal Village, Marakkanam 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

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S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and Date
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</u> <u>2024</u> .	R. Dhams_
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</u> 2024	K. Aning
3	SHW	Ramadoss N	Assessment of waste generated from the project, suggested waste management practices. <u>Period: March 2024 to May</u> 2024	Cr Rail
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</u> 2024	Nr. S. My
5	EB	Saravanan S	Baseline data collection of related to ecology of the area. <u>Period: March 2024 to May</u> <u>2024</u>	astrarenza-
6	HG	Ravinthiran N	<i>Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area.</i> <u>Period: March 2024 to May 2024</u>	and the second and

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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</u> <u>2024</u>	7 Simbalte
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</u> <u>2024</u>	R.Dhams
9	LU	Dhanalakshmi Ramanathan	Preparation of land use mapbased on satellite imagery.Land use classification andanalysis. Impact predictionof the project on thesurroundinglandenvironment.Period: March 2024 to May2024	R.Dhams
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</u> <u>2024</u>	
11	SC	Shisupal Sing	Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil. <u>Period: March 2024 to May</u> <u>2024</u>	Showpoy Singly.
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</u> <u>2024</u>	7

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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</u> <u>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	N. Storups
		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	
		EB	S.Saravanan		Associated with the expert in baseline data collection related to ecology of the study area	
2	M. Manikandan	SC	Shishupal Singh	<u>March 2024</u> <u>to May 2024</u>	Associated with the expert in Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	contrar ?

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TM-	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		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. Swest
		AP	Dhanalakshmi Ramanathan	<u>March 2024</u> <u>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	
		SC	Shishupal Singh		Associated with the expert in Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	
2	S. Kamaraj	RH	S.V.Prashant	<u>March 2024</u> <u>to May 2024</u>	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	y Kommerk e

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		WP	Abirami Kaliaperumal		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	
	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	S. Asan au	
3.	S. Asan Ali	AP	Dhanalakshmi Ramanathan	<u>March 2024</u> <u>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	
		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.	

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					Associated with expert in assessing existing air quality,	
		AP	Dhanalakshmi Ramanathan		impact of the project on ambient air and suggesting mitigation measures for air pollution	
4.	Mownica. B	NV	Dhanalakshmi Ramanathan	<u>March 2024</u> <u>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.	Moronica
5.			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	@ Jahren
	G.Balasubramani	GEO	Dhanalakshmi Ramanathan	<u>March 2024</u> <u>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.	Ч!

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Dated 16/07/2024

File No: 10951 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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To,

10,				
	NAGARAJAN			
	NAGARAJAN			
	Thiru.V.Nagarajan, S/o. Varadharaj Gounder, No	0.65, Marakkanam Road, Perumukkal Village, puram , VILLUPURAM, TAMIL NADU, Viluppuram		
	ingini, in the gammer in			
Subject:	Grant of Terms of Reference(ToR) along with Public Hearing under the provision of the EIA Notification 2006 and as amended-regarding.			
Sir/Madam,				
	This is in reference to your application for Grant	t of Terms of Reference (ToR) issued along with Public		
	Rough Stone and Gravel Quarry lease over an ex 35/4 of Nalmukkal Village, Marakkanam Tal			
	2. The particulars of the proposal are as below :			
	(i) TOR Identification No.	TO24B0108TN5964918N		
	(ii) File No.	10951		
	(iii) Clearance Type	TOR		
	(iv) Category	B1		
	(v) Project/Activity Included Schedule No.	1(a) Mining of minerals		
	(vii) Name of Project	Rough Stone and gravel Quarry of Thiru.V.Nagarajan		
	(viii) Name of Company/Organization	NAGARAJAN		
	(ix) Location of Project (District, State)	VILLUPURAM, TAMIL NADU		
	(x) Issuing Authority	SEIAA		

- 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 09/07/2024. 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 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 issue the following Terms of Reference for instant proposal of Thiru.NAGARAJAN Granites 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.

<u>Copy To</u>

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9

2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.

3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.

4. Monitoring Cell, IA Division, Ministry of Environment, Forests &CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003

5. The District Collector, Viluppuram District.

6. Stock File.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Specific Conditions:

S. No	Terms of Reference
1.1	After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant

S. No	Terms of Reference
	 Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC, standard conditions stipulated by MoEF&CC and with the Specific and Standard Conditions. i) Considering the water bodies situated around the project site, Terms of reference is accorded for the restricted depth of 33m below the ground level. The proponent shall furnish the revised mining plan accordingly.

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	 A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities. The proponent shall make necessary application to produce the NOC from the Competent Authority under the provisions of the Central Electricity Authority Notification No. CEA-PS- 16(1/2021-CEI Division dt 08.07.2023 at the time of lease execution. Since waterbodies are situated nearby, the PP shall carry out the scientific studies to assess the hydrogeological condition of the quarry to determine impacts of the mining operation on the ground water conditions in the waterbodies. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarrise & water bodies nearby provided as per the approved

3. Seac Standard Conditions

S. No	Terms of Reference
3.1	 In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: Original pit dimension Quantity schieved Vs EC Approved Quantity Balance Quantity as per Mineable Reserve calculated. Vio Mined out Depth as on date Vs EC Permitted depth Details of illegal/illicit mining Vio Idation in the quarry during the past working. Vio Quantity of material mined out outside the mine lease area Civii Quantity of material mined out outside the mine lease area Civii Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site. The 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 liccome, etc. The PP shall submit a detailed hydrological report indicating the impact of proposed quarry out Bio diversity study through reputed Institution and the same shall be included in ELA Report. The PO letter studing that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve, etc., up to a radius of 25 km from the proposed site. The Proponent shall carry out

S. No	Terms of Reference
S. No	 issued by the AD/DD mines? 14. Quantity of minerals mined out. Highest production achieved in any one year Detail of approved depth of mining. Actual depth of the mining achieved earlier. Name of the person already mined in that leases area. If EC and CTO already obtained, the copy of the same shall be submitted. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. 15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone). 16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc., (17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment. and the remedial measures for the same. 19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment. 20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping
	monsoon & non-monsoon) be submitted.24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife
	lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required,

S. No	Terms of Reference
	clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
	 27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided. 28. Impact on local transport infrastructure due to the Project should be indicated. 29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining
	activity. 30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
	31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
	32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon
	sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with
	shrubs should be planted in a mixed manner.
	33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags
2	should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an
	organized manner 34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the
	complete life of the proposed quarry (or) till the end of the lease period.35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMPReport for the complete life of the proposed quarry (or) till the end of the lease period.
6	36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining
	area may be detailed. 37. Public health implications of the Project and related activities for the population in the
	impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
	38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
	39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
	40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
	41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC,
	Regional Office, Chennai (or) the concerned DEE/TNPCB.42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit
	stating to abide the EMP for the entire life of mine. Concealing any factual information or submission of false/fabricated data and failure to comply

S. No	Terms of Reference	
	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.	

4. Seiaa Standard Conditions:

S. No	Terms of Reference		
4.1	 Cluster Management Committee 1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quary. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc., The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines before the execution of noting lease and the same shall be updated every year to the AD/Mines before the execution of noting lease and the submitted which must include the blasting frequency with respect to the nearby quary situated in the cluster, the usage of haul roads by the individual quary in the form of route map and network. 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. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quary falling under the cluster in a holistic manner. The committee shall furnish he Emergency Management plan within the cluster. The committee shall furnish the Emergency Management plan within the cluster. The committee shall furnish the Emergency Management plan within the cluster. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents. Indext study shall be carried out in regard to impact of mining around the proposed minine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following Soil health & soil bio		

S. No	No Terms of Reference			
	soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem. 17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.			
	18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.Forests			
	19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.			
	20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.			
	 21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection. 22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site. 			
	Water Environment23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining			
	 activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period. 24. Erosion Control measures. 			
	 25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas. 26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. 			
	27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.			
	28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.			
	29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams,			
	lakes and farmer sites. Energy			
	31. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.<u>Climate Change</u>			
	 32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities. 33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock. Mine Closure Plan 			
	34. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued. EMP			
	 35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued. 36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan. 			

S. No	Terms of Reference		
	 Risk Assessment 37. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining. Disaster Management Plan 38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in &around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued. Others 39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc. 40. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan. 41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic &microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported. 		

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference			
1.1	An EIA-EMP Report shall be prepared for peak capacity (MTPA)operation in an ML/project area ofha based on the generic structure specified in Appendix III of the EIA Notification, 2006.			
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 forMTPA. Baseline data collection can be for any season (three months) except monsoon.			
1.3	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided			
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			
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			

S. No	Terms of Reference			
	features such as water bodies, etc should be furnished.			
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.			
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 eloboration in form of lengthe, quantity and quality of water to be diverted			
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.			
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.			
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though 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	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 S.N ML/Project Land use Area under Surface Area Under Mining Rights(ha) Area under Both (ha) 1 Agricultural land 2 Forest Land 3 Grazing Land 4 Settlements 5 Others (specify)			

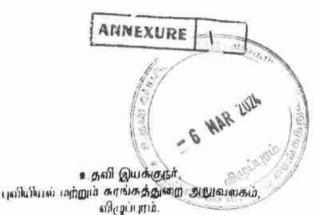
S. No	Terms of Reference			
	S.N.DetailsArea (ha)1Buildings2Infrastructure3Roads4Others (specify)Total			
1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the 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 laborartory and NABET accreditation of the consultant to be provided.			
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			

S. No	Terms of Reference			
	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 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			

S. No	No Terms of Reference			
	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 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 Managament Cell and its responsibilities to be clearly spleel out in EIA/ EMP			

S. No	Terms of Reference			
	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 PCCF 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	Details on the Forest Clearance should be given as per the format given: Total ML Total Project Area Forest land (ha) If more than one provide details of each FC			
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			
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 alloted/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 acrreditation) 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.			





ந.க.எண். அ/பு & சு/96/2021 நாள்: 02.02.2024

குறிப்பாலை

Quin mai: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் மற்றும் கிராவல் - விழுப்பாம் மாவட்டம் -மரக்காணம் வட்டம் - நல்முக்கல் கிராமம் - பட்டா புல 35/4 மற்றும் என்கள்.34/181. 35/28. 35/3. பரப்பளவில் ஹெக்டோ ஆகியவற்றில் 4.75.00 பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குவாரி குத்தகை அனுமதி கோரி த/பெ.வாதராஜ் கவுண்டர் திரு.வ.நாகராஜன் பெருமுக்கல் கிராமம் என்பவர் விண்ணப்பம் செய்தது -அறிக்கை செய்து வழங்க பரிந்துரை உரிமம் நிலப்பரப்பாக கருதி வரப்பெற்றது - ககுதியான ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவிணை பெற்று சமர்பிக்கக் கோருதல் - தொடர்பாக.

பார்வை:

- திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர், எண்.65, மரக்காணம் ரோடு, பெருமுக்கல் கிராமம், மரக்காணம் வட்டம், விழுப்பாம் மாவட்டம் என்பவரின் விண்ணப்பம் நாள்.15.04.2021.
 - சார் ஆட்சியர், திண்டிவனம் அவர்களின் கடித என். ந.க. அ3/6969/2021, நாள்: 30.10.2023.
 - விழுப்புரம் மாவட்ட புலியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநர் அவர்களின் புலத்தணிக்கை அறிக்கை நாள்: 13.12.2023.

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விழுப்புரம் மாவட்டம், மரக்காணம் வட்டம், பெருமுக்கல் கிராமத்தைச் சேர்ந்த திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் என்பவர் விழுப்புரம் மாவட்டம், மரக்காணம் வட்டம், நல்முக்கல் கிராமம், பட்டா புல எண்கள். 34/181 - 2.43.0 ஏர்ஸ், 35/28 - 0.28.0 ஏர்ஸ், 35/3 -0.88.0 ஏர்ஸ் மற்றும் 35/4 -1.16.0 ஏர்ஸ் ஆகியவற்றில் 4.75.00 ஹெக்டேர் பரப்பளவில் உள்ள நிலத்தில் பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குவாரி குத்தகை பார்வை 1-ல் காணும் விண்ணப்பத்தினை சமர்ப்பித்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக, திண்டிவனம் சார்ஆட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் அறிக்கையில் மரக்காணம் வட்டம், நல்முக்கல் கிராமம், பட்டா புல எண்கள். 34/181 - 2.43.0 ஏர்ஸ், 35/28 -0.28.0 ஏர்ஸ், 35/3 -0.88.0 ஏர்ஸ் மற்றும் 35/4 -1.16.0 ஏர்ஸ் ஆக மொத்த பரப்பு 4.75.00

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ஹெக்டேர் பரப்பளவில் உள்ள பட்டா நிலத்தில் திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் என்பவருக்கு பத்தாண்டுகளுக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க கீழ்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

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

எனவே, திண்டிவனம் சார் ஆட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் பரிந்துரை அறிக்கையின் அடிப்படையில் மரக்காணம் வட்டம், நல்முக்கல் கிராமம், பட்டா புல எண்கள். 34/181 - 2.43.0 ஏர்ஸ், 35/28 - 0.28.0 ஏர்ஸ், 35/3 -0.88.0 ஏர்ஸ் மற்றும் 35/4 - 1.16.0 ஏர்ஸ் ஆக மொத்த பரப்பு 4.75.00 ஹெக்டேர் பரப்பளவில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன்படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் என்பவருக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

அதன் அடிப்படையில், தமிழ்நாடு சிறு கனிம சலுகை விதிகள் 1959 விதி எண்.41-ன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை தகுதிவாய்ந்த நபர் (QP) மூலமாக கீழ்கண்ட நிபந்தனைகளுக்குட்பட்டு தயாரித்து அதனை 90 தினங்களுக்குள் உதவி இயக்குநர் (புவியியல் மற்றும் சுரங்கத்துறை) விண்ணப்பதாரரை சமர்ப்பிக்குமாறு பரிசீலனைக்கு அவர்களின் கேட்டுக்கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன்படி சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்பிக்கும் மூலம் இதன் வழங்கப்படும் STEET குவாரி 2 Inicia மட்டுமே பட்சத்தில் தெரிவிக்கப்படுகிறது.

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- விண்ணப்ப புலன்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்பூரி 101 பாதுகாப்பு இடைவெளியும் மற்றும் அரசு பறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி மேற்கொள்ளப்பட வேண்டும்.
- ப். குவாரிப்பணி மேற்கொள்ளும் போது அருகிலுள்ள அரசு பறம்போக்கு, வாய்க்கால் மற்றும் பட்டா நிலங்களுக்கு எவ்வித இடையூறும் இல்லாமல் குவாரிப்பணி செய்ய வேண்டும்.
- iii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை DGPS சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்பிக்க வேண்டும்.

உதவி இயக்க

புவியியல் மற்றும் சுரங்கத்துறை, விழுப்புரம்.

பெறுநர்

திரு.வ.நாகராஜன், த/பெ.வரதராஜ் கவுண்டர்,

எண்.65, மாக்காணம் ரோடு,

பெருமுக்கல் கிராமம், மரக்காணம் வட்டம்,

விழுப்புரம் மாவட்டம்

நகல்:-

மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.

ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை.



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

Thiru.V.Nagarajan, S/o.Varadaraj Gounder, No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District.

Rc.No.B/G&M/96/2021 Dated 06 .03.2024

- Sub: Mines & Minerals Minor Mineral Rough stone and Gravel - Viluppuram District - Marakkanam Taluk - Nalmukkal Village - over an extent of 4.75.00 hectares of patta lands - S.F.Nos. 34/1B1 -2.43.0, 35/2B - 0.28.0, 35/3 - 0.88.0 and 35/4 -1.16.0 - Quarry lease application preferred by Thiru.V.Nagarajan, Perumukkal Village - Precise area communicated - Submission of mining plan for approval - Approved - Regarding.
- Ref: 1. Quarry lease application dated 15.04.2021 preferred by Thiru.V.Nagarajan, S/o.Varadaraj Gounder, No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District.
 - Assistant Director, Geology and Mining, Viluppuram Letter Rc.No. B/G&M/96/2021 Dated 02.02.2024.
 - 3. Mining Plan submitted by Thiru.V.Nagarajan, S/o.Varadaraj Gounder Dated 04.03.2024.
 - 4. G.O.Ms.No.79, Industries (MMC-1) Department dated 06.04.2015.
 - 5. G.O.(Ms).No.169, Ind. (MMC.1) Dept. dated 04.08.2020.

In response to the precise area communicated vide the reference 2^{nd} cited, the applicant viz., Thiru.V.Nagarajan, S/o.Varadaraj Gounder vide reference 3^{rd} cited has submitted three copies of mining plan for the area applied seeking grant of quarry lease for Rough stone and Gravel over an extent of 4.75.00 hectares of patta lands in S.F.Nos.34/1B1 - 2.43.0, 35/2B - 0.28.0, 35/3 - 0.88.0 and 35/4 -1.16.0 of Nalmukkal Village, Marakkanam Taluk, Villupuram District with a request to approve the same.

2. The mining plan so submitted has been verified in detail.

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

- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- This approval of the mining plan does not in any way (ii) imply the approval of the Government in terms or any of the Mines and Minerals other provisions (Development and Regulation) Amended Act, 2015, or laws including Forest other connected anv (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Explosives Act, 1884 (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv) As per the Assistant Director, Geology and Mining, Viluppuram letter Rc.No.B/G&M/96/2021 Dated 02.02.2024, the following conditions have been incorporated in the Mining Plan.
 - a. A safety distance of 7.5 meter and 10 meter should be provided to the adjacent patta lands and Government lands.
- (v) Quarrying shall be strictly done as per the approved Mining Plan.

Encl: Two copies of Approved Mining Plan.

Assistant Dept. of Geology and Mining, Viluppuram.

Copy to:

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The Commissioner of Geology and Mining, Chennai-32.





MINING PLAN FOR

NALMUKKAL

ROUGH STONE & GRAVEL QUARRY

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

LOCATION OF THE QUARRY LEASE APPLIED AREA

F 6 NAR 2014

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STATE	:	TAMIL NADU
DISTRICT	:	VILUPPURAM
TALUK	:	MARAKKANAM
VILLAGE	:	NALMUKKAL
S.F.NOS	ŧ	34/1B1, 35/2B, 35/3 and 35/4
EXTENT	:	4.75.00Ha

FOR APPLICANT

THIRU. V.Nagarajan, S/o. Varadharaj Gounder, No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District.

PREPARED BY

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.

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V.Nagarajan, S/o. Varadharaj Gounder, No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District.

CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 4.75.00hectares of Patta lands in S.F.Nos.34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam 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,

Omalur 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

V.Nagarajan

Place: Viluppuram Date: 03.02.2024 n antennara

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V.Nagarajan, S/o. Varadharaj Gounder, No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District.

DECLARATION

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 4.75.00hectares of Patta lands in S.F.Nos.34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam 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

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V.Nagarajan

Place: Viluppuram Date: 03.02.2024 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

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 4.75.00hectares of Patta lands in S.F.Nos.34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District Tamil Nadu State applied by Thiru.V.Nagarajan, 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.

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

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

Place: Salem Date: 05.02.2024

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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 4.75.00hectares of Patta lands in S.F.Nos.34/1B1. 35/3 and 35/4 35/2B, of Nalmukkal Village. Marakkanam Taluk, Viluppuram District Tamil Nadu State for Thiru.V.Nagarajan, 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.

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

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

Place: Salem Date: 05.02.2024

CERTIFICATE

Certified that I, C.Natarajan, residing at No.93/36 E2, Subramaniyar 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 4.75.00hectares of Patta land in S.F.Nos.34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District by Thiru.V.Nagarajan, 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.

Place: Salem

Date: 05.02.2024

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

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

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MINING PLAN FOR MINOR MINERALS

ROUGH STONE AND GRAVEL

Over an extent of 4.75.00hectares of Patta land in S.F.Nos.34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State.

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

1.0 Introduction and Executive Summary;

- for Thiru.V.Nagarajan, 1. The Mining Plan is prepared present Gounder. residing at No.65, Marakkanam Road. S/o. Varadharai Perumukkal Village, Marakkanam 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/96/2021 dated 02.02.2024 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 4.75.00 hectares of Patta lands in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam 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.

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- b) The applicant shall be maintained proper safety distance to the government poramboke vaikkal and the applicant should not cause any hindrance to adjoining 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 21,37,500m³ of Rough stone and 1,42,500m³ of gravel formation and Mineable Reserves is estimated at 10,15,275m³ of Rough Stone and 96,210m³ 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.
- The production schedule is proposed production of 8,89,700m³ of Rough Stone, 96,210m³ of gravel formation for the period of first five years.
- The applicant ensured that, child labours under 18 years of age will not be engaged for quarrying operation.
- The applicant ensure that will appoint should have valid certified persons (Mines Manager, Foreman, Mate) during quarrying operation.
- 8. Environmental parameters,
 - The area does not attract the Forest Conservation Act, 1980 as there is no forest around 2.8km radius.
 - ii) There is no interstate boundary around 10Kms 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).

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9. Environmental measures to be adopted shall be,

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- 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.
- 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.
- And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

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EXECUTIVE S	SUMMARY:				10/ 3	
a. Name of	the Village Panchayat	12	Nalmukkal		141	0.00
b. Name of	the Panchayat Union	1	Nalmukkal		100)	Digital analog
	oposed total Mina	ble :	10,15,275m ³ c	of Rough 3	Stone,	2.4460-10:012
Reserves	-		96,210m ³ of g	ravel form	nation	
d. The prop	osed quantity of reserve	ves :	8,89,700m ³ of	Rough S	tone, 📪	
(level of) to be reserves)	production) for Five yea mined is(Recovera		96,210m³ of g	ravel form	nation	
e. Total ext	ent of the area	2	4.75.00Ha			
f. Proposed	Period of mining	8	Five Years			
g. Existing	depth		3m (maximum	n) below §	ground l	evel
h, Proposed	l Depth of mining	8	38m below gro mining plan.	ound leve	l for the	proposed
i. Method	of mining/level	of :	Opencast, Ser	ni-mecha	nized Mi	ning with
mechani	zation		a bench heigh 5m is propose		nd bencl	h width of
j. Types of quarry	Machineries used in t	the :	Machineries compressor hammers, Ex deploy for qua	attacheo cavators	are pro	
			1 7 1			
c. Cost of th	1e Project		D- 01 50 000	1		
	ne Project xed Assets Cost		Rs. 31,50,000			
A. Fi	xed Assets Cost		Rs. 92,50,000	/-		
A. Fi B. Op	-		Rs. 92,50,000 Rs. 6,70,000	/- /-	-Do 1 20	70.000/
A. Fi B. Op C. EN	xed Assets Cost perational Cost MP Cost	unded	Rs. 92,50,000 Rs. 6,70,000 Total Project co	/- /- st(A+B+C)=		
A. Fi B. Op C. EM . The area	xed Assets Cost perational Cost MP Cost applied for lease is bo ly marked in plate no II	i	Rs. 92,50,000 Rs. 6,70,000 Total Project co by fourteen co	/- /- st(A+B+C): orners an	d the co	ordinates
A. Fit B. Op C. EN . The area are clear	xed Assets Cost perational Cost MP Cost applied for lease is bo ly marked in plate no II Co- or	l. dinate	Rs. 92,50,000 Rs. 6,70,000 Total Project co by fourteen co	/- /- st(A+B+C): orners an	d the co	ordinates een the
A. Fit B. Op C. EN . The area are clear Corners	xed Assets Cost perational Cost MP Cost applied for lease is bo ly marked in plate no II Co- or Latitude	l. rdinate	Rs. 92,50,000 Rs. 6,70,000 Total Project co by fourteen co s Longitude	/- st(A+B+C)= orners an Distan	d the co ce betwo corners	ordinates een the
A. Fit B. Op C. EN The area are clear Corners	xed Assets Cost perational Cost MP Cost applied for lease is bo ly marked in plate no II Co- or Latitude 12° 13' 06.70"N	l. rdinate J 79°	Rs. 92,50,000 Rs. 6,70,000 Total Project co I by fourteen co s Longitude 2 46' 08.42"E	/- st(A+B+C): prners an Distan	d the co ce betwo corners = 13	ordinates een the 6.8m
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A. Fit B. Op C. EN The area are clear Corners 1 2 3	xed Assets Cost perational Cost MP Cost applied for lease is bo ly marked in plate no II Co- or Latitude 12° 13' 06.70"N 12° 13' 10.99"N 12° 13' 11.68"N	l. rdinate 79° 79° 79°	Rs. 92,50,000 Rs. 6,70,000 Total Project co by fourteen co s Longitude 46' 08.42"E 46' 09.64"E 2' 46' 07.17"E	/- st(A+B+C): orners an Distan 1-2 2-3 3-4	d the co cce betwo corners = 13 = 77 = 22	ordinates een the 6.8m .6m .0m
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2.0	G	eneral Information:		- 6 WAR 2
2.1	a.	Name of the Applicant	:	Thiru.V.Nagarajan,
	b.	Address of the Applicant	:	S/o. Varadharaj Gounder,
		with phone No and e-mail		No.65, Marakkanam Road,
		id if any		Perumukkal Village,
				Marakkanam Taluk,
				Viluppuram District.
				Pin Code- 604301
				Cell No.:9626809118
	c.	Status of the Applicant	\$	Individual
2.2	a.	Mineral Which the		Rough Stone and Gravel.
		applicant intends to mine		
_	b.,	Precise area	•	Precise area communication letter received
		communication letter No.		from the Assistant Director, Department of
				Geology and Mining, Viluppuram, vide
				Rc.No.A/G&M/96/2021 dated 02.02.2024.
	c.	Period of permission /	ż	The Assistant Director, Department of
	5	lease granted		Geology and Mining, Viluppuram, has grant
				of lease period for ten years.
	d,	Name and Address of the		C.Natarajan, M.Sc.,M.Phil.,
		QP preparing Mining Plan		Qualified Person
				No.93/36E2, Subramaniyar Kovil Street,
				Omalur Taluk, Salem District,
				Tamil Nadu, Pin-636 455.
				Mobile: 97502 23535 & 94446 54520.

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3.0	Location:	E HAR 2014
S.No		Details of the Area:
1	Corner Coordinates	Latitude :12°13'05.24"N to 12°13'14.52"N Longitude :79°46'07.17"E to 79°46'16.18"E
2	Toposheet Number	57- P/16
3	The altitude of the area	90m (MSL)
4	Extent	4.75.00Ha
5	Survey Nos	34/1B1, 35/2B, 35/3 and 35/4
6	Village	Nalmukkal
7	Taluk	Marakkanam
8	District	Viluppuram
9	State	Tamil Nadu

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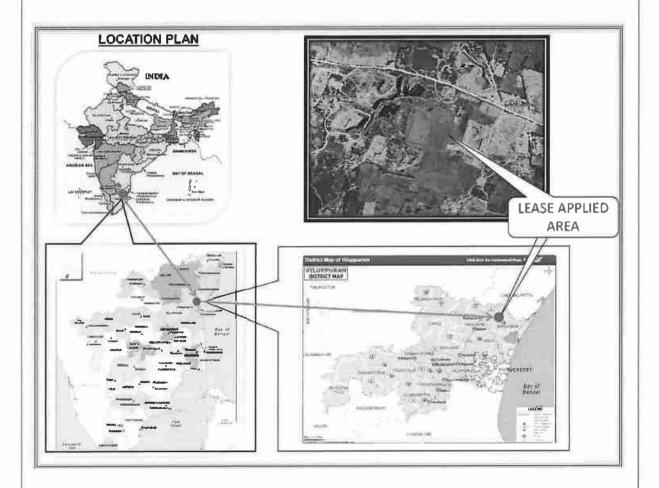
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a.	Classification of the Area (Ryotwari / poramboke / others)	1.0	Patta land
b.	Ownership / Occupancy of the Applied area (Surface rights)		It is patta land registered in the name of applicant vide patta no.425, Please refer Annexure No: IV.
c.	Toposheet No. with Latitude and Longitude	100 100 100 100 100 100 100 100 100 100	Topo Sheet No: 57-P/ 16 Latitude:12°13'05.24"N to 12°13'14.52"N Longitude:79°46'07.17"E to 79°46'16.18"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 Ariyanthangal - Senalur village road on northern side of the area. The Nearest Railway line is Viluppuram to Chennai line which is about 10Km on

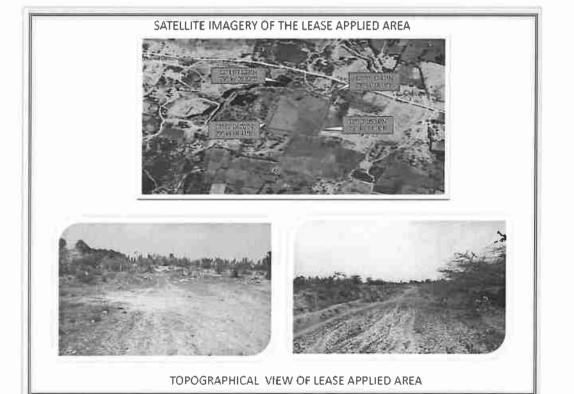


Fig. Location of the lease applied area

		PART - A	HAR ITTA
	ology and Mineral Res	erves:	N. S.
4.1 a.	Topography : General Geology of :	 The area applied for quarry almost plain topography or formation. The massive Char is noticed below 3m (Avg) Grassloping towards southeastern the altitude of the area (maximum) from MSL. No major river is found at a summer and 65m in rainy sea Temperature of the area is rea to a maximum of 42°C during Rainfall of this area is about mm during the both NE & SW 	overed by Gravel mockite formation avel formation and a side of the area, is above 90m mearby the lease depth of 68m in asons. ported to be 18°C g summer. at 800mm to 900 J monsoons.
	the Area	metamorphic rocks of pen complex. These rocks are extent and overlain by the recent alluvium at places. The geolo found in the district are Arc Gneisses, Granites, Char granulites and calc-gneisses formations are Quartz veins and The rock type noticed in the Charnockite which contains m Feldspar with some ferromag The Charnockite is part of penir high grade metamorphic rock. The strike of the Charnockite for -S45°W with dipping towards SI The general geological successing given as under. AGE Recent Grave Unco Archaean - Doler Charnockite Penir Gneis	hinsular gneissic nsively weathered valley fills and ogical formations chaean rocks like mockites basic s. The younger d pegmatite. area for lease is nostly Quartz and gnesian minerals. hsular Gneisses, a prmation is N45°E E80°.

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4.2		Details of	•	No exploration was carried out, as the Rough
		Exploration already		stone formations are clearly visible as out crops
		carried out if any		within the lease applied area.
4.3	a.	Estimation of		The Geological and Recoverable reserves are
		Reserves		estimated by cross sectional method.
				Totally three sections have been drawn, one
				section drawn length wise as (X-Y), and another
				two sections drawn width wise as (A-B), (C-D) 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

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The quarrying is restricted up to a depth of 48m below ground level only, availability of resources is given below.

The Geological resources are calculated in area method.

4.75.00Ha X 10,000Sqm = 47,500m²

 $47,500m^2 X 3.0m$ Depth = $1,42,500m^3$ of Gravel Formation

 $47,500m^2 X 45.0m$ Depth = 21,37,500m³ of Rough stone

Gravel Formation		1,42,500m ³
The Geological Resources of Rough stone	:	21,37,500m ³

b. Already excavated

The area has been quarried in earlier operation the existing pit dimension are given below.

Table N	lo-1
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Pit No	length (Max) in(m)	Width (Max) in (m)	Depth (Max) in (m)
I	31	21	3m below ground level

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The available mineable reserve calculated by deducting 7.5m safety distance and bench loss.

				Table I	No-2		9
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m³	Gravel in m ³	Mineable Reserves of Rough stone in m ³
	Ι	73	154	3	33726	33726	
	II	95	174	5	82650		82650
	III	90	164	5	73800		73800
1	IV	85	154	5	65450		65450
	V	80	144	5	57600		57600
XY-AB	VI	75	134	5	50250		50250
	VII	70	124	5	43400		43400
2	VIII	65	114	5	37050		37050
	IX	60	104	5	31200		31200
	Х	55	94	5	25850		25850
			Total			33726	467250
	Ι	127	164	3	62484	62484	
	II	123	155	5	95325		95325
	III	118	145	5	85550		85550
	IV	113	135	5	76275		76275
	V	108	125	5	67500		67500
XY-CD	VI	103	115	5	59225		59225
	VII	98	105	5	51450		51450
	VIII	93	95	5	44175		44175
	IX	88	85	5	37400		37400
	Х	83	75	5	31125		31125
			Total			62484	548025
		Grand	Total			96210	1015275

The available mineable reserve is computed as 10,15,275m³ of Rough stone and

96,210m³ of Gravel formation upto a depth 48m below ground level only.

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			STATES AND
5.0	<u>Mining</u> : Method of Mining	ia.	 Opencast method of semi mechanized mining with 5.0m height 5m width of the bench. 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.	.0	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.

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		The Y	'earwise			Developme	ent Table	it as
				T	able No –	3	1	1 8221
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel in m ³	Mincaster reserve of Rough stone in m ³
		Ι	68	154	3	31416	31416	
		II	90	174	5	78300		78300
I	XY-AB	III	85	164	5	69700		69700
		IV	38	154	5	29260		29260
			T	otal			31416	177260
		I	5	154	3	2310	2310	
	XXX AD	II	5	174	5	4350		4350
	XY-AB	III	5	164	5	4100		4100
		IV	47	154	5	36190		36190
п	XY-CD	Ι	61	164	3	30012	30012	
		II	61	155	5	47275		47275
		III	61	145	5	44225		44225
		IV	61	135	5	41175		41175
			Т	otal			32322	177315
		I	66	164	3	32472	32472	
		II	62	155	5	48050		48050
111	XY-CD	III	57	145	5	41325		41325
111		IV	52	135	5	35100		35100
	*	V	86	125	5	53750		53750
			Тс	otal			32472	178225
	XY-CD	v	22	125	5	13750		13750
	AI-CD	VI	98	115	5	56350		56350
IV	XY-AB	V	80	144	5	57600		57600
	AI-AD	VI	75	134	5	50250		50250
			Тс	otal				177950
		VI	5	115	5	2875		2875
	XY-CD	VII	98	105	5	51450		51450
v		VIII	93	95	5	44175		44175
v	XY-AB	VII	70	124	5	43400		43400
	AI-AD	VIII	65	114	5	37050		37050
			Тс	otal				178950
			Grand T	otal			96210	889700

The available mineable reserve is computed as 10,15,275m³ of Rough stone and 96,210m³ of Gravel formation but the applicant has proposed to carry out 8,89,700m³ of Rough stone and 96,210m³ of Gravel formation upto a depth of 38m below ground level for the period of first five years

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5.5 Machineries to be used It is proposed to use following machineres for quarrying rough stone a. Drilling 1 lis proposed to use following machineres for quarrying rough stone 1 Jack hammer 16 32 Atlas Copeo 2 Compressor 4 Atlas Copeo 2 Compressor 4 Atlas Copeo 2 Compressor 4 Atlas Copeo 5.6 Disposal of 2 5.6 Disposal of 2 7 Transportation 2 Tiper 6Nos (5/10Ts) capacity. 5.6 Disposal of 2 The overburden in the form of Gravel, after the excavation gravel will be directly loaded into tiper 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 I case period I construction of infrastructures etc. Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible area setc. Ultimate pit dimension is given as under, Ultimate pit dimension End of the lease period Pric Length <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>2</th><th>E 1020</th><th>016</th></td<>													2	E 1020	016
a. Drilling i It is proposed to use following machineries for quarrying rough stone v 1 Jack hammer 16 32 Atlas Copco Compressed air 2 Compressor 4 - Atlas Copco Diesel Drive b. Loading : Excavator of 0.90m ³ bucket capacity (with Rock breaker attachment) (2No). c. Transportation : Tipper 6Nos (5/10Ts) capacity. 5.6 Disposal of : 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 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. Ultimate pit dimension is given as under, Iltimate Pit dimension is given as under, Vitimate Pit dimension End of the lease period Pit Length Width (Avg) Depth(max) no(max) in (m) 1 227 170 38 Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air														6 MAR 20	A
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All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be								10			-	-		l along	
Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be								th	•		• •	-			
monitoring, Water Analysis studies will be															
								-	e e						
carried out every year as per the MOEF norms.									-		•				
		_						са	mea out every	/ ye	ar as per	the N	IOBF no	orms.	

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	Blasting:					- 6 HAR L			
-	Blasting Pat	:tern	pi us Po ha pe	: The massive formation shall be broken pieces of portable size by drilling and blast using jack hammers and shot hole blast Powder factor of explosives for breaking st hard rock shall be in the order of 6 to 7 Ton per K.g of explosives. Blasting parameters as follows.					
	Diameter of the hole	Spacing	Depth	Burden for hole	Pattern of hol e	Inclination of hole			
	32-36mm	1 to 1.5m	0.6m	Zig Zag	70º from the horizontal				
	7	Fr	Hole Diamers	ser (D)	Burnets Lerren Go				
			For	Explosive		Height (H)			

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6.3	Measures proposed to minimize ground vibration due to blasting	:	 Controlled blasting measures will be adopted for minimizing ground vibration and fly rock. Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly rock. Number of holes : 514 Powder factor : 6Ts/Kg of explosives Total explosive : 257Kg slurry explosives Charge / hole : 0.5Kg Blasting time : 12-2 Pm
6.4	Storage of Explosives and safety measures to be taken while blasting.		 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. The applicant ensure that will appoint the Mate (Should have Valid Blaster Certificate) during Blasting Operation.
7.0	Mine Drainage:		
7.1	Depth of Water table		The ground water table is reported as 68m below ground level. In the proposed mining plan only 38m (below ground level) and 48m depth has been envisaged as workable depth for safe & economic quarrying for the entire lease period. Hence the quarrying operation may not affect the ground water.
7.2	Arrangement and Places where the mine water is finally proposed to be discharged	•	The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 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

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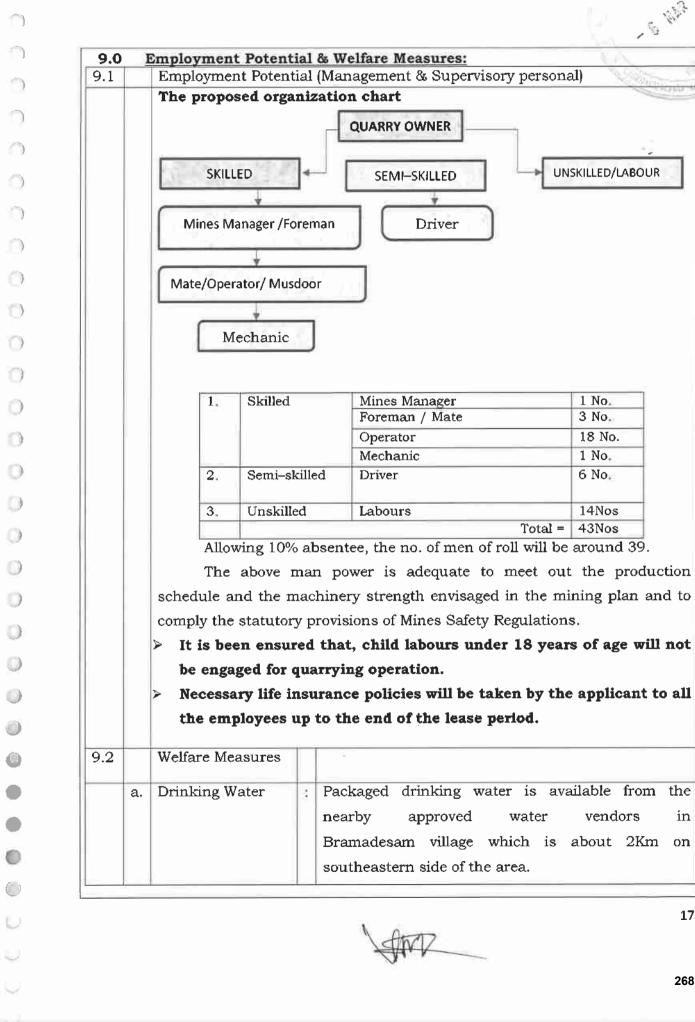
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8.0	Other Permanent Structu		NAR 2
8.1	Habitations / Village		There are no habitations within a radius of
0.1	Theoreanons / Village	÷	300m.
8.2	Power lines (HT/LT)		There is no Power line (HT/LT) passing within
0.2	Power lines (FIT/LT)		a radius of 50m.
8.3	Water bodies (River, Pond,	R.	There is a seasonal odai passing on
0.0	Lake, Odai, Channel etc)	- K2	northeastern side of the area and is 230m away
			from the lease applied area, there is tank
			situated on southern side of the area and is
			270m away from the area.
8.4	Archeological / Historical		There are no Archaeological / Historical
	Monuments		Monuments within a radius of 300m.
8.5	Road (NH, SH, Village Road		The National Highway (NH-179B) Chennai –
	etc)		Tiruvannamalai is about 9.3km on
	,		northwestern side of the area.
			The State Highway (SH-134) Tindivanam -
			Marakkanam is about 2Km on southern 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 /		There is no Reserved Forest / Wild Life
	Social Forest / Wild Life Sanctuary etc.,		Sanctuary etc., within a radius of 1Km.
8.8	Any Interstate Border,		There are No inter State border within a radius
	Protected areas under the		of 10Kms.
	Wild Life (Protection) Act,		
	1972, Critically Polluted		
	Areas as Identified by		
	Central Pollution Control		
	Board and Notified Eco		
	sensitive areas		
8.9	Any Other Structures	:	Nil

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I				Welfare Measures:	- N	18/
				Management & Supervisory persona	al)	to mar
		SKILL ines Ma e/Opera	ED ED anager /Forema ator/ Musdoor echanic		SKILLED/LABOUR	
		1.	Skilled	Mines Manager Foreman / Mate	1 No. 3 No.	
				Operator	18 No.	
		2.	Semi-skilled	Mechanic Driver	1 No. 6 No.	
		4.	Octifit Skilled		0 110	
		3.	Unskilled	Labours	14Nos	
		A 11	1	Total =	43Nos	
			-	entee, the no. of men of roll will be		
				power is adequate to meet out	-	
				inery strength envisaged in the mi		
		-		ovisions of Mines Safety Regulations		
	≻ It	is bee	en ensured t	hat, child labours under 18 years	s of age will not	
		-		rying operation.		
			•	ance policies will be taken by the o the end of the lease period.	e applicant to all	
_	Welfa	re Mea	asures	12		
a.	Drink	ing W	ater :	Packaged drinking water is ava	ulable from the	
I		0	2 I I	nearby approved water	vendors in	

b. Sanitary facilities : Semi-permanent latrines & urinty shall be maintained at convenient places for use of labour as per the provisions of Rule (33 of the Vares Rules, 1960 separately for males and tenales. 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 12.5Km (West) in Thindivanam 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: 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. 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. PERSONAL PROTECTIVE EQUIPMENT (PPEE) Eventor PERSONAL PROTECTIVE Eventor PERSONAL PROTECTIVE Eventor PERSONAL PROTECTIVE Eventor PERSONAL PROTECTIVE Eventor <	c. First Aid Facility is per the provisions of Rule (33 of the Kules, 1960 separately for males and chales, Washing facilities shall also be arranged as per rule (36) of the Mines Rules, 1960. c. First Aid Facility is 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 12.5Km (West) in Thindivanam the competent and Statutory foreman/ permit manager will be in charge of first aid. d. Labour Health i: 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: 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. 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. FIFSONAL PROTECTIVE FIFSONAL PROTECTIVE OWNERTIFY PROTECTIVE FIFSONAL PROTECTIVE		I BURNED USE										
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e. Precautionary safety measures to the Labourers: 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. 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. Image: Precision of the protective pro	e. Precautionary safety measures to the Labourers: 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. Mecessary 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. Image: the provide of the train the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation. Image: the provide of the provide officers to train about the safe and systematic quarrying operation. Image: the provide officer to train about the safe and systematic quarrying operation. Image: the provide officer to train about the safe and systematic quarrying operation. Image: the provide officer to train about the safe and systematic quarrying operation. Image: the provide officer to train about the safe and systematic quarrying operation. Image: the provide officer to train about the safe and systematic quarrying operation. Image: 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. Image: training will be conducted once in a year to all the employees with the help of the provide the p	c. First Aid Facility	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 12.5Km (West) in Thindivanam the competent and Statutory foreman/ permit manager										
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		for Mine labour operation. Necessary tra with the help of and systematic o	rs under the guidance of DGMS being a mechanized ining will be conducted once in a year to all the employees qualified and experienced officers to train about the safe uarrying operation.										
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	PART - B
10.0 Environmental Manage	
10.1 Existing Land Use Pattern	
10.2 Water Regime	: Water table in this area is noticed at a depth of 68m and presently, in the proposed mining plan only 38m below ground level and 48m depth has been envisaged as workable depth for safe & economic quarrying for the entire lease period. hence, it will not affect the ground water depletion of this area.
10.3 Flora and Fauna	: 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.
10.4 Climatic conditions	 Generally subtropical climatic condition prevails throughout the year and there is no sharp variation in climate. This District receives rain both in south west and north east monsoon. 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.

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					an film an	- 6 HAR ITA	
10.5	Human Settlement			en as under.	ions with the po		/
		SN	lo	Name of the Village	able No-5 Approximate distance & Direction from lease applied area	Approximate population	
		-	1,	Tennampundi	1.4Km - NE	250	
			2.	Karuppur	2.7km - NW	500	
			3.	Bramadesam	2.0km - SE	700	
			4.	Alangaipakkam	1.5km - SW	300	
10.6	Plan for Air, Dust	: A	۱ir	or dust expected	to be generated f	rom drilling	
	Suppression	- II-		-	ds, places of exca		
					y periodical wettin		
					drilling and du		
		- 6		-	e provided to drill	-	
					dust from the sit	-	
			•		exposed directly		
		C	on	ditions will be	e provide such	protective	
			-	ipment like mask per the Mines Act.	t, ear plug, helme	t, gloze etc.,	
10.7	Plan for Noise Control	_			Stone will be car	ried out by	
10.7	Fian for Noise Condion		-	<i>v</i> v -	ing by using	-	
				-	ence, noise wil	-	
			-			noise level	
					arried out to chec		
				-	the quarry site. I		
					ceed the permiss		
		8	30d	lb during the qua	rry working hours	.	
10.8	Environmental Impact	: 1	'nε	mining plan	proposed is fo	r a small	
	Assessment Statement	r	pro	duction of Rough	stone without inv	volving deep	
1	Describing Impact on	1	ol	e drilling and h	eavy blasting. S	uch limited	
	mining on the next	r	nir	ning activity is no	ot likely to cause	any impact	
	Five years	а	ıdv	ersely on enviror	nment as far as	pollution of	
	, , , , , , , , , , , , , , , , , , ,	а	úr,	water and no	oise is concerne	d, anyhow	
				-	et studies will be		
		a	is j	per EIA notificatio	n issued by MOEI	ř.	
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10.9	Proposal for Waste Management Proposal of Reclamation of Land		There is no waste anticipated in this rough stone quarry operation. In the proposed mining plan 38m (below ground level) and 48m depth has been envisaged as	10-550
	affected during mining activities and at the end of mining.		workable depth for safe & economic mining during the lease period. Hence, after quarry reaches ultimate pit limit (for this lease period) of 48m 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 8600Sqm area is proposed to use under afforestation by planting 1032nos 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 Esti	ma	ate / Budget for (EMP) Environment Management	
	 A. Fixed Asset Cost: 1. Land Cost (600000/1Ha)= 2. First aid room and accessories 3. Labour Shed 4. Sanitary Facility Total= 	44 - 44	Rs. 28,50,000 Rs.1,00,000 Rs.1,00,000 Rs.1,00,000 Rs. 31,50,000/-	
	 B. Operational Cost: 1. Machineries 2. Fencing cost Total 		Rs.90,00,000- Rs. 2,50,000 Rs.92,50,000/-	

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C.EMP Cost:		Budget Provision for the entire quartying period
	:	Air Quality Sampling = Rs 40,000/-
	¥.	Water Quality Sampling = Rs. 40,000/-
	2	Noise Monitoring = Rs. 20,000/-
	2	Ground vibration test = Rs. 20,000/-
Expenditure		, ,
1. Drinking water		
facility		Rs.1,50,000/-
2. Sanitary		
Arrangements		Rs. 50,000/-
3. Safety kids		Rs. 50,000/-
4. Water sprinkling		Rs. 1,50,000/-
5. Afforestation		Rs. 1,50,000/-
Total=		Rs. 6,70,000/-
Total Project Cost	E.	Rs. 1,30,70,000/-
(A+B+C)		
CSR Cost(2% of	÷	Rs. 2,61,400/-
Total Project Cost)		

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	reclamation of already		pits after the end of the life of lease will be
	mined out area.		fenced to prevent inherent entry of public and
			cattles.
11.2	Measures to be under	\$	Measures will be taken as per the Acts and
	taken on mine closure as		Rules. The quarried pit will be fenced by using
	per Act & Rules		Barbed wire fencing to prevent inherent entry of
			public and cattle.
11.3	Mitigation measures to	÷	Mitigation measures: Drilling will be carried out
	be undertaken for safety		by wet drilling mode to control the dust
	and restoration/		propagation into the air.
	reclamation of the		Blasting will be carried out on limited scale.
	already mined out area		Mist Water spraying on haul road is proposed
			to prevent the dust propagation into the air.

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- (i) Permission will be obtained from the District Mines Office (or stract 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 : 05.02.2024

This mining plun is approved based on the instructions and guidelines issued by the Commissioner of Geology and mining. Chennai vide letter Re. 96 2007 1012 dated 19-11-2012 Assistant Director cining, Viluppuram is precise area communication and Rc. No. Algam/9612021 Wated : 🔁 🤉 02.202 þЗ Assistant Director Geology and Mining Dated : 06.03.202.4 Viluppuram.

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สีแอบันชาย

உதவி இயக்குநர். புவியியல் மற்றும் கரங்கத்துறை அறுவலகம், விழுப்புரம்.

குறிப்பானை

பொருள் களிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் மற்றும் கிராவல் - விழுப்புரம் மாவட்டம் -மரக்காணம் வட்டம் - நல்முக்கல் கிராமம் - பட்டா புல 35/435/3. மற்றும் எண்கள்.34/181. 35/2в. பரப்பளவில் ஆகியவற்றில் 4.75.00 ஹெக்டோ பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குவாரி சூத்தகை அனுமதி கோரி திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவண்டர் பெருமுக்கல் கிராமம் என்பவர் விண்ணப்பம் செய்தது -அறிக்கை செய்து உரிமம் வழங்க பரிந்துரை வரப்பெற்றது தகுதியான நிலப்பரப்பாக கருதி -ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவிணை பெற்று சமர்பிக்கக் கோருதல் - தொடர்பாக.

பார்வை:

ந.க.எண். ஆ/பு & சு/96/2021

நாள்: 02.02.2024

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- திரு.வ.நாகராஜன் து/பெ.வரதராஜ் கவுண்டர், எண்.65, மரக்காணம் ரோடு, பெருமுக்கல் கிராமம், மரக்காணம் வட்டம், விழுப்புரம் மாவட்டம் என்பவரின் விண்ணப்பம் நாள்.15.04.2021.
- சார் ஆட்சியர், திண்டிவனம் அவர்களின் கடித எண். ந.க. அ3/6969/2021, நாள்: 30.10.2023.
- விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநர் அவர்களின் புலத்தணிக்கை அறிக்கை நாள்: 13.12.2023. ----000----

விழுப்புரம் மாவட்டம், மரக்காணம் வட்டம், பெருமுக்கல் கிராமத்தைச் சேர்ந்த திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் என்பவர் விழுப்புரம் மாவட்டம், மரக்காணம் வட்டம், நல்முக்கல் கிராமம், பட்டா புல எண்கள். 34/181 - 2.43.0 ஏர்ஸ், 35/28 - 0.28.0 ஏர்ஸ், 35/3 -0.88.0 ஏர்ஸ் மற்றும் 35/4 -1.16.0 ஏர்ஸ் ஆகியவற்றில் 4.75.00 ஹெக்டேர் பரப்பளவில் உள்ள நிலத்தில் பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குவாரி குத்தகை பார்வை 1-ல் காணும் விண்ணப்பத்தினை சமர்ப்பித்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக, திண்டிவனம் சார்ஆட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் அறிக்கையில் மரக்காணம் வட்டம், நல்முக்கல் கிராமம், பட்டா புல எண்கள். 34/181 - 2.43.0 ஏர்ஸ், 35/28 -0.28.0 ஏர்ஸ், 35/3 0.88.0 ஏர்ஸ் மற்றும் 35/4 -1.16.0 ஏர்ஸ் ஆக மொத்த பரப்பு 4.75.00 ஹெக்டேர் பரப்பளவில் உள்ள பட்டா நிலத்தில் திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் என்பவருக்கு பத்தாண்டுகளுக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க கீழ்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

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- விண்ணப்ப புலன்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளியும் மற்றும் அரசு புறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி மேற்கொள்ளப்பட வேண்டும்.
- ii. குவாரிப்பணி மேற்கொள்ளும் போது அருகிலுள்ள அரசு பறம்போக்கு, வாய்க்கால் மற்றும் பட்டா நிலங்களுக்கு எவ்வித இடையூறும் இல்லாமல் குவாரிப்பணி செய்ய வேண்டும்.
- ப்ப. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை DGPS சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்பிக்க வேண்டும்.
- iv. தமிழ்நாடு சிறுகனிம் சலுகை விதிகள் 1959 விதி-41ன்படி தகுதிவாய்ந்த நபரால் சுரங்க திட்டம் தயார் செய்து உதவி இயக்குநர் அவர்களின் ஒப்புதல் பெறவேண்டும்.
- v. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-42ன்படி மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்திடமிருந்து சுற்றுச்சூழல் சான்று பெற்று சமர்பிக்கப்படவேண்டும்.

எனவே, திண்டிவனம் சார் ஆட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் பரிந்துரை அறிக்கையின் அடிப்படையில் மரக்காணம் வட்டம், நல்முக்கல் கிராமம், பட்டா புல எண்கள். 34/181 - 2.43.0 ஏர்ஸ், 35/28 - 0.28.0 ஏர்ஸ், 35/3 -0.88.0 ஏர்ஸ் மற்றும் 35/4 -1.16.0 ஏர்ஸ் ஆக மொத்த பரப்பு 4.75.00 ஹெக்டேர் பரப்பளவில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன்படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் என்பவருக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

அதன் அடிப்படையில், தமிழ்நாடு சிறு கனிம சலுகை விதிகள் 1959 விதி எண்.41-ன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை தகுதிவாய்ந்த நபர் (QP) மூலமாக கீழ்கண்ட நிபந்தனைகளுக்குட்பட்டு தயாரித்து அதனை 90 தினங்களுக்குள் உதவி இயக்குநர் (புவியியல் மற்றும் சுரங்கத்துறை) சமர்ப்பிக்குமாற விண்ணப்பகாரா பரிசீலனைக்கு அவர்களின் கேட்டுக்கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன்படி சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்பிக்கும் இதன் மூலம் என குவாரி உரிமம் வழங்கப்படும் மட்டுமே பட்சத்தில் தெரிவிக்கப்படுகிறது.

- விண்ணப்ப புலன்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 பட்டிய பியி பாதுகாப்பு இடைவெளியும் மற்றும் அரசு பறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி மேற்கொள்ளப்பட வேண்டும்.
 குவாரிப்பணி மேற்கொள்ளப்பட மல்லும் மல்லும் குவாரிப்பணி மேற்கொள்ளப்பட மல்லும் மல்லும் குவாரிப்பணி மேற்கொள்ளப்பட மல்லும் மல்லும் குவாரிப்பணி மேற்கொள்ளப்பட மல்லும் மல்லும் குவாரிப்பணி மேற்கொள்ளப்பட
- ii. குவாரிப்பணி மேற்கொள்ளும் போது அருகிலுள்ள அரசு பறம்போக்கு, வாய்க்கால் மற்றும் பட்டா நிலங்களுக்கு எவ்வித இடையூறும் இவ்வாமல் குவாரிப்பணி செய்ய வேண்டும்.
- iii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை DGPS சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்பிக்க வேண்டும்.

உதவி வெ

புவியியல் மற்றும் சுரங்கத்துறை, விழுப்புரம்.

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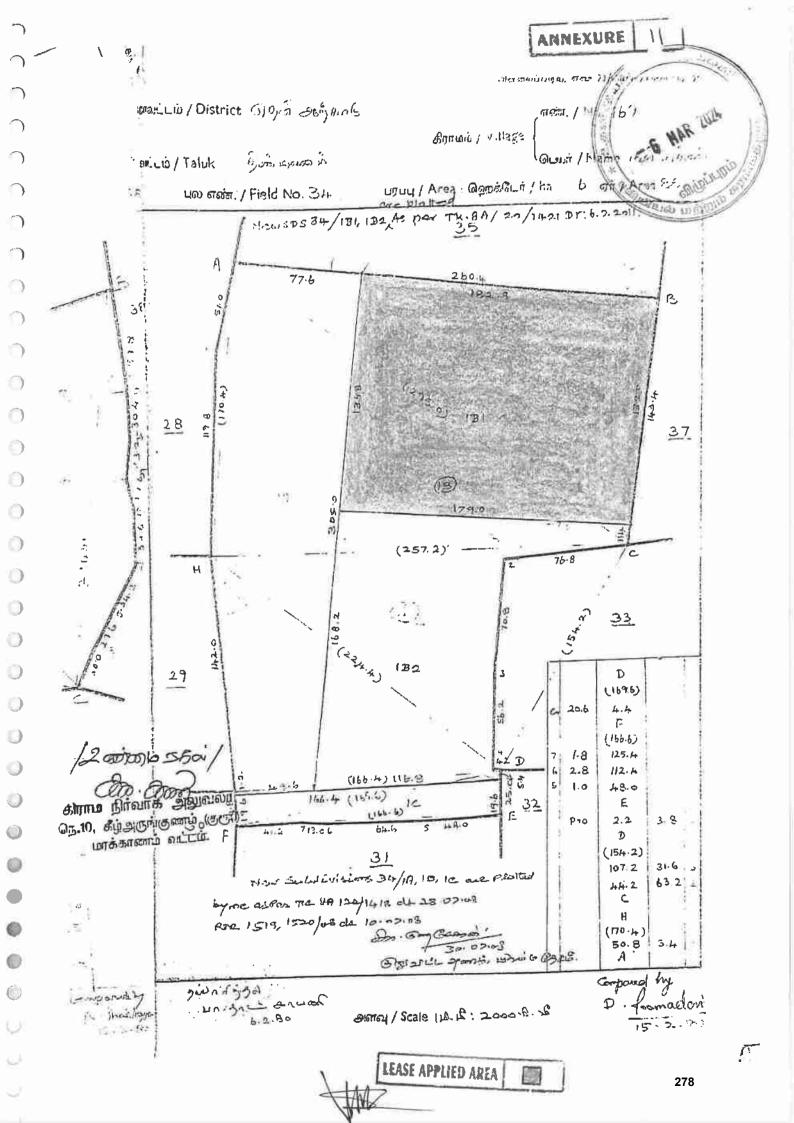
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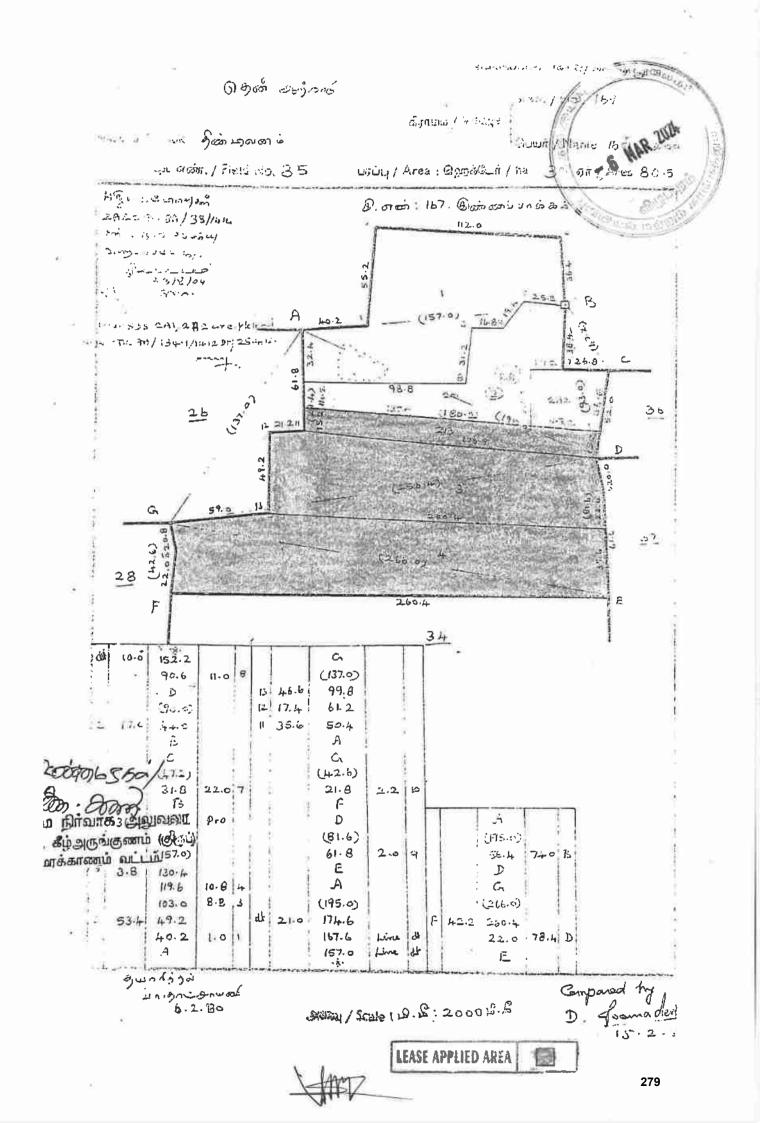
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திரு.வ.நாகராஜன், த⁄பெ.வரதராஜ் கவுண்டர், எண்.65, மரக்காணம் ரோடு, பெருமுக்கல் கிராமம், மரக்காணம் வட்டம், விழுப்புரம் மாவட்டம் <u>நகல்:-</u>

_____ 1. மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.

2. ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை.





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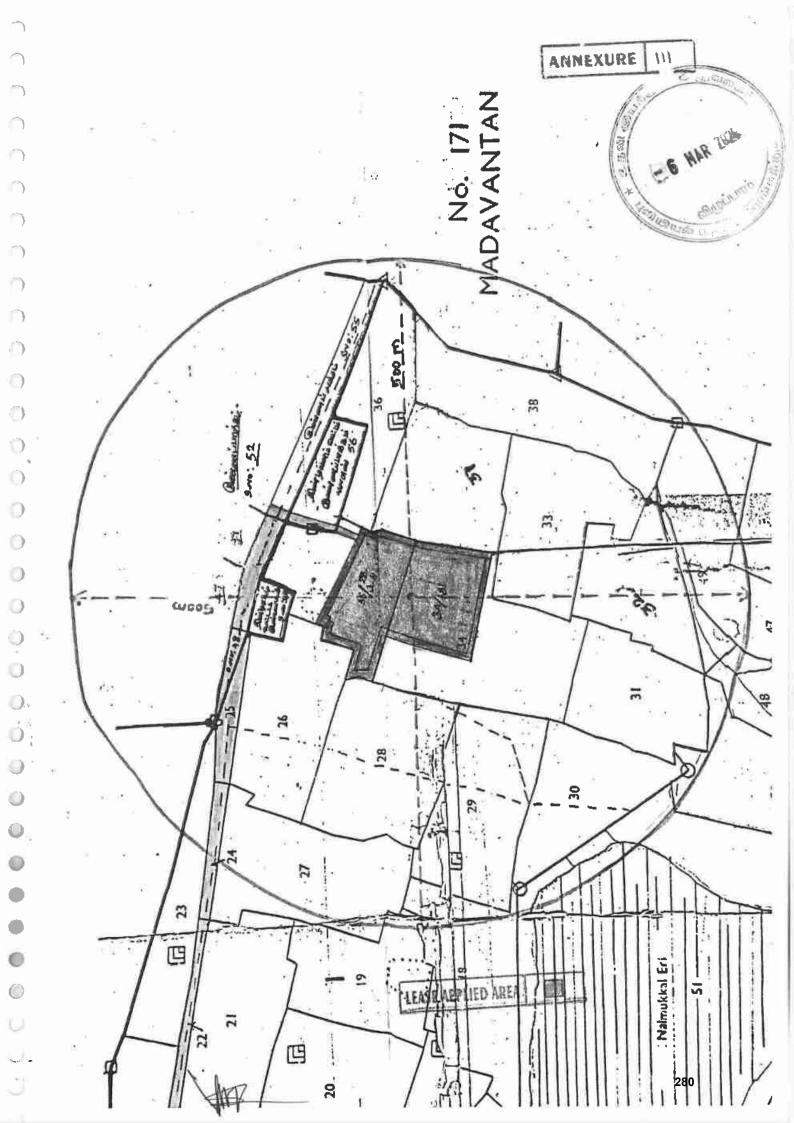
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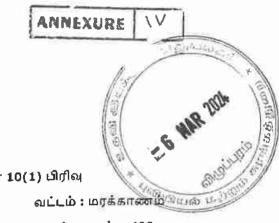
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தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : விழுப்புரம்

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பட்டா எண் : 425

வருவாய் திராமம் : நல்முக்கல்

உரிமையாளர்கள் பெயர்

புல எண்	உட்பிரிவு	புன்	செய்	நன் ⁽	செய்	وروم)ബെ	குறிப்புரைகள்
		սդնպ	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர	ரு - பை	ஹெக் - ஏர்	ரூ - பை	
34	181	2 - 43.00	6.70	+		-		rtr2591/11 22-06-2011
35	2B	0 - 28.00	0.80			~		D5679/20118A38/1414 09-08-2004
35	3	0 - 88.00	2.42				-	D5679/2011
35	4	1 - 16.00	3.19		-			D5679/2011
		4 - 75.00	13.11					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 07/11/157/00425/110761 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 31-01-2021 அன்று 11:01:29 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3.கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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1. പ്രാ எண்	34	9. மண் வயனமும் ரகமும்	8 - 4
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3. பழைய புல உட்பிரிவு எண்	34-1B	11. தீர்வை (ரூ - ஹெ)	
4. பகுதி	Ρ	12. பரப்பு (ஹெக்டேர் ஏர்)	
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	6.70
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	425
7. பாசன ஆதாரம்	-	15. குறிப்பு	*
8. இரு போகமா	-	16. பெயர்	1.நாகராஜன்
குறிப்பு:			
தறிப்பு:			

பேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து 1 பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 07/11/157/34/1B1/100761 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

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	அ-புதிவேடு	விவரங்கள் - ஊரகம்	19/
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வட்டம் : மரக்காண	מי		
திராமம் : நல்முக்க	ல்		
1. புல எண்	35	9. மண் வயனமும் ரகமும்	8 - 4
2, உட்பிரிவு எண்	28	10. மண் தரம்	7
3. பழைய புல உட்பிரிவு எண்	28-2	11. தீர்வை (ரூ - ஹெ)	2.75
உடபர்வு எண் 4. பகுதி		12. பரப்பு (ஹெக்டேர் ஏர்)	
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.80
5. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	425
7. பாசன ஆதாரம்	-	15. குறிப்பு	ē.
3. இரு போகமா	-	16. பெயர்	1.நாகராஜன்
	1.பெறப்பட்டவை. இவற்க		பின் பதிவேட்டிலிருந்து vices.tn.gov.in என்ற என்ற குறிப்பு எண்ணை உள்ள
	1. பெறப்பட்டவை. இவற்க இணைய தளத்தில் 07/	றை தாங்கள் https://eser 11/157/35/28/100761 எ	vices.tn.gov.in என்ற

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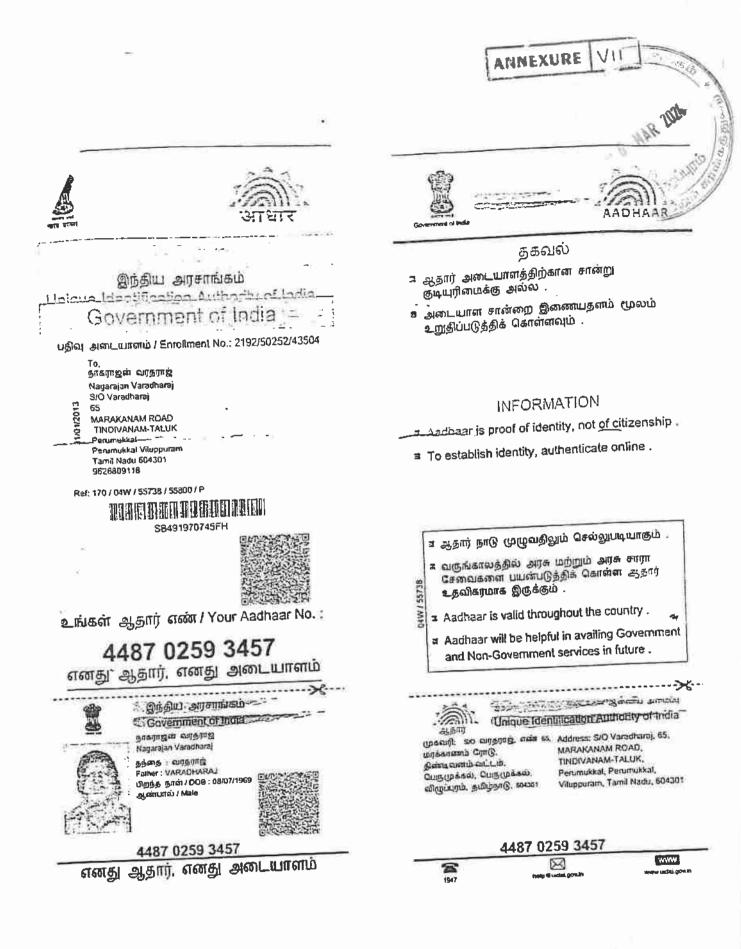
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ANNEXURE	MA
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CHETTINAD CEMENT CORPORATION LTD.,

(Regd. Office: RANI SEETHAI HALL BUILDING IV & V FLOORS, 603, ANNA SALAI, MADRAS-600006.) WORKS OFFICE: PULIYUR.

21144 TELE: PHONE 22744 KARUR 21745 GRAM "CEMENT" Puliyur C.F. Telex: 0456-215. STD Code: 04324

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All Correspondences to Kumatarajah Muthatie Nagar. PULIYUR CEMENT FACTORY POST 6391148 (Karur Talun Trichy Dt.)

SU2 1003 69

22"dSeptember,1987.

T.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.

	Name of the Pit		Average Raising/day.
1.	Alambadi Pit.		1,700 T.
2.	Mallapuram Pit.	-	900 T.
з.	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.

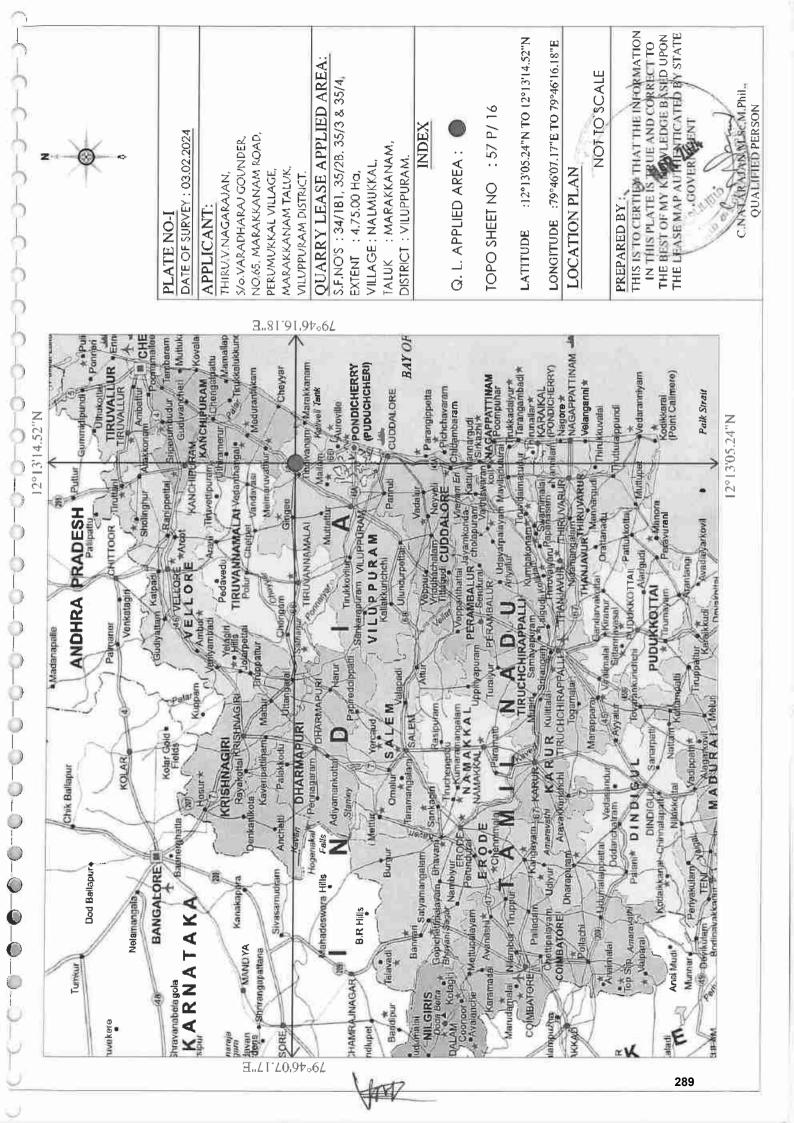
for CHETTINAD CEMENT CORPORATION LTD.,

- PN

(T.RAJU). Mines Manager & Dy. General Manager.

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3209 Faculty of Science The Senate of the Annamalai University hereby makes to the Degrees of Muster of Science (by Ecomination) in _____ he having been certified by duly appointed Examiners at the examination held in April 1976. to be qualified to receive the same und that he was placed in the First Class. Given under the seal of the University. A. Chandrasekha Annamalainagan Vice . CASSacellor. ANV All Decomber 1976 .



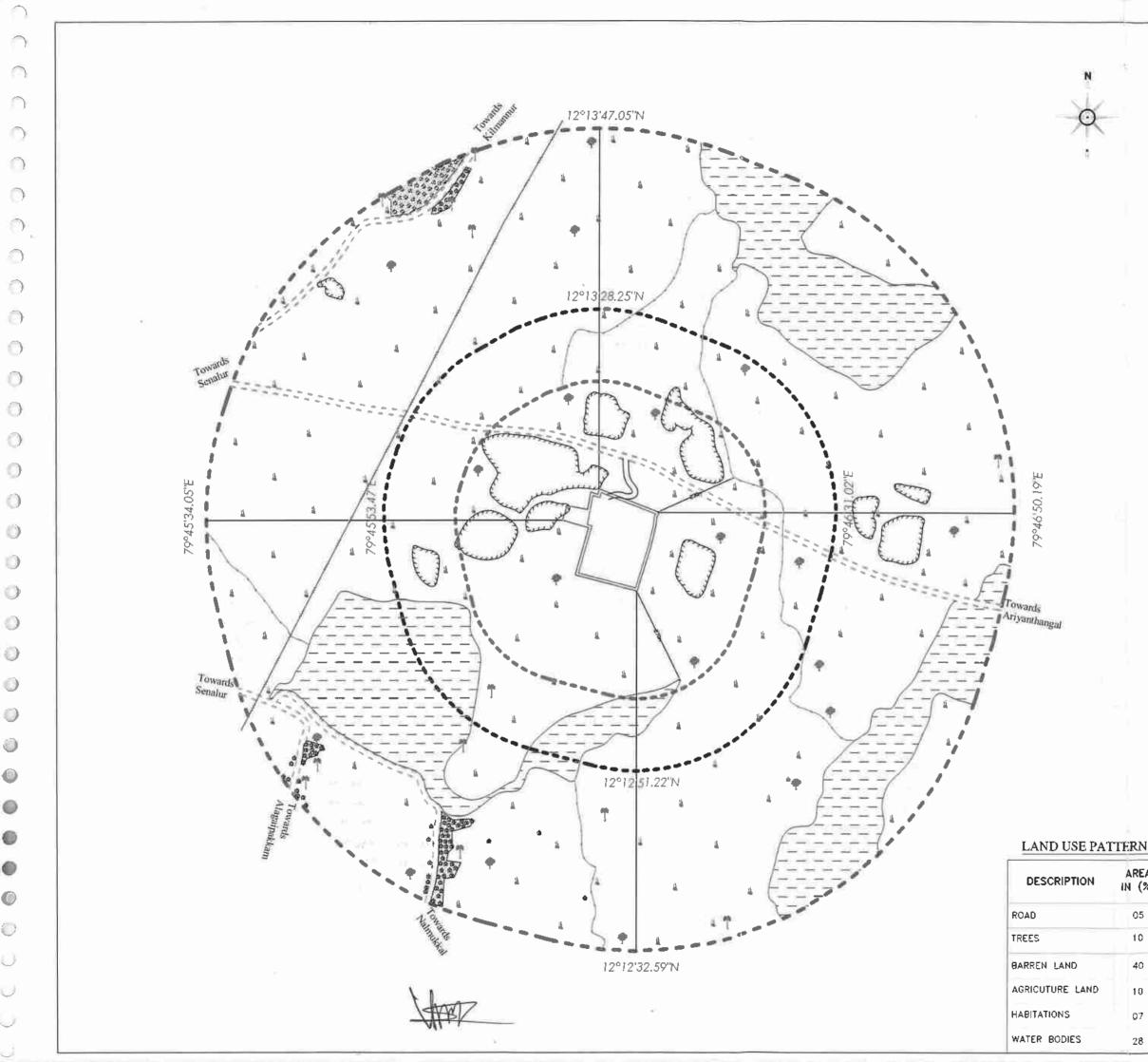
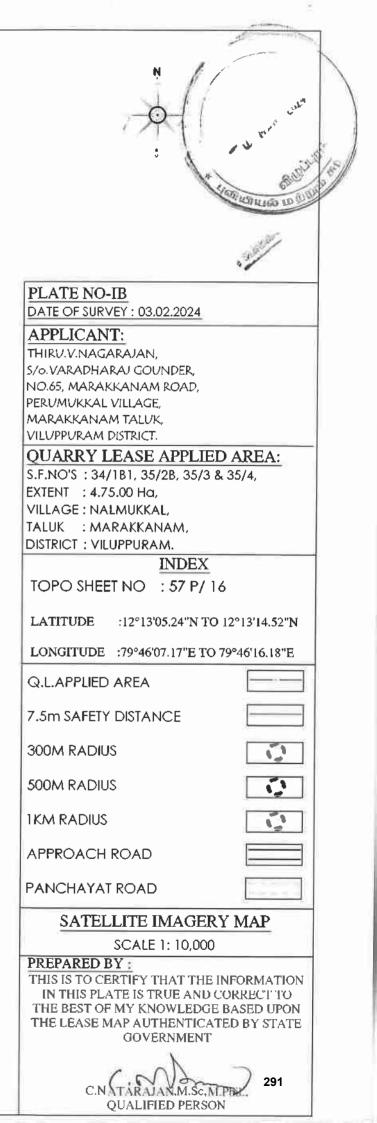
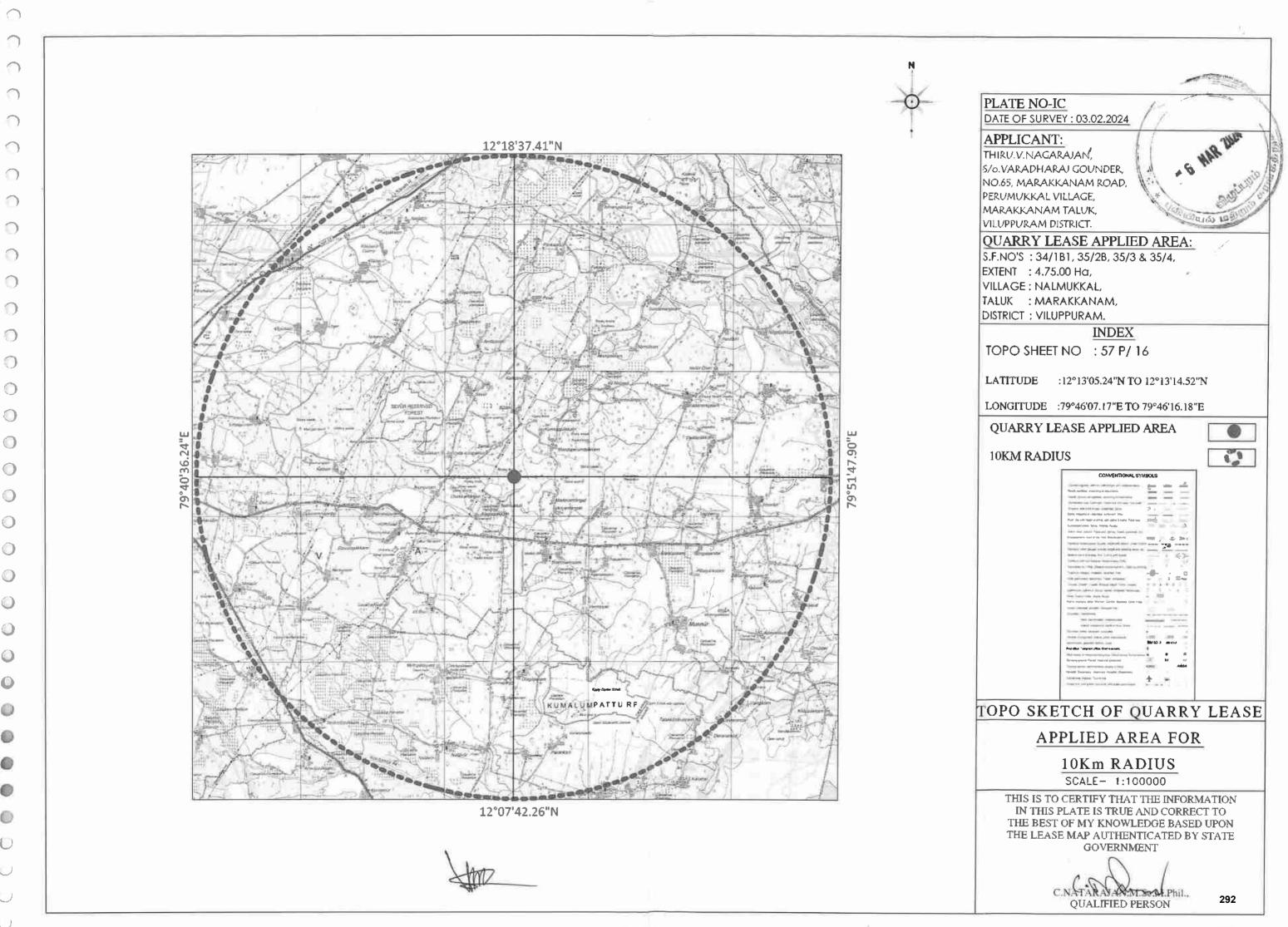


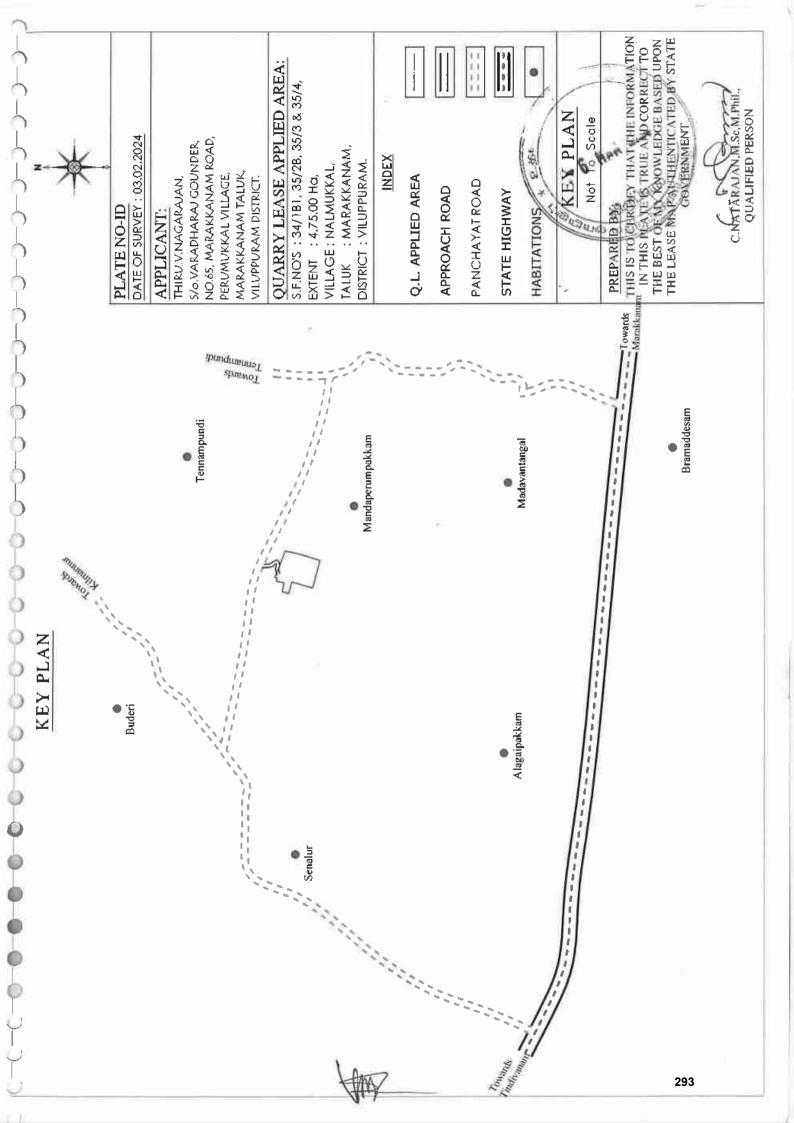
PLATE NO-IA DATE OF SURVEY : 03.02.202	4
APPLICANT: THIRU.V.NAGARAJAN, S/o.VARADHARAJ GOUNDER, NO.65, MARAKKANAM ROAD PERUMUKKAL VILLAGE, MARAKKANAM TALVK, VILUPPURAM DISTRICT.	1
QUARRY LEASE APPI S.F.NO'S : 34/181, 35/28, 35 EXTENT : 4.75.00 Ha, VILLAGE : NALMUKKAL, TALUK : MARAKKANAM, DISTRICT : VILUPPURAM. INDE	5/3 & 35/4,
TOPO SHEET NO : 57 F	P/ 16
LATITUDE :12°13'05.24"N	NTO 12°13'14.52"N
LONGITUDE :79°46'07.17"E	E TO 79°46'16.18"E
Q.L.APPLIED AREA	
7.5m SAFETY DISTANCE	
300M RADIUS	
500M RADIUS	0
1 KM RADIUS	
APPROACH ROAD	
PANCHAYAT ROAD	
BARREN LAND	<u><u>u</u> <u>u</u> <u>u</u></u>
TREES	• 1
SEASONAL AGRICULTURE	
HABITATIONS	
QUARRY PIT	
TANK	
HT LINE	
ODAI	\sim
ENVIRONMENTA SCALE 1: 10.0	
PREPARED BY : THIS IS TO CERTIFY THAT T IN THIS PLATE IS TRUE AN THE BEST OF MY KNOWLEI THE LEASE MAP AUTHENTI GOVERNME	THE INFORMATION ND CORRECT TO DGE BASED UPON ICATED BY STATE
C.NATARAJAN.M.S QUALIFIED PEI	Sc.M.Phil.

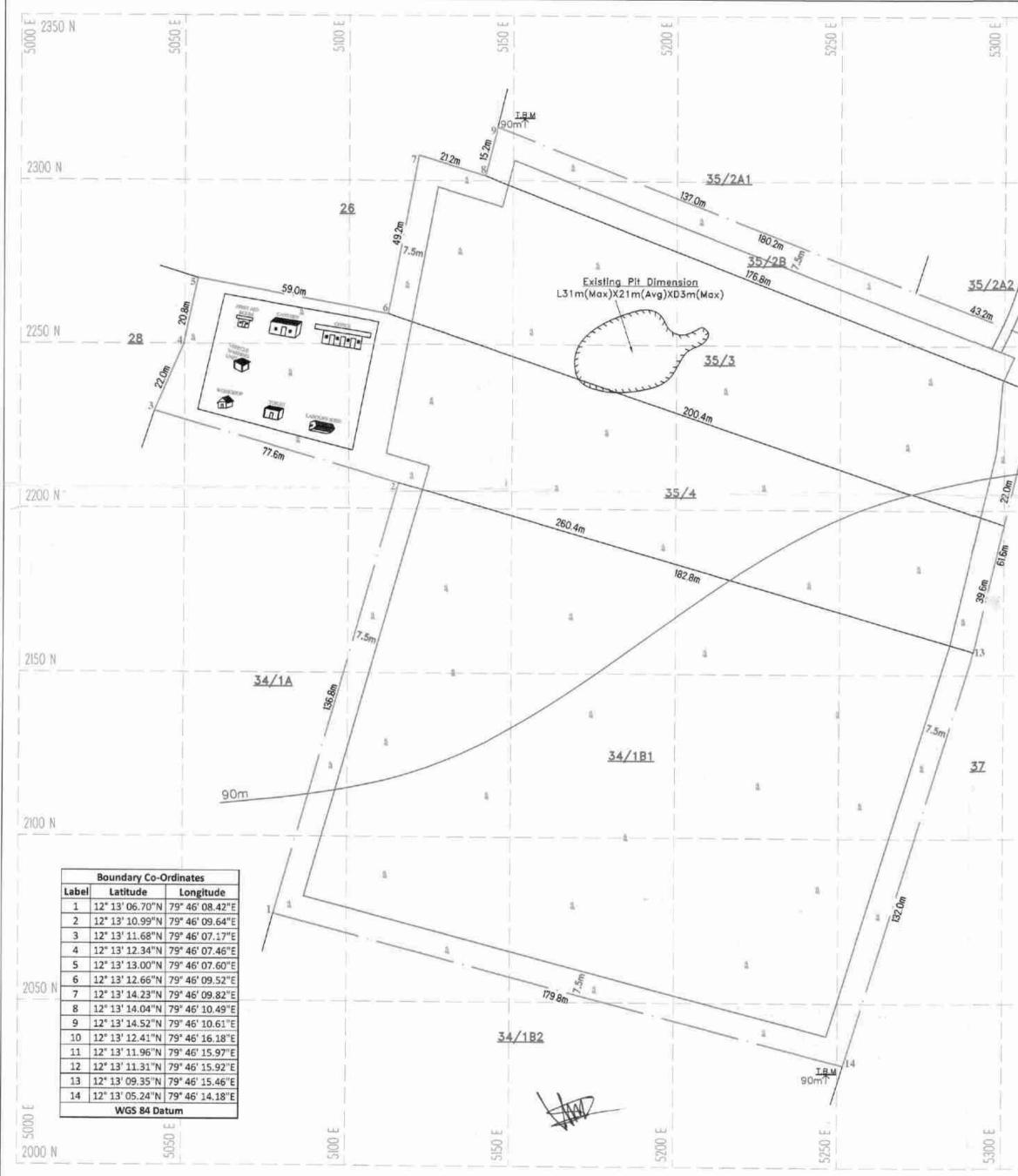




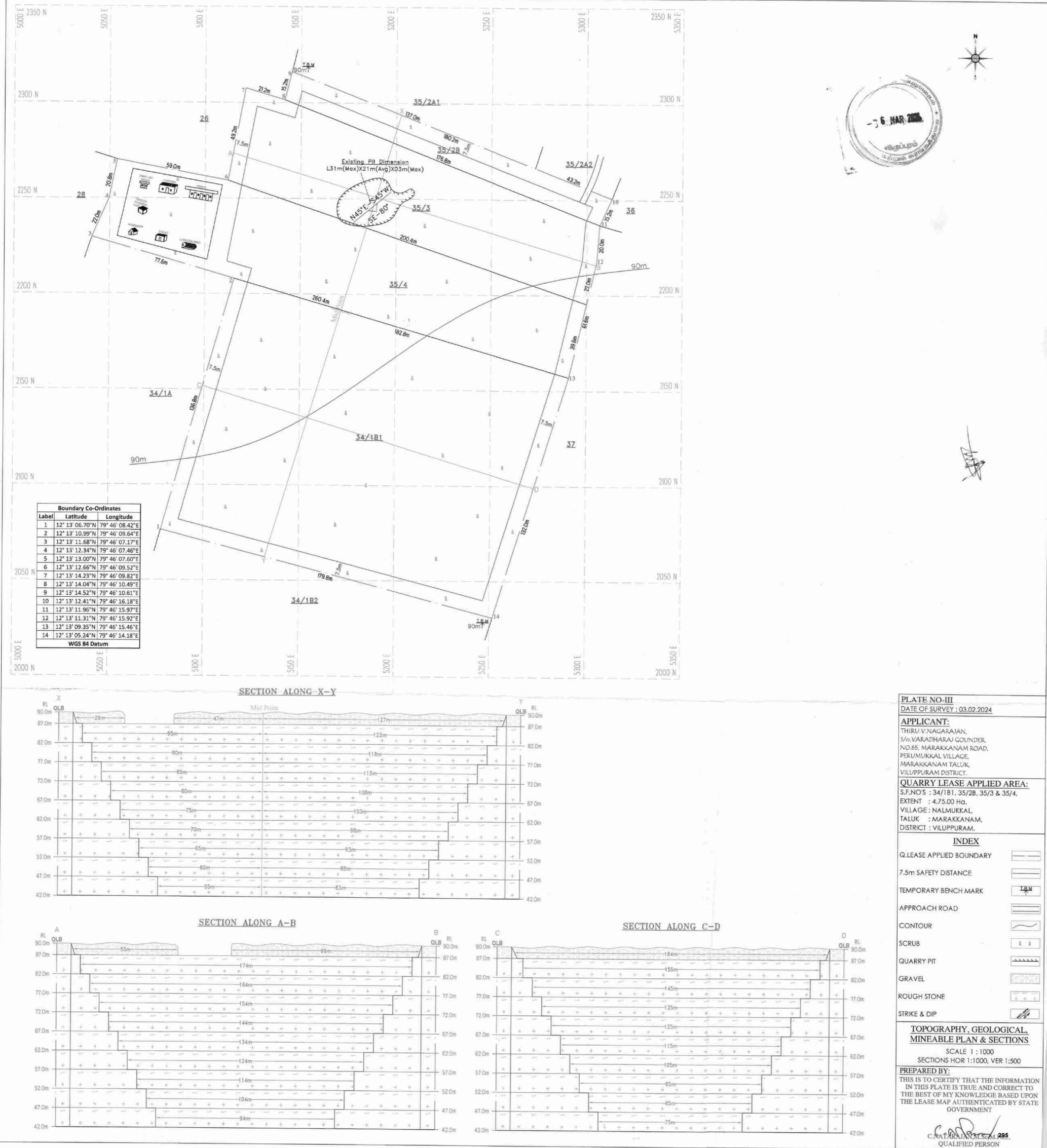


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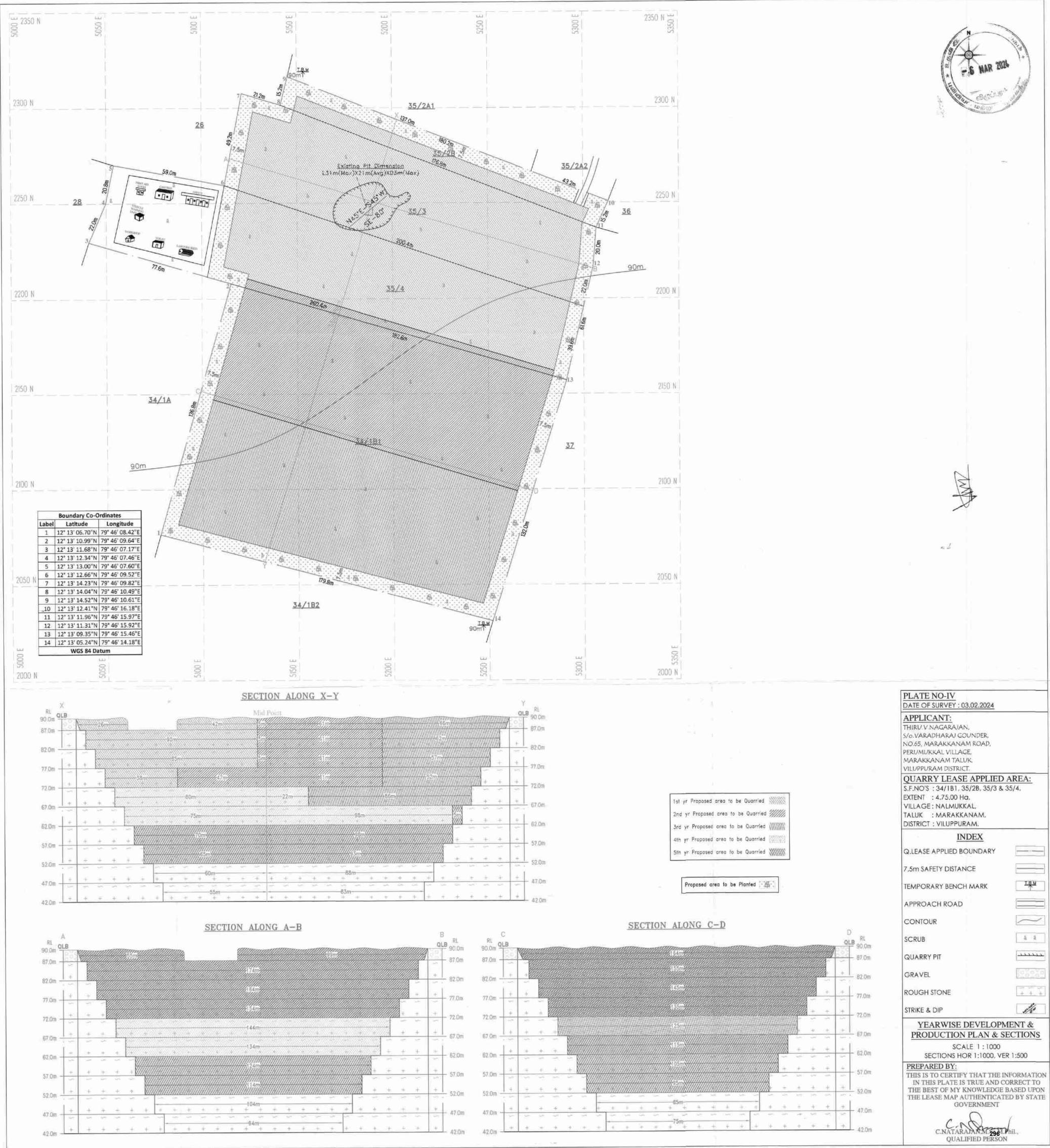


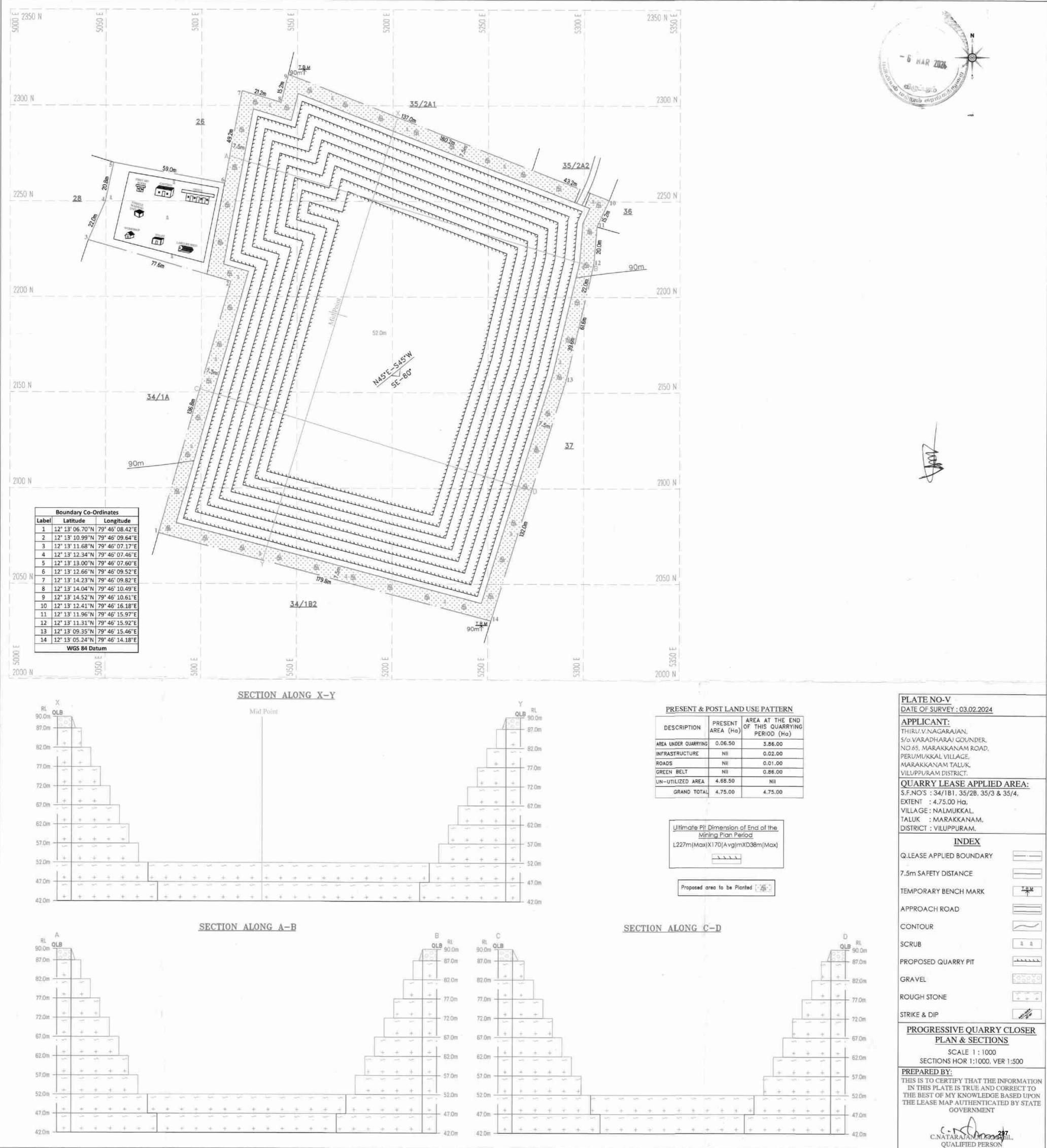
2350 N 955	- 5 NAR ZOLA
10 2250 N 2250 N 36 4 4 2250 N 36	
8 12 <u>90m</u> 2200 N	
2150 N	PLATE NO-II DATE OF SURVEY : 03.02.2024 APPLICANT: THIRU.V.NAGARAJAN, S/o.VARADHARAJ GOUNDER, NO.65. MARAKKANAM ROAD, PERUMUKKAL VILLAGE, MARAKKANAM TALUK, VILUPPURAM DISTRICT. QUARRY LEASE APPLIED AREA: S.F.NO'S : 34/1B1, 35/2B, 35/3 & 35/4, EXTENT : 4.75.00 Hg, VILLAGE : NALMUKKAL, TALUK : MARAKKANAM, DISTRICT : VILUPPURAM.
2100 N	INDEX Q.LEASE APPLIED BOUNDARY 7.5m SAFETY DISTANCE TEMPORARY BENCH MARK
	APPROACH ROAD
2050 N	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
2000 N	C.NATARAJAN.M. SC.N29414 QUALIFIED PERSON



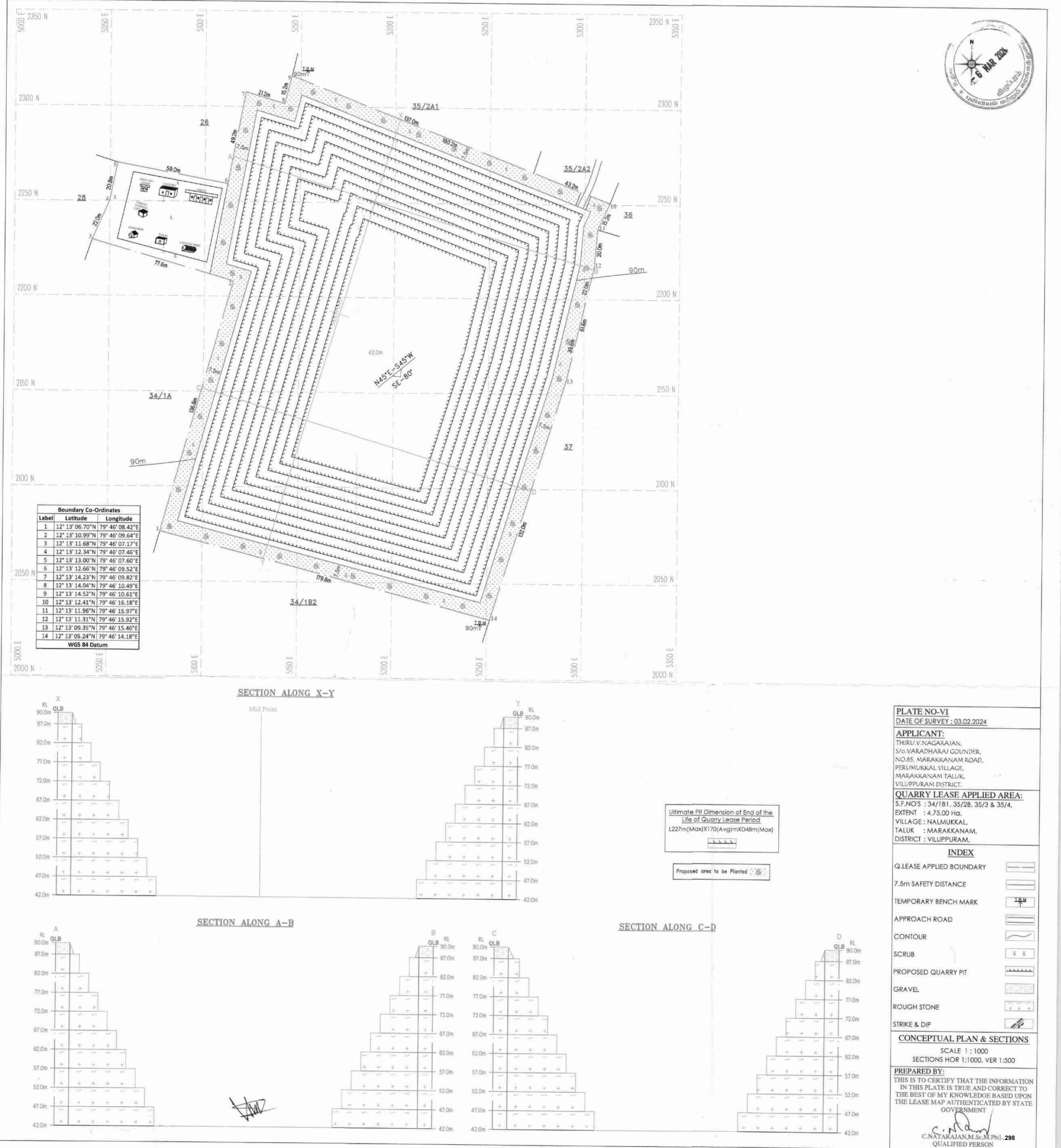
















From Tmt. S.Safiya, M.Sc., Assistant Director, Geology and Mining, Viluppuram.

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To Thiru.V

Thiru.V.Nagarajan, S/o.Varadaraj Gounder, No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District.

Rc.No.B/G&M/96/2021 Dated 06.03.2024

- Sub: Mines & Minerals Minor Mineral Rough stone and Gravel - Viluppuram District - Marakkanam Taluk - Nalmukkal Village - over an extent of 4.75.00 hectares of patta lands - S.F.Nos. 34/1B1 -2.43.0, 35/2B - 0.28.0, 35/3 - 0.88.0 and 35/4 -1.16.0 - Quarry lease application preferred by Thiru.V.Nagarajan, Perumukkal Village - 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. B/G&M/96/2021 Dated 02.02.2024.
 - 2. Representation from Thiru.V.Nagarajan, Perumukkal Village Dated 04.03.2024.

With reference to your letter in the reference 2^{nd} 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 4.75.00 hectares of patta lands in S.F.Nos.34/1B1 - 2.43.0, 35/2B - 0.28.0, 35/3 - 0.88.0 and 35/4 -1.16.0 of Nalmukkal Village, Marakkanam Taluk, Villupuram District are as follows.

SI. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hects)	Lease period	Remarks
1.	N.Gopinath, S/o.Natarajan, No.19, Nattamaikarar Street, Polambakkam Village, Cheyyur Village, Kanchipuram District.	Rough stone & Gravel	Marakkanam, Nalmukkal	33/5 37/3 37/4 37/5 37/6 37/7	0.54.5 1.14.0 0.68.5 0.40.0 0.31.0 <u>0.27.0</u> 3.35.0	21.03.2022 to 20.03.2027	*

1. Existing quarries:

2.	D.Durai, S/o.Dhanapal Gounder, Keelarungunam Village, Perumukkal Post, Marakkanam Taluk, Viluppuram District.	Rough stone & Gravel	Marakkanam Nalmukkal	27/6 27/7 27/8	0.40.5 0.39.0 <u>0.40.5</u> <u>1.20.0</u>	06.12.2022 to 05.12.2027	
3.	V.Ravichandiran, S/o.Varatharaj Gounder, No.63/19, Perumukkal Village and Post, Marakkanam Taluk, Viluppuram District	Rough stone & Gravel	Marakkanam Nalmukkal	26/1B1 27/3A 27/3B	0.77.0 0.14.5 <u>0.43.5</u> <u>1.35.0</u>	29.12.2022 to 28.12.2027	*

II. Proposed Area :

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Sl. No.	Name of the lessee / permit holderName of the Mineral		Taluk & Village	S.F. Nos.	Extent (in hects)	Remarks
1.	Thiru.V.Nagarajan,	Rough	Marakkanam,	34/1B1		-
	S/o.Varadaraj Gounder,	stone &	Nalmukkal	35/2B	0.28.0	
	No.65, Marakkanam Road,	Gravel		35/3	0.88.0	
	Perumukkal Village,			35/4	1.16.0	
	Marakkanam Taluk,				4.75.0	
	Viluppuram District.					

III. Abandoned quarries :

S1. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hects)	Lease period	Remarks
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Assistant Director, Geology and Mining, Viluppuram. Mg 613/24



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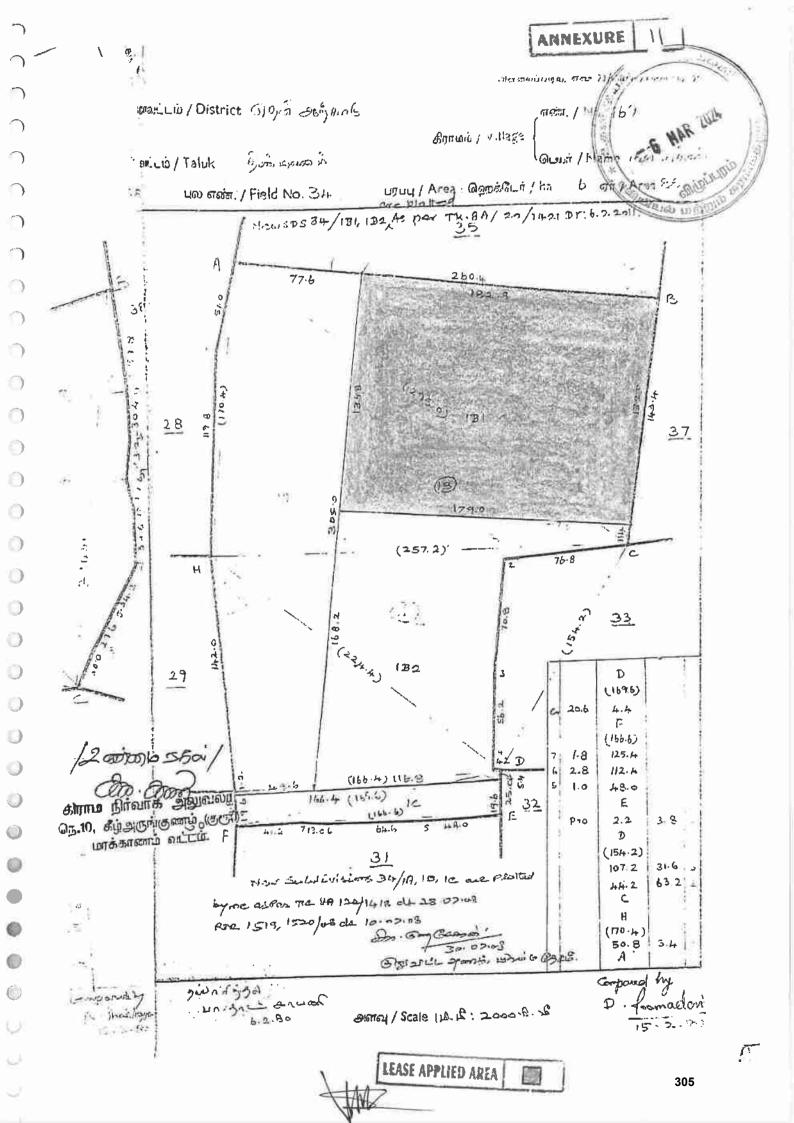
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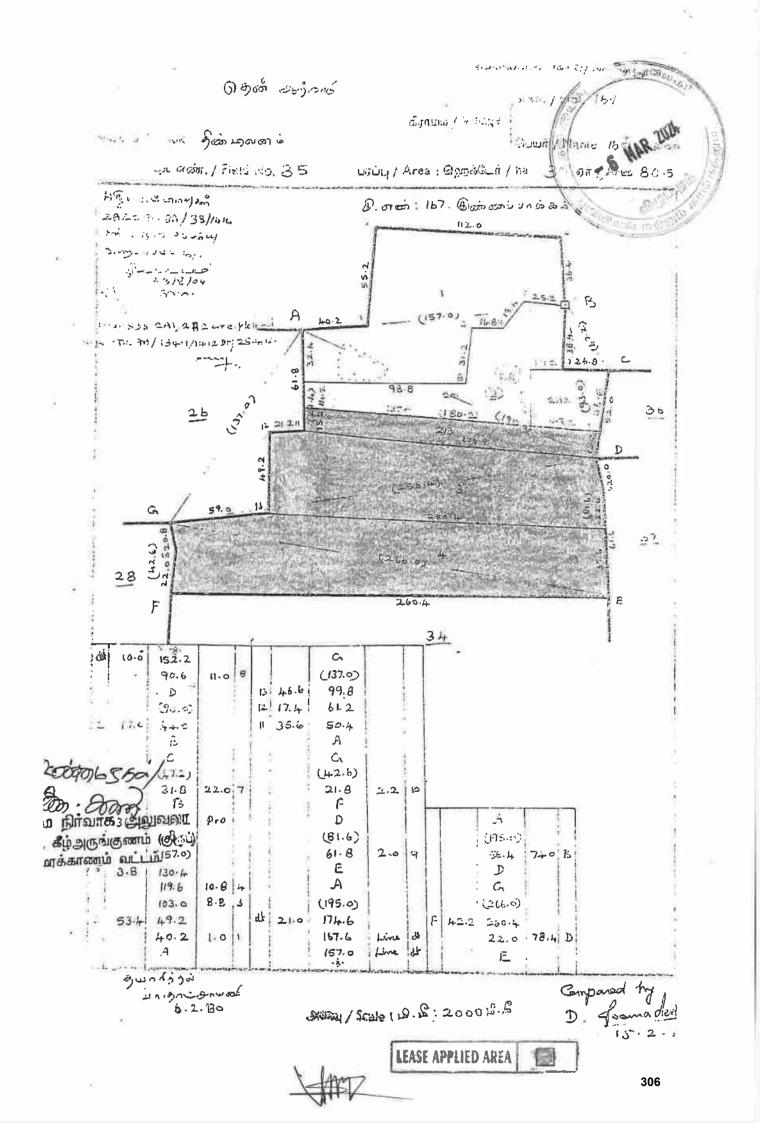
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லை 6 பேறம் மாவட்டம் மரக்காணம் நட்டம் 6 தல் முக்கல் கிறாமக 4ல எண்: 34/181 . 2.43.0 ஏர்ஸ் 35/28 0.280 ஏர்ஸ் 35/3 0.88.0 ஏர்ஸ் 35/4 1.16.0 ஏர்ஸ் 35 க லமாத்த பறப் 4. 4.75.0 ஷக்ட் பறப்பனவு நிலத்தில் உரிமையாளர் நடு, வ. நாதராஜன் திலப வரதறாகத் கவுண்டர் என்பலர் துக், வ. நாதராஜன் திலப வரதறாகத் கவுண்டர் என்பலர் துக், வ. நாதராஜன் திலப வரதறாகத் கவுண்டர் என்பலர் திக், வ. நாதராஜன் திலப வரதறாகத் கவுண்டு திக் கிடைது கல் மற்றும் திராவல் வெடீடி எடுக்க தேதனை சாதாரண கல் மற்றும் திராவல் வெடீடி எடுற்பது நலிகுக்கல் விமம் 400 ஏண் தளில் 300 மேடேர் சிர்ற்றவாதில் கிறாம 400 ஏண் தளில் 300 மேடேர் சிர்ற்றவாதில் இன்னாங்கள் தொறைல் 300 மேதேதிகள் பன் எரிதன் திலினாதிகள் தொறைல்கள் மத்திகள் பன் எரிதன் தல்லாதிகள் தாறைல்கள் மத்திகள் பன் எரிதன் தல்லாதிகள் வரணவுகள் சுரணாலயம் மற்றுடம் அல் நிக்கன் தல்லாரிகள் பரணவுகள் சுரணாலயம் மற்றுடம் அல் நிக்கன் தல்லாலம் ஏதிமே இல்றை எஸ் பதைதிகள் ஒருற்றைத்து துல்லாலம் துதிமே இல்றை எஸ் பதைதிகள்

கிராம நிர்வாக அறுகள் கீழ் அருக்குணம் (ஆப்) கிராமம் கேக்காணம் வட்டம், விழுப்புக் மாஷட்டம்







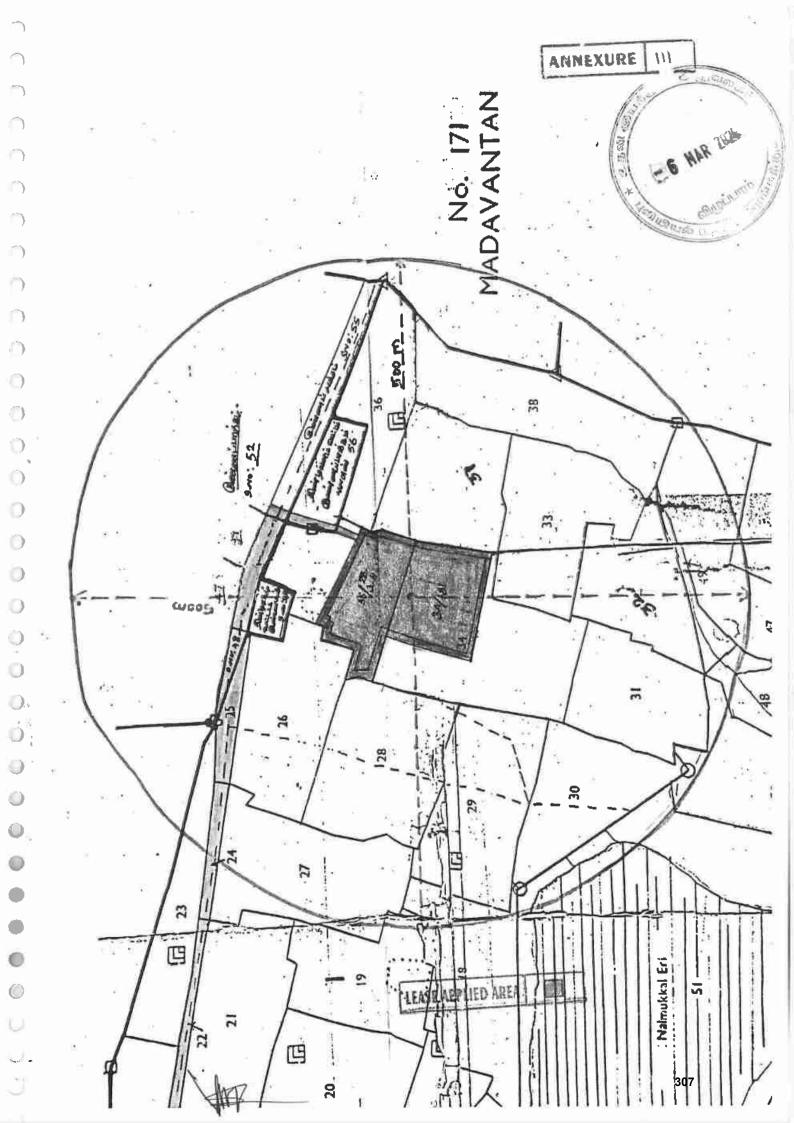
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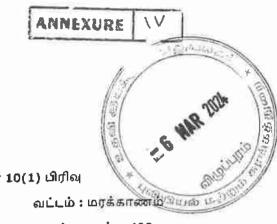
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தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : விழுப்புரம்

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வருவாய் திராமம் : நல்முக்கல்

உரிமையாளர்கள் பெயர்

เ. ฉ	ரதராஜிகவ	புண்டர்			தந்ல	1) 2) 2)	தாகரா	
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35	4	1 - 16.00	3.19		-		-	D5679/2011
		4 - 75.00	13.11					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 07/11/157/00425/110761 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 31-01-2021 அன்று 11:01:29 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3.கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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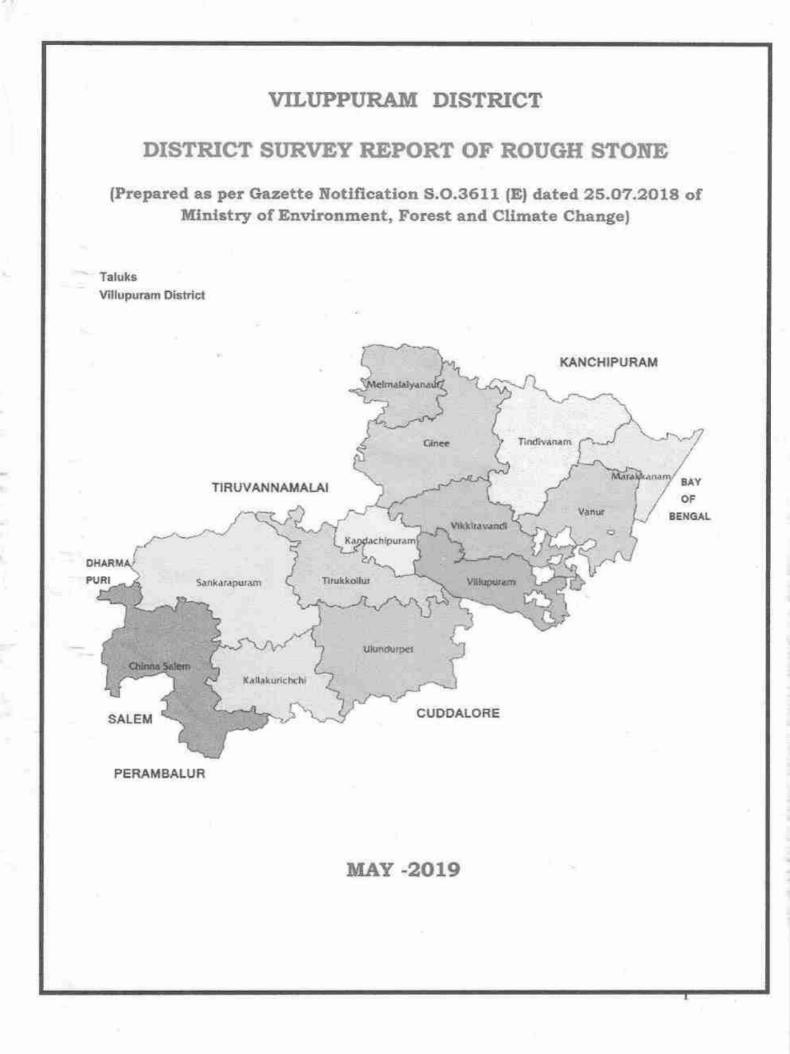
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திராமம் : நல்முக்க	ல்		
1. புல எண்	35	9. மண் வயனமும் ரகமும்	8 - 4
2. உட்பிரிவு எண்	28	10. மண் தரம்	7
3. பழைய புல பல் பிரிய பல	28-2	11. தீர்வை (ரூ - ஹெ)	2.75
உட்பிரிவு எண் 4. பகுதி	*	12. பரப்பு (ஹெக்டேர் ஏர்)	
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.80
5. நிலத்தின் வகை	புஞ்சை	ுட்டா எண் 14. பட்டா எண்	425
7. பாசன ஆதாரம்		15. குறிப்பு	÷
3. இரு போகமா	*:	16. பெயர்	1.நாகராஜன்
	1.பெறப்பட்டவை. இவற்ன	ன்றிதழ் நகல் விவரங்கள் (றை தாங்கள் https://ese r	vices.tn.gov.in என்ற
In the second	இணைய தளத்தில் 077. செய்து உறுதி செய்துவெ		ன்ற குறிப்பு எண்ணை உள்ள
			ன்ற குறிப்பு எண்லைன் உளவ

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VILUPPURAM DISTRICT

DISTRICT SURVEY REPORT OF ROUGH STONE

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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.

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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

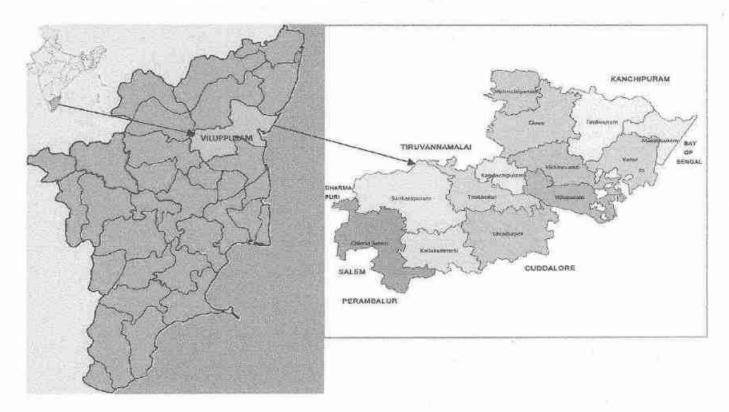
Viluppuram District was segregated from the South Arcot District on G.O.Ms.No.1486 Revenue Y(3), Dated 18.12.1992 and became a separate district on 30th September 1993.

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.





3.3 Area and Population

According to the Department of Statistics, Chennai, the Viluppuram District covers an area of 7194 square kilometers. Villupuram 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	
2	Viluppuram	Vanur	
2 3		Vikkiravandi	
4		Tindivanam	
5	Tindivanam	Gingee	
6		Marakkanam	
7	-	Melmalayanur	
8		Tirukoilur	
9	Tirukoilur	Ulundurpet	
10		Kandachipuram	
11		Kallakurichi	
12	Kallakurichi	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 distirct 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 Unitied 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

Cuddalore Sandstone with intercalations on clay, shale and pebble bed		
Shales and sandstones		
Basic dykes, Pegmatites and Quartz veins		
Granites		
Norites		
Charnockitic rocks		
Garnet plagioclase and pyroxene plagiocla 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, pyroxenegranulite 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 instructions 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 instrusives 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 The two sub-basins are deposited by Gadilam and Pennaiyar rivers. recognized as Vridhachalam sub-basin and Pondicherry sub-basin. In

Vridhachalam sub-basin, the marine Upper Cretaceous seidements are divisible into four formations viz., Parur Formation, Patti Formation, Mattur Formation and Alladi Formation. The Parur Formation is not exposed in the The Patti Formation comprises fossiliferous sandy limestone and district. Mattur Formation and Aladi Formation are chiefly Calcareous shale. composed of argillaceous sandstone and shales with pockets of fossiliferous The Pondicherry sub-basin is partly exposed in the eastern part limestone. 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 fossilferous shale, The Palaeocene rocks, overlying the siltstone and bands of shell limestone. 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 The Tertiary rocks comprises the Cuddalore Formation, Putturai Group. 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 overtain by the Quarternary fluvial, marine and Aeolian formations along the coast as well as river courses.

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

Mineral Wealth

The occurrences of limestone, limeshells, clay and reh salt are reported from the district. The polymetal sulphide deposit occurrence, eleven

kilometers southwest of Mamandur, in the granulite terrain has been extensively studied by way of mapping, sampling, geophysical surveys and drilling by GSI, BGML and by Tamil Nadu Government (UNDP Programme). The polymetal deposit includes ares of copper, lead and silver. The district forms the hub for exploitation of dimensional stone viz., granite deposit in the The world famous black granite. Dykes of Kunnam area, Vanur country. 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.	Classificati on	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

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.

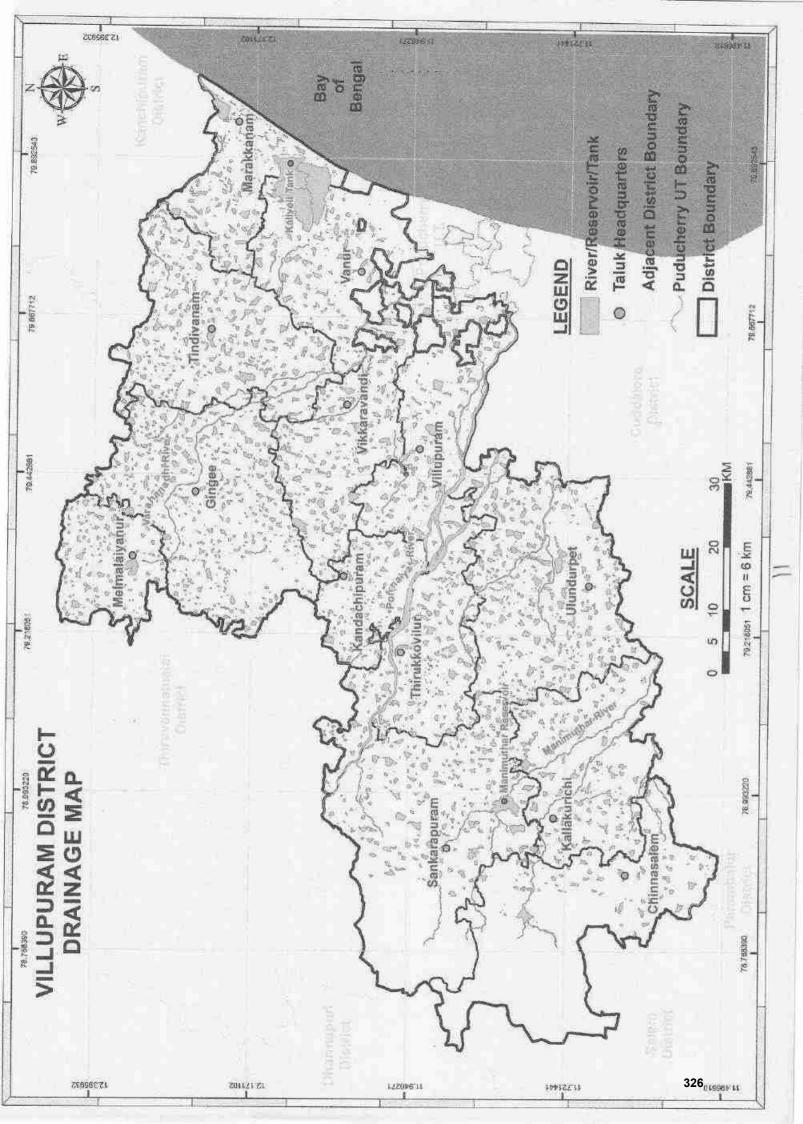
S. No.	Block	Canals	Tanks	Tube wells	Ordinary wells
1	Melmalayanur	1	85	468	10911
2	Gingee	0	132	0	11821
3	Vallam	0	119	533	10509
4	Olakkur	1	116	252	6028
5	Mailam	1	94	750	2259
6	Marakanam	0	150	1418	9986
7	Koliyanur	41	55	3385	1388
8	Kanai	18	86	298	10162
9	Kandamangalam	0	62	4597	4843
10	Vikkiravandi	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	Thiruvennainall ur	31	135	3765	16421
16	Thiyagadurgam	4	54	63	11387

_	Total	196	2085	23454	164871
22	Vanur	14	82	3467	6631
21	Tirunavalur	4	58	1775	3285
20	Ulundurpet	14	81	45	11302
19	Kalrayan Hills	4	123	0	8540
18	Chinnasalem	32	93	38	9306
17	Kallakurichi	0	0	25	608

The block-wise and source-wise net area irrigated (2005-06) in the district is given below.

S.		Net area Irrigated (Ha)							
No.	Block	Canals	Tanks	Tube wells	Ordinary wells	Other	Total		
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		
	Total	6648	61205	54525	120661	102	24314 1		

The well irrigation is highest in Chinnasalem followed by Kallaruichi, Melmalayanur, Rishivandiyam, Sankarapuram, and Gingee so on. (Viluppuram district groundwater brochure, Central Ground Water Board).



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.

S1. 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 Pitchavaram, Pitchavaram 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 Eraiyur of Vanur Taluk, Udaiyanatham, Malligaipattu, Kangeyanur, Siruvalai, Muttathur, Vengamur, Hanumanthapuram, Kaanai and Kunnathur of Villupuram Taluk, Eraiyanur, Varagupattu, Adasal, Nagar and Sirvadi of Tindivanam taluk, Pothuvai-Pazhavalam, Nagalampattu, Sathaputhur, Padipallam, Thatchampattu, Valathi, Irumpuli, Sathaputhur, Sorathuperiyan kuppam of Gingee taluk, Eeriyur 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.

14

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 Tiruvakkarai, Thollamur & Kadagampattu of Vanur taluk and Sengadu, Vaduganathakuppam of Villupuram taluk are being mined. The sand dunes (stablised 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 my 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 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 31st 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 (μ S/cm at 25° 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 Ration values range from 1.7 to 4.4 with an average value of 3.25 in the district. This implies that no alkali hazard is anticipated to crops.

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

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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 m3/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

Month	Normal	2018	2017	2016	2015	2014
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
Winter	18.35	12.28	42.94	0.00	3.72	14.44
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
Summer	47.18	26.00	54.48	90.86	158.77	116.56
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
S.W. Monsoon	356.66	268.58	453.76	299.86	291.37	434.88
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
N.E. Monsoon	638.11	341.39	532.65	172.96	936.39	414.54
Total	1060.30	648.25	1083.83	563.68	1390.25	980.42

Source: District Meterological Dept.)

Method of Mining (Openant Under ground)		16	Open cast	Open cust	Open cust	Open trast	Open crist	Open cast
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Ottaired Environmental Environmee (Yee/No)H Yee Letter no with Letter no with date of great of LEC		14	Y 68, letter No.SEIAA- T.N/F. No.2682/ EC/1(a)/1724/20 14 dated 15 03 2015	Na.	Yes, letter No.SEIAA- TNIF No.3430ff C7(a)2547201 5 dated 21.12.2015	Yes, latter No.SEIAA- TNJF No.4467/E C/1(13/3177201 C/1(13/32016 21.03.2016	Yee, letter No SEIAA- TN/F No 2699/E C/1(sy17022001 4 dated 19 03 2015	Yes, letter No.SEIAA-
Cuplive / Non- Cuplive	CONTRACTOR NO.	13	Non Captive	Non Cuptive	Non Caplive	Not Captive	Captive	Non Captive
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ning lense	To	8	30.08.2021	22.01.2022	30.12.2020	1202-00-80	18.03.2020	18 03 2020
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Address & Contact No. of Lation		4	Sto Thermiten, Mansher Village, Sankaruparun Taluk, Vilupputan District.	Slo, Ramasuny, 15/3, Kamakorni Village, Yemapar Post, Kalakurichi Taluk, Viluypuram	Sto Karuppanna Gounder, Veflakulan, Keelaviri Post, Tindivanam Taluk	Séo Kaninaiya Gounder, Nollavar Village & Post, Vanur Taluk, Viluppuran Destrict.	Séo. Kesawun, No. 96, Emiyur Village, Varnur Tatuk, Villappursin District	S/a.Appadurui, 190, Kadaiveetiii,
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9. Details of Mining Lease Name of the Mineral: Rough stone

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1N/1-No.2004/E C/1(a/5324/201 6 dated 15.07.2016	Yea, letter No.SEIAA- No.SEIAA- TN/F No.1316/F C/1(a/S88/2013 dited thted 18.07/2013	Yes, letter No SELAA- No SELAA- No SELAA- CU(aV3392/201 6 dated 25.07 2016	Yes, letter No.SEIAA- No.SEIAA- No.SEIAA- No.SEIAA- C.V.aM631/201 4 dated 19.02.2015	Yes, letter No.SEIAA- No.SEIAA- TN/F.No.4000/E TN/F.No.4000/E C/1(a)/2546/201 5 flated 21.12,2015	Yes, lotter No.DEJAA- No.DEJAA- TN/F.No. 9072/F C No. 16/2017, dated 04.02.2018
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turanyur et post, Vanur taluk, Vihupparam District	Sta.Pranchutcharum, 2.89, Main Road, Kaphunpadi Village, Gingee Taluk, Vilupyuram District,	S.o. Velluiya Goundar. No. 47/1A, East Street, Tirukoilur	Sto.Ramaswamy, No.41, Irakaran Strees, Nerkundran, Chemai-107,	W/o. Sankar, No. 14, 3ª Street, Juyapuum, Tindivanan Taluk	S/o.Govindaraj, Emapaŭ Village, Kalfakurichi Taluk
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B/G&M/2018/10 dl, 15.12.2010.	B/O&M/398/2016 dt 24,09.2017	B/G&M/23/10 At 10:05:2010	B/G/8/M/147/2013 dt 18.07-2014	B/G&M/459/13 at 06.02 2015	BJC4&N/2012/10 dc 31.12.2010.
Sio, Ratmasuny, 1503, Katrakottai, Emagoair Post, Kallakurich Jaluk, Viluppunan District	Selo.Chandran. Samathi Sireet. Matiam Village, Tindiwanan Taluk	S/o Elturaliet, No.1019, Fillatyur Kail Street. Devidapurari Village, Antrif Tatlak. Tinvennarialat District	S/o.Chellapu Miadaliyur, Sangeetharnangala m Rosed, Anandapurau, Gingee Taiuk	S/o Sengodan, Athaur & Post, Raspuram Talrik, Namaiskal District	Sio. Arthenatti Geundes. Katukottat. Parangrashaut, Maliigurpady Post. Sankarapuram Taluk, Viluppuram
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	Yes, letter No SBLAA- TN/F No S616/1(a MEC.No 3694/2 016 dated 06.09/2016	Yes. letter No.SEIAA- TNF.No. 2683/E C/1(a)/1739/201 4 dated 13/03 2015	Yes, letter No.SEIAA- No.SEIAA- TN/F.Na.4736/E C/ Ita/3196/2016 dated 11.07/2016	Yes. Iotter No.SEIAA- No.SEIAA- No.F.No.2831/E C/ Itay/1752/2014 duted 19.03.2015	No
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District	Sto Vivekanundun, 14. Jayaparam Colony, Colony, Lindrwaan Lowa & Tutk, Viluppiram District	S/0. Alangaramoopur, Malakazalam, Kallakunchi Takut	Slo Vellaiyun, 24, School Street, Kattoparyur Villege, Trinkoilur Taluk.	S/o Patunyan, T.Nailalam Viliage, Perunokkal Post, Jindivanan Taluk	S/o.Annatkutti Glounder, Keelsiviri Village & Post, Tindivanan Teluk, Viluobaran
	V.Sutkat	A.Rumesh	V, Chanditasekaran	P.Detwasigoment	A. Balareman
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	Yes, letter No SEBAA- TN/F.No.5148/E C/ (12/319772016 dated 05.07.2016	Yes, lotter Nortes AAA- NDA No. 5825 / Huy JECNo. 3879/2016 dated 14.11.2016	Yes, letter No.SEIAA- 'TN/F.No.5061 / T(1/BC/No. 5(11/2016 dated 24.08.2016	Yes. Ves. Nester NesEIAA- TN/FNb.4827/ 1(4) /EC No. 2829/2016 dated 17.02.2016	Yes, letter Na SEIAA- Na SEIAA- INF-Na 3109 / EC/ I(a) / 2148/2014 dated 01.04 2015
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	22.08.2016	23.01.2017	14.10.2016	03.03.2016	14.05.2015
	2251	1.14.5	4.225	5.001	0.75.0
	di, 22.08.2016.	HrG&M/1059/2015 dr. 23.01/2017	D/G&M/1053/2015 dt. 14, 10.2016 & B/G&M/436/ 2018 19, 11.2018	B/G2&M/67/42015 dt.03.03.2016	B(G&M/117/13 d: 14.05.2015
District	S/o Thurdapani Naidh. 8/66, Siyun Kovil Street, Elävinseurkottni Village &Post, Ulumburpet Taluk,	S/o.Subramami, 252, Kulaktaran, Ulagalampeondi, Vikkiravandi Tulak	Wio (Inte) L. Rameshtæbu, No 5, Shankar Nagar, Thenpathi, Sirihali Taluh, Nagaputinem District	Syo Kanesa Grander, No. 29015, Mariamman Koil Sireet, Choldamthangal, Keelayuri Post, Morokkanam Trink	S(a Ettiyäppan, Mariyanman Kovil Srread, Kovadi, Tindivanan Talitk
	T Rajendiran	S.Arulsaman	Imt.R.Sajatha	K. Paramasiwam	E.Pavadarroyan
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Yes, letter No SEIAA- 'INF No 1862 / EC/ 1(a) / 1139A/2013 dated 27 02.2014	Yes, letter No.SEIAA- No.SEIAA- TN/E.No.2931/ EC/1(a)/ 1768/2013 dated 19.03.2015	Yes, lettor No.SHIAA- No.SHIAA- TN/F.No.5224/ I(a)/BC.No. 3537/2016 dated (0.08.2016	Yes, letter No.SEIAA- No.SEIAA- TNR No.2779 / EC/ I(a) 17.472014 dated 13.03.2015	Yes. Jetter Na SBIAA- TNR Na 1206 / 1267 (12) 12442013 dated 08 05 2014	Yee, letter Na.SEIAA- Na.SEIAA- TR/F.No.2763 / 10738/2014 dated 13.03.2015
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	13,11,2015	15 10 2016	24,04,2015	16.03.201 5	08.02.2016
0.72.0	1.61.5	0.0800	1.07.5	1.05.5	2,120
B/G&M/2005/10dL 23:09:2014	BVG&&N2290/13 dk 13,11,2015	A/G&M/4222013 dated 15.10.2016	13/5(&n/1187/13 dt.24.04.2015	A/G&M/528/08 dated 15.03 2015	B/G&M/693/2012 df 08.02.2016
Sio Sanjeevi, No.9, Wahub Nugur, Marnikkanam Read, Tindiyanam Taluk,	Sio. Pattsbi Rudiiyar, Mo.142, Mosque Street, C.Pallavanun, C.hermai	Slo Muruzaryan, No 1, Palayakara Stoat, Thirwakkaral.	S/o.Arumugum, No 135, 7 th Creass Road, Housnig Board, Gopalapuram, Manoor Village, Tindivanam Taluk, Villuppuran District,	S/o Gujtoj Jain, No.5, Rudindershine Street, Venketta Nagar, Pondicherry	S/o Trinkeran, Peruranakkai Village, Tibdivaana Taink
S. Scrittvaenn	P. Srinivasan	M. Krishnemoerthi	A.Selvaraj	G. Animel Kumar Juin	TAravindan
Rough	Rough stone & Earth	Rough store & Earth	Rough storie & Earth	Rough stone & Rarth	Rough stone & Earth
28.	29.	Ö	31	32.	33.

Open cast	Open cast	Open cast	Open cost	Option carat	Optim cast
12"02"10.25"N 10 79°38"52.17"E 79°38"59.91"E 79°38"59.91"E 79°38"59.91"E	12 ⁰ 04 ¹ 1 ¹	12°03°25°N to 12°03°25°N 79°39°58°T5 to ?99°40°10°T5 (12°03°20°58°T5) 79°39°58°T5)	01 N°25 219 12°11 14°27 12°11 14°27 13°11 14°27 14°11 14°27	12"" 12"" 12"" 12" 12" 12" 12" 12" 12" 1	12°15'17'N to 12°15'20'N 19°27'12'E 10'79°27'11'E (12°15'17'N
Yes, letter No SEIAA- No SEIAA- TNF No.4512 / 20/1(s) 20/1(s) 127782215 dated 19.01.2016	Yes, letter No.SETAA- No.SETAA- No.SETAA- ISO/103 150/103 150/103 27.03.2015	Yes, Ititis No,SEIAA- No,SEIAA- TN/F No,50697 1(0,7 1(s) 732/62016 dated 15.07,2016 dated	Yes, cuta: No SEJAA- No SEJAA- TN/F No 2377/ EC/1(a) 1251/2014 dated 09.05 2014	Y 66, letter No SEIAA- No SEIAA- DAR No 3365 / ISC/ 1(a) 233827015 dated 02.11.2015	Yes, letter No SEIAA- No SEIAA- TRVP:No S048 / 322/2016 dated 16:09:2016
Non Cupuse	Captive	Captive	Captive	Captive	Non Gaptive
Working	Working	Warking	Working	Working	Working
10.03.2016	06.03.2017	15,12,2016	29.04.2015	26.92.2016	21.08.2017
<u>n</u>	<u>е</u>	(F)	<i>d</i> .	#6	9
19.02.2021	13.06.2021	21.08.2021	20.06.2019	30.12.2020	29.12.2021
20.02.2016	14,06.2016	22,08,2016	21.06 2014	3) (2.2015	30,12,2016
130	5723	4.27.5	1,28.0	5 000 0	2.00.0
AVGRAN7590/2013 dated 20.02.2016	AUG & MIT461/2013 dated 14.05.2016	A/G&M/1682015 dated 22.08.2016	B/G&M/12072012 di 21.06 2014	B/G&M/531/14 dt.31.12.2015	Br5869412008/10 dt 30.12.2016.
Sto Submanyan, 8, Mettu Street, Eraiyar Village & Post, Varur Taliak, Viluppuram, District,	W/b Marokaran, 4/53, Mariyananan Kovil Street, Sivanttangel, Chennal-69.	S/o.Chinzaiya Goundor, 168, Metta Street, Karasarur Village, V Parangani Post, Vanar Taluk	S/o. Velayutham, Elavatapakkam Village, Perimukkal, Tadivanam Taluk	S/o.Thorypeium No. 667, Marakkmuen Rosed, Drammaelessan Village, Tinduwatan Taitik	Sto. Darmarni, Chekkanamharalai, Grugee Talaik
S.Ruguranum	M.Kafayarasi	C. Ganesen	V.Gnauguru,	T.Kuppasamy	D, Marngapandiyan
R ongth strand	Bongh stone & Earth	Rough stane & Earth	Rough stone & Earth	Rough stonc & Farth	Rough stune
34.	35.	36.	37.	89 299	39.

Open cast	Cipters cutst	Open cast	Open cant	Open cast	Open tast
12°07'55.87'N	12°02'51.37'70 10 12°02'57,60'70 19°27'50.49''10 19°27'57'50'12 19°27'55'15 19°27'55'15	12"07'36 16"N	11 0452 233 221 04 12 051 16 15 12 051 16 15 13 051 16 15 14 15 15 051 15 051 1	12°13'19'10 to 12°13'16''N 79°46'09''E to 79°46'04'E (12°13'16''N (12°13'16''N	(270 N 222 N to 79°38 557 N H 20°38 557 N H 20°38 557 N
	Yea, letter No.SEIAA- No.SEIAA- TUR: No.1424/ EC/140 EC/140 (637/2013 dated 01.08.2013	No	Yes, lotter No. SEHAA- TN/F. No. 4872 / TN/F. No. 4872 / 100 / EC. No. 34867201 6. dated 29.07/2016	Yes, Intrer No.SEIAA- No.SEIAA- 101/F.No.1757/ 1(n)/ FC.No.866/2013 BC.No.866/2013 BC.No.866/2013	Yes, letter No.SEIAA- No.SEIAA- TN/F.No.1962/ BC/((a) 1192/2013 dated 15.04.2014
Non Captive	Nea	Non Cuptive	Captive	Captive	Capture
Working	Non Working	Non. Working	Working	Watking	Working
11.06.2010	06,03.2017	26.12.2011	10.05.2010	01.02.2019	27.06.2614
12	a		e.	(a):	×
06.05.2020 -	30.08.2021	30:01:2021	22.06.2019	22.09.2019	29,05.2019
07.05 2010	31.08.2016	31.01.2011			30,05,2014
3.00.0	2,21,5	0.50.0			142.5
B(G&M/205/2010 dt 13.04.2010	dr. 31,08,2016 dr. 31,08,2016	B/G&M/2000/10 dt 16.12.2010.			A/G&M/513/13 dated 30.05.2014
Wo, Ravi, Throwpathiamman Koil Street, Vembi Village and Post, Villagpurem Taluk and District	W/o.J.Ravi, Throwputhianman Kovil Street, Vembi Village, Viluppuram Taluk,	S/o. Kali Gourder, Nangadhar Villago, Anniyur Via, Viluppartern Taluk,	S/o. Parmetradyurn, Vadakkanauthal post, Kallakurichi Taluk, Viluppuram Diatrici	S/o Verrasumy, Perumakkal Village, Tundivanam Taluk.	Sto Periyasamy, 1/13, Threwpathianntuan Ko vil Street, Thiruvakkartti Vilupatean Viluppuran District,
imt.K. Dhamakakami	R, Dhunslekshuni,	K. Murugavel	P. Elanchezhiyun	V Ravi	P.Ravichundoran
Kougn stone	Rough	Rough stanc	stone	Rough	Rough
40.	41.	42.	43.	44.	45.

Open case	Open cast	Opon cast	Open cast	Open cast	Open cust
12°03 30°N to 12°03 40°N 79°40'07°E to 79°40'12°E (12°03 324,73° N 79°40'15 44°JE	12 ⁰ 05 '51'N to 12 ⁰ 05 (50'N 79 ⁰ 42'42'40"E (0 79 ⁰ 42'40"E 79 ⁰ 42'32'E)	11 ⁰ 40'00.33''N 12 ¹⁰ 40'00.33''N 79 ⁶ 12'18.51''E 10 ⁶ 12'13.14''E 10 ⁶ 12'13.14''E 10 ⁶ 12'13.14''E 10 ⁶ 12'13.14''E	12 ⁰ 13'36.27'N 79 ⁰ 44'16.52'E	(379, 24, 24, 24, 24, 24, 24, 24, 24, 24, 24	12'01'42''''''''''''''''''''''''''''''''
Yes, letter No.SEJAA- TINF No.3425 / TINF No.3425 / TINF No.3425 / TINF No.34201 DC.No.3920/201 DC.NO.3920/201 DC.NO.3020/201	Ves. letter No.DEIAA- TNG: No.122018 doted 05.07.2018 doted 05.07.2018	Yes letter No.DEIAA- TNF No.7427/ BC: No.142017 duted 04.02.2018	Yes, letter No DEIAA- TN/P No 80967 ECI No 31/2017 duted 04.12.2018	Yos, latter No DEIAA- TNF No. 15706 / EC No. 127018 dated 04 12.2018	Yes, lutter, No.157087 FNA: No.157087 EC.No.152018 dated 04.12.2018
Captive	Non Captive	Non Gaptive	Nam Captive	Non Captive	Captive
Working	Working	Warking	Non Working	Non Working	Workittg
13,122017	\$102.60.81	22.10.2018	ĒN	2	09.05 2019
6 1	×		AL	14	
* 2202.20.22	26.08.2023	26.09.202 -	27.02.2024	- 07.03.2024	07.03.2024
24.09.2017	27.08.2018	8102.40.12	28.02 2019	08.03.2019	08.03.2019
516	2.53.0	1:55.0	0.69.0	000	1,00.0
A/G&M/483/2013 dared 24/09.2017	AL 27.08.2018	B/G&M/848/2016 dl/ 27.09.2018,	14G&M/764/17 di. 28,02.2019.	B/G&M/1142/2017 dt. 08.03.2019	B/G&M/1141/2017 dt 08.03.2019,
Syo Kamudi counder, Mettu Street, Karasanur Village, Vunur Taluk, Villupurem District.	Sto. Duchinamoorth ys 25, Eniharan Street, Maryaannan Kovil Sinsei, Caddalure Distract.	S/o Molamed Ravathar, Panayapuran Village, Vilugpuran Tatuk	SVo, Thangavel, Nathamedu Streat, Olatcos: & Post, Tindivanar Taluk, Viluppurari District	Sto Atumugum, Mestu Street, Thuruvui, Rayupadupakkan Post, Varur Tuluk	Sio, Chukurwarthi, Indira Nagar, Kiliyamur Village & Post, Vanur Taluk, Viluppuram
K. Gnutusekaran	B.Narayanaswa tuy	M.Juffer suit	T. Antorchagan	A. Sathishkumar	C Phabu
Raugh stone & Earth	stone	Rough stonc & Earth	Rough stone	Rough	Rough
46.	47.	48.	49.	50.	51.

Open clist	Open cast	Öpen cast	Opthicast	Openuest	Open cust
12 12 12 12 12 12 12 12 12 12	12°04'14'N to 12°04'14'N 79°39'32'E 10°79°39'41'E	12°08'33'N'to 12°08'40'N 79°43'28'E to 79°43'36'E (12°08'3702'N 79°43'28'IG'E)	12°13'13'06''N 12°13'24'92''N 70°46'15.51''E 10°46'15.21'E 10°46'15.04''E) 79°46'15.04''E)	12 ⁶ 07734 ¹ 0 12 ⁶ 0734 ¹ 0	12°11'07.87'N to 12°11'11.80'N 79°45'42'80'E to 79°45'51.85'E
Yes, letter No.DEIAA- No.DEIAA- No. No. 18339 / BC. No. 22018 åned 04, 12.2018	Yes, letter No.DETAA. IN/P No.7699 / DC No.72017 dated 04.02.2018	Yes, letter No.DEFAA- No.DEFAA- ENVE 350.15201 / BC No.142018 duted 05.07.2018	Yes, letter Ns.DFBAA- Ns.DFBAA- IN/F: Na. 15483 / EC.No. 17/2018 dated 05.07/2018	Yes, letter Inter No. 151AA- IN/F. No. 1527/ EC. No. 152017 dated 04.02.2018	Yea, letter No.13HAA- TIN/F No.1332017 BC.No.23/2017 dated 04.12.2018
Non Cophye	Captive	Non Captive	Captive	Non Captive	Nem Captive
Working	Working	Working	Working	Working	Working
08.04.2019	08.03.2019	28,03.2019	19,08,2018	15.03.2018	16,05,2019
*		C	20	я	•
14:02:20224	27.02.2024	14.02.2024	08.08.2023	- 520230	27.02.2024
15,02,2019	28.02.2019	15.02.2019	09.08.2018	08.03.2018	28.02.2019
2110	2.81.5	2345	3,94.0	1.00.0	1.76.0
BrO&M/260/15 dt: 15.02 2019	AVG&M/3622017 dated 28.02.2019	A/GEM/7782017 dt.15/322019	B/G&M/1159/2017 dt 09/08 2018	D/G&M/363/17 dt. 08.03.2018	B/G&M/100/2018 dt.28.02.2019
Sto. Subremania Gounder, No. 135, Pondy Roud, Mrankkanem, Vituppurem District	S/o Hurikrishnun, Etaiyur Villoge, Vanur Taluit, Viluppurem District	Sfo. Subramanya Reddiyar, Thenkodipakkam Village, Vanur Taluk, Viluppuran Dianiet,	No 2, Minham Road, Indira Nagur, Tindrwaam	Sto, Kali, Nangathur Village, Villupurun Darrict,	S/o Devarti Perumukkal Village & Post, Marakkanam Taluk, Viluppuram District
S. Ranganathan	H. Chiruskannan	S. Riguramon	Millaubu	Manitkam	D Rancelh
Rough stone & Earth	Rough store	Rough smie & Earth	Rough stone & Earth	Rough	Rough stone & Earth
52.	23.	54.	Ś	56,	57.

	Open cust	Open cast	Open cast	Open west	Open cust	Dpm takt
(12-11.09.72"N 7945'45'42.90'E)	12,03,25,104 12,02,02,104 12,02,02,104 12,02,02,104 12,02,02,04 12,02,02,04 14,02,02,02 14,02	12 ⁰ 031314 ^M 10 12 ⁰ 0321314 ^M 10 79 ⁴ 016.66 ⁰ E 10 79 ⁴ 016.66 ¹ E 10 79 ⁴ 016.66 ¹ E	12'04'09'74'10 12'04'19'74' 79'38'34'E 10'79'38'44'16'98'74 79'38'34'04'E)	11°58'25'N to 11°58'22'N 79°14'24''E 10'79'14'24''E 10'758'25''N (11°58'25''N	15,49,19,19,19,19,19,19,19,19,19,19,19,19,19	12 ⁶ 03 ⁺ 53 ⁺ N to 12 ⁶ 03 ⁺ 53 ⁺ N 19 ⁶ 38 ⁻ 53 ⁺ E to 79 ⁶ 38 ⁺ 53 ⁺ E (12 ⁶ 03 ⁺ 47 ⁻ 31 ⁺ N 79 ⁶ 38 ⁺ 29 ⁻ 29 ⁺ E
	Yes. lette: No.DELAA- No.DALAA- BAAA No.No.No.11757 ECCNO.NO.132018 dated 05.07.2018	Yes. letter No.DEJAA- TNE No.15627/ EC No.182018 doted 05.072018	Y cs, lietter No DEHAA- TNIF No.183457 EC.No.192018 dared 04.12.2018	Yes, letter No.DEIAA- No.DEIAA- TN/FNo.8297/ EC.No.1022018 dated 04.02.2018	Yes, letter No DELAA- IN/F No. 7596 / EC No. 122017 dated 04.02.2018	Yes, tetter No.DEIAA- TN/F.No.18212/ EC.No.182218 dired 04.12.2018
	Non Captive	Non Captivo	Non Captive	Non Captive	Non Captive	Captive
	Working	Non Working	Working	Working	Working	Working
	31.05.2018	TIN	06.01.2019	04,06.2018	28.03.2018	03.04.2019
_	41	¥	r	<u>v</u>	a	а Т
	15.08.2023	15.08.2023	14.02.2024	27,03,2023 -	12.03.2023	14.02.2024
-	16.08.2018		15,02.2019		13.03.2018	15.02.2019
	2.06.0		2.83.5		2.16.0	1.90.3
	A/G&M/10482017 dt. 16.08.2018	A/G&M/90/2018 dt.16.08.2018	ACG&M181/2018 dt.15.02.2019	B/GRM/366/17 dt.08.03.2018.	B/O&M/365/17 dt_08.03.2018	AK38M/1762018 dt 15.02.2019
	Manuger, OM sakthi Constructions, Thollamur Village, Vanur Taink	S/a Gopal, Sivaraj Street, Thiruncermalat, Chennai	S/o Thengavel, Erniyur Vällage, Vanur Talak, Villupparum District	Slo Sampantham, S. Kollur Village, Kondschiptram Tahts, Villupuram District.	W/o. Selvaraj B1, Kristmu Apartment, Kartavaral Village, Kallakurchi.	S/o. Ditamothiran, Auna Nagar, Emiyur Village, Vunur Taluk,
	K.Murkhidaman	G.Raja,	T.Vasudevan	8. Sankar	S. Revath	D. Marokar
	Kough stone & Earth	Rough stone & Earth	Rough	Rough	Rone stone	Rough stone & Earth
	200	59.	60.	61.	62	8.

NO

Open cast	Open cast	Open cast	Open cast	Opmeast	Open cast	Open cast
12 ⁰ 20 ¹	12°03*18°N 15 12°03*26°N 79°40°05°R 15 79°40°10°E 79°40°10°E 79°40°18°N 79°40°18°N	12°04'02'00'00'00'00'00'00'00'00'00'00'00'00'	11°39°496°N to 79°12°12°E 79°12°12°E 79°12°22°E 11°39°496°N 11°39°42°N	12°2:42.777N 12°2:42.725.42.777N 12°2:42.925.45.40 12°2:45.77.72°2 12°2:45.777N 12°2:45.777N 12°2:45.777N	12"13"2"13"2"14" 12"13"2"13"2" 73"44"15"E 16 73"44"15"E 16 73"44"15"E 16	12°13'331.97'N 79°40'05.13"E 80°40'05.13"E
Yes, letter No.DEJAA- No.DEJAA- IN/F No.18587/ EC No.262018 dated 04.12.2018	Yes. letter No.DETAA- TN/F.No.15355/ JSC.No.153251 JSC.No.1532018 dated 05.07.2018	Yes, letter No.DEIAA- TN/F No.18349/ BC No.202018 duted 04 12.2018	Yes, letter No.SEIAA- No.SEIAA- TN/F No.5134 /1(a)/ EC.No.3912(20) EC.No.3912(20) EC.No.3912(20)	5437 5437 018 2018	Yes, letter No DEIAA- No. No. 17579 / B.C. No. 17579 / B.C. No. 172018 dated 04.12.2018	Yes, letter No.DEIAA- TMF No.150307
Non Captive	Non Captive	Kon Capitve	Non Captive	Captave	Non Captive	Non Captive
Working	Warking	Working	Working	Working	Working	Working
06.02.2019	13.11.2018	06,03,2019	07.12.2017	· · · · · · · · · · · · · · · · · · ·	20.04.2019	18.09.2018
	к		. 67	a	эг	<u>.</u>
11.10.2019	26.08.2023	14.02.2024	09.10.2022	14.02.2024	29.02.2024 -	15.08.2023
12.10.2009	27.08.2018	15.02.2019	10,10,2017	15.02.201	30.02.2019	16.08.2018
0.81.0	2.12.0	3.37.5	1.05	3.93.5	2.30.5	2.30.5
BYG&M/192/09 Dt. 03.09.08, & B/G&M/950/2017 Dt. 09.08.2018	A/G&M/18/2013 dL 27.08.2018	A/G&M/1802018 dt:15.02.2019	B/G&D#174/2015 dt 10.10.2017.	A/G&M/203/2018 dt.15.02.2019	B/G&M/1013/2017 at 30.02/2019	A/G&M/95/2018 dt. 16.08.2018
Sio (late) M. Ganesat, Gounder, Melmanpattu Village, Melmalayanur Post, Gingee Tatuk	S/o Kupjusuny. Kurasana & Post, Vonir Taluk.	Séa Elumatat, No.198, Vinayakar Koil Street, Erasiyur Village, Vanur Tahuk, Vanur Tahuk,	Sóo Kalipulla Selam Main Road, Elavanasurkottai, Uluadurpet	S/o. Muniun, Mannarsany Kovil Street, Thruvakiarai Village, Vanur Tahik	Sfo. Nataraj. No 158. Kurinji Nagar, Vellisemmandalam, Cuddalore,	No.18, Amal Nagar, West Funtharan,
G. Tumiselvan	K. Bahamunuyan	E. Jayasankar	K. Mujeepur Ragman	M. Moorthi	N. Venlattest	V.Sadaiyappan
R caugh store	Rough store & Earth	Rough stone & Earth	Rough stone & Barth	Rough stone & Earth	Rough stone & Earth	Rough stone & Earth
64.	65.	66.	67,	68.	69.	70.

	Open cast	Open cast	िंग्रेल्ता रक्षत्	Open cast	Open cues	Open and
(J., £1.90,08,62 N., 44, 55, 50,61 A., 49,00,08,62	1202.327 10 N°12.202.387 10 N°12.587 10 N°12.587 10 N°12.202.31 N°12.202.31 N°12.202	N792.0540.3040.00 N717.042.0540.00 N717.042.05.04 N712.162.05.19 N72.02.05.04 N72.02.05.04 N72.02.02 N7	12°07'59'' 10°12'07'59'' 19°36'28''E 10°36'28''E 112°07'51''	11 ⁹ 56 '52 '52 '52 '10' 10' 10' 10' 10' 10' 10' 10' 10' 10'	12°05 35,99°N 79°17 11,65°E	11 ⁹⁵ 62.52 94 94 10 ¹¹⁰ 56'55 94 28 ⁹ 52'51 57'68'E 28 ⁹ 52'91 04'E
EC No. 16/2018 dated 05.07.2018	Yes, lietter No.DEIAA- TM/F.No.18382/ EC No.21/2018 EtC No.21/2018 fatted 04, 12,2018	Yes, lotter Na.DEIAA- TN/F No.17233/ BC.No.142018 dated 04.12.2018	Yes, letter No SFIAA- TN/F No 2639 / EC/I(g/139120 14 dated 25.06.2014	Yes, hetter No.SEIAA- No.SEIAA- 10/FN0.4757/ 10/FC No.228) 12015 dated 11.07.2016	240	Yes. lettur No SEIAA- TNG No 4725 / I(a)/EC No 3331 (a)/EC No 3331 (a)/EC No 3331 (a)/EC No 3331
	Non Captivo	Non Capitive	Captive	Captive	Capitve	Non Caplitee
	Warking	Working	Working	Working	Working	Working
		25,02.2019	16.02.2015	29,09-2100	17,12,2012	16.09,2009
	91	a);		£	<u>u</u>	<u>e</u>
	14.02/2024	24.01.2024	16.07.2019	- 6102.60.90	11.07.2020.	30,08,2019
	15,02 2019	25.01.2019		07,09,2009	12.07,2010	31.08.2009
	020			1.562	1.50.0	1.00.0
	AG&M269/2018	13/G#M/118/2018.dr. 25.01.2019.	B/G&M/7/02014 dt.17/07/2014	B/O&M/200/09 Dr. 27/05/2009	B/0762/024 / 2010 dt 18.02.2010	B/G&M/199/09
Cheman-500 (345,	oon Siveprakanam, Viraiyagar Kovil Straci, Kathirkamum, Puducherry,	a 4		Sto. Nachtyuppun, Devupandnlam Village, Sankurapuram Tahuk	See Kuppusanty Gr., Malaiyansanukuppa an Village, Mazhuvanthangal Pesi, Gingee taluk, Viluppurun Diatriet	Sto. Durasarry, Thirmanundel Village, Arra post, Sunkaraparun Tahuk
	negatamuran 1. so	V. Negaru	D. Selvakunur,	N. Elangovan,	K. Arjanau,	D.Remichendran
1	Kougn stone & Earth	Kangh store & Earth	Rough stone & Earth	Kough store	Rough	Round Round
	Ŕ	72.		74.	75.	76.

	Open cast	Open cast	Open cast	Open cast	Open unst	Opencist	Open cast
(11'56'0.09'N 78°51'57.68'E)	12"13'08"Y6 to 12"13'14"N 79"46'03"E 79"46'03"E 79"46'03"E 79"16"Y	12"26"16"N to 12"26"21"N 79"23"05"E (5 79"23"11"E	H. 17 17, 55,064	12°13'25.45'N	12°14°54°N to 12°14°64°N 79°44°45°N 79°44°41°E 79°44°41°E 79°44°45°N	12'04'05'N to 12'04'05'N to 79'39'40'E 79'39'40'E 79'39'40'E 79'39'33'34'E	12,24,38,17W
	Yes, letter No.8514A- No.8514A- TNP: No.48267 TNP: No.43247 2016 dated 15.07 2016	Yes. letter No.SELAA TN/F.No.2484 / TN/F.No.2484 / T(1) 2484 / 1(1) 2015 dated 72015 dated 19.08.2016	Yen, letter No. DEJAA- TMF.No. 18617/ 1(a)FC:No. 2822 1(a)FC:No. 2822 01.12.2018 04.12.2018	No.	Yes, letter No.SELAA- No.SELAA- IEA/2014 1537/2014 dated dated 30.05.2014	Yes, letter No. SEIAA- NNF. No. 1650 / 1507 1(a) 1169/2013 dr. 20.03.2014	No
	Non Captéve	Captive	Non Captive	Non Captive	Non Captive	Non Captive	Nen Captive
	Working	Working	Working	Non Working	Working	Working	Working
_			01/2 60/21	23.04.2010	21.07.2014	12.06.2014	18.03.2010
	4	æ	к.	a			<u></u>
	23.08.2019	27.02:2021	15.08.2020.	15.04.2020 -	20.06.2019	29.05.2019	22.06.2019 -
	24.08.2009		16.08.2010	16.04.2010	21.06.2014	30.05.2014	23.06:09
	1.64.0		3,72.0	2.50.0	330	0.66.0	3.00.0
	BrcazM185709 Dr. 11,062009	BK9&M200010 dt.25.01.2011.	B(G&M/207/10 dt 12.05.2010.	B/G&M25/2010 di. 30.03.2410	B/G&M/961/2012 dt 21.06.2014	4/C&A/360/15 dated 30,05.2014	B/G&M/192/09 dt: 11.06.2009.
	S/o. Auburdagan, Metus Streed, Vadanerkunam post, Lindivanam Taluk,	W/o, K.S. Minsthuu, 39, Desurpattai Satai, Krishnepurem, Gingee, Vilupparem Districi	Sia Parunal, Pullyandur village Viluppuran Viluppuran Districi,	W/o. Sentharml Selvan, Murugun Koil Street, KalatlumpatusPest, Gingae Tahik, Vihippuran Disarret	Slo. Vetroutham, Eduvadapakkam Village, Perumukkul, Tudivanam Tajuk	Wfo.Loganathun, Finiyur Village & psat, Vanni tuluk,	W/o. Surastragh, Erysil Village & post, Ginges Taluk, Villagpuram District
	A. Sivananilani.	Tart Saitharabee	P. Ranulingam,	Tmt.K. Parinala	V.Kunar	Tmt.I.Savithri	S. Kamsaladevi
	Rough stote	Rough	Rough	Rough	Rough store & Earth	Rough stone & Earth	Rough stone
	77.	78.	79.	80.	10	82.	83.

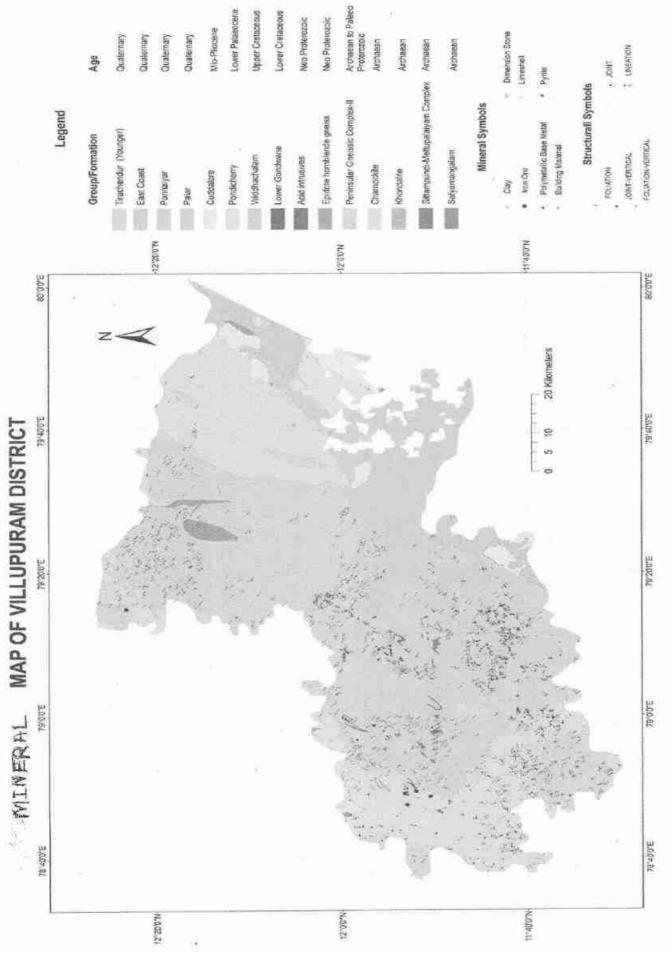
Open cost	(Open cast
(H.01, 71, 64 N.42, 66, 111) H.51, 71, 66 M. H.60, 71, 66 N.447, 66, 11 N.447, 66, 11	12 ⁰ 13 ¹ 3 ¹ N to 12 ⁰ 13 ⁰ 8 ¹ N 79 ⁰ 46 ³ 44 ² E to 79 ⁰ 46 ³ 44 ² E
Yea, letter No.01//TN/MIN/ 6326/2017/DELAA 2017,Ec.No.1, 2017,Ec.No.1, Duted:01.08.201	Yes, ke lietter No.SEFAA- No.SEFAA- NO.No.2677 / 15/(1/a/y 15/6/2014 dited 14.08.2014
Non Captive	Non Captive
Working	Working
12.03.2018	25.10.2015
	6
07.03.2023	15.04.2020
08,03.2018	15.04.2020
2.94,0	0.95.0
B/G&M/367/17 dt:08.03.2018.	B/G&M/1224/12 dt 16.04 2015
S/o. Balassibrummiyan Vadakurumbur, Ulundtupet Taluk, Villupunun District	S/o Kanlasany, Nailalam Kootrood, Perumuksa Village, Tindivanam Tahuk
B. Sulthived	K. Ashokkumar
Rough	Rough
84,	85.

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



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13. List of Letter of Intent (LOI) Holders in the District along with its validity:-

Location of the Mining Lease (Latitude& Longitude)	6	12 ⁰ 03'10.49"N to 12 ⁰ 03'20.70"N 79 ⁰ 40'08.70"E to 79 ⁰ 40'16.98"E (12 ⁰ 03'11.13"N 79 ⁰ 40'09.94"E)	12 ⁶ 03 ⁺ 36 ⁻ N to 12 ⁹ 03 ⁺ 36 ⁻ N 79 ⁹ 40 ⁺ 23 ⁻ E to 79 ⁹ 40 ⁺ 30 ⁻ E (12 ⁰ 03 ⁺ 33 ⁻ N 79 ⁹ 40 ⁺ 23 ⁻ E)	12 ⁰ 04'07, 16"N to 12 ⁰ 04'13,93"N 79 ⁹ 38'59.73"E to 79 ⁹ 39'03.75"E (12 ⁰ 04'07,45"N 79 ⁰ 39'00.95"E)	12 ⁰ 13'05.47"N to 12 ⁰ 13'13.31"N 79 ⁰ 47'04.29"E to 79 ⁰ 47'10.26"E (12 ⁰ 13'06.53"N 79 ⁰ 47'04.83"E)	12°03'41.93"N to 12°03'48.98"N 78°57'199.17"E to 78°57'15.01"E (12°13'43.97"N 78°57'09.17"E)	
Use (Captive/ Non- Captive)	8	Non Captive	Non Captive	Non Captive	Non Captive	Non Captive	
Validity of LoI	7			¥'			
Area of Mining lease to be allotted	9	3.53.0	2.06.0	1.49.5	2.85.5	2.00.0	
Letter of Intent Grant Order No. & Date	5	B/G&M/463/2018 dt.18.01.2019	B/G&M/357/2018 dt 04.01.2019	B/G&M/423/2018 dt.18.01.2019	B/G&M/462/2018 dt.15.02.2019	B/G&M/1143/2017 dt.17.01.2018	223
Address & Contact No. of letter of Intent Holder		S/o. Venkatapathy, No.5, Thangaraj Street, FILL Colony, Pammal, Chennai – 75.	No. 173, Sarkar Thoppu, Tindivanam.	S/o. Duraisamy, Eraiyur Village, Vanur Taluk, Viluppuram District.	No.33/8, Mailam Road, Indira Nagar, Tindivanam	S/o Karuppaiya, 28/4B, Raja Nagar, Kallakurichi - 606 202,	
Name of the Lessee	- AND	V Ramesh	Santhosh Blue Metals, Prop. S.V. Venkatesh	D. Dhandapani	Sri Balaji Blue Metals & M. Sand	K. Balasubramanian	
Name of the Mineral	6	Rough stone & Gravel	Rough stone & Earth	Rough stone & Earth	Rough stone & Earth	Rough stone	
SI. No.		T	ci	eri	च	5	

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)	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)
Captive 1 7 7 7 7 7 7	Non 1 Captive 1 7 7 7 7 7 7 7 7 7 7
a ^e a	÷
1.77.0	2.68.0
A/G&M/337/2018 dt.30.01.2019	A/G&M/277/2018 dt.04.01.2019
School Street, Kadagampattu, Vanur Taluk, Viluppuram District.	S/o.Kannadi Gounder, Karasanur Village, Vanur Taluk, Viluppuram District.
A.Aridass	K. Gnanasekaran
Rough stone & Gravel	Rough stone & Earth
ý.	r.

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Total Quantity in CBM		16	RS45305	RS 67289	RS:85355	RS-27417	R8:9425 E-8282
Location of the Mining Lease (Latitude & Langthide)		15	12'00'30'10' 12'00'26'N 78'55'28'E to 78'55'28'E 78'55'21'E (12'00'27)7'N 78'55'21.8'E)	112021.78° N 79'97 10.61 78°	12°11°56°N to 12°11°46°N 12°11°46°N 12°11°45°33°E 10°72°13°E 10°72°11°47°N (12°11°47°N	12'08' 38.40'N 12'09' 04.64'N 79'44' 38.34'E 10'79'44' 54'E 112'00'04,63'N 79'44' 38.34'E)	12°04°28°N to 12°04°28°39°E 79°38°39°E (0.79°38°43°E (12°04°24°N 79°38°39°E)
Optialised Environmential Cleanmore (Cleanmore Letter no with Letter no with date of grant of BC			Yes, letter No. SEIAA- TNE. No. 2682/ EC/(ay/1724/20) 14 dated 13.03 2015	N6	Yes, letter No. SETAA- TN/F No. 3439/E C/I(u/22347/201 5 dated 21 12:2015	Yes Letter No SEIAA- No SEIAA- TN/F.No.4167/E C/1(a)3177/201 5 dated 21.03.2016	Yes, letter No.SEIAA- TNR 2269/E TN(3)792201 4 dated 19.032015
Cuptive /Non- Cuptive	No. of Concession, Name	13	Non Capitve	Captive	Non Captive	Nan Câpăwe	Non Captive
Sittus Sittus Working Vitang Morking Morking for for for for for for for for for for	the factor of the second	12	Working	working	working	Kon werking	Working
Date of commence ment of Mining Operation		11	06.02 2017	Ŧ	25.02.2016	II.	18,09.2017
Feriad of Mining lease (1" / 7" renewal)	Frann To	- 30	6	6	<i>i</i>		X
	Free Free	÷	- 120		320	- 120	
of Mining ica (farral)	To	8	30.08 2021	22.01.2022	30.12.2020	2 60 80	18,03,2020
Period of Mining issue (famile)	From	5	31,08 2016	23.01 2012	31.12.2015	09.09.2016 08.09.2021	28.07.2017
Area of Mining lease (ha)		- 9	1.50,0	1.20,0	2.23.0	1.955	1.08.0
Mining Jacos gaur order No. & Date		5	B/G&M/ 2020/2019 dr. 31,08,2016	B638M/371/11 dt. 26.11.2011	B/G&M/1213/13 dL31.12.2015	Arcas Ar \$2222014 dated 09 09 2016	A/G&A/977/2012 dt.28.07.2017.
Address & Compet No. of Lesser		TO THE REPORT OF	S/o. Themsvan, Manalur Village, Sankarapurun Talok, Viluppurum District,	Sfo. Remnsuny, 15/3, Katukottai Village, Yennapat Post, Kallakurichi Tahuk, Viluppuram District.	Sto. Karuppunna Gomder, Vellakulum, Keelsiviri Post, Tindivanam Taluk	S/o Kamalya Gemder, Nallavur Village & Post, Vanar Taluk, Vilupparam District	S/o. Kesavarı, No.96, Eraiyur Villaşe, Vatur Taluk, Viluppuran Diğiriot
Name of the Lasteer		5	T. Muthamizhan	RSutrumetien	K. Natchiaggam	K Shannugan	K.Anandawelu
Name of the Mineral		t.	Rongh	Rotagli sione	Rough	Rough	Rough stone & Earth
No.	1	1	ц.	5	ň	4.	ů.

14. Mineral Reserve : Name of the Mineral: Rough stone

E.20538	RS215065	RS 27560	RS72406 E:15340	RS.370455	RS-230090
12°04'12'N to 1 12°04'16'N 19°38'39'19'E 10'79°38'39'15' 10°38'39'16'N		11°55'22 78" 1 N to N SS 26.97" N 79°09'25.55"E 10° 79°00'31.92"E 10° 10°00'31.92"E 11°55'25.41"N		12°03'25.80° N to N 200° N 200° N 200°40'12' 200°40'13'20'13'20' N 200°40'10'88'TE 10' 200°40'10'88'TE 10' 200°40'10'88'TE 10'	11 ⁰ 49'47 N to R 11 ⁰ 49'51'N to R 78 ⁰ 58'13'E
Yes, letter No. SELAA- No. SELAA- UNT: No. 5064/E C/I(0)3324/2011 6 dated 15.07.2016.	Yee, latter No.SEJAA- TUAF No.1316/E TUAF No.1316/E TUAF S0.13582/2013 dated 18.07.2013.	Yes, buter Noter Noter Noter Notev 128,0739392201 6 dated 25.072016	Yes, lotter No.SEIAA- No.SEIAA- TNR No.1769/E C/1(a)/1631/201 4 dated 19.02.2015	Yes, letter NessEJAA- TNF-No-4000/E C/1(a)254/201 5 datel 21, 12.2015	Yes, letter No.DELAA- TMF: No.9772/E
Non Capitve	Noti Captive	Non Cuptive	Cuptive	Captive	Non. Captive
Working	Working	Working	Working	Working	Working
6.05.2018	5102-60-95	22.06.2009	04:05:2015	08.03.2016	04.12.2018
4		14	ik	ŝ.	
18.03.2020	25.07.2019.		24:03,2020 -	30.12.2020	07.10.2023
	26.07.2014	6.002.00.61	25.03 2015 24.03,2020	31,122015	68, 10, 2018
	2 42 0		L46.5	132.5	1.50.0
ArG&M/822/2016 dated 22.08.2016	LP/CJ&A/C2/07/10 dl. 26.07 2014.	B/GRM 196/09 dt 25.05 2009	A/G&M265/13 dated 25.03.2015	A/G&M/601/15 dated 31.122015	B/G&M/ 369/2017 dt 08.10.2018
S/o. Appadumi, 190, Kadaiveethi, Ernöyur & post, Vanur inhik, Vihippuram District	Stor.Panchatcharam, 289, Main Roud, Kaplampsdi Village, Gingee Tabuk, Vilupparam District	S/o. Vellaiya Goundar, No. 47/1A, East Street, Tirokoilur	Sto Ramaswanty, No.41, Firikaran Siteet, Nerkundram, Cheman-107,	W/6.Sunkar, No.14, 3 rd Street, Inyuparum, Tindivanam Taluk	Sto Govindeng. Emupair Villago, Kallakurichi Tahuk
A.Ganesary	P.Rumsh	V.Guusekaran	.R. Alegurajan	Trat.S.Nantbirti	G.Seivakumar
Rough starts & Earth	Rough state	Rough	Rough store & Earth	Rough	Rongh stone
۵	к	œ	တ်	10.	11.

	RS:154465	E:15687	RS-592898	RS/21495 E-1773	RS.330000 E-23373
(11°49'58'58'13' (11°49'58'13'' 78'58'13''	11°53°01,58° N 79°03°39,54°B.	12'07'33.59° N ID 12'07'39.47° N 79'36'24.94°E 00 79'36'28.56°E 79'36'28.56°E (12'07'56.09°S	12"26'10.85" N 10 10 12"26'03.38" N 20"21"36,79"E 10 10 10 10 10 10 10 10 10 10 10 10 10	12%77.21% W 12%77.27% W 12%27.46% H 10.7%22.45% H 10.2%27.45% H 10.22%47% H 10.22%46% H 10.22\%20% H 10%20% H 10%20% H 10%20% H	(21.62.92.92.02.15 (78°55'02''E N°10''78''55''02''E N°10''78''55''02''E
C No. 16/2017, dated 04,02.2018	r	Ves, letter No DELAA-F3h: No DIATTNAM N57792017/dated 01.08.2017, dated	8	Yus, letter No SEIAA- TNAF No 2602/E C/I(ayi4/34/20) 4 dated 25.06 2014	Yes. Istrer No. SEIAA- TINF No. ISB2E C71(a)7459201 4 dated 02.072014
	Non Captive	Nen Capitve	Non Captive	Non Captive	Non Captive
	Non Worlding	Wotking	Working	Working	Nen Working
	25,01,2011	19.03.2018		97.01.2019	IIN
	1	(d)	<u></u>		24
	· 1257 10/60	23.09.2022	15,08,2020	17.07.2019	05.02.2020 -
	10.01.2011	24.09.2017		18.07.2014	06.02.2015
	1.96.0	0.79.0	3,00.0	0.0970	335.0
	B/G&M/2018/10 dt. 16.12.2010	brc&M7982016 dt 24.09.2017	BiG&M/23 /10 dt. 10.05 2010	BAG&BAFI4 20/2013 dh 18 07 2014	fb/586459/13 dt. 06.02.2015
	Sfo. Ræmassany, 15/3, Kanukottai, Emappar Post, Kallakurichi Taluk, Viluppuran District	Sfo.Chandran, Samathi Sucet, Mailam Village, Tixtiyunam Taluk	Sfo Elternaliai, No. 1019, Pullajour Koil Stredi, Devikapurun Village, Arani Taluk, Turwarmamalar District	S/o Cheliapu Mudaliyne, Sangeethamangula m Roail, Anandapuram, Gingee Taink,	Sto Sengodan, Athurr & Post, Resigteran Talud, Namakkal District
	R. Subrarmanian	C. Bulanurugan	R. Sridhar	C/Selvam,	A.S. Sruiyasan
	Rough stone	Rough stone & Earth	Rough	Kough stone & Earth	Rough stone & Harth
	12,	ů.	14.	si	16.

	R\$(161930) E:9436		R8-70235 E413654	RS:61305 E-20060	
6	12'03'32"N to 12'03'40'N 79°40'16"T 10'79'40'23'B (12'03'34'N	12,037,437% (0) 12,037,507 (0) 12,037,507 (0) 12,037,1237 (0) 12,033,437% (0) 12,034,437% (0) 12,034% (0	11 ⁶ 57 ¹ 9,50 ⁷ N 10 11 ⁶ 57 ¹ 14,14 ⁴ N 79 ⁶ 10 ¹ 16,12 ⁴ E 79 ⁶ 10 ¹ 18,84 ⁴ E (11 ⁶ 57 ¹ 9,50 ⁴ N 79 ⁶ 10 ⁴ 16,12 ⁴ E)	1.51.55454 00 380.55464 N55.11621 or N15.11621	
	Yes, lotier No. SEJAA- No. S616/1(1NN no. 5616/1(a)TEC No. 3694/2 a)TEC No. 3694/2 016 dued 06 09 2016	Yes, ldtter No. SIEJAA- No. SIEJAA- TN/F No. 268/F C/1(n)/1739/201 4 dated 13.03.2015	Yes, Joint No. SELAA- No. SELAA- TINR No.4736/L C/ L(0/3199/2016 dated 11.072016	Yes, letter No.SEEAA- TNF No.2831/E CT (a)7752/2014 dated 19 03 2015	
Cuptive	Non Captive	Nom Captive	Captive	Non Captive	
Werking	Working	Working	Working	Working	
21,07,2016	28.09.2016	31,01,2017	22.12.2016	26.05.2015	
é	14 ⁰	a	.i.	a	
13.02.2021	19.09.2021	02.07,2026	- 138.09.2021	10.04.2020	
14.02 2011	20.09.2016	03.07.2016	10:09:2016	11.04,2013	
0.00	3.00.5	2.00.0	1,02.5	1.03.0	
BrG&M2012/10 du 31.f2.2010.	A/682M/2016 dated 20.09.2016	deted 20.09.2016 BV(RM/2019/2010 dt. 03.07.2016. dt. 09.09.2016.		B/G&M/1898/12 dt.11.04/2015	
No. Arthman Gounder, Katulkotta, Parnegnatham, Maligarpady Poet, Sankarapuran Talak, Vituppuran District. District. Sto Vivekunandhu, 14, Jayapuran District. Erabiwnam Town. & Taluk,		S/0. Alartgararroopur, Mataikottalam, Kahlakurichi Tatuk	Séo. Vellaryan, 2/4, Schoel Sarset, Kattupatyar Village, Tarukeilar Tsituk	Sto.Putulyun, T. Nadlajam Villege, Pernunkkal Post, Tindivarsen Taluk,	
A. Muthusany V. Sankar		A.Rumesh	V. Chantifrasekaren	P.Detvinigatuaul	
Rongh stone	Rough stone & Earth	Rough	Kough stone & Earth	Rough atone & Earth	
12,	18.	19.	20.	21.	

	RS.15856	RS:116185 H:5884	RS:94010 E:15480	RS-254672 E:61926
(12°11'54"N 79°45'8"E)	12 ⁶ [1'353]* N 79 ⁵ 45'29,14°E	11 ³ 39'59.60" N 16 N 79 ⁹ 12'16.58" E to 79 ⁹ 12'16.58" (11 ⁶ 39'59.60" N 79 ⁹ 12'18.64"E)	12 ⁷ 02'42.84" N to N 79 ⁵ 28'49.08" E 0 79 ⁵ 28'49.08" E 10 79 ⁵ 28'49.08" N (12 ⁰ 02'43.45" N 79 ⁵ 28'49.08"E)	(3,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	0N	Yes, letter No. SEIAA- TN/F.No. 5148/E C/ 1(a)/3197/2016 dated 06.07.2016	Yes, leitar No. SEIAA- TN/F No. 5825 / 1(a) / RC/No. 3879/2016 dated 14.11.2016	Yes, letter No. SEIAA- TINF No. 5061 / 1(a) /BC No. 3611/2016 dated 24.08.2016
	Non Captive	Captuve	Captive	Non Captive
	Non Working	Working	Working	Working
	27.01.2012	28.09.2016	25.01.2018	24.08.2017
		,		<i>.</i>
	25.12.2021	21.08.2021	22.01.2022	13-10.2021
	26.12.2011	22.08.2016	23.01 2017	14.10.2016
	1.10.0	5/26/1	1.14.5	422.5
	B/G&M/ 36911 dt: 25.11.2011.	B/G&M/975/2015 dt. 22.08.2016.	dr. 23.01.2017	B/G&M/1053/2015 dt. 14, 10: 2016 & B/G&M/436/ 2018 Dated 19:11:2018
	Sío, Annakutti Giouader, Keebiviri Village & Post, Taadivanam Tahuk, Villappuram District	S/o.Thandapuni Naidu, 8/66, Sivun Kovil Sureut, Elavmasurkottai Villege &Pout, Ulundurpet Tuluk	S/o Subrimmit, 252, Kulakkarni, Ullagalampoondi, Vikkiravandi Talok,	W/o. (lute) L. Rameshbabu, No. S, Shankar Nagar, Thonpathi, Sirkuli Taink, Nagnpattimen District
	A Balanman	T. Rajendiran	S.Arulkaruan	Tint R.Sujatha
	Rough stone	Rough stone & Earth	Rough stone & Farth	Rough stene & Earth
	22.	23.	24.	25.

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	E 6564	RS:37700 E:16248	RS:31745	E 20247	RS:56054 E. 10386	
	12713'05'N to 12 ⁶ 13'11'N 79 ⁹ 45'26'E to 79 ⁵ 45'30'F (12 ⁶ 13'07'N 79 ⁴ 5'26'E)	12 ⁰ 11.397N to 12 ⁰ 11.457N 79 ⁰ 4510°TE to 79 ⁰ 4510°TE 79 ⁰ 4510°E 79 ⁰ 4510°E	12°12°24°N la 12°12°19°N 79°44°55°1E (a 79°64°59°E (12°12°19°N 79°44°55°E)	12°13'58 N to 12°14'03'N 79°45'17''E to 79°45'23''E (12°13'58''N 79°45'23''E	ETT22.22.22.21 H*20.25.22.22.17 H*20.25.25.22.21 H*20.25.25.25 H*20.25.22.22 H*20.25.22.22 H*20.25.22.22 H*20.25.22.22 H*20.25.25.22 H*20.25.25.25.25 H*20.25.25.25.25 H*20.25.25.25.25 H*20.25.25.25.25.25 H*20.25.25.25.25 H*20.25.25.25.25 H*20.25.25.25.25.25 H*20.25.25.25.25 H*20.25.25.25.25 H*20.25.25.25.25 H*20.25.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25 H*20.25.25.25.25 H*20.25.25.25.25 H*20.25.25.25.25.25 H*20.25.25.25.25.25.25 H*20.25.25.25.25.25.25.25.25.25.25.25.25.25.	1 12 ⁰ 13 22 th w 12 ⁰ 13 22 th w 79 ⁰ 44 03 th E
	Yes, hetter No. SI-HAA- No. SI-HAA- TAMF No. 4827 / 1(a) / EC No. 2829/2016 dated 17 02 2016	Yes, letter No.SEIAA- TNIF No.3109 / EC/1(a)/ 2148/2014 dated 01.04.2015	Y28, letter No. SELAA- TNF. No. 1862 / BC/ 1(a) / 1139A/2013 dited 27:02.2014	Yes, latter No. SI3IAA- No. 2951 / TMF No. 2951 / EC/ 1(0) / 1769/2014 dated 19.03.2015	Yes, letter No. SEJAA- TN/F Nu. 5424 / 1(a) / EC.No. 3557/2016 dated 10.08/2016	Yes letter No SEJAA- TNF-No.2779 / ECI 1(6)
	Non Captive	Non Captive	Non Captive	Non Captive	Non Captive	Non Captive
	Working	Working	Wonking	Working	Working	Non W(wking
	04.05.2016	19,08.2015	02.12.2009	29.06.2016	22.052017	18.05.2015
-				- F	Y	6
	02/03/2023	13.05.2020		- 12.11.2020 -	14.10.2021	23.04 2020
	03 03 2016	14.05.2015	23.09.2014	13.11.2015	15.10.2016	24,04,2015
	1.06.5	0.75.0	0.70	5001	0.80.0	5201
	BAG&M/674/2015 dt 03 03 2016	B/0&0/137/13 dt 14.05.2015	B/G&M/2005/104t 23.09.2014	B/G&M29013 dt 13 11.2015	A/G&M/422/2013 dated 15.10.2016	3/G&M/1187/13 df.24,04.2015
	S/o.Katness Gounder, No.290/5, Mariamman Koil Sireet, Chokkanthangal, Keeksiviri Poat, Manikkunan Taluk	Slo Ettiyappan, Mariyamman Kovil Steat, Kovadi, Tiydivanam Taluk	Sóo Sanjeevi. No.9, Wahab Nagar, Mirnákanam Road, Tindivanara Taluk	Sfo. Pattahi Reddiyar, No. 142, Mosquu Street, C. Patlavotan, Chetmai	Sfo.Murugaiyan, No.I. Pelayakara Street, Thiruvakkarai	Sio Arumigam, No.155, 75 Cross Read, Housing Beard,
	K. Parsmasi van	II. Pavadairayan	S. Semi vasan	P. Struivasan	M. Krjsbunnoorthi	A.Selvanij
	Rough stone & Earth	Rough stone & Farth	Rough	Rough stone & Earth	Rough state & Earth	Rough stone & Harth
	26.	27.	28.	29.	30.	31.

	RS:29350 E.4028	RS: 1451,35 1556624	RS:28714	RS-110810 E449335	RS\$5740 E.6848
N	12.75.85.651 N00.20.6	12°13 15°N to 12°13 15°N to 79°45 22°E to 79°45 16°E 79°45 16°E	12°0210.25° N to 12°0210.444= N 79°38'52.17" E to 79°38'59.91"E N (12°02'10.25° N N	12%41317% to 12%41317% to 79%38'54'E to 79%38'54'E (12%64'32'YV 79%38'57'E	12'03'20'N to 12'03'27'N to 79'39'58''E 10'79'40'10'E (12'03'29'58''E)
// /4 //2014 dated 13.03.2015	Y as, Lettar No. SEIAA- TN/F No. 1206 / EC/ 1(a) Acted 03.05.2014	Yes, letter No.SEIAA- No.SEIAA- EC/ 1(a) EC/ 1(a) EC/ 1(a) 13.032015	Y es, letter No.SFIAA- TN/F.No.4512 / EC/ 1(s) 227782015 dated 19.01.2016	Yes, licitar No. SELAA- TN/F. No. 3101 / EC/ 1(a) /18042014 dated 27.03.2015	Yes. letter No.SELAA- TN/FNo.50697 EC/1(a) EC/1(a) EC/1(a) EC/1(a) 15.072016
	Non Capitre	Non Captive	Non Captive	Non Cuptive	Captive
	Working	Working	Working	Warking	Working
		30.10.2016	10,03.2016	06.03.2017	15.12.2016
		a'		r	i a
	15.03.2020	07.02.2021	- 1202-20/61	13,06,2021	21.08.2021
	16:03.201	08.02.2016	20.02.2016	14.06 2016	22.08.2016
		2.12.0	1,13.0	5.27.5	4.27.5
	A/GRM/528/08 dated 16.03.2015	BA58M/6922012 dt:08.02.2016	Arted 20.02.2016	A/G&M/1451/2013 dated 14.05.2016	A/G&M/168/2015 dated 22.08.2016
Manwar vulage, Tindivanam Taluk, Vilippuram District.	Sio Gajraj Jain, No.5, Radhakrishna Street, Venkutta Negar, Pondicherry,	Sio Timukatan, Perumanakkal Village, Tindivanum Taluk	Sto.Subtramaniyan, 8. Mettu Street, Firanjur Village & Poet, Vanur Taluk, Viluppucam District,	Wio, Manokaran, 4/53, Matiyamuan Kovil Succt, Siventhangal, Chemsi-69.	S/o Chimatya Gouader, 168, Metu Street, Katnasur Village, V Parangani Post, Vanur Taitik
	O. Attaod&tumar Jain	T.Axavindan	S.Raguramin	M Kalaiyarasi	C.Gamesan
	Rough stone & Earth	Rough stone & Earth	Rough	Rough stime & Earth	Roten stone & Earth
4	32.	33,	34.	ŝ	36.

RS 120530	RS-43050 E0-5820	RS:144805	RS.312852	12930	RS/16872	RS:44275
hoosenti e	1991.94	2 2 ^m	RS	RSS.	RS	RSA
12°1,3°37°N to 12°1,3°32°N 79°44°1,1°°E to 79°44°1,5°E to 79°44°1,5°E 79°44°1,1°E)	12°11.43°N to 12°11.43°N to 79°45°39°E to 79°45°42°E (12°11.47°N 79°45°39°E)	12%57'02"E	12°07'55887" N 79 ⁶ 26'40.90" E	12''12''51.37" N 10 12''02'57.60' N 79'27'50.49" E to 79'27'57''S 79'27'53''E) 79'27'53''E)	12°07'36.16" N 79°24°43.73" E	11%45°23.82* N to 11%45°27.08*
Yes, later No.SEIAA- TUR No.2327 / TUR No.2327 / TUR No.2327 / 1251/2014 dated 09.05 2014	Yes, letter No.SEIAA- TNF No.SEIAA- TNF No.3363 / EC/1(a) /2318/2015/dated 0/2.11/2015	Yes, lefter No. SEIAA- LINF No. 5048 / EC/ 1(a) EC/ 1(a) 15722/2016 disted 16.09 2016		Yes, letter No.SEIAA- No.SEIAA- TNR.No.14247 EC/1(a) 65372013 dated 01.08 2013	No	Yea, letter No SEIAA- TWE No 4877 /
Non Capitive	Non Capitre	Non Captive	Non Capliw	Captive	Nou Captive	Non Captive
Working	Working	Non-Emg Working	Wonling	Working	Non Working	Working
	26.02.2016	21.06.2017	11.06.2010	06.03.2017	26.12.2011	10.05-2010
6	¥.		1	Ü	<u> </u>	14.
	3	đ	1	N	(i)	1
20.06.2019	30.12.2020	29.12 2021	06.06.2020	30.08.2021	30.01.2021	22.06.2019
	31.42.2015	30.12.2016	02062010	31.08.2016	31,01.2011	23.06,2009
1.28.0	0.225	2.00.0	3.00.0	2,21.5	0.50.0	2.00.0
BARAN120772012 dt 21,06 2014	BK2&M5531/14 dt.31.12.2015	B/G&0//2008/10 di, 30.12.2016.	B/G&M/205/2010 dt. 13.04.2010	dt 31.08.2016 dt 31.08.2016	B/G&M/200/10 dt. 15.12.2010.	B/(3&M/198109 dt 25.05.09
S/o. Velayutham, Elavalayakkam Village, Perumukkai, Tindivanam Taluk	Sio. Thoppalarr No. 667, Marakkanam Road, Brummadsam Viliage, Lindivanam Talak	Sto Darman), Citekbargathandal, Gingee Tolak.	W/o. Ravi, Throwpathiamman Koil Shreet, Vembi Village and Post, Vilippuram Tahik and District	W/o.J.Ravi, Throwpathamman Kovil Sucet, Vembi Vilage, Vilage,	Slo, Kali Counder, Nongathur Village, Amiyur Via, Vilupptram Talak,	S/o. Parmeerselvam, Vadaideananthal post, Katlakurichi
	T.Kuppusamy	1). Murugapsodiyan	Tni R. Dhansiskistri	R. Dhamilakıdımi,	K. Murugawel	P. Elanchezhiyan
Rough stanc & Earth	Rough store & Earth	Rough steric	Rough stone	Rough	Rough stone	Rough store
37.	38	é	40.	41.	42.	43,

	RS-23700	RS:67895	RS47100	RS:144425	RS-96417 E311874
78°51'24.54°E to 78°51'31,13°E (11°45'23.82" N 78°51'24.54°E	12913119794 to 12913119794 to 1291311678 1094630772 1094630772 1094630875	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)	12'03'36'N to 12'03'36'N to 79240'07''E to 79943'12'E (12'03'324'73 "N 79'40'15:44") E	12'05'51''N to 12'06'00''N 79'42'40''E to 79'42'40''E 79'42'32''E)	11 ⁶ 39'53.90° N to N 11 ⁹ 40'60,33"
1(a)/ PCJN0.348/201 6 dated 29.072016	Yes, latter No.SEIAA- TNF.No.1757/ 1(a)/ EC.No.866/2013 dated [2.11.2013	Yes, luttur No. SE(JAA- No. 1962 / TEAT No. 1962 / TEC/1(a) 11.92/2013 dated 15.04.2014	Yes, letter No. SIJIAA- TN/F No. 3425 / 1(a) / HC: No. 3920/201 6 dated 19:06.2017	Yes, latter No.DEIAA- TNF No.12631 / EC No.1/2018 dated ()5.07.2018	Yes, . letter No DHAA- TNR'No.74277 EC No.14/2017
	Non Capuw	Captive	Non Capitye	Non Capitve	Non Captive
	Working	Warking	Working	Working	Working
	01.02.2019	27,46,2014	13 [2.2017	18.09.2018	22.10.2013
		×		*	e
	22.09.2019	29,05,2019	23.09.2022	26.08.2023	26.09.202
	23,09,2014	30.05.2014	24,09,2017	27.08.2018	27,09,2015
	0.37.5	142.5	1243	2,53.0	1.55.0
	B/G&M/2003/10 dr. 23.09/2014,	A/G&A/513/13 dated 30.05.2014	Artes M/483/2013 dated 24.09.2017	A/G&M/702/2017 dt. 27.08 2018	B/G&M/848/2016 dt. 27.09.2018.
Talak, Viluppuran District	S/o. Veensamy, Permaukkal Village, Findivenam Taluk	S/o.Periyasany, 1/13, Throwpathinman Kovil Streat, Thurunkkarni Vilinge, Vanur Taluk, Vilingearan Diseriot	Séo Kamnadi counaler, Mattu Street, Karasnuur Village, Vanur Taluk, Villupurun Disirici,	Sto. Dachinamoorth 35. Finikarun Street, Mariyamman Kovil Street, Cuddalore District	Sio. Mahamed Ravuthar, Fanayapuram Villago,
	V.Ravi	P.Ruvisharahan	K. Grannsekarun	D.Narayanuswa my	M.Infler sait
	Rough stone	Rough	Rough stano & Earth	Rungh stons	Rough stone & Earth
	44.	45.	46.	47.	48.

	R\$32211	R.S.51890	RS-104810	E:9207 E:9207
79°12'18.51" E 79°12'23.14"E 79°12'23.14"E N N 19°12'18.51"E) 12°13'36.27" N 79°44'16.52'' E	12 ⁶ 01 ⁻ 48 ^T N to 12 ⁸ 01 ⁻ 54 ^T N to 79 ⁶ 38 ⁻ 49 ^T E to 79 ⁶ 38 ⁻ 55 ^T E (12 ⁶ 01 ⁻ 49 [,] 67 ^T N 79 ⁶ 38 ^T 54.89 ^T E)	(12°01'97'97'40 12°01'55'10" 79°38'51'15 10°79°38'55'10" 10°79°38'55'69'E N 79°38'53,69'E	12 ⁶ 11 ⁻ 27.47 ^o N to N N N 79 ⁶ 45 ⁻ 31.19 ^o ⁻ F 79 ⁶ 45 ⁻ 46.59 ^o E to 79 ⁶ 45 ⁻ 46.59 ^o E (12 ⁶ 11 ⁻ 29.96 ^o N N N N
dated 04.02.2018	Yes, letter No.DELAA- TN/F No.8096 / EC No.312017 doted 04.12.2018	Yes, lotter No. DEIAA- TNF No. J 5706 / EC. No. 122018 doted 04. 12.2018	Yes. letter No. DEIAA- TIN/F.No. 15708 / EC.No. 122018 dated 04. 12.2018	Yes, letter No.DEEAA- TN/F No.18539/ EC.No.222018 dated 04.12.2018
	Non Captive	Non Captive	Capitive	Capityc
	Non Working	Non Working	Working	Working
	Ē	л.	09.05.2019	08.042019
	18	2	à .	
	27.02.2024 -	07.03.2024	07.03.2024 -	14.02.2024 -
	28:02.2019	08.03.2019	08.03.2019	15.02.2019
	0.99.0	1,00,0	1.00.0	2.13.0
	B/G&M/364/17 dt. 28.02.2019;	B/O&M/11422017 df: 08.03.2019.	B/0&M/1141/2017 dt. 08.05:2019.	B/C&M/240/15 dt, 15 02 2019
A angipuntin Ranak.	S/o. Thangavel, Nathametu Street, Olakoer & Post, Tindivenam Taluk, Viluppuram District	S/o Arumugam, Metu Street, Thuruvai, Rayapadapan Post, Varne Taluk	Sto. Chakravarthi, Indim Nagar, Kiliyamr Village & Post, Vanur Tahu, Viluppurun	Slo. Subtamunia Gounder, No 135, Pendy Road, Marnfskanan, Viluppuran District.
	T.Anbsclugun	A. Sathishkumar	C. Pradut	S, Rangunathan
	Rough stone	Rough stone	Rough	Rough stone & Earth
	49.	50.	51.	52.

RS412160	RS:109143 E-10166	R5211615 E32120	R5:137825	E29241 E29241
12'04'07'N to 12'04'14'N 79'39'32''E to 79'39'41'E	12'08'33'N tu 12'08'40'N 79 ⁰ 43'38'E 10'79 ⁰ 43'36'E (12 ⁰ 08'37.02' N N'43'28.16''	L) L) N, un N P9461551* P9461551* D9461551* T9*467551* T9*467551* N T9*4671614* N F9	12'07'34'N to 12'07'34'N to 79°24'44''E to 79°24'50''E (12'07'34''N 20'23'4'10'''	12 ⁰ 11 ¹⁰⁷ 87 N ¹⁰ 12 ⁰ 11 ¹¹¹ 80" N 79 ⁶ 45 ⁴ 2390" E ¹⁰ 79 ⁶ 45 ⁴ 2390" N (12 ⁶ 11 ¹ 05 ³ 72" N 79 ⁶ 45 ⁴ 2390'E
Yes, letter No.DEIAA- T.Wr.No.7599 / HC.No.772017 dated 04,02.2018	Yes: Inter No.DBIAA- TIN/P.No.152017 EC.No.14/2018 deced 05.07.2918	Yes, Beitor No.DEHAA- No.DEHAA- TM/F.No.15483 / BC.No.172018 dated 05.07.2018	Yes, latter No DELAA- No DELAA- TINE No 7327 / E.C. No 1322017 dated 04 22:2018	Yes, lettar No.DETAA- TIN/F.No.18540/ EC.No.232017 deted 04.12.2018
Non Captive	Non Captive	Capityce	Non Captive	Non Capitre
Working	Working	Working	Working	Working
08.03.2019	28.03.2015	8102.80.61	15.03.2018	16.05.2019
9		1. ·).	•
21.02.2024	14.02.2024	08.08.2023	• 07.03.2023	27.02.2034
6102 20 27	15.02.2019	09,08,2018	1 mm	28.02.2019
c-10.7	2545	3.94.0		1.76.0
ditted 28.02 2019	AKJ&AK778/2017 dt.15.02.2019	710280-0180-018	dt 08.03.2018.	B/G&M/100/2018 dt 28.02 2019
ov. runnananun, Erniyur Villago, Vinuppuram District	S/o. Subramaniya Rechtiyar, Themkodipashkum Village, Vunur Village, Vingpuran Liahk, Vingpuran District	No 2, Mailam Read, Iadira Nagar, Tindiranam	Sloc Kali, Nangathur Village, Vikkravandi Talak, Villupurani District,	S/o Davaraj Perumukkal Vilage & Post, Marukkanan Taluk, Viluppurani Disiriut
	S. Ragurernan	M Babin		1). Kamesti
stone	Rough stone & Earth	Rough stone & Earth	Rough	scough stone & Earth
ń	54,	ŝ	56,	57.

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E-30040	E:200425 E:20042	RS:404793	RS/191318	RS:151034
12°03'38''N to 12°03'36.50" N 79°40'35.29" E 79°40'35.29" N 79°40'35.29" N 79°40'35.29")	12°03'13.14°N to 12°03'21.15°N 79°40°16.66° E 10 79°40°16.66° 79°40°16.66°E N N	12 ⁰ 04 ⁻ 19 ⁻ N to 12 ⁰ 04 ⁻ 19 ⁻ N 79 ⁰ 38 ⁻ 34 ⁻ E to 79 ⁰ 38 ⁻ 45 ⁻ E to 79 ⁰ 38 ⁻ 45 ⁻ E N N	11°58'28'28'10 79°14'28'28'10 79°14'29'19 79°14'26'29'10 79°14'26'70	12 ⁹ 11'48.13" N T9 ⁹ 45'16.40" E
Yes, hetter No, DELAA- TNIT No. 14175 / FIC No. 132018 dated 05.072018	Yes, Jutter No. DELAA. TN/fr No. 15827 / EC No. 1822018 dated 05.072018	Yes, later No. DEJAA- TIVF No. 18345 / HC No. 19/2018 dated 04.12.2018	Yes. Jutter No DEIAA TNIF No 8297 / BC No 102017 dated 04 922018	Yes. Tettor No. DEJAA- TINF No. 7596 / EC. No. 12/2017 dered 04.62-7018
Caprive	Non Capitive	Num Captive	Non Captive	Non Captre
Working	Non Working	Working	Working	Working
31.08.2018	ž	6107.89.99	04.06.2018	28.03.2018
i.		,	ä	(<u>+</u>)
15.08.2023	15,08,2023 -	14(2)2.2024	27.03.2023	12.03.2023
16.08.2018	16,18,2018	15.02.2019	28,03,2018	13.03.2018
2.06.0	2425	483.6	3.00.0	2.16.0
AL 16.08.2018 dt. 16.08.2018	at 16.08.2018 at 16.08	A(G&M/181/2018 dt.15.02.2019	B/G&M366/17 dt. 08.03.2018.	B/G&M/365/17 dt_08.03.2018.
Managee, OM sakthi Consenctions, Thollamur Village, Vanur Tahik	S/a. Gopal. Siveraj Street, Thruncernalat, Chemai.	S/o. Thangayed, Eritiyur Village, Vanar Tahk, Viluppuram Djariet	Sto Sempentham, S. Kaitar Village, Randachipuram Taittk, Viilupuram District.	W/o. Selvaraj B1, Krastua Apartmont, Katakuroti, Katlakurchi,
R Muraliduran	G.Raju,	T, Vasudevan	S., Senter	S. Revathi
Rough stone & Earth	Rough stone & Earth	Rough	Rough stone	Rough
58	65	60.	61.	62

in

RS:22030 E:26970	RS 35567	RS:198035 E.10544	RS:378010	E:2790	RS:355330 E'26818
12 ⁰ 03 ⁻⁴⁶ N to 12 ⁰ 03 ⁻⁴⁶ N to 79 ⁶ 38 ⁷ 28 ¹ E 10 ⁷ 79 ⁶ 38 ⁷ 38 ¹ E 10 ⁷ 79 ⁶ 38 ⁷ 38 ¹ E N 79 ⁶ 38 ⁷ 29 ² 29 ² 29 ⁴ E	12*20*20.51°E to 12*20*20.04°E 79*20*40.65°N 10 79*20*48.88°N (12*20*48.88°N (12*20*48.88°N	12'03'18'N to 12'03'26'N 79 ⁶ 40'05'E to 79 ⁶ 40'10'E 79 ⁶ 40'10'E	12°04'04'02'N (6) 12°04'13'N 79°38'35'15 10'79°38'42''5 10'79°38'42''5 N (12°04'03.46'' N 10°38'35.07''	11 ¹⁰ 39487N to 11 ¹⁰ 39547N to 79 ¹ 121171E to 79 ² 12227E 11 ⁰ 3954967N 11 ⁰ 394967N	12°2°42.77°N to 12°2°53.80°N 79°39°50.80°T 10
Yes, letter No.DEIAA- TNF No.18212 / EC No.182018 dated 04.12.2018	Yes, htte: htte: No.DEIAA- TNG: No.18587 / EC.No.2562018 date:i 04.122018	Yes, letter No.DJEIAA- TN/F,No.15355/ EC.No.1552018 dated 05.072018	Yes, lotter No.D/EIAA- ThV/F.No.18349 / EC.No.202018 dated 04.122018	Yes, letter No.SEIAA- No.SEIAA- IN/F.No.5134 /((a)/ BC.No.391220)1 BC.No.3912201 00.00 datach	Yes, letter No.DEIAA- TNF No.18543 / EC No.24/2018
Non Captive	Non Captive	Non Caplive	Non Captive	Non Captive	Non Captive
Working	Working	Working	Working	Working	Working
03.0422019	06.02.2019	13.11.2018	06.03.2019	07.12.2017	14.03.2019
91	2	•)	×	i	ł
- 14.02.2024	11.10.2019	· E202.80.92	14.02.2024	09.10.2022	14,02.2024
15,02,2019.	12.10.2009	27.08.2018	15.02.2019	1	9
130.5	6.81.0	2.12.0	575.6	1.40.5	556
A/G&M/1762018 dt.15.02.2019	B/G&M/193/09 Dt 03.09.09.& Dt 09.08.2018	AlGEM/138/2017 dt 27.08 2018	A/G&M/180/2018 dt. 15.02.2019	B/G&M/174/2015 du 10.10.2017;	A/G&M/2032018 dt.15.02.2019
S/o. Dkamothunn, Auna Nagar, Ezaiyur Village, Vanur Taluk.	Slo, (late) M. Gamstar, Gounder, Melmanpattu Villogo, Welmaiayanur Post, Gingoe Tatuk.	Sto Kurpusamy, Kurasunz & Post, Vanur Tahik	S(n. Elumatini, No. 198, Vinayakar Koil Steeet, Eraiyur Village, Vanur Taluk, Viluppurum District	Sto. Kalipulu Selum Mani Read, Elayunasurkattai, Ulundurpet	Selo. Minnian, Marmarsemy Kovij Street, Thiravakkarni
D. Manokar	G. Tamiselvan	K.Balamurugan	11. Jayasankar	K. Mujeepur Ragmon	M. Moorthi
Rough stone & Earth	Rough state	Rough stone & Earth	Rough stone & Earth	Rough stone & Farth	Rough stone & Earth
63.	64.	65.	99.	67.	68.

S

	and the second s	RS:277000 E.12934	R.30336 R.30336	RS:72405 E:6796	RS:6400 E-21960
79°39'57.78'E (12 ⁴ 2'46.77'N 79°39'50.80''	12 ⁰ 13 ³ 27N to 12 ⁰ 13 ³ 27N to 73 ⁰ 44 ¹ 15 ⁴ F to 73 ⁰ 44 ³ 51 ⁴ F 73 ⁰ 44 ³ 51 ⁴ F 73 ⁰ 44 ³ 51 ⁴ F	12°13'331.97'N to 12°03'41.75'N 79°40'06.13'E to 79°40'16.50'E 79°40'06.13'' N N 80	12%2730°M to 12%2738°M 79%38°33°E to 79%38°40°E (12%2731.21° N 79%38°34.83° 79%38°34.83° E)	11 ⁶ 39 40.39" N to N 19 N 11 ⁶ 039 46.71" N N ⁶ 11'58 957E to 79 ⁶ 12'05.54°E (12 ⁶ 02'31.21" N N S ⁰ 38'34.83" F)	12'07'50'N 12'07'55'N 19'36'24'E 10'79'36'24'E 10'79'36'24'E 19'36'24''E)
dated (34, 12, 2018	Yes, lietter No. DEIAA- TNN: No. 17579 / EC.No. 172518 dated 04. 12. 2018	Yes. letter No DELAA- TN/F No. 1 5429 / EC.No. 162018 dated 05.07.2018	Yes, letter No. DELAA- TN/F.No. 18382 / EC No.21/2018 dated 04, 12.2018	Yes, letter No. DiTAA- TIMP:No.17233 / EC.No.142018 deted 04, 12, 2018	Yes. letter No SEIAA- TN/F.No.2639/ EC/1(a2/1391/20 14 dated 25 06.2014
	Non Capitive	Nen Captive	Non Caphyve	Kon Captive	Non Capitye
	Working	Working	Working	Working	Working
	20.04.2019	18.09.2018	22.04.2019	25.02.2019	16.02.2015
	÷	<i>b</i>	R.		U <u>N</u>
	29.02.2024	15.08.2023	14.02.2024	24.01.2024	16,07,2019
1	30.02.2019	16.08.2018	15 02 2019	25,01.2019	17.07.2014
	2.30.5	2.30.5	2.92.0	7362	1.08.0
	B/G&M/1013/2017 dt 30.02.2019	A/G&M952018 dt. 16.08.2018	AV3&M72692018 dt. 15.02.2019	1940,82018.dt. 25.01.2019.	B/G&M/70/2014 dt.17.07.2014
Village, Vanur Taluk	Sjo. Natara, No. 158, Kurnji Nugar, Velisemmandalam, Culdalore	No. 18, Amal Nagar, West Tambazum, Chemnii-600 045,	S/o. Sivaprakassum, Vinayagar Kovil Sireet, Kathirkannam, Puducherry,	Sto. Valyapuri, No.3/32A, South Street, Street, Calikurichi Taluk, Viluppurum Diatrict.	Sto Dandapant, Marlam Village, Tindivansan Taluk.
	N. Verkatesh	V Sadaryappan	S. Thurunungan	V.Nagaraj	D.Selvakunser,
	Rough stone & Earth	Rough stone & Earth	Rough stone & Earth	Rough stone & Earth	Rough stone & Earth
	69.	70.	71.	72.	<u>7</u> 3,

	1	1			
RS,72461	RSofterd	RS,79353	RS:80015	RS-155980	RS 55102
N N N N N N N N N N N N N N N N N N N	12°05'55.99° N 79°17'11.65°TE	11.8925.15682 N.600.055611 31.4910.25682 01 31.8925.15682 N. N. N. 665.95610 N. N. 665.95610	12"13 '08" N to 12"13 '08" N to 79"45' 57"E 10"79"45' 57"E 10"79"45' 03"E	12%6167N to 12%6217N 12%523057	3.1775.5b,66 N N
Yes. letter No.SELAA- No.SELAA- 11/05/SEC No.3281 (2015 dated 11/07/2016	No	Yes, heite: No. SEIAA- TN/F. No. 4725 / 1(n//EC. No. 3331 /2016 dated E5.07.2016	Yes, lettes, No. SEJAA- No. SEJAA- TNF No. 4826 / 1(0)/EC No. 3347 /2016 dated 15.07.2016	Yes, letter No.SEIAA- TRVF No.2484 / 1(a)/EC.No.3590 2015 dited 19.08 2016	Yes, lietter No.DEIAA. TNF.No.18617/ TNF.No.2822 018 dated 04.122018
Non Captive	Non Capitive	Nett Cuptive	Noa Captive	Non Captive	Captive
Working	Working	Working	Wasking	Working	Working
6007-60 67	17,12 2012	16,09.2009	12.10.2009	30,06.2017	17.09 2010
*	£	8	<a td="" ·<=""><td></td><td>(h)</td>		(h)
* * * 1182 K00 901	11.07.2020. +	30.08.2019	- 23.08.2019	27,02.2021	15.08.2020.
4007 GO UN	12.07.2010	31.08.2659		28.02.2011	16.08.2010
now c	1.50.0	3.00.0	1.64.0	3,00.0	3.72.0
27.05.200	B/G&M/24 /2010 dt. 18.02.2010	BIG&M19905	B/G&M/185/09 Dr. 11.06.2009	B/G&M/2006/10 dt. 25.01,2011.	B/G&M/207/10 dt 12.05.2010.
zee, vacatyaran, Derapandalam Village, Sankaraparan Talak,	Slo, Kuppusamy Gr., Malaryarasankupna m Villago, Muzhavanthangal Post. Gingee taluk, Vilngpuram District	S/o. Duratiamy, Thiramanandal Village, Artar post, Sankarspuram Taitik	S/o. Anbazhagan, Metro Street, Vadauekuman poat, Tindivanam Taluk,	W/o. K.S. Mesthen, 59, Desurpottni Salai, Krishnopuran, Gingee, Viluppuran District	Ske. Perunal, Palityandar vilage Viluppuran Taluk Viluppuran District.
N. LINING	K Arjuman,	D, Rumich mótain	A. Sivaantinus,	Tmt Saithunchee	P. Ramalingum,
stone	Rough	Rough stone	Rough stone	Rough stone	Rough
14.	75.	76.	77.	78.	79.

Sul

RS:30566	E.54491	RS:34640 E.5983	RS:231055	RS:180180	R8.79075 E-24804
12 ⁶ 13'25,45" N 79 ⁶ 18'46.08"E	12 ¹ 4 ¹ 54 ¹ 84 ¹ 84 ¹ 8 N ² 84 ² 41 ² 1 N ² 84 ² 41 ² 1 N ² 84 ² 41 ² 1 N ² 94 ² 41 ² 1 N ² 94 ² 41 ² 1	12 ⁰ 04 05 W 10 ² 04 05 W 10 ² 04 08 W 10 ² 04 6 W 10 ² 04 6 W	12 ¹ 24 38 17 ¹ N 79 ⁶ 22 26 58 E	11°39'37'N to 11°39'4'N 79°12'09'E to 79°12'15"E (11°39'37'N 79°12'10'E)	T ²⁰ 13'13'13'13'13'13'13'13'13'13'13'13'13'1
Na	Yes, liciter No SIEJAA- TNF No 2328 / EC/ 1(87) 1537/2014 dated 30.05 2014	Yes, letter No SEIAA- TNF No 1650/ EC/ 1(a) 11692013 dated 20.03.2014	No.	Yes, lietter No.DIA/IN/MIN/ 6526/2017/J3ELAA 2017/J3C.No.1, Dated:01.08.201 7	Yes, lotter No.251AA- No.2577 / TMF.No.2677 / 15462014 date date date date date 14.082014
Non Captive	Non Cuptive	Captive	Non Captive	Non Captive	Non Captive
Working	Working	Non Working	Non Working	Working	Working
23.04.2010	21,07 2014	12.06.2014	18.03.2010	12.03.2018	23102.015
*	1. 1.	1	÷		
- 15.04 2020	20.06.2019	29.05.2019	22,06,2019 -	07.03.2023 -	15.04.2020
16.04.2010 15.04.2020		30.05.2014	23.06.09	08.03.2018	16.04.2015
2.50.0	×	0.99.0	3.00.0	3.94.0	0.95.0
B/G&M/25 /2010 dt. 30.03.2010	c N		B/G&M/192/U9 dr 11.06.2(09,	B/08/03/2018	B/G&M/1224/12 dt 16.04.2015
W/o. Seuthamil Selvan, Murugan Koil Street, Kalathumpattu Post, Oingee Taluk, Viluppuram District	Sio. Velayuthum. Elavalapakkam Villego. Perumuktal, Tindivansm Taluk	W/o.Logunathun, Eraiyur Villsge & post, Vanur ta'uk.	W/o. Surasingh, Eyyil Wilage & post, Gingee Tahuk, Vilinppuram Disariet.	Séo. Balaxobranasniyan Vadakarumbur, Ulundurpet Taluk, Villupuran District	Sto.Kandasenny, Nallalam Kootroad, Perunudikal Village, Tindivanaan Taluk.
Jurt K. Parmala	V Kumar	Tmt L.Savithri	S. Kamstadevi	B. Sakthivel	K. Ashokkumur
stone	Rough stone & Earth	Rough stone & Earth	Rough stone	Rough	Rough stone
80.	81.	82.	83.	84.	85.

List of Letter of Intent (LOI) Holders in the District along with Mineral Resources:

Total resources in com	10	1295840 M ³ of RS & 64792 M ³ of Gravel	914130 M ³ of RS & 40628 M ³ of E	569040 M ³ of RS & 28452 M ³ of E	1284120 M ³ of RS & 85608 M ³ of E	803600 M ³ of RS
Location of the Mining Lease (Latitude& Longitude)	6	12 ⁰ 03'10.49"N to 12 ⁰ 03'20.70"N 79 ⁰ 40'08.70"E to 79 ⁰ 40'16.98"E (12 ⁰ 03'11.13"N 79 ⁰ 40'09.94"E)	12 ⁶ 03'30"N to 12 ⁰ 03'36"N 79 ⁶ 40'23"E to 79 ⁶ 40'30"E (12 ⁶ 03'33"E) 79 ² 40'23"E)	12 ⁶ 04'07.16'N to 12 ⁶ 04'13.93"N 79 ⁵ 38'59.73"E to 79 ⁶ 39'03.75"E (12 ⁶ 04'07,45"N 79 ⁶ 39'00,95"E)	12°13°05.47"N to 12°13°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)	12 ⁰ 03'41.93''N to 12 ⁰ 03'48.98''N 78 ⁰ 57'09.17'E to 78 ⁰ 57'15.01''E (12 ⁰ 13'43.97''N 78 ⁶ 57'09.17''E)
Use (Captive/ Non- Captive)	8	Non Captive	Non Captive	Non Captive	Non Captive	Non Captive
Validity of LoI	t	K.		a.	- Catr	141- 1180
Area of Mining lease to be allotted	9	3.53.0	2.06.0	1.49.5	2,85.5	2.00.0
Letter of latent Grant Order No. & Date	5	B/G&M/463/2018 dt.18.01.2019	B/G&M/357/2018 dt.04.01.2019	B/G&M/423/2018 dt.18.01.2019	B/G&M/462/2018 dt.15.02.2019	B/G&M/1143/2017 dt.17.01.2018
Address & Contact No. of letter of Intent Holder	4	S/o. Venkatapathy, No.5, Thangaraj Street, HLL Colony, Pammal, Chennai - 75.	No.173, Sarkar Thoppu, Tindiyanam.	S/o. Duraisamy, Eraiyur Village, Vanur Taluk, Viluppuram District.	No.33/8, Mailam Road, Indira Nagar, Tindivanam	S/o. Karuppaiya, 28/4B, Raja Nagar, Kallakurichi – 606 202.
Name of the Lessee	3	V.Ramesh	Santhosh Blue Metals, Prop. S.V. Venkatesh	D. Dhandapani	Sri Bataji Blue Metals & M.Sand	K. Balasubramanian
Name of the Mineral	2	Rough stone & Gravel	Rough stone & Earth	Rough stone & Earth	Rough stone & Earth	Rough stone
SI. No.	I SI OI	A -	સં	m	4	Ś

1180270 M ² of	1206000 M ³ of
RS & 33722 M ³	RS & 53600 M ³
of Gravel	of E
12"03"55.01"N	12 ⁰ 03 [•] 20,03 ^m N
to 12"04"01.91"N	to 12 ⁰ 03 [•] 27,36 ^m N
79"38"24.85"E	79 ⁰ 40 [•] 15,44 ^m E
to 79"38"32.27"E	to 79 ⁹ 40 [•] 23,75 ^m E
(12"03"56.29"N	(12 ⁰ 03 [•] 24,73 ^m N
79"38"24.85"E)	79 ⁹ 40 [•] 15,44 ^m E)
Non	Non
Captive	Captive
	a
1.77.0	2.68.0
A/G&M/337/2018	A/G&M/277/2018
dt.30.01.2019	dt.04.01.2019
School Street,	S/o.Kannadi Gounder,
Kadagampattu,	Karasanur Village,
Vanur Taluk,	Vanur Taluk,
Viluppuram District.	Viluppuram District.
A Aridass	K.Gnanasekaran
Rough	Rough
stone &	stone &
Gravel	Earth
6.	<i>"L</i>

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. Charnockiteis blusih 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.

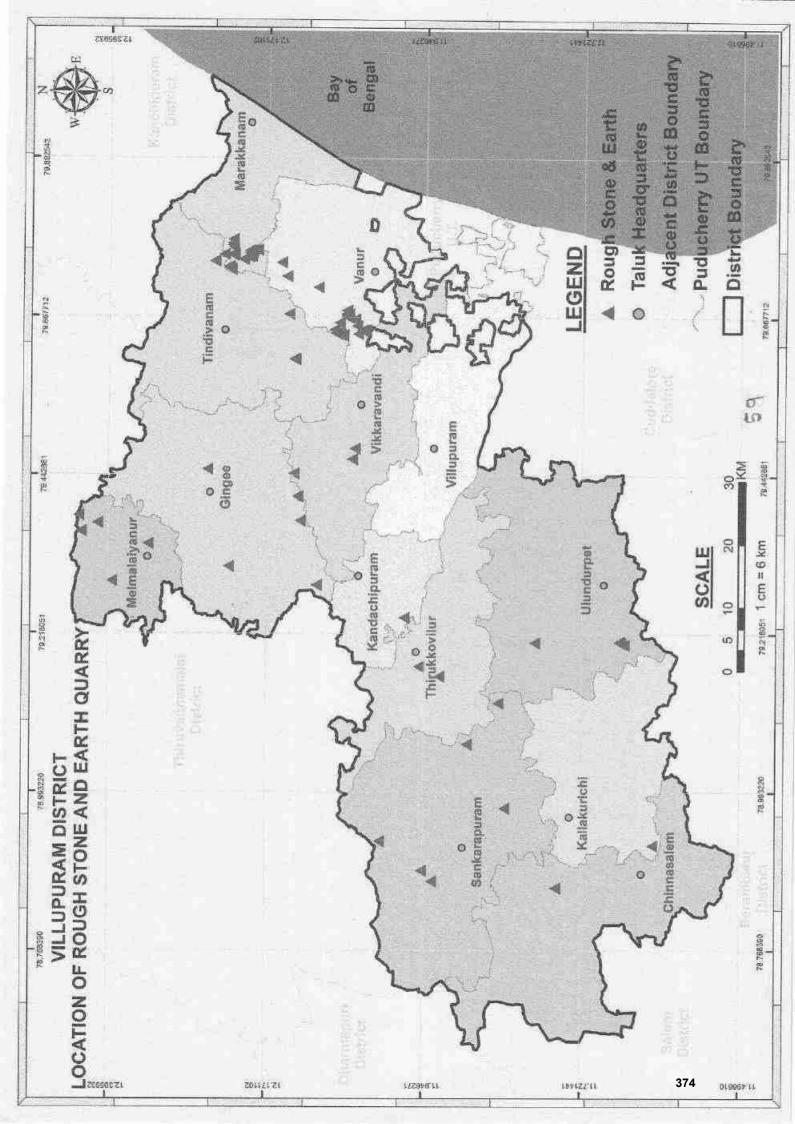
16. Use of Mineral

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

Rough stone							
Year	2016-17	2017-18	2018-19				
Demand (Cub.m)	782595.08	753676.27	928248.61				
Supply (Cub.m)	782595.08	753676.27	928248.61				



S1. No.	Cluster area	Cluster area 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		
			2	(12°01'52"N - 79°38'55"E) 12°02'00"N - 79°38'52"E		
			3	12 ⁶ 02'10.25"N to 12 ⁶ 02'14.44"N 79 ⁶ 38'52.17"E to 79 ⁶ 38'59.91"E		
				(12°02'10.25"N - 79°38'52.17"E)		
			4	12 ⁸ 2'23.90"N to 12 ⁶ 2'27 58"N 79 ⁶ 39'32.17"E to 79 ⁶ 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"IE to 79°38'40"E		
			6	(12°02'31.21"N - 79°38'34.83"'E) 12°01'49'N to 12°01'55'N		
			0,	79º38'51''E to 79º38'55''E		
			7	(12°01'49.40"N 79°38'53.69"E) 12°01'48'N to 12°01'54'N		
			1. C.	79°38'49''E to 79°38'55"E		
	Land and the second sec			(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 ⁶ 03'20"N to 12 ⁶ 03'27"N 79 ⁶ 39'58"E to 79 ⁶ 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		
			10	(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°03'324,73"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 ⁰ 03'32.44"N - 79 ⁰ 40'06.13"E)		
			7	12 ⁶ 03"13.14"N to 12 ⁶ 03"21.15"N 79 ⁶ 40"16.66"Eto79 ⁶ 40"24.21"E		
			8	(12°03'17.09"N-79°40'16.66'E) 12°03'28"N to 12°03'36.50"N		
			0	79640'35.29"'E to79640'39.92"E		
			6	(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		
		U		(12°03'18"N - 79°40'06"E)		

19. Details of the area where there is a cluster of mining leases :

			10	12 ⁶ 2'42.77"N to 12 ⁵ 2'53.80"N 79 ⁶ 39'50.80"E to 79 ⁶ 39'57.78"Ii
				(12°2°46.77"N - 79°39'50.80"*E)
3	Eraiyur	8	1	12°04'07"N to 12°04 14"N
0	istaryur	0	1	79°39'32"E to 79°39'41"E
			2	12"04"05"N to 12"04"08"N
			-	79839'33"E to 79839'40"E
		3		Jaho Suno D
				(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 ⁰ 04'32''N 79 ⁰ 38'57'E)
			1	12"04'12"N to 12"04'19"N
			4	79°38'39"E to 79°38'51"E
				The second s
				(12 ⁴ 04'16"N 79 ⁶ 38'39"E)
			5	12°04'28"N to 12°04'24"N
			1	79°38'39"E to 79°38'43"E
		-		
				(12º04'24'78 - 79º38'39"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)
			1.44	(12 04 10.98 N 79 38 34.04 b) 12°04'02"N to 12°04'13"N
			7	79°38'35"E to 79°38'42"E
				1 - 20 22 IS DE 12 20 ML D.
				(12°04'03.46"N 79°38'35.07"E)
			8	12"03'46"N to 12"03'53"N
			0	79938'28''E to 79938'33"E
				(12°03'47.31"N 79°38'29.29'E)
ł.	T.Nallalam	um 6	1	12°11'36.91"N - 79°45'21.21"E
			2	12°11'35.31''N - 79°45'29.14"E
			З	12 ⁶ 11'48 13'N - 79 ⁶ 45'16.40''E
			-	12011'51"N to 12011'55"N
		1	4	79°45'08''E to 79°45'15''E
				CONTROLOGY - STANLER AND THE
				(12 ⁸ 11*54"N - 79 ⁸ 45*8"E)
			5	12011'39"N to 12011'43"N
			1	79945'10"'E to 79945'14"E
				and a second and a second
			1	(12°11'40"N - 79°45'10"E)
			6	12°11'56"N to 12"11'46"N
			6	
			6	12°11'56"N to 12"11'46"N 79°45'33"E to 79°45'26"E
	723			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	Keelarungunam	4	6	12°11'56"N to 12"11'46"N 79°45'33"E to 79°45'26"E
5	Keelarungunam	4	1	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) 12°13'36:27"N - 79°44'16;52"'E 12°13'37"N to 12°13'32"N
5	Keelarungunam	4		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) 12°13'36.27"N - 79°44'16,52"'E
5	Keelarungunam	4	1	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) 12°13'36:27"N - 79°44'16;52"'E 12°13'37"N to 12°13'32"N 79°44'11''E to 79°44'15"E
5	Keelarungunam	4	1	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) 12°13'36.27"N - 79°44'16,52"'E 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)
5	Keelarungunam	4	1 2	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) 12°13'36.27"N - 79°44'16,52"E 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) 12°13'15"N to 12°13'09"N
5	Keelarungunam	4	1	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) 12°13'36.27"N - 79°44'16,52"'E 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)
5	Keelarungunam	4	1 2	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) 12°13'36.27"N - 79°44'16,52"'E 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) 12°13'15"N to 12°13'09"N 79°45'22"E to 79°45'16"E
5	Keelarungunam	4	1 2 3	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) 12°13'36.27"N - 79°44'16,52"E 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) 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
5	Keelarungunam	4	1 2	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) 12°13'36.27"N - 79°44'16,52"E 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) 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) 12°13'32"N to 12°13'38"N
5	Keelarungunam	4	1 2 3	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) 12°13'36.27"N - 79°44'16,52"E 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) 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)

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_X,SO₂and 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,

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- 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 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'sshall 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 upperbenches.
- 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.

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- 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 restriced 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.

 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

- Since Marakkanam and Vanur blocks are facing Bay of Bengal, they face the risk of Tsunami directly.
- 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.

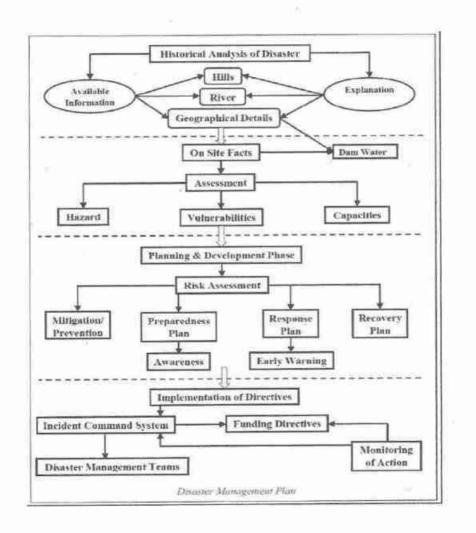
SI. No	Name of the Taluk	Highly Vulner able	Vulnerable	Moderately Vulnerable	Low Vulnerability	Total No.of Vulnearable Location
1	VILUPPURAM	0	0	0	21	21
2	VIKRAVANDI	0	0	0	27	27
3	VANUR	0	0	0	7	7
4	TINDIVANAM	0	0	0	17	17
5	GINGEE	0	0	0	4	4
6	MELMALAIYANUR	0	0	0	0	0
7	MARAKKANAM	0	8	21	24	53
8	TIRUKOILUR	0	1	3	5	9
9	ULUNDURPET	3	0	1	5	9
10	KANDACHIPURAM	0	0	0	0	0

ABSTRACT OF LIST OF VILLAGES VULNERABLE

ы.

	TOTAL	4	13	25	128	170
15	WRO KK	1	4	0	15	20
14	WRO VPM	0	0	0	1	1
13	CHINNASALEM	0	- 0	0	0	0
12	SANKARAPURAM	0	0	0	0	0
11	KALLAKURICHI	0	0	0	2	2

District Disaster Management Plan



District Disaster Management Plan (DDMP)

The objective of the District Disaster Management Plan (DDMP) is to devise a set of guidelines for Distrit 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 function s of various departments will be listed out in the plan. An inventory of resources in the district will be listed oput. 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.-

- Comprehensive flood protection strategies with reference to Gedilam river, Gomuki, Manimukthar River and 19 coastal habitations in the district prone to flood.
- Building self-reliant coastal communities and empower them to manage their livelihoods in a sustainable manner.
- Long term comprehensive pre and post disaster management programs linked to developmental activities.
- De-centralize the decision making authority to the field level line department officials.
- 5) Participatory Management.
- Increasing the awareness of long-term impact of relief program on development potential.
- 7) Emphasis on quality management of Relief measures.
- Enhance the resilience of farmers to face the Vagaries of monsoon in rainfed areas.
- To maintain the database capturing all the past experiences like Tsunami, Flood, Cyclone, Drought in the district.

PS

- 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 lifes and property.
- 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.

- 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.
- 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.

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- 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 inherant 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

S1. No.	Year	Total Case
1	2014	4931
2	2015	4527
3	2016	4669
4	2017	4534
5	2018	4647

Silicosis : -- Nil--

 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 conductive.

27. Any other information

-NIL-

Assistant Director Geology and Mining, Viluppuram.

District ector Viluppuram.





Sample Condition

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TEST REPORT

Report No.	SARL/24/2117]	Report	Date.	16.03.2024	
			ry of Thiru.V. Nagarajan			
Customer Name & Ad			Nos. 34/1B1, 35/2B, 35/3 a			
	of N	almukkal Village, Maral	kkanam Taluk, Viluppuraı	n Distr	ict, Tamil Nadu	
Sample Description	AM	BIENT AIR QUALITY				
Sampling Procedure	IS –	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
		X				
Sample Location	A1-]	PROPOSED MINE LEA	SE AREA			
Positioned height of S	ampler 1.5 l	1.5 M above Ground Level				
	·					
Customer Reference	By	Mail	Sampling Duration		24 hrs	
Sample Reference No	SA	RL/A/CHE-2117	Sample Received on		11.03.2024	
Sample Collected by	LA	BORATORY Test Commence			11.03.2024	
Sample Collected on	05.0)3.2024	Test Completed on		16.03.2024	
Temperature	36°	С	Relative Humidity		25%	

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM_{10})	IS:5182: Part 23:2006	µg/m ³	65.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	31.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Temperature

Sample Condition

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TEST REPORT

Report No.	SARL/24/2	2118	Report Date.	16.03.2024		
		Rough stone & Gravel Qua				
Customer Name	& Address	extent of 4.75.00 Ha in S.F	.Nos. 34/1B1, 35/2B, 35/3 and 35	5/4		
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Dis	trict, Tamil Nadu		
Sample Description	ion	AMBIENT AIR QUALITY	Υ.			
Sampling Proced	lure	IS – 5182 (Part – 14: 2000	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines			
1 0						
Sample Location	l	A2-Nalmukkal				
Positioned heigh	t of Sampler	1.5 M above Ground Level				
	*	•				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2118	Sample Received on	11.03.2024		
Sample Collected	d by	LABORATORY	Test Commenced on	11.03.2024		
Sample Collected	d on	05.03.2024	Test Completed on	16.03.2024		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	8.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

25%



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END OF THE REPORT* 48 * 94

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36°C

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Sample Collected on

Sample Condition

Temperature

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TEST REPORT

Report No.	SARL/24/2	2119			Report Date.	16.03.2024	
				arry of Thiru.V. Na			
Customer Name	& Address	extent of	of 4.75.00 Ha in S.	F.Nos. 34/1B1, 35/2	B, 35/3 and 35/	/4	
		of Naln	nukkal Village, Ma	arakkanam Taluk, V	iluppuram Distr	rict, Tamil Nadu	
Sample Descripti	on	AMBIE	ENT AIR QUALIT	Ϋ́			
Sampling Proced	ure	IS – 51	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location		A1-PR	OPOSED MINE L	EASE AREA			
Positioned height	t of Sampler	1.5 M a	1.5 M above Ground Level				
	*	I					
Customer Referen	nce	By Ma	il	Sampling D	uration	24 hrs	
Sample Reference	e No	SARL/	/A/CHE-2119	Sample Rec	eived on	11.03.2024	
Sample Collected	l by	LABO	RATORY	Test Comm	enced on	11.03.2024	
•	•						

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Test Completed on

Relative Humidity

16.03.2024

28%



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06.03.2024

Fit for Analysis

34°C

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TEST REPORT

Report No.	SARL/24/21	20	Report Date.	16.03.2024		
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Di	strict, Tamil Nadu		
Sample Description	ion	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
• •		· · ·				
Sample Location		A2-Nalmukkal				
Positioned height of Sampler		1.5 M above Ground Level				
		•				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2120	Sample Received on	11.03.2024		
Sample Collector	1 h	LADODATODV	Test Common and an	11.02.2024		

Sample Reference No	SARL/A/CHE-2120	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	44.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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-T. X **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** **END OF THE REPORT***

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Sample Condition

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TEST REPORT

Report No.	SARL/24/2	2121			Report Date.	16.03.2024	
		Rough	stone & Gravel Qua	rry of Thiru.V. Na	Igarajan		
Customer Name	& Address	extent	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nal	mukkal Village, Mar	akkanam Taluk, Vi	luppuram Distr	rict, Tamil Nadu	
Sample Descripti	ion	AMBI	AMBIENT AIR QUALITY				
Sampling Proced	ure	IS - 51	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
		•	X				
Sample Location		A3-Se	A3-Senalur				
Positioned height of Sampler		1.5 M	1.5 M above Ground Level				
Customer Refere	nce	By M	ail	Sampling Du	uration	24 hrs	
Sample Reference No		SARL	/A/CHE-2121	Sample Rece	eived on	11.03.2024	
Sample Collected by		LABO	ABORATORY Test Commenced on		enced on	11.03.2024	
Sample Collected	l on	07.03	2024	Test Comple	eted on	16.03.2024	
Temperature		36°C		Relative Hu	nidity	27%	

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Ros 18 * 8 **END OF THE REPORT***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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Fit for Analysis

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TEST REPORT

Report No.	SARL/24/212	22	Report Date.	16.03.2024		
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	ion	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location		A4-Kunnapakkam				
Positioned height of Sampler		1.5 M above Ground Level				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference No		SARL/A/CHE-2122	Sample Received on	11.03.2024		
Sample Collected by		LABORATORY	Test Commenced on	11.03.2024		
Sample Collected on		07.03.2024	.03.2024 Test Completed on 10			
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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2123	Report Date	. 16.03.2024	
		Rough stone & Gravel Q	uarry of Thiru.V. Nagarajan		
Customer Name	& Address	extent of 4.75.00 Ha in S	.F.Nos. 34/1B1, 35/2B, 35/3 and 2	35/4	
		of Nalmukkal Village, M	arakkanam Taluk, Viluppuram D	istrict, Tamil Nadu	
Sample Descripti	ion	AMBIENT AIR QUALI	ГҮ		
Sampling Proced	lure	IS - 5182 (Part - 14: 200	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
		· · · · · · · · · · · · · · · · · · ·			
Sample Location	l	A3-Senalur			
Positioned height	t of Sampler	1.5 M above Ground Level			
	-				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	
Sample Reference	e No	SARL/A/CHE-2123	Sample Received on	11.03.2024	
Sample Collected	d by	LABORATORY	Test Commenced on	11.03.2024	
Sample Collected	d on	08.03.2024	Test Completed on	16.03.2024	
Temperature		36°C	Relative Humidity	26%	

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM_{10})	IS:5182: Part 23:2006	µg/m ³	47.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2124	Report Date	. 16.03.2024		
			Rough stone & Gravel Quarry of Thiru.V. Nagarajan			
Customer Name	& Address		S.F.Nos. 34/1B1, 35/2B, 35/3 and 3			
1		of Nalmukkal Village, N	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description		AMBIENT AIR QUAL	AMBIENT AIR QUALITY			
Sampling Procedure		IS – 5182 (Part – 14: 20	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
		· · · ·				
Sample Location		A4-Kunnapakkam	A4-Kunnapakkam			
Positioned height	of Sampler	1.5 M above Ground Le	1.5 M above Ground Level			
	_	•				
Customer Referen	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2124	Sample Received on	11.03.2024		
Sample Collected	l by	LABORATORY	Test Commenced on	11.03.2024		

		Sumple Received on	11.03.2021
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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	45.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/21	25	Report Date.	16.03.2024
	·			·
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan	
Customer Name	& Address	extent of 4.75.00 Ha in S.F	Nos. 34/1B1, 35/2B, 35/3 and 35.	5/4
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Dis	trict, Tamil Nadu
Sample Descript	tion	AMBIENT AIR QUALITY	7	
Sampling Proce	dure	IS – 5182 (Part – 14: 2000	& Part – V: Reaffirmed - 2003),	CPCB Guide lines
· · ·		· · · · ·		
Sample Location	n	A5-Ravanapuram		
Positioned heigh	nt of Sampler	1.5 M above Ground Level		
Customer Refer	ence	By Mail	Sampling Duration	24 hrs
Sample Referen	ce No	SARL/A/CHE-2125	Sample Received on	11.03.2024
Sample Collecte	ed by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected on		09.03.2024	Test Completed on	16.03.2024
Sample Conecte		36°C	Relative Humidity	28%
Temperature		J0 C	1001001/0110010/	

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m³	53.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	8.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2126	5	Report Date	e. 16.02.2024
		6	rry of Thiru.V. Nagarajan	
Customer Name	& Address	extent of 4.75.00 Ha in S.F.	Nos. 34/1B1, 35/2B, 35/3 and	35/4
		of Nalmukkal Village, Mara	akkanam Taluk, Viluppuram D	vistrict, Tamil Nadu
Sample Descripti	on	AMBIENT AIR QUALITY	-	
Sampling Proced	ure	IS – 5182 (Part – 14: 2000 d	& Part – V: Reaffirmed - 2003), CPCB Guide lines
		•		
Sample Location		A6-Tennampundi		
Positioned height	t of Sampler	1.5 M above Ground Level		
Customer Referen	nce	By Mail	Sampling Duration	24 hrs
Sample Reference	e No	SARL/A/CHE-2126	Sample Received on	11.03.2024
Sample Collected	l by	LABORATORY	Test Commenced on	11.03.2024
Sample Collected	l on	09.03.2024	Test Completed on	16.03.2024
Temperature		36°C	Relative Humidity	28%
Sample Condition	n	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m³	46.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	127	Report Date.	16.03.2024	
Customer Name & Address		Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descript	ion	AMBIENT AIR QUALITY	AMBIENT AIR QUALITY		
Sampling Procee	lure	IS - 5182 (Part - 14: 2000 d	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	1	A5-Ravanapuram			
Positioned heigh	t of Sampler	1.5 M above Ground Level			
	*	•			
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	
Sample Reference	ce No	SARL/A/CHE-2127	Sample Received on	11.03.2024	
Sample Collecte	d by	LABORATORY	Test Commenced 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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	49.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



-T. X **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** **END OF THE REPORT***

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TEST REPORT

			JI KEI UK	L			
Report No.	SARL/24/	2128		Report Date.	16.03.2024		
		Rough stone & Gr	avel Quarry of Thir	u.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 H	Ha in S.F.Nos. 34/11	B1, 35/2B, 35/3 and 35/	4		
		of Nalmukkal Vill	age, Marakkanam T	aluk, Viluppuram Distr	rict, Tamil Nadu		
Sample Descript	ion	AMBIENT AIR Q	UALITY				
Sampling Proceed	lure	IS - 5182 (Part - 1)	14: 2000 & Part – V	: Reaffirmed - 2003), C	PCB Guide lines		
Sample Location	l	A6-Tennampundi					
Positioned heigh	t of Sampler	1.5 M above Grou	1.5 M above Ground Level				
Customer Refere	ence	By Mail	Sam	pling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-21	28 Sam	ple Received on	11.03.2024		
Sample Collecte	d by	LABORATORY	Test	t Commenced on	11.03.2024		
Sample Collecte	d on	10.03.2024	Test	t Completed on	16.03.2024		
Temperature		35°C	Rela	ative Humidity	32%		
Sample Conditio	n	Fit for Analysis					

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2191		Re	eport Date.	23.03.2024	
		D 1	e C	Thim V No a			
Customer Name	& Address			urry of Thiru.V. Naga		Λ	
Customer Name (& Address		extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Descripti	on	AMBIE	NT AIR QUALITY	Y	•		
Sampling Proced	ure	IS – 518	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
			.				
Sample Location		A5-Rav	anapuram				
Positioned height	t of Sampler	1.5 M a	1.5 M above Ground Level				
Customer Refere	nce	By Ma	il	Sampling Dura	tion	24 hrs	
Sample Referenc	e No	SARL/	A/CHE-2191	Sample Receiv	red on	18.03.2024	
Sample Collected	l by	LABO	RATORY	Test Commence	ed on	18.03.2024	
Sample Collected	l on	12.03.2	2024	Test Complete	d on	23.03.2024	
Temperature		36°C		Relative Humi	dity	30%	

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM_{10})	IS:5182: Part 23:2006	µg/m ³	46.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	192	Report Date	e. 23.03.2024			
		Rough stone & Gravel	Quarry of Thiru.V. Nagarajan				
Customer Name &	z Address	extent of 4.75.00 Ha in	S.F.Nos. 34/1B1, 35/2B, 35/3 and	35/4			
		of Nalmukkal Village,	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	n	AMBIENT AIR QUA	AMBIENT AIR QUALITY				
Sampling Procedu	re	IS – 5182 (Part – 14: 2	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
				· ·			
Sample Location		A6-Tennampundi					
Positioned height	of Sampler	1.5 M above Ground Level					
0	*						
Customer Referen	ce	By Mail	Sampling Duration	24 hrs			
Sample Reference	No	SARL/A/CHE-2192	Sample Received on	18.03.2024			
Sample Collected	by	LABORATORY	Test Commenced 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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	42.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	$\mu g/m^3$	3.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



-T. X **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** **END OF THE REPORT***

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TEST REPORT

Report No.	SARL/24/2	2193		Report D	Date.	23.03.2024	
		Rough stor	ne & Gravel Qua	rry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4	.75.00 Ha in S.F	Nos. 34/1B1, 35/2B, 35/3 a.	nd 35/	4	
		of Nalmuk	kal Village, Mar	akkanam Taluk, Viluppuran	n Distr	rict, Tamil Nadu	
Sample Description	ion	AMBIENT	AIR QUALITY	7			
Sampling Proced	lure	IS – 5182 (Part - 14: 2000	& Part – V: Reaffirmed - 20	03), C	PCB Guide lines	
		·	•				
Sample Location	-	A5-Ravana	A5-Ravanapuram				
Positioned height	t of Sampler	1.5 M above Ground Level					
		·					
Customer Refere	nce	By Mail		Sampling Duration		24 hrs	
Sample Reference	e No	SARL/A/O	CHE-2193	Sample Received on		18.03.2024	
Sample Collected	d by	LABORA	TORY	Test Commenced on		18.03.2024	
Sample Collected	d on	13.03.2024	4	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	42.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	194	Report Date	. 23.03.2024			
			arry of Thiru.V. Nagarajan				
Customer Name	& Address	extent of 4.75.00 Ha in S.I	F.Nos. 34/1B1, 35/2B, 35/3 and 3	35/4			
		of Nalmukkal Village, Ma	rakkanam Taluk, Viluppuram Di	strict, Tamil Nadu			
Sample Descripti	ion	AMBIENT AIR QUALIT	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS - 5182 (Part - 14: 2000	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
			~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~				
Sample Location	l	A6-Tennampundi					
Positioned height	t of Sampler	1.5 M above Ground Level					
	-	·					
Customer Refere	ence	By Mail	Sampling Duration	24 hrs			
Sample Reference	e No	SARL/A/CHE-2194	Sample Received on	18.03.2024			
Sample Collecter	d by	LABORATORY	Test Commenced on	18 03 2024			

Sumple Reference Re	STILL/IN CITE 2171	Sumple Received on	10.03.2021
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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	45.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2195		Report Date.	23.03.2024
Customer Name & Address e		Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Description	n .	AMBIENT AIR QUALITY		
Sampling Procedur	e]	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location		A3-Senalur		
Positioned height of Sampler		5 M above Ground Level		

Customer Reference	By Mail	Sampling Duration	24 hrs	
Sample Reference No	SARL/A/CHE-2195	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_{10})	IS:5182: Part 23:2006	µg/m³	43.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	196	Report Date	e. 23.03.2024		
		Rough stone & Gravel Qua	arry of Thiru.V. Nagarajan			
Customer Name &	& Address	extent of 4.75.00 Ha in S.F	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, Mar	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description	on	AMBIENT AIR QUALIT	AMBIENT AIR QUALITY			
Sampling Procedu	ure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location		A4-Kunnapakkam				
Positioned height of Sampler		1.5 M above Ground Level				
	•					
Customer Referen	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference No		SARL/A/CHE-2196	Sample Received on	18.03.2024		

Sample Reference No	SARL/A/CHE-2196	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_{10})	IS:5182: Part 23:2006	µg/m ³	41.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	197		Report Date.	23.03.2024	
		Rough stone & Gravel (
Customer Name	& Address	extent of 4.75.00 Ha in	S.F.Nos. 34/1B1, 3	5/2B, 35/3 and 35/	/4	
		of Nalmukkal Village, N	/larakkanam Taluk	, Viluppuram Distr	rict, Tamil Nadu	
Sample Descripti	ion	AMBIENT AIR QUAL	ITY			
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location	l	A3-Senalur	A3-Senalur			
Positioned height	t of Sampler	1.5 M above Ground Level				
Customer Refere	ence	By Mail	Sampling	g Duration	24 hrs	
Sample Reference No		SARL/A/CHE-2197	Sample F	Received on	18.03.2024	
Sample Collected by		LABORATORY	Test Con	nmenced on	18.03.2024	

Sumple Reference 100		Sumple Received on	10.05.202	
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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	40.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Temperature

Sample Condition

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TEST REPORT

Report No.	SARL/24/2	2198	Report Date	23.03.2024		
			Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in	S.F.Nos. 34/1B1, 35/2B, 35/3 and	35/4		
		of Nalmukkal Village,	Marakkanam Taluk, Viluppuram D	istrict, Tamil Nadu		
Sample Descripti	ion	AMBIENT AIR QUAI	LITY			
Sampling Proced	lure	IS – 5182 (Part – 14: 20	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
. 0				,		
Sample Location	l	A4-Kunnapakkam	A4-Kunnapakkam			
Positioned height	t of Sampler	1.5 M above Ground L	1.5 M above Ground Level			
	<u>^</u>					
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2198	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		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	37.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	14.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

23%



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37°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/2	2199		Report Date	. 23.03.2024	
<u>.</u>						
		U	Rough stone & Gravel Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75	.00 Ha in S.F.No	s. 34/1B1, 35/2B, 35/3 and 3	35/4	
		of Nalmukkal	Village, Marakk	anam Taluk, Viluppuram Di	strict, Tamil Nadu	
Sample Descripti	on	AMBIENT A	AMBIENT AIR QUALITY			
Sampling Proced	ure	IS – 5182 (Pa	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location		A1-PROPOS	A1-PROPOSED MINE LEASE AREA			
Positioned height	t of Sampler	1.5 M above	1.5 M above Ground Level			
Customer Refere	nce	By Mail		Sampling Duration	24 hrs	
Sample Reference No		SARL/A/CH	E-2199	Sample Received on	18.03.2024	
Sample Collected by		LABORATO	RV	Test Commenced on	18 03 2024	

1		1	
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		Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	46.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Temperature

Sample Condition

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TEST REPORT

Report No.	SARL/24/2	200	Report Date.	23.03.2024		
		e (uarry of Thiru.V. Nagarajan			
Customer Name	& Address		.F.Nos. 34/1B1, 35/2B, 35/3 and 3			
		of Nalmukkal Village, M	arakkanam Taluk, Viluppuram Dis	strict, Tamil Nadu		
Sample Descripti	on	AMBIENT AIR QUALI	ГҮ			
Sampling Proced	ure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location		A2-Nalmukkal				
Positioned height	of Sampler	1.5 M above Ground Lev	1.5 M above Ground Level			
Customer Refere	nce	By Mail	Sampling Duration	24 hrs		
Sample Referenc	e No	SARL/A/CHE-2200	Sample Received on	18.03.2024		
Sample Collected	l by	LABORATORY	Test Commenced on	18.03.2024		
Sample Collected on		16.03.2024	Test Completed on	23.03.2024		

S. No.	Parameters	Protocol		Results	*Limits
1	Particulate Matter less than 10micron size (PM10)IS:5182: Part 23:2006		µg/m ³	42.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

30%



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36°C

Fit for Analysis



Sample Collected on

Temperature

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TEST REPORT

Report No.	SARL/24/2	2201	I	Report Date.	23.03.2024		
			vel Quarry of Thiru.V. Naga				
Customer Name	& Address		a in S.F.Nos. 34/1B1, 35/2B	· · · · · · · · · · · · · · · · · · ·			
		of Nalmukkal Villa	ge, Marakkanam Taluk, Vil	uppuram Distr	ict, Tamil Nadu		
Sample Descripti	on	AMBIENT AIR QU	JALITY				
Sampling Proced	ure	IS – 5182 (Part – 14	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
<u> </u>		· · ·					
Sample Location		A1-PROPOSED M	INE LEASE AREA				
Positioned height	t of Sampler	1.5 M above Ground Level					
		•					
Customer Referen	nce	By Mail	Sampling Du	ration	24 hrs		
Sample Reference	e No	SARL/A/CHE-220	1 Sample Rece	ived on	18.03.2024		
Sample Collected by		LABORATORY	Test Commer	nced on	18.03.2024		

Samp	ble Condition Fi	for Analysis				
S. No.	Parameters		Protocol		Results	*Limits
1	Particulate Matter less than 10mic size (PM ₁₀)	ron IS:518	2: Part 23:2006	µg/m ³	49.6	100
2	Particulate Matter less than 2.5mi size (PM _{2.5})	Particulate Matter less than 2.5micron Lize (PM _{2.5}) IS 5182 (Part 24):2019		µg/m ³	23.8	60
3	Sulphur dioxide (SO ₂)	IS:518	2: Part 02:2001	µg/m³	5.1	80
4	Nitrogen Dioxide (NO ₂)	IS:518	2: Part 06:2006	µg/m ³	7.5	80
5	Carbon monoxide (CO)		P/013 (Issue No:01, ate – 01.03.2023)	mg/m ³	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

Test Completed on

Relative Humidity

23.03.2024

30%



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17.03.2024

35°C



Temperature

Sample Condition

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TEST REPORT

Report No.	SARL/24/2	202	Report Date.	23.03.2024		
	0 + 11		arry of Thiru.V. Nagarajan	- / .		
Customer Name	& Address		F.Nos. 34/1B1, 35/2B, 35/3 and 3			
		of Nalmukkal Village, Ma	arakkanam Taluk, Viluppuram Di	strict, Tamil Nadu		
Sample Descripti	on	AMBIENT AIR QUALIT	ΓY			
Sampling Proced	ure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
• •		· · · ·				
Sample Location		A2-Nalmukkal				
Positioned height	t of Sampler	1.5 M above Ground Lev	1.5 M above Ground Level			
		•				
Customer Refere	nce	By Mail	Sampling Duration	24 hrs		
Sample Referenc	e No	SARL/A/CHE-2202	Sample Received on	18.03.2024		
Sample Collected	l by	LABORATORY	Test Commenced on	18.03.2024		
Sample Collected on 17.		17.03.2024	Test Completed on	23.03.2024		

S. No.	Parameters	Protocol		Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	e less than 10micron IS:5182: Part 23:2006		47.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

30%



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48 * 94

35°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/2	2265			Report Date.	30.03.2024	
				arry of Thiru.V. Nag			
Customer Name	& Address	extent	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalr	nukkal Village, Ma	rakkanam Taluk, Vil	luppuram Distr	ict, Tamil Nadu	
Sample Descript	ion	AMBI	ENT AIR QUALIT	Y			
Sampling Proceed	lure	IS – 51	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
<u> </u>							
Sample Location	1	A1-PR	OPOSED MINE LI	EASE AREA			
Positioned heigh	t of Sampler	1.5 M a	1.5 M above Ground Level				
		•					
Customer Refere	ence	By Ma	il	Sampling Du	iration	24 hrs	
Sample Reference	ce No	SARL	/A/CHE-2265	Sample Rece	eived on	25.03.2024	
Sample Collecte	d by	LABO	RATORY	Test Comme		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 ₁₀)	¹ IS:5182: Part 23:2006		67.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	32.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Sample Condition

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TEST REPORT

Report No.	SARL/24/2266		Report I	Date.	30.03.2024
		1			
~ .			rry of Thiru.V. Nagarajan		
Customer Name & A			Nos. 34/1B1, 35/2B, 35/3 a		
	of N	Nalmukkal Village, Mar	akkanam Taluk, Viluppuran	n Distr	ict, Tamil Nadu
Sample Description	AM	IBIENT AIR QUALITY	7		
Sampling Procedure	IS -	- 5182 (Part - 14: 2000 d	& Part – V: Reaffirmed - 20	03), C	PCB Guide lines
		X			
Sample Location	A2-	Nalmukkal			
Positioned height of S	Sampler 1.5	M above Ground Level			
	·				
Customer Reference	By	Mail	Sampling Duration		24 hrs
Sample Reference No) SA	RL/A/CHE-2266	Sample Received on		25.03.2024
Sample Collected by	LA	BORATORY	Test Commenced on		25.03.2024
Sample Collected on	19.	03.2024	Test Completed on		30.03.2024
Temperature	36°	°C	Relative Humidity		29%

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	59.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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END OF THE REPORT* 48 * 94

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TEST REPORT

				•			
Report No.	SARL/24/2	2267		Report Da	ate.	30.03.2024	
				of Thiru.V. Nagarajan			
Customer Name	& Address			s. 34/1B1, 35/2B, 35/3 an			
		of Nalı	nukkal Village, Marakk	anam Taluk, Viluppuram	Distr	ict, Tamil Nadu	
Sample Descripti	on	AMBI	AMBIENT AIR QUALITY				
Sampling Proced	ure	IS – 51	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
		•	, , , , , , , , , , , , , , , , , , ,				
Sample Location		A1-PR	OPOSED MINE LEAS	E AREA			
Positioned height of Sampler 1.5 M above Ground Level							
Customer Referen	nce	By Ma	il	Sampling Duration		24 hrs	
Sample Reference	e No	SARL	/A/CHE-2267	Sample Received on		25.03.2024	
Sample Collected	l by	LABC	RATORY	Test Commenced 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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	62.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	6.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/22	268]	Report Date.	30.03.2024
		_			
		Rough stone & Grav	el Quarry of Thiru.V. Nag	arajan	
Customer Name & Address		extent of 4.75.00 Ha	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4		
		of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descript	ion	AMBIENT AIR QUALITY			
Sampling Proced	lure	IS - 5182 (Part - 14	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	1	A2-Nalmukkal			
Positioned heigh	t of Sampler	1.5 M above Ground	.5 M above Ground Level		
	*	•			

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2268	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	56.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	6.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2269			Ι	Report Date.	30.03.2024
		Rough	stone & Gravel	Quarry of	Thiru.V. Naga	arajan	
Customer Name		extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu					
Sample Description AMBIENT AIR QUALITY							
Sampling Proced	ure	IS – 51	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location		A3-Sen	A3-Senalur				
Positioned height of Sampler 1.5			1.5 M above Ground Level				
Customer Refere	nce	Bv Ma	1		Sampling Du	ration	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2269	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	42.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

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TEST REPORT

Report No.	SARL/24/2	270	Report Date	2. 30.03.2024			
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan				
Customer Name	& Address	extent of 4.75.00 Ha in S.F.	Nos. 34/1B1, 35/2B, 35/3 and 3	35/4			
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Di	istrict, Tamil Nadu			
Sample Description	ion	AMBIENT AIR QUALITY	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines					
. 0			,	*			
Sample Location	1	A4-Kunnapakkam					
Positioned heigh	t of Sampler	1.5 M above Ground Level					
	*						
Customer Refere	ence	By Mail	Sampling Duration	24 hrs			
Sample Reference	e No	SARL/A/CHE-2270	Sample Received on	25.03.2024			
Sample Collected by		LABORATORY	Test Commenced 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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	39.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2271		Report Date	e. 30.03.2024
Customer Name &	& Address e	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Description		AMBIENT AIR QUALITY		
Sampling Procedu	ure I	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	1	A3-Senalur		
Positioned height	of Sampler	1.5 M above Ground Level		
Customer Referen	nce	By Mail	Sampling Duration	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs	
Sample Reference No	SARL/A/CHE-2271	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	38.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Temperature

Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/2	2272	Report I	Date.	30.03.2024	
Customer Name & Address ex		extent of 4.75.00 H	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descripti	ion	AMBIENT AIR QU	ALITY			
Sampling Proced	ure	IS – 5182 (Part – 14	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
<u> </u>		• •		,		
Sample Location		A4-Kunnapakkam				
Positioned height	t of Sampler	1.5 M above Groun	1.5 M above Ground Level			
	-	•				
Customer Refere	nce	By Mail	Sampling Duration		24 hrs	
Sample Reference	e No	SARL/A/CHE-227	Sample Received on		25.03.2024	
Sample Collected	l by	LABORATORY	Test Commenced on		25.03.2024	
Sample Collected on		22.03.2024	Test Completed on		30.03.2024	

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	36.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	17.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Relative Humidity

32%



END OF THE REPORT

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36°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/2	2273		Report Date.	30.03.2024	
		Rough stone & G	ravel Quarry of Thiru.V. N	agarajan		
Customer Name	& Address	extent of 4.75.00	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Vil	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descripti	on	AMBIENT AIR	AMBIENT AIR QUALITY			
Sampling Proced	ure	IS - 5182 (Part -	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
		· · ·				
Sample Location		A5-Ravanapuram	A5-Ravanapuram			
Positioned height of Sampler		1.5 M above Ground Level				
Customer Referen	nce	By Mail	Sampling	Duration	24 hrs	
Commite Defenses	. NT.	CADI /A/CITE 2		1	25.02.2024	

	Dy Maii	Sumpring Duration	211115
Sample Reference No	SARL/A/CHE-2273	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	44.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	2274	Report Dat	e. 30.03.2024		
			avel Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 H	Ia in S.F.Nos. 34/1B1, 35/2B, 35/3 and	35/4		
		of Nalmukkal Vill	age, Marakkanam Taluk, Viluppuram E	District, Tamil Nadu		
Sample Descript	ion	AMBIENT AIR Q	AMBIENT AIR QUALITY			
Sampling Proced	lure	IS – 5182 (Part – 1	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location	l	A6-Tennampundi				
Positioned height	t of Sampler	1.5 M above Ground Level				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-22	74 Sample Received on	25.03.2024		
Sample Collecter	1 hv	LABORATORY	Test Commenced on	25.03.2024		

Sumple Reference 110		Sumple Received on	23.03.2021
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 ₁₀)	IS:5182: Part 23:2006	µg/m³	5.19	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	8.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Renarch 1

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Please Contact:

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Temperature

Sample Condition

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TEST REPORT

Report No.	SARL/24/2	2275	Report Date.	30.03.2024	
			uarry of Thiru.V. Nagarajan		
Customer Name	& Address	extent of 4.75.00 Ha in S.	F.Nos. 34/1B1, 35/2B, 35/3 and 3	5/4	
		of Nalmukkal Village, M	arakkanam Taluk, Viluppuram Dis	strict, Tamil Nadu	
Sample Description	ion	AMBIENT AIR QUALIT	ΓΥ		
Sampling Proced	lure	IS – 5182 (Part – 14: 200	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
1 8			<i>//</i>		
Sample Location	l	A5-Ravanapuram			
Positioned heigh	t of Sampler	1.5 M above Ground Lev	1.5 M above Ground Level		
	-				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	
Sample Reference	e No	SARL/A/CHE-2275	Sample Received on	25.03.2024	
Sample Collected	d by	LABORATORY	Test Commenced on	25.03.2024	
Sample Collected	d on	24.03.2024	Test Completed on	30.03.2024	

S. No.	Parameters	Parameters Protocol		Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	41.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity



.

END OF THE REPORT*

Authorized Signatory J. GNANAPRAKASAM Technical Manager

23%

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48 * 94

38°C

Fit for Analysis



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TEST REPORT

Customer Name & AddressRough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil NaduSample DescriptionAMBIENT AIR QUALITYSampling ProcedureIS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide linesSample LocationA6-TennampundiPositioned height of Sampler1.5 M above Ground LevelCustomer ReferenceBy MailSampling DurationSample Reference NoSARL/A/CHE-2276Sample Received on25.03.2024	Report No.	SARL/24/2	276			Report Date.	30.03.2024
Customer Name & Addressextent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil NaduSample DescriptionAMBIENT AIR QUALITYSampling ProcedureIS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide linesSample LocationA6-TennampundiPositioned height of Sampler1.5 M above Ground LevelCustomer ReferenceBy MailSampling Duration24 hrs							
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil NaduSample DescriptionAMBIENT AIR QUALITYSampling ProcedureIS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide linesSample LocationA6-TennampundiPositioned height of Sampler1.5 M above Ground LevelCustomer ReferenceBy MailSampling Duration24 hrs							
Sample Description AMBIENT AIR QUALITY Sampling Procedure IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines Sample Location A6-Tennampundi Positioned height of Sampler 1.5 M above Ground Level Customer Reference By Mail Sampling Duration 24 hrs	Customer Name	& Address			· · · · · · · · · · · · · · · · · · ·	,	
Sampling Procedure IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines Sample Location A6-Tennampundi Positioned height of Sampler 1.5 M above Ground Level Customer Reference By Mail Sampling Duration 24 hrs			of Naln	nukkal Village, Mar	akkanam Taluk, V	iluppuram Distri	ict, Tamil Nadu
Sample Location A6-Tennampundi Positioned height of Sampler 1.5 M above Ground Level Customer Reference By Mail Sampling Duration 24 hrs	Sample Descripti	on	AMBIE	NT AIR QUALITY	7		
Positioned height of Sampler 1.5 M above Ground Level Customer Reference By Mail Sampling Duration 24 hrs	Sampling Proced	ure	IS – 51	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Positioned height of Sampler 1.5 M above Ground Level Customer Reference By Mail Sampling Duration 24 hrs							
Customer Reference By Mail Sampling Duration 24 hrs	Sample Location		A6-Ten	A6-Tennampundi			
	Positioned height of Sampler		1.5 M a	1.5 M above Ground Level			
Sample Reference No SARL/A/CHE-2276 Sample Received on 25.03.2024	Customer Refere	nce	By Ma	il	Sampling D	uration	24 hrs
	Sample Reference	e No	SARL/	A/CHE-2276	Sample Rec	eived on	25.03.2024

Sample Reference No	SARL/A/CHE-2276	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	48.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/23	39	Report Date	. 06.04.2024	
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan		
Customer Name	& Address	extent of 4.75.00 Ha in S.F	Nos. 34/1B1, 35/2B, 35/3 and 3	35/4	
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Di	strict, Tamil Nadu	
Sample Description	ion	AMBIENT AIR QUALITY	[
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
		•			
Sample Location	l	A5-Ravanapuram	A5-Ravanapuram		
Positioned height of Sampler		1.5 M above Ground Level			
U	•	-			
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	
Sample Reference	e No	SARL/A/CHE-2339	Sample Received on	01.04.2024	

Sample Reference No	SARL/A/CHE-2339	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		Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2340	Report Date	e. 06.04.2024	
		Rough stone & Gravel Qu	arry of Thiru.V. Nagarajan		
Customer Name	& Address	extent of 4.75.00 Ha in S.	F.Nos. 34/1B1, 35/2B, 35/3 and 2	35/4	
		of Nalmukkal Village, Ma	rakkanam Taluk, Viluppuram D	istrict, Tamil Nadu	
Sample Descript	ion	AMBIENT AIR QUALIT	AMBIENT AIR QUALITY		
Sampling Proced	lure	IS – 5182 (Part – 14: 2000	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
<u> </u>		· · · · ·		•	
Sample Location	1	A6-Tennampundi	A6-Tennampundi		
Positioned heigh	t of Sampler	1.5 M above Ground Level			
0	1	I			
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	
Sample Reference	e No	SARL/A/CHE-2340	Sample Received on	01.04.2024	
Sample Collecter	d hv	LABORATORY	Test Commenced on	01 04 2024	

Sample Reference No	SARL/A/CIIL-2J+0	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	46.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2341	Report Da	ate. 06.04.2024		
			Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village,	Marakkanam Taluk, Viluppuram	District, Tamil Nadu		
Sample Descripti	ion	AMBIENT AIR QUAI	LITY			
Sampling Proced	ure	IS – 5182 (Part – 14: 2	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location		A5-Ravanapuram				
Positioned height of Sampler		1.5 M above Ground Level				
		•				
Customer Refere	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2341	Sample Received on	01 04 2024		

	5	1 0	
Sample Reference No	SARL/A/CHE-2341	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	52.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

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Temperature Sample Condition

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TEST REPORT

Report No.	SARL/24/2	2342	Report Da	ate. 06.04.2024	
Customer Name	& Address	extent of 4.75.00	vel Quarry of Thiru.V. Nagarajan a in S.F.Nos. 34/1B1, 35/2B, 35/3 and ge, Marakkanam Taluk, Viluppuram		
Sample Description AMBIENT AIR QUALITY					
Sampling Proced	ure	IS - 5182 (Part -	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
<u> </u>		· ·			
Sample Location		A6-Tennampundi			
Positioned height	t of Sampler	1.5 M above Grou	1.5 M above Ground Level		
<u> </u>	*	ł			
Customer Referen	nce	By Mail	Sampling Duration	24 hrs	
Sample Referenc	e No	SARL/A/CHE-23	2 Sample Received on	01.04.2024	
Sample Collected	l by	LABORATORY	Test Commenced on	01.04.2024	
Sample Collected	d on	27.03.2024	Test Completed on	06.04.2024	

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM_{10})	IS:5182: Part 23:2006	µg/m ³	44.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

21%



Rea **END OF THE REPORT*** 10.4

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38°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/2	343		Report Date.	06.04.2024		
		Rough stone & Grave	l Quarry of Thiru.V. Na	agarajan			
Customer Name &	z Address	extent of 4.75.00 Ha i	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu					ict, Tamil Nadu		
Sample Description AMBIENT AIR QUALITY							
Sampling Procedu	re	IS – 5182 (Part – 14: 2	2000 & Part – V: Reaff	irmed - 2003), C	PCB Guide lines		
Sample Location		A3-Senalur					
Positioned height	sitioned height of Sampler 1.5 M above Ground Level						
		·					
Customer Referen	ce	By Mail	Sampling I	Duration	24 hrs		
Sample Reference	No	SARL/A/CHE-2343	Sample Re	ceived on	01.04.2024		

	29111011		_ · mb
Sample Reference No	SARL/A/CHE-2343	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	45.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

			_				
Report No.	SARL/24/23	344	Report Date	. 06.04.2024			
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan				
Customer Name	& Address	extent of 4.75.00 Ha in S.F	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Di	strict, Tamil Nadu			
Sample Descript	ample Description AMBIENT AIR QUALITY						
Sampling Procee	lure	IS - 5182 (Part - 14: 2000	& Part – V: Reaffirmed - 2003)	, CPCB Guide lines			
* -		· ·	·				
Sample Location	1	A4-Kunnapakkam					
Positioned height of Sampler 1.5 M above Ground Level							
		•					
Customer Refere	ence	By Mail	Sampling Duration	24 hrs			
Sample Reference	e No	SARL/A/CHE-2344	Sample Received on	01.04.2024			

Sample Reference No	SARL/A/CHE-2344	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	43.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT*

Authorized Signatory J. GNANAPRAKASAM Technical Manager

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TEST REPORT

Report No.	SARL/24/234	5	Report Date	e. 06.04.2024		
1			*			
Customer Name &	Address	Rough stone & Gravel Quarry of Thiru.V. Nagarajan				
Customer Name &	L Address	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	n	AMBIENT AIR QUALITY				
Sampling Procedur	re	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location		A3-Senalur				
Positioned height of	of Sampler	1.5 M above Ground Level				
Customer Reference	ce	By Mail	Sampling Duration	24 hrs		
Sample Reference	No	SARL/A/CHE-2345	Sample Received on	01.04.2024		

Sample Reference No	SARL/A/CHE-2345	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 ₁₀) IS:5182: Part 23:2006		$\mu g/m^3$	48.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	346		Report Date.	06.04.2024		
		Rough stone & G	Rough stone & Gravel Quarry of Thiru.V. Nagarajan				
Customer Name	& Address	extent of 4.75.00	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalmukkal Vill	age, Marakkanam Taluk, '	Viluppuram Distri	ct, Tamil Nadu		
Sample Description AMBIENT AIR QUALITY							
Sampling Proced	ure	IS – 5182 (Part –	14: 2000 & Part – V: Reaf	firmed - 2003), CI	PCB Guide lines		
<u> </u>		•					
Sample Location		A4-Kunnapakkam	Kunnapakkam				
Positioned height of Sampler 1.5 M above Ground Level							
		•					
Customer Referen	nce	By Mail	Sampling	Duration	24 hrs		
G 1 D C	3.7	GADI LA COURT AG	46 9 1 1	• •	01 04 0004		

Customer Reference	by Mall	Sampling Duration	24 mrs
Sample Reference No	SARL/A/CHE-2346	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	46.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT*

Authorized Signatory J. GNANAPRAKASAM Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Temperature Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/234	.7	Report Date.	06.04.2024		
		Rough stone & Gravel Quar				
Customer Name &	z Address		Nos. 34/1B1, 35/2B, 35/3 and 3			
			akkanam Taluk, Viluppuram Dis	strict, Tamil Nadu		
Sample Descriptio	n	AMBIENT AIR QUALITY	-			
Sampling Procedu	re	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
<u> </u>		X				
Sample Location		A1-PROPOSED MINE LEASE AREA				
Positioned height	of Sampler	1.5 M above Ground Level				
Customer Referen	ce	By Mail	Sampling Duration	24 hrs		
Sample Reference No		SARL/A/CHE-2347	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		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM_{10})	IS:5182: Part 23:2006	µg/m ³	56.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

25%



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38°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/23	648	Report Date. 06.04.2024		
Customer Name	& Address	e	vel Quarry of Thiru.V. Nagarajan a in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4		
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu					
Sample Descript	ion	AMBIENT AIR QU	JALITY		
Sampling Proced	lure	IS – 5182 (Part – 14	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	1	A2-Nalmukkal			
Positioned heigh	t of Sampler	1.5 M above Ground Level			
Customer Refere	ence	By Mail	Sampling Duration 24 hrs		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2348	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	articulate Matter less than 10micron ze (PM ₁₀) IS:5182: Part 23:2006		µg/m ³	52.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 51X / (Part 74) / 119		25.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

		. –				
Report No.	SARL/24/23	49		Report Date.	06.04.2024	
		Rough stone & Gravel				
Customer Name &	2 Address	extent of 4.75.00 Ha in	S.F.Nos. 34/1B1,	35/2B, 35/3 and 35/	4	
		of Nalmukkal Village,	Marakkanam Talu	k, Viluppuram Distr	rict, Tamil Nadu	
Sample Description	on	AMBIENT AIR QUALITY				
Sampling Procedu	re	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	Samplin	ng Duration	24 hrs	
Sample Reference No		SARL/A/CHE-2349	Sample	Received on	01.04.2024	
Sample Collected by		LABORATORY	Test Co	ommenced on	01.04.2024	

LABORATORY	Test Commenced on	01.04.2024
31.03.2024	Test Completed on	06.04.2024
38°C	Relative Humidity	23%
Fit for Analysis		
	38°C	31.03.2024Test Completed on38°CRelative Humidity

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	59.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/23	50	Report Date	e. 06.04.2024	
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan		
Customer Name & Address		extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, Mar	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Description AMBIENT AIR QUALITY					
Sampling Procedu	ure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
		•			
Sample Location		A2-Nalmukkal			
Positioned height	of Sampler	1.5 M above Ground Level			
		•			
Customer Referen	nce	By Mail	Sampling Duration	24 hrs	
Sample Reference	e No	SARL/A/CHE-2350	Sample Received on	01.04.2024	

Sample Reference No	SARL/A/CHE-2350	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_{10})	IS:5182: Part 23:2006	µg/m³	49.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



****END OF THE REPORT***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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Temperature Sample Condition

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TEST REPORT

Report No.	SARL/24/2	413		Rep	oort Date.	13.04.2024
~		U	· · ·	rry of Thiru.V. Nagara	,	
Customer Name	& Address			Nos. 34/1B1, 35/2B, 3		
		of Nalmuk	kal Village, Mar	akkanam Taluk, Vilup	ouram Distr	ict, Tamil Nadu
Sample Description AMBIENT AIR QUALITY						
Sampling Proced	ure	IS - 5182	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
1 0			χ.			
Sample Location		A1-PROP	OSED MINE LE	ASE AREA		
Positioned height	of Sampler	1.5 M abo	1.5 M above Ground Level			
		•				
Customer Referen	nce	By Mail		Sampling Durat	ion	24 hrs
Sample Reference	e No	SARL/A/	CHE-2413	Sample Receive	d on	08.04.2024
Sample Collected	l by	LABORA	TORY	Test Commence	d on	08.04.2024
Sample Collected on		02.04.202	4	Test Completed	on	13.04.2024

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m³	48.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Relative Humidity



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20%

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40°C

Fit for Analysis



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TEST REPORT

			NEI UNI		
Report No.	SARL/24/2	2414	R	Report Date.	13.04.2024
		Rough stone & Grave	el Quarry of Thiru.V. Naga	arajan	
Customer Name	& Address		in S.F.Nos. 34/1B1, 35/2B		ŧ
		of Nalmukkal Village	, Marakkanam Taluk, Vilı	uppuram Distri	ct, Tamil Nadu
Sample Description AMBIENT AIR QUALITY					
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location	1	A2-Nalmukkal			
Positioned heigh	t of Sampler	1.5 M above Ground Level			
Customer Refere	ence	By Mail	Sampling Dur	ration	24 hrs
Sample Reference	re No	SARL/A/CHE-2414	Sample Recei	ved on	08 04 2024

Sample Reference No	SARL/A/CHE-2414	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	2415	Report Date	e. 13.04.2024		
		Rough stone & Gravel	Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village,	Marakkanam Taluk, Viluppuram D	istrict, Tamil Nadu		
Sample Description AMBIENT AIR QUALITY						
Sampling Procedure IS – 5182 (Part – 14: 2000 & Part – V: Reaffirm			000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
			· · · · · · · · · · · · · · · · · · ·			
Sample Location	l	A1-PROPOSED MINE	LEASE AREA			
Positioned height	t of Sampler	1.5 M above Ground Level				
0	1	1				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2415	Sample Received on	08.04.2024		
Sample Collecter	d hv	LABORATORY	Test Commenced on	08 04 2024		

Sumple Reference 100	DI III DI II DI LI DI	Sumple Received on	00.01.2021
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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	43.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	4.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT*

Authorized Signatory J. GNANAPRAKASAM Technical Manager

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TEST REPORT

Report No.	SARL/24/24	416	Report Date	. 13.04.2024
Customer Name	& Address		rry of Thiru.V. Nagarajan .Nos. 34/1B1, 35/2B, 35/3 and 3 akkanam Taluk, Viluppuram Di	
Sample Descript	ion	AMBIENT AIR QUALITY		
Sampling Procee		IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
		· ·		
Sample Location	1	A2-Nalmukkal		
Positioned height of Sampler 1.5 M above Ground Level				
		•		
Customer Refere	ence	By Mail	Sampling Duration	24 hrs
Sample Reference	re No	SARL/A/CHE-2416	Sample Received on	08 04 2024

	Dy Widii	Sampling Duration	24 1113
Sample Reference No	SARL/A/CHE-2416	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	38.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Please Contact:

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TEST REPORT

Report No.SARL/24/2417Report Date.13.04.2024Customer Name & AddressRough stone & Gravel Quarry of Thiru.V. Nagarajan
extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil NaduSample DescriptionAMBIENT AIR QUALITYSampling ProcedureIS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide linesSample LocationA3-Senalur

Sample Location	A3-Senalur
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2417	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	36.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	17.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	5.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Authorized Signatory J. GNANAPRAKASAM **Technical Manager** **END OF THE REPORT***

Please Contact:

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TEST REPORT

Report No.	SARL/24/24	18	Report Date.	13.04.2024
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan	
Customer Name	& Address	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4		
	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descript	ion	AMBIENT AIR QUALITY	7	
Sampling Procee	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
		•		
Sample Location	l	A4-Kunnapakkam		
Positioned height of Sampler		1.5 M above Ground Level		
	-	•		
Customer Refere	ence	By Mail	Sampling Duration	24 hrs
Sample Deference	No.No.	SADI / A/CHE 2419	Samula Dessived on	08 04 2024

	Dy Maii	Sampling Duration	24 1113		
Sample Reference No	SARL/A/CHE-2418	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	ample Condition Fit for Analysis				

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	35.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	16.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	5.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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TEST REPORT

Report No.	SARL/24/24	-19	Report Date.	13.04.2024	
Customer Name	& Address	extent of 4.75.00 Ha in	l Quarry of Thiru.V. Nagarajan n S.F.Nos. 34/1B1, 35/2B, 35/3 and 3 , Marakkanam Taluk, Viluppuram Dis		
Sample Descript	ion	AMBIENT AIR QUALITY			
Sampling Procee	lure	IS – 5182 (Part – 14: 2	2000 & Part - V: Reaffirmed - 2003),	CPCB Guide lines	
		· ``			
Sample Location	1	A3-Senalur	Senalur		
Positioned height of Sampler 1.		1.5 M above Ground Level			
0	*	1			
Creater an Defense		Dry Mail	Someling Dynation	24 h m	

Customer Reference	By Mail	Sampling Duration	24 hrs	
Sample Reference No	SARL/A/CHE-2419	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	44.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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TEST REPORT

Report No.	SARL/24/2	420	Report Date	. 13.04.2024	
		Rough stone & Gravel Qu	arry of Thiru.V. Nagarajan		
Customer Name & Address		extent of 4.75.00 Ha in S.	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4		
		of Nalmukkal Village, Ma	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Description	ion	AMBIENT AIR QUALITY			
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
		•	·		
Sample Location	l	A4-Kunnapakkam	A4-Kunnapakkam		
Positioned heigh	t of Sampler	1.5 M above Ground Level			
		· ·			
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	
Sample Reference	e No	SARL/A/CHE-2420	Sample Received on	08.04.2024	
· · · · ·			*		

Sample Reference No	SAKL/A/CHE-2420	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	42.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Terral 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	421			Report Date.	13.04.2024
Customer Name	& Address	extent of 4	.75.00 Ha in S.F.	rry of Thiru.V. Nag Nos. 34/1B1, 35/2 akkanam Taluk, Vi	B, 35/3 and 35/4	
Sample Descript	ion	AMBIEN	BIENT AIR QUALITY			
Sampling Proced	lure	IS - 5182	- 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines			
. V		•				
Sample Location	1	A5-Ravan	A5-Ravanapuram			
Positioned heigh	t of Sampler	1.5 M abo	M above Ground Level			
0	Ĩ	1				
G · D C		D 1/ 1		a ti p		2.1.1

Customer Reference	By Mail	Sampling Duration	24 hrs	
Sample Reference No	SARL/A/CHE-2421	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	37.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	5.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	422	Report Date	2. 13.04.2024		
		e (arry of Thiru.V. Nagarajan			
Customer Name	& Address		extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, Ma	rakkanam Taluk, Viluppuram D	istrict, Tamil Nadu		
Sample Description	ion	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
		· ·	·			
Sample Location	l	A6-Tennampundi				
Positioned height	t of Sampler	1.5 M above Ground Level				
		•				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2422	Sample Received on	08.04.2024		

Sample Reference No	SARL/A/CHE-2422	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 ₁₀)	IS:5182: Part 23:2006	µg/m³	52.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	8.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

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TEST REPORT

Report No.	SARL/24/2	2423	Report Date	e. 13.04.2024		
		Rough stone & Gravel Q	Juarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in S	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, N	larakkanam Taluk, Viluppuram D	istrict, Tamil Nadu		
Sample Descript	tion	AMBIENT AIR QUALITY				
Sampling Procee	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
		•				
Sample Location	ı	A5-Ravanapuram				
Positioned heigh	t of Sampler	1.5 M above Ground Le	1.5 M above Ground Level			
		•				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
C 1. D. f.	NI.	CADI / A /CHE 2422	Complete Description	00.04.2024		

Customer Reference	By Mail	Sampling Duration	24 hrs	
Sample Reference No	SARL/A/CHE-2423	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	46.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



****END OF THE REPORT***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/24	-24	Report Date	. 13.04.2024		
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Di	strict, Tamil Nadu		
Sample Description	ion	AMBIENT AIR QUALITY	T AIR QUALITY			
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location	l	A6-Tennampundi				
Positioned heigh	t of Sampler	1.5 M above Ground Level				
		•				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	re No	SARL/A/CHE-2424	Sample Received on	11 03 2024		

Sample Reference No	SARL/A/CHE-2424	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/	2487			Report Date.	20.04.2024
Customer Name & Address exter			stone & Gravel Quarr of 4.75.00 Ha in S.F.N nukkal Village, Marak	los. 34/1B1, 35/2	B, 35/3 and 35/4	
			MBIENT AIR QUALITY			
Sampling Proced	lure	IS –	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
		•				
Sample Location A5		A5-F	.5-Ravanapuram			
Positioned height of Sampler 1.5			M above Ground Level			
1						

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2487	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	39.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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Phone Number +91 82208 36377 Email: - info@shrientanalytical.com www.shrientanalytical.com

TEST REPORT

Report No.	SARL/24/2	2488	Report Date. 20.04.2024		
		Darrah utawa 8 C			
Customer Name & Address		extent of 4.75.00	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4		
			of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Descript			AMBIENT AIR QUALITY		
Sampling Procee	lure	IS – 5182 (Part –	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	1	A6-Tennampundi	A6-Tennampundi		
Positioned heigh	t of Sampler	1.5 M above Grou	5 M above Ground Level		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2488	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	45.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Resarcher to the report***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	port No. SARL/24/2489			Report Date.	20.04.2024
				r •	
			e & Gravel Quarry of Thiru.V. N		
Customer Name &	k Address		75.00 Ha in S.F.Nos. 34/1B1, 35/	/	
		of Nalmuk	almukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Description	on	AMBIENT	IBIENT AIR QUALITY		
Sampling Procedu	ıre	IS – 5182 (S – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location		A5-Ravana	A5-Ravanapuram		
Positioned height of Sampler 1.5		1.5 M abov	M above Ground Level		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2489	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_{10})	IS:5182: Part 23:2006	µg/m ³	42.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2490		Report Dat	te. 20.04.2024
	R	ugh stone & Gravel	Quarry of Thiru V. Nagarajan	
Customer Name & A	Address ex	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4		
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description AMBIENT AIR QUALITY				
Sampling Procedure	e IS	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
	·			
Sample Location	A	6-Tennampundi		
Positioned height of Sampler 1.5 M above Ground Level				
	·			
Customer Reference	e B	y Mail	Sampling Duration	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2490	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	42.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	491		Report Date.	20.04.2024
Customer Name	& Address	extent of 4.75.00 H	ough stone & Gravel Quarry of Thiru.V. Nagarajan ktent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 f Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Description AMBIENT AIR QUALITY					
Sampling Proced	lure	IS - 5182 (Part - 14	S – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	l	A3-Senalur			
Positioned heigh	t of Sampler	1.5 M above Groun	1.5 M above Ground Level		
Customer Refere	nce	By Mail	Sampling D	uration	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2491	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	37.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	5.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

SARL/24/2492 20.04.2024 Report No. Report Date. Rough stone & Gravel Quarry of Thiru.V. Nagarajan Customer Name & Address extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu AMBIENT AIR QUALITY Sample Description IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines Sampling Procedure Sample Location A4-Kunnapakkam Positioned height of Sampler 1.5 M above Ground Level DC D 1 1

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2492	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	36.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	17.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	5.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.SARL/24/2493Report Date.20.04.2024Customer Name & AddressRough stone & Gravel Quarry of Thiru.V. Nagarajan
extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil NaduSample DescriptionAMBIENT AIR QUALITYSample procedureIS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide linesSample LocationA3-Senalur

Sample Location	AJ-Schalul
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2493	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 ₁₀)	IS:5182: Part 23:2006	µg/m³	41.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Phone Number +91 82208 36377 Email: - info@shrientanalytical.com www.shrientanalytical.com

TEST REPORT

Report No.	SARL/24/249)4	Report Date	20.04.2024	
		Rough stone & Gravel Qua			
Customer Name	& Address	extent of 4.75.00 Ha in S.F.	Nos. 34/1B1, 35/2B, 35/3 and 2	35/4	
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram D	istrict, Tamil Nadu	
Sample Descripti	on	AMBIENT AIR QUALITY	7		
Sampling Proced	ure	IS - 5182 (Part - 14: 2000 d	& Part – V: Reaffirmed - 2003)	, CPCB Guide lines	
<u> </u>		·			
Sample Location		A4-Kunnapakkam			
Positioned height	t of Sampler	1.5 M above Ground Level			
Customer Refere	nce	By Mail	Sampling Duration	24 hrs	
Sample Referenc	e No	SARL/A/CHE-2494	Sample Received on	15.04.2024	
<u>a</u> 1 <u>a</u> 11 <u>.</u>	1 1	I I DOD I TODII		1	

Sample Reference No	SAKL/A/CHE-2494	Sample Received on	13.04.2024
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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	38.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2495	[Report Date.	20.04.2024	
		e	Bravel Quarry of Thiru.V. Na	0 3		
Customer Name	& Address	extent of 4.75.0	Ha in S.F.Nos. 34/1B1, 35/2	2B, 35/3 and 35/4	4	
		of Nalmukkal V	llage, Marakkanam Taluk, V	iluppuram Distr	ict, Tamil Nadu	
Sample Descript	ion	AMBIENT AIR	AMBIENT AIR QUALITY			
Sampling Proced	lure	IS – 5182 (Part	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
* -		· · ·				
Sample Location	l	A1-PROPOSEI	A1-PROPOSED MINE LEASE AREA			
Positioned heigh	t of Sampler	1.5 M above Gr	1.5 M above Ground Level			
Customer Refere	ence	By Mail	Sampling D	uration	24 hrs	
Sample Reference	e No	SARL/A/CHE-	A495 Sample Rec	ceived on	15.04.2024	
Sample Collecter	d bv	LABORATOR	Test Comm	enced 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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	41.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT*

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TEST REPORT

Report No.	SARL/24/24	96	Report Date.	20.04.2024
		Rough stone & Grav	el Quarry of Thiru.V. Nagarajan	
Customer Name	& Address	extent of 4.75.00 Ha	in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35	5/4
		of Nalmukkal Villag	e, Marakkanam Taluk, Viluppuram Dis	trict, Tamil Nadu
Sample Descripti	on	AMBIENT AIR QU	ALITY	
Sampling Proced	ure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
		· ·		
Sample Location		A2-Nalmukkal		
Positioned height of Sampler 1.5 M above Ground Level				
		·		
Customer Referen	nce	By Mail	Sampling Duration	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2496	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	40.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Sample Collected on

Temperature

Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/2	2497		[Report Date.	20.04.2024
Customer Name &	& Address	extent of	f 4.75.00 Ha in S.	arry of Thiru.V. Na F.Nos. 34/1B1, 35/2 arakkanam Taluk, V	B, 35/3 and 35/	
Sample Description	on		AMBIENT AIR QUALITY			
Sampling Procedu	ure	IS – 518	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location		A1-PRO	A1-PROPOSED MINE LEASE AREA			
Positioned height	of Sampler	1.5 M ab	1.5 M above Ground Level			
		•				
Customer Referen	nce	By Mail	1	Sampling D	uration	24 hrs
Sample Reference	e No	SARL/A	A/CHE-2497	Sample Rec	eived on	15.04.2024
Sample Collected	by	LABOR	RATORY	Test Comm	enced on	15.04.2024
	-					

Samp	ble Condition Fit f	or Analysis	•	·	
S. No.	Parameters	Parameters Protocol		Results	*Limits
1	Particulate Matter less than 10micro size (PM ₁₀)	n IS:5182: Part 23:2006	µg/m ³	44.5	100
2	Particulate Matter less than 2.5micr size (PM _{2.5})	on IS 5182 (Part 24):2019	µg/m ³	21.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	$\mu g/m^3$	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Test Completed on

Relative Humidity

20.04.2024

32%



END OF THE REPORT*

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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10.4

Res

14.04.2024

37°C



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TEST REPORT

Report No.	SARL/24/24	98		Report Date.	20.04.2024
Customer Name	& Address	extent of 4.75.00 Ha	vel Quarry of Thiru.V. N a in S.F.Nos. 34/1B1, 35/	2B, 35/3 and 35/	
Sample Descripti Sampling Proced		of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu AMBIENT AIR QUALITY IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
× •				2005); e	
Sample LocationA2-NalmukkalPositioned height of Sampler1.5 M above Ground Level					
Customer Referen	nce	By Mail	Sampling	Duration	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2498	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	44.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



& Rea **END OF THE REPORT*** 10 *

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	561	I	Report Date.	27.04.2024
			avel Quarry of Thiru.V. Naga		
Customer Name	& Address	extent of 4.75.00	Ha in S.F.Nos. 34/1B1, 35/2B	B , 35/3 and 35/4	1
		of Nalmukkal Vil	age, Marakkanam Taluk, Vilu	uppuram Distri	ict, Tamil Nadu
Sample Description	ion	AMBIENT AIR (QUALITY		
Sampling Proced	lure	IS - 5182 (Part -	14: 2000 & Part - V: Reaffirm	ned - 2003), Cl	PCB Guide lines
		· ·			
Sample Location	l	A1-PROPOSED	MINE LEASE AREA		
Positioned height of Sampler 1.5 M above Ground Level					
Customer Refere	ence	By Mail	Sampling Du	ration	24 hrs
Sample Reference	e No	SARL/A/CHE-2	561 Sample Recei	ived on	22.04.2024
Samula Callasta	1 1	LADODATODY	Test	and an	22.04.2024

Sumpre retrerence res		Sumpre recent ou on	
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 ₁₀)	IS:5182: Part 23:2006	µg/m³	56.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	8.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT*

Authorized Signatory J. GNANAPRAKASAM Technical Manager

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TEST REPORT

Report No.	SARL/24/2	562	Report Dat	te. 27.04.2024	
			uarry of Thiru.V. Nagarajan		
Customer Name	& Address	extent of 4.75.00 Ha in S	.F.Nos. 34/1B1, 35/2B, 35/3 and	35/4	
		of Nalmukkal Village, M	arakkanam Taluk, Viluppuram I	District, Tamil Nadu	
Sample Descripti	ample Description AMBIENT AIR QUALITY				
Sampling Proced	ure	IS - 5182 (Part - 14: 200	0 & Part – V: Reaffirmed - 2003	B), CPCB Guide lines	
Sample Location		A2-Nalmukkal	A2-Nalmukkal		
Positioned height of Sampler 1.5 M above Ground Level					
		•			
Customer Referen	nce	By Mail	Sampling Duration	24 hrs	
Sample Reference No		SARL/A/CHE-2562	Sample Received on	22.04.2024	
•					

Sample Reference No	SAKL/A/CHE-2362	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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Temperature

Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/2	2563		R	eport Date.	27.04.2024
	·					
Customer Name	& Adress		Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
Customer Name & Address extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu						
Sample Descripti					•	
Sampling Proced	ure	IS – 5	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
			· · · · · · · · · · · · · · · · · · ·			
Sample Location		A1-PI	A1-PROPOSED MINE LEASE AREA			
Positioned height	t of Sampler	1.5 M	1.5 M above Ground Level			
	*	I				
Customer Referen	nce	By M	ail	Sampling Dur	ation	24 hrs
Sample Reference	e No	SAR	L/A/CHE-2563	Sample Receiv	ved on	22.04.2024
Sample Collected	l by	LAB	ORATORY	Test Commen	ced on	22.04.2024
		17.04	.2024	Test Complete	ed on	27.04.2024

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	60.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

24%

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40°C

Fit for Analysis



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TEST REPORT

		P				
Report No.	SARL/24/2	564		Report Date.	27.04.2024	
			ravel Quarry of Thiru.V. N			
Customer Name	& Address	extent of 4.75.00	Ha in S.F.Nos. 34/1B1, 35/	2B, 35/3 and 35/4	4	
		of Nalmukkal Vil	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description	ion	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS - 5182 (Part -	14: 2000 & Part – V: Reaff	firmed - 2003), C	PCB Guide lines	
		•				
Sample Location	l	A2-Nalmukkal				
Positioned height of Sampler 1.5 M above Ground Level						
		•				
Customer Refere	ence	By Mail	Sampling	Duration	24 hrs	

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2564	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Phone Number +91 82208 36377 Email: - info@shrientanalytical.com www.shrientanalytical.com

TEST REPORT

Report No.	SARL/24/2	565	R	eport Date.	27.04.2024
Customer Name	& Address	extent of 4.75.00 H	wel Quarry of Thiru.V. Naga a in S.F.Nos. 34/1B1, 35/2B, age, Marakkanam Taluk, Vilu	35/3 and 35/4	
Sample Descripti	ion	AMBIENT AIR QUALITY			
Sampling Proced	lure	IS – 5182 (Part – 14	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
		• · · · · · · · · · · · · · · · · · · ·			
Sample Location	l	A3-Senalur			
Positioned height	t of Sampler	1.5 M above Ground Level			
	<u>^</u>				
Customer Refere	ence	By Mail	Sampling Dur	ation	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs	
Sample Reference No	SARL/A/CHE-2565	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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TEST REPORT

Report No.	SARL/24/2	2566		F	Report Date.	27.04.2024
			n stone & Gravel Qua			
Customer Name	& Address	extent	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Na	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descripti	on	AMB	AMBIENT AIR QUALITY			
Sampling Proced	ure	IS – 5	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location		A4-K	unnapakkam			
Positioned height of Sampler		1.5 M	1.5 M above Ground Level			
		•				
Customer Refere	nce	By M	lail	Sampling Du	ration	24 hrs
Sample Referenc	e No	SARI	L/A/CHE-2566	Sample Recei	ived on	22.04.2024
•						

Sample Reference No	SARL/A/CHE-2566	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	46.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Reserved to the report***

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TEST REPORT

Report No.	SARL/24/2	2567		Rep	oort Date.	27.04.2024	
		Rough st	tone & Gravel Qua	rry of Thiru.V. Nagara	jan		
Customer Name &	& Address	extent of	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalmı	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	ample Description AMBIENT AIR QUALITY						
Sampling Proced	ure	IS – 5182	2 (Part – 14: 2000	& Part – V: Reaffirmed	1 - 2003), CI	PCB Guide lines	
• -		·					
Sample Location		A3-Sena	lur				
Positioned height	of Sampler	1.5 M ab	ove Ground Level				
		÷					
Customer Referen	nce	By Mail		Sampling Durat	ion	24 hrs	
Sample Reference	e No	SARL/A	/CHE-2567	Sample Receive	d on	22.04.2024	

Sample Reference No	SARL/A/CHE-2567	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	43.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2568	Report Da	te. 27.04.2024		
		Rough stone & Gravel	Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in	S.F.Nos. 34/1B1, 35/2B, 35/3 and	1 35/4		
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu						
Sample Descripti	on AMBIENT AIR QUALITY					
Sampling Proced	ure	IS - 5182 (Part - 14: 2	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
		•				
Sample Location		A4-Kunnapakkam				
Positioned height	t of Sampler	1.5 M above Ground L	evel			
Customer Refere	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2568	Sample Received on	22.04.2024		
<u>a</u> 1 a 11 .	1.1	LIDODITODU	T G 1	22.04.2024		

Sample Reference No	SARL/A/CIIL-2300	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	41.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2569	Report Date. 27.04.2024	
Customer Name &	Address	ough stone & Gravel Quarry of Thiru.V. Nagarajan tent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu	
Sample Description	MBIENT AIR QUALITY		
Sampling Procedure	e 1	- 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines	
	·		
Sample Location A5-Ravanapuram			
Positioned height of Sampler		5 M above Ground Level	
	·		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2569	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

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TEST REPORT

Report No.	SARL/24/2	2570	Report Dat	e. 27.04.2024		
		Rough stone & Gravel	Quarry of Thiru.V. Nagarajan			
Customer Name & Address		extent of 4.75.00 Ha in	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Descripti	on	AMBIENT AIR QUAI	AMBIENT AIR QUALITY			
Sampling Procedure IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines), CPCB Guide lines			
				·		
Sample Location		A6-Tennampundi				
Positioned height	t of Sampler	1.5 M above Ground Level				
	*	1				
Customer Referen	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2570	Sample Received on	22.04.2024		
Sample Collected	l by	LABORATORY	Test Commenced 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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	52.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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Temperature

Sample Condition

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TEST REPORT

Report No.	SARL/24/2	2571	Report Date	27.04.2024			
		- 1					
~		e	el Quarry of Thiru.V. Nagarajan				
Customer Name	& Address		in S.F.Nos. 34/1B1, 35/2B, 35/3 and 2				
		of Nalmukkal Villag	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Descripti	ion	AMBIENT AIR QU	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines					
1 0			· · · · · · · · · · · · · · · · · · ·	, 			
Sample Location		A5-Ravanapuram					
Positioned height	t of Sampler	1.5 M above Ground Level					
Customer Refere	nce	By Mail	Sampling Duration	24 hrs			
Sample Referenc	e No	SARL/A/CHE-2571	Sample Received on	22.04.2024			
Sample Collected	d by	LABORATORY	Test Commenced on	22.04.2024			
Sample Collected on		21.04.2024	Test Completed on	27.04.2024			

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	44.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

23%



END OF THE REPORT

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41°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/2	2572		Report D	ate.	27.04.2024
				f Thiru.V. Nagarajan		
Customer Name &	z Address			34/1B1, 35/2B, 35/3 ar		
		of Nalmukkal Vi	llage, Marakka	nam Taluk, Viluppuram	Distr	ict, Tamil Nadu
Sample Descriptio	n	AMBIENT AIR	QUALITY			
Sampling Procedu	re	IS – 5182 (Part –	- 14: 2000 & Pa	rt – V: Reaffirmed - 200	03), C	PCB Guide lines
Sample Location		A6-Tennampund	li			
Positioned height	of Sampler	1.5 M above Ground Level				
Customer Referen	ce	By Mail		Sampling Duration		24 hrs
Sample Reference	No	SARL/A/CHE-2	2572	Sample Received on		22.04.2024
Sample Collected	by	LABORATORY	ľ	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	49.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Read of the Report***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	2635		Report Date.	04.05.2024
		Rough	stone & Gravel Quarry of	Thiru V Nagarajan	
Customer Name & Address		extent	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Descripti	on	AMBI	AMBIENT AIR QUALITY		
Sampling Proced	Sampling Procedure		IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location		A5-Ray	A5-Ravanapuram		
Positioned height of Sampler		1.5 M a	5 M above Ground Level		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2635	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	48.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	2636		Report Da	ite.	04.05.2024
				ry of Thiru.V. Nagarajan		
Customer Name	& Address	extent of 4.75.0	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal V	/illage, Mara	kkanam Taluk, Viluppuram	Distri	ct, Tamil Nadu
Sample Descripti	ion	AMBIENT AIF	AMBIENT AIR QUALITY			
Sampling Proced	ure	IS – 5182 (Part	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location		A6-Tennampur	ndi			
Positioned height of Sampler		1.5 M above Ground Level				
Customer Refere	nce	By Mail		Sampling Duration		24 hrs
Sample Reference	e No	SARL/A/CHE	-2636	Sample Received on		29.04.2024

	Byman	Sumpring Durution	21115
Sample Reference No	SARL/A/CHE-2636	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	46.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/26	537	Report Date	04.05.2024	
Customer Name	& Address		arry of Thiru.V. Nagarajan F.Nos. 34/1B1, 35/2B, 35/3 and 3	35/4	
			arakkanam Taluk, Viluppuram Di		
Sample Descript	ion	AMBIENT AIR QUALIT	AMBIENT AIR QUALITY		
Sampling Procee	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location	l	A5-Ravanapuram			
Positioned heigh	t of Sampler	1.5 M above Ground Level			
		•			
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	
G 1 D C	Ъ.т.			20.01.0021	

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2637	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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	41.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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Phone Number +91 82208 36377 Email: - info@shrientanalytical.com www.shrientanalytical.com

TEST REPORT

Report No.	SARL/24/263	8	Report Date	e. 04.05.2024	
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan		
Customer Name & Address		extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram D	District, Tamil Nadu	
Sample Description AMBIENT AIR QUALITY					
Sampling Procee	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
			,	, ,	
Sample Location	1	A6-Tennampundi			
Positioned height of Sampler 1.5 M above Ground Level					
	-				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	
C 1 D C	NT			20.04.2024	

Customer Reference	By Mail	Sampling Duration	24 nrs
Sample Reference No	SARL/A/CHE-2638	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	43.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Terral 44

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	639		Report Date.	04.05.2024
				•	
Customer Name & Address			Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4		
		of Nalmukkal Vill	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Descript	ion	AMBIENT AIR C	AMBIENT AIR QUALITY		
Sampling Proceed	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location	l	A3-Senalur			
Positioned heigh	t of Sampler	1.5 M above Ground Level			
		·			
Creater an Defense		Dry Mail	Compline Dr		24 1

Customer Reference	By Mail	Sampling Duration	24 hrs	
Sample Reference No	SARL/A/CHE-2639	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 ₁₀)	IS:5182: Part 23:2006	µg/m³	46.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

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TEST REPORT

Report No.	SARL/24/2	2640	R	eport Date.	04.05.2024	
		Rough stone & Grav	el Quarry of Thiru.V. Naga	rajan		
Customer Name	& Address	extent of 4.75.00 Ha	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Villag	e, Marakkanam Taluk, Vilu	ppuram Distri	ict, Tamil Nadu	
Sample Descripti	ion	AMBIENT AIR QU	AMBIENT AIR QUALITY			
Sampling Proced	ure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location		A4-Kunnapakkam				
Positioned height	t of Sampler	1.5 M above Ground Level				
Customer Refere	nce	By Mail	Sampling Dur	ation	24 hrs	
Samula Dafanana	a Na	CADI / A/CHE 2640) Commite Descrip	und an	20.04.2024	

Customer Reference	by Mall	Sampling Duration	24 III S
Sample Reference No	SARL/A/CHE-2640	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	44.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

		_				
Report No.	SARL/24/2641			Report Date.	04.05.2024	
	Rou	igh stone & Gravel Qu	arry of Thiru.V. Nag	garajan		
Customer Name & A	Address exte	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
	ofl	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	AM	AMBIENT AIR QUALITY				
Sampling Procedure	IS -	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
	·					
Sample Location	A3-	A3-Senalur				
Positioned height of Sampler 1.5 M above Ground Level			1			
	·					
Customer Reference	By	Mail	Sampling Du	iration	24 hrs	
\mathbf{C}_{1}		DI /A /CITE 2/41		· 1	20.04.2024	

Customer Reference	Dy Mail	Sampling Duration	24 1118
Sample Reference No	SARL/A/CHE-2641	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 ₁₀)	IS:5182: Part 23:2006	µg/m³	39.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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Temperature

Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/2	2642	Report Da	te. 04.05.2024			
		Rough stone & Gravel	Quarry of Thiru.V. Nagarajan				
Customer Name	& Address	extent of 4.75.00 Ha in	n S.F.Nos. 34/1B1, 35/2B, 35/3 and				
		of Nalmukkal Village,	Marakkanam Taluk, Viluppuram I	District, Tamil Nadu			
Sample Descripti	ion	AMBIENT AIR QUA	LITY				
Sampling Proced	ure	IS – 5182 (Part – 14: 2	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
<u> </u>		· · ·					
Sample Location		A4-Kunnapakkam					
Positioned height	t of Sampler	1.5 M above Ground I	1.5 M above Ground Level				
	-						
Customer Refere	nce	By Mail	Sampling Duration	24 hrs			
Sample Reference	e No	SARL/A/CHE-2642	Sample Received on	29.04.2024			
Sample Collected	l by	LABORATORY	Test Commenced on	29.04.2024			
Sample Collected on		26.04.2024	Test Completed on	04.05.2024			

S. No.	Parameters	ers Protocol Unit		Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	39.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

24%



Charran - 45 ****END OF THE REPORT***

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40°C

Fit for Analysis



Temperature

Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/26	543	Report Da	ate. 04.05.2024		
			l Quarry of Thiru.V. Nagarajan			
Customer Name	& Address		n S.F.Nos. 34/1B1, 35/2B, 35/3 an			
		of Nalmukkal Village	, Marakkanam Taluk, Viluppuram	District, Tamil Nadu		
Sample Descripti	on	AMBIENT AIR QUA	LITY			
Sampling Proced	ure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
1 0						
Sample Location		A1-PROPOSED MIN	E LEASE AREA			
Positioned height	of Sampler	1.5 M above Ground Level				
Customer Referen	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2643	Sample Received on	29.04.2024		
Sample Collected	l by	LABORATORY	Test Commenced on	29.04.2024		
Sample Collected on		27.04.2024	Test Completed on	04.05.2024		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	46.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

23%



Res **END OF THE REPORT*** 10.4

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39°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/26	44	Report Dat	e. 04.05.2024		
		1				
		Rough stone & Gravel Qua	arry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalmukkal Village, Ma	almukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description	ion	AMBIENT AIR QUALIT	Y			
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location	l	A2-Nalmukkal				
Positioned height of Sampler 1.5 M above Ground Level						
		·				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
C 1 D C	N T			20.04.2024		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2644	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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	43.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

SARL/24/2645 04.05.2024 Report No. Report Date. Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 Customer Name & Address of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu AMBIENT AIR QUALITY Sample Description IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines Sampling Procedure A1-PROPOSED MINE LEASE AREA Sample Location Positioned height of Sampler 1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2645	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_{10})	IS:5182: Part 23:2006	µg/m ³	54.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	$\mu g/m^3$	6.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/264				I	Report Date.	04.05.2024	
			n stone & Gravel					
Customer Name &	z Address		extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4					
		of Na	lmukkal Village,	Marakkar	am Taluk, Vil	uppuram Dis	trict, Tamil Nadu	
Sample Description	n	AMB	IENT AIR QUA	LITY				
Sampling Procedu	re	IS-5	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines					
Sample Location A2-Nalmukkal								
Positioned height of Sampler 1.5 M above Ground Level								
Customor Deferon	22	D ₁ , N			Someling Du	rotion	24 hrs	

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2646	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	50.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Charry - 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	709	Report Date	2. 11.05.2024
				·
		Rough stone & Gravel Qua	arry of Thiru.V. Nagarajan	
Customer Name	& Address	extent of 4.75.00 Ha in S.H	F.Nos. 34/1B1, 35/2B, 35/3 and 2	35/4
		of Nalmukkal Village, Ma	rakkanam Taluk, Viluppuram D	istrict, Tamil Nadu
Sample Description	ion	AMBIENT AIR QUALIT	Y	
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	•
Sample Location	1	A1-PROPOSED MINE LE	EASE AREA	
Positioned height of Sampler		1.5 M above Ground Level		
0				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs
Sample Reference	e No	SARL/A/CHE-2709	Sample Received on	06.05.2024
Sample Collected	d by	LABORATORY	Test Commenced 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 ₁₀)	IS:5182: Part 23:2006	µg/m³	42.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	710	Report Date.	11.05.2024		
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in S.F	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Di	strict, Tamil Nadu		
Sample Description AMBIENT AIR QUALITY						
Sampling Proced	lure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines				
		· · · · ·				
Sample Location	l	A2-Nalmukkal				
Positioned heigh	neight of Sampler 1.5 M above Ground Level					
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Deference	No No	SADI /A/CHE 2710	Sample Dessived on	06 05 2024		

	Dy Maii	Sumpting Duration	211115	
Sample Reference No	SARL/A/CHE-2710	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	arameters Protocol		Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	39.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2711]	Report Date.	11.05.2024		
Customer Name & A	ddress exte	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	AM	AMBIENT AIR QUALITY				
Sampling Procedure	IS –	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location	A1-	A1-PROPOSED MINE LEASE AREA				
Positioned height of	Sampler 1.5	1.5 M above Ground Level				
Customer Reference		Mail	Sampling Duration	24 hrs		
Sample Reference N	o SA	RL/A/CHE-2711	Sample Received on	06.05.2024		
Sample Collected by	LA	BORATORY	Test Commenced 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	· · · · ·	
Sumple Condition	The for 7 maryors		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m³	63.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019		30.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2712	,	Report Date	. 11.05.2024	
		Rough stone & Gravel Quarr			
Customer Name &	z Address	extent of 4.75.00 Ha in S.F.N	os. 34/1B1, 35/2B, 35/3 and 3	5/4	
		of Nalmukkal Village, Marak	kanam Taluk, Viluppuram Di	strict, Tamil Nadu	
Sample Descriptio	n .	AMBIENT AIR QUALITY			
Sampling Procedure IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide li			CPCB Guide lines		
Sample Location		A2-Nalmukkal			
Positioned height	of Sampler	1.5 M above Ground Level			
Customer Referen	ce	By Mail	Sampling Duration	24 hrs	
Sample Reference	No	SARL/A/CHE-2712	Sample Received on	06.05.2024	
			- ~ ·		

Sample Reference No	SAKL/A/CHE-2/12	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	48.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

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Temperature

Sample Condition

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TEST REPORT

Report No.	SARL/24/27	13	Report Date.	11.05.2024		
		Rough stone & Gravel Quar				
Customer Name	& Address		Nos. 34/1B1, 35/2B, 35/3 and 35			
		of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Descripti	ion	AMBIENT AIR QUALITY	-			
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
		· · · · · ·				
Sample Location		A3-Senalur				
Positioned height	t of Sampler	1.5 M above Ground Level				
		-				
Customer Refere	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2713	Sample Received on	06.05.2024		
Sample Collected	d by	LABORATORY	Test Commenced on	06.05.2024		
Sample Collected	d on	02.05.2024	Test Completed on	11.05.2024		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity



terral 45

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23%

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43°C

Fit for Analysis



Sample Condition

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TEST REPORT

Report No.	SARL/24/2714		Report D	Date.	11.05.2024
		ough stone & Gravel Quarry	63		
Customer Name & A		xtent of 4.75.00 Ha in S.F.Nos			
	0	f Nalmukkal Village, Marakka	ınam Taluk, Viluppuram	n Distri	ct, Tamil Nadu
Sample Description	A	MBIENT AIR QUALITY			
Sampling Procedure	IS	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location	А	A4-Kunnapakkam			
Positioned height of	Sampler 1	1.5 M above Ground Level			
Customer Reference	H	By Mail	Sampling Duration		24 hrs
Sample Reference No		SARL/A/CHE-2714	Sample Received on		06.05.2024
Sample Collected by		ABORATORY	Test Commenced on		06.05.2024
Sample Collected on 02.05		2.05.2024	Test Completed on		11.05.2024
Temperature	4	·3°C	Relative Humidity		23%

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM_{10})	IS:5182: Part 23:2006	µg/m ³	42.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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END OF THE REPORT* 48 * 94

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Fit for Analysis



Temperature

Sample Condition

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TEST REPORT

Report No.	SARL/24/2	715	Report Date	e. 11.05.2024		
			Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in	S.F.Nos. 34/1B1, 35/2B, 35/3 and	35/4		
		of Nalmukkal Village, N	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description	ion	AMBIENT AIR QUAL	ITY			
Sampling Proced	lure	IS - 5182 (Part - 14: 20	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
<u> </u>		· · · · ·				
Sample Location	l	A3-Senalur				
Positioned height	t of Sampler	1.5 M above Ground Le	1.5 M above Ground Level			
	-					
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2715	Sample Received on	06.05.2024		
Sample Collected	d by	LABORATORY	Test Commenced on	06.05.2024		
Sample Collected	d on	03.05.2024	Test Completed on	11.05.2024		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	41.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

22%



& Rea **END OF THE REPORT***

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10.4

42°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/27	/16	Report Da	ate. 11.05.2024			
		Rough stone & Gravel	Quarry of Thiru.V. Nagarajan				
Customer Name	& Address	extent of 4.75.00 Ha in	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalmukkal Village, I	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Descript	ion	AMBIENT AIR QUALITY					
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines					
Sample Location	l	A4-Kunnapakkam					
Positioned height of Sampler		1.5 M above Ground Level					
		·					
Customer Refere	ence	By Mail	Sampling Duration	24 hrs			
Sample Reference	e No	SARL/A/CHE-2716	Sample Received on	06.05.2024			
a 1 a 11		T I D O D I D O D T	1				

Sumple Reference 140	DI III DI II DI LI DI II	Sumple Received on	00.03.2021
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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	39.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	717	Report Date	. 11.05.2024		
î						
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in S.F.	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, Mar	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descript	ion	AMBIENT AIR QUALITY	AMBIENT AIR QUALITY			
Sampling Procee	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
		•	·			
Sample Location	1	A5-Ravanapuram				
Positioned heigh	t of Sampler	1.5 M above Ground Level				
	*					
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	ce No	SARL/A/CHE-2717	Sample Received on	06.05.2024		
Sample Collecter	d by	LABORATORY	Test Commenced on	06.05.2024		

			0010212021
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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Domont No.	SARL/24/2	719	Demont Data	. 11.05.2024	
Report No.	SAKL/24/2	2/10	Report Date	. 11.03.2024	
Customer Name	& Address		rry of Thiru.V. Nagarajan .Nos. 34/1B1, 35/2B, 35/3 and 3 akkanam Taluk, Viluppuram Di		
Sample Description	ion	AMBIENT AIR QUALITY	AMBIENT AIR QUALITY		
Sampling Proced	lure	IS – 5182 (Part – 14: 2000	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	l	A6-Tennampundi			
Positioned height	t of Sampler	1.5 M above Ground Level	1.5 M above Ground Level		
U	*				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	
Sample Reference	e No	SARL/A/CHE-2718	Sample Received on	06.05.2024	
Sample Collected	d by	LABORATORY	Test Commenced on	06.05.2024	

Sumple Reference 110		Sumple Received on	00.02.202
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 ₁₀)	IS:5182: Part 23:2006	$\mu g/m^3$	53.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/271	9	Report D	Date.	11.05.2024
			arry of Thiru.V. Nagarajan		
Customer Name &	z Address	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, Ma	rakkanam Taluk, Viluppuran	n Distri	ict, Tamil Nadu
Sample Descriptio	Sample Description AMBIENT AIR QUALITY				
Sampling Procedu	re	IS - 5182 (Part - 14: 2000	& Part - V: Reaffirmed - 20	03), Cl	PCB Guide lines
Sample Location		A5-Ravanapuram			
Positioned height of Sampler 1.5 M above Ground Level					
Customer Referen	ce	By Mail	Sampling Duration		24 hrs
Sample Reference	No	SARL/A/CHE-2719	Sample Received on		06.05.2024

Sample Reference No	SARL/A/CHE-2719	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	39.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2720		Report Date	. 11.05.2024	
			rry of Thiru.V. Nagarajan		
Customer Name & A	Address ex	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
	of	Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Di	strict, Tamil Nadu	
Sample Description AMBIENT AIR QUALITY					
Sampling Procedure IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			, CPCB Guide lines		
			·		
Sample Location	А	6-Tennampundi			
Positioned height of Sampler 1.5 M above Ground Level					
Customer Reference	e B	y Mail	Sampling Duration	24 hrs	
Sample Reference N	lo S	ARL/A/CHE-2720	Sample Received on	06.05.2024	
· · · · · · ·					

Sample Reference No	SARL/A/CHE-2720	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_{10})	IS:5182: Part 23:2006	$\mu g/m^3$	50.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m³	4.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	8.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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TEST REPORT

Report No.	SARL/24/2	783	Report Date	e. 18.05.2024
		Dereil et en 8 Correl O		
Customer Name & Address		Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Description AMBIENT AIR QUALITY				
Sampling Proced		IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location		A5-Ravanapuram		
Positioned height of Sampler 1.5 M above Ground Level				
Customer Refere	nce	By Mail	Sampling Duration	24 hrs
Sample Reference		SARL/A/CHE-2783	Sample Received on	13.05.2024
a 1 a 11		TADODATODI	T A 1	12.05.2024

Sample Reference No	SARL/A/CHE-2/85	Sample Received on	15.05.2024
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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	36.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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TEST REPORT

Report No.	SARL/24/2	2784	Report Date	. 18.05.2024		
		Rough stone & Grave	Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in	n S.F.Nos. 34/1B1, 35/2B, 35/3 and 3	35/4		
		of Nalmukkal Village,	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descript	ion	AMBIENT AIR QUA	AMBIENT AIR QUALITY			
Sampling Procee	lure	IS – 5182 (Part – 14: 2	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
U		· · ·	· · · · · · · · · · · · · · · · · · ·			
Sample Location	1	A6-Tennampundi				
Positioned heigh	t of Sampler	1.5 M above Ground I	1.5 M above Ground Level			
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	ce No	SARL/A/CHE-2784	Sample Received on	13.05.2024		
Sample Collecter	dhu	LADODATODV	Test Commonand on	12.05.2024		

Sample Reference No	DI III. III. CIIL-2704	Sample Received on	13.03.2024
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 ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Terral 44

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/	2785		Report Date.	18.05.2024	
	·					
		Rough stone & G	ravel Quarry of Thiru.V. N	agarajan		
Customer Name	& Address	extent of 4.75.00	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Vil	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descripti	ion	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS - 5182 (Part -	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location		A5-Ravanapuram				
Positioned height	t of Sampler	1.5 M above Ground Level				
	-	- I				
Customer Refere	nce	By Mail	Sampling	Duration	24 hrs	

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2785	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 ₁₀)	IS:5182: Part 23:2006	µg/m³	38.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	$\mu g/m^3$	6.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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TEST REPORT

Report No.	SARL/24/2	786		Report Date.	18.05.2024		
		1					
				Thiru.V. Nagarajan			
Customer Name	& Address			34/1B1, 35/2B, 35/3 and 35			
		of Nalmukkal Vi	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	ion	AMBIENT AIR QUALITY					
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines					
		•		iiiiiii			
Sample Location	l	A6-Tennampund	i				
Positioned height	t of Sampler	1.5 M above Ground Level					
Customer Refere	ence	By Mail		Sampling Duration	24 hrs		
Sample Reference No		SARL/A/CHE-2	786	Sample Received on	13.05.2024		

Sample Reference No	SARL/A/CHE-2786	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 ₁₀)	IS:5182: Part 23:2006	µg/m³	43.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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Temperature

Sample Condition

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TEST REPORT

Report No.	SARL/24/2	787		Repor	rt Date.	18.05.2024	
Customer Name & Address e		extent of 4	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Descripti	on	AMBIEN	AIR QUALITY				
Sampling Proced	ure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines					
		<u>.</u>					
Sample Location		A3-Senalur					
Positioned height	of Sampler	1.5 M above Ground Level					
	~	1					
Customer Referen	nce	By Mail		Sampling Duration	1	24 hrs	
Sample Reference	e No	SARL/A/	CHE-2787	Sample Received	on	13.05.2024	
Sample Collected	l by	LABORA	TORY	Test Commenced	on	13.05.2024	
Sample Collected on		09.05.202	4	Test Completed or	ı	18.05.2024	

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	37.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	5.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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

Relative Humidity

31%



END OF THE REPORT

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39°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/2	2788		Re	eport Date.	18.05.2024	
Customer Name & Address		Rough stone & Gravel Quarry of Thiru.V. Nagarajan					
		extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4					
		of Nalmu	ıkkal Village, Ma	rakkanam Taluk, Vilup	puram Distr	ict, Tamil Nadu	
Sample Description		AMBIENT AIR QUALITY					
Sampling Procedure		IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines					
• -		·	,				
Sample Location		A4-Kunnapakkam					
Positioned height of Sampler		1.5 M above Ground Level					
Customer Refere	nce	By Mail		Sampling Dura	tion	24 hrs	
Sample Reference	e No	SARL/A	/CHE-2788	Sample Receiv	ed on	13.05.2024	
Samula Callesta	11		ATODV	Tert	. 1	12.05.2024	

Sample Condition	Fit for Analysis		
Temperature	39°C	Relative Humidity	31%
Sample Collected on	09.05.2024	Test Completed on	18.05.2024
Sample Collected by	LABORATORY	Test Commenced on	13.05.2024
Sample Reference No	SARL/A/CIIL-2/00	Sample Received on	13.03.2024

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	35.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	17.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	5.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2789	Report Date	. 18.05.2024		
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in S.F	.Nos. 34/1B1, 35/2B, 35/3 and 3	35/4		
		of Nalmukkal Village, Mar	f Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description AMBIENT AIR QUALITY						
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
		``````````````````````````````````````	· · · · · · · · · · · · · · · · · · ·			
Sample Location		A3-Senalur				
Positioned height	t of Sampler	1.5 M above Ground Level				
	*					
Customer Refere	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-2789	Sample Received on	13.05.2024		
Sample Collected	1 by	LABORATORY	Test Commenced on	13.05.2024		

			10:00:202
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 ₁₀ )	IS:5182: Part 23:2006	µg/m ³	39.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	19.2	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	6.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

**Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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#### **TEST REPORT**

Report No.	SARL/24/2	2790	Report Dat	te. 18.05.2024
Customer Name	& Address	extent of 4.75.00 Ha in	Quarry of Thiru.V. Nagarajan S.F.Nos. 34/1B1, 35/2B, 35/3 and Marakkanam Taluk, Viluppuram E	
Sample Description     AMBIENT AIR QUALITY				
Sampling Proced				
		• · · ·		
Sample Location		A4-Kunnapakkam		
Positioned height	t of Sampler	1.5 M above Ground L	evel	
Customer Refere	nce	By Mail	Sampling Duration	24 hrs
Sample Referenc	e No	SARL/A/CHE-2790	Sample Received on	13.05.2024
Sample Collecter	1 by	LABORATORY	Test Commenced on	13 05 2024

Sumpre receiverence rec			10.00.202
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 ₁₀ )	IS:5182: Part 23:2006	µg/m ³	37.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	18.3	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	6.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Renarch 1

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### **TEST REPORT**

Report No.	SARL/24/2791		Report Date.	18.05.2024
		Rough stone & Gravel Quarry of		
Customer Name &		extent of 4.75.00 Ha in S.F.Nos.		
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	n A	AMBIENT AIR QUALITY		
Sampling Procedure IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			PCB Guide lines	
		×		
Sample Location	Ι	A1-PROPOSED MINE LEASE	AREA	
Positioned height o	of Sampler 1	.5 M above Ground Level		
Customer Reference	ce l	By Mail	Sampling Duration	24 hrs
Sample Reference	No	SARL/A/CHE-2791	Sample Received on	13.05.2024
Sample Collected b	by .	LABORATORY	Test Commenced 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 $(PM_{10})$	IS:5182: Part 23:2006	µg/m ³	57.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	27.6	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	6.6	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



**END OF THE REPORT***

**Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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**TEST REPORT** 

Report No.	SARL/24/2	2792	Report Date	. 18.05.2024		
		Rough stone & Gravel Qua	arry of Thiru.V. Nagarajan			
Customer Name & Address extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				35/4		
		of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Descript	ion	AMBIENT AIR QUALIT	Y			
Sampling Proceed	lure	re IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location	1	A2-Nalmukkal				
Positioned heigh	t of Sampler	1.5 M above Ground Leve	1			
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	ce No	SARL/A/CHE-2792	Sample Received on	13.05.2024		
Sample Collecter	d by	LABORATORY	Test Commenced on	13 05 2024		

Sumple Reference 100		Sumple Received on	15.05.2021
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 ₁₀ )	IS:5182: Part 23:2006	µg/m ³	56.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	30.4	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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Temperature Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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### **TEST REPORT**

Report No.	SARL/24/2	2793		Rep	oort Date.	18.05.2024	
Customer Name &	& Address	extent of	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	Sample Description AMBIENT AIR QUALITY						
Sampling Procedu	ure	IS – 5182	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
		·			,		
Sample Location		A1-PRO	POSED MINE LE	ASE AREA			
Positioned height	of Sampler	1.5 M ab	ove Ground Level				
	*						
Customer Referen	nce	By Mail		Sampling Durat	ion	24 hrs	
Sample Reference	e No	SARL/A	L/A/CHE-2793 Sample Received on		d on	13.05.2024	
Sample Collected	l by	LABOR	ORATORY Test Commenced on		d on	13.05.2024	
Sample Collected on		12.05.20	24	Test Completed	on	18.05.2024	

S. No.	Parameters	Protocol		Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀ )	IS:5182: Part 23:2006		48.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	23.2	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	$\mu g/m^3$	7.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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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**Relative Humidity** 

33%



Charry 44

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39°C

Fit for Analysis



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TEST REPORT

Report No.	SARL/24/2794		Report Date	. 18.05.2024
			rry of Thiru.V. Nagarajan	
Customer Name &	Address	extent of 4.75.00 Ha in S.F	.Nos. 34/1B1, 35/2B, 35/3 and 3	35/4
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Di	istrict, Tamil Nadu
Sample Description	mple Description AMBIENT AIR QUALITY			
Sampling Procedure	e l	IS – 5182 (Part – 14: 2000	& Part – V: Reaffirmed - 2003)	, CPCB Guide lines
	·			
Sample Location		A2-Nalmukkal		
Positioned height of	f Sampler	1.5 M above Ground Level		
	_			
Customer Reference	e	By Mail	Sampling Duration	24 hrs
Sample Reference No		SARL/A/CHE-2794	Sample Received on	13.05.2024

Sample Reference No	SARL/A/CHE-2794	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 ₁₀ )	IS:5182: Part 23:2006	µg/m ³	45.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	22.1	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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#### **TEST REPORT**

Report No.	SARL/24/2	2857	Report Dat	e. 25.05.2024			
	<u>.</u>						
		Rough stone & Grave	l Quarry of Thiru.V. Nagarajan				
Customer Name	& Address	extent of 4.75.00 Ha	n S.F.Nos. 34/1B1, 35/2B, 35/3 and	35/4			
		of Nalmukkal Village	, Marakkanam Taluk, Viluppuram E	District, Tamil Nadu			
Sample Descripti	on	AMBIENT AIR QUA	AMBIENT AIR QUALITY				
Sampling Proced	ure	IS – 5182 (Part – 14:	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines				
				× ·			
Sample Location		A1-PROPOSED MIN	E LEASE AREA				
Positioned height	t of Sampler	1.5 M above Ground	1.5 M above Ground Level				
	*	1					
Customer Referen	nce	By Mail	Sampling Duration	24 hrs			
Sample Reference	e No	SARL/A/CHE-2857	Sample Received on	20.05.2024			
Sample Collected by		LABORATORY	Test Commenced 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 ₁₀ )	IS:5182: Part 23:2006	µg/m ³	60.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	28.9	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2858			1	Report Date.	25.05.2024
		Rough	stone & Gravel (	Quarry of 7	Гhiru.V. Naga	arajan	
Customer Name	& Address	extent of	f 4.75.00 Ha in	S.F.Nos. 3	4/1B1, 35/2B	3, 35/3 and 35	/4
		of Naln	ukkal Village, N	Marakkana	m Taluk, Vil	uppuram Dist	rict, Tamil Nadu
Sample Description AMBIENT AIR QUALITY							
Sampling Proced	ure	IS – 51	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location		A2-Nal	A2-Nalmukkal				
Positioned height	1.5 M a	1.5 M above Ground Level					
Customer Refere	nce	Bv Ma	1		Sampling Du	ration	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2858	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 ₁₀ )	IS:5182: Part 23:2006	$\mu g/m^3$	52.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	25.8	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	6.3	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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#### **TEST REPORT**

Report No.	SARL/24/2	2859	Report Da	te. 25.05.2024			
		Rough stone & Gra	vel Quarry of Thiru.V. Nagarajan				
Customer Name	& Address	extent of 4.75.00 H	a in S.F.Nos. 34/1B1, 35/2B, 35/3 and	1 35/4			
		of Nalmukkal Villa	ge, Marakkanam Taluk, Viluppuram I	District, Tamil Nadu			
Sample Descripti	ion	AMBIENT AIR QU	JALITY				
Sampling Proced	lure	IS – 5182 (Part – 14	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location	l	A1-PROPOSED M	A1-PROPOSED MINE LEASE AREA				
Positioned height	t of Sampler	1.5 M above Ground Level					
Customer Refere	ence	By Mail	Sampling Duration	24 hrs			
Sample Reference	e No	SARL/A/CHE-285	9 Sample Received on	20.05.2024			
Sample Collected by		LABORATORY	Test Commenced 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 ₁₀ )	IS:5182: Part 23:2006	µg/m³	52.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	25.2	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	6	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	8.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2	2860	[	Report Date.	25.05.2024
Customer Name & Address exter		extent o	Rough stone & Gravel Quarry of Thiru.V. Nagarajan xtent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 f Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Descripti	ple Description AMBIENT AIR QUALITY				
Sampling Proced	ure	IS – 518	2 (Part - 14: 2000 & Part - V: Reaffi	rmed - 2003), CI	PCB Guide lines
Sample Location A		A2-Nalı	A2-Nalmukkal		
Positioned height of Sampler 1		1.5 M a	5 M above Ground Level		
	*	I			
· · · · · · · · · · · · · · · · · · ·					

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2860	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 $(PM_{10})$	IS:5182: Part 23:2006	$\mu g/m^3$	47.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	23.1	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2861		Re	eport Date.	25.05.2024
		Rough stone & Gravel Qu			
Customer Name & A	ddress	extent of 4.75.00 Ha in S.	F.Nos. 34/1B1, 35/2B, 2	35/3 and 35/4	
		of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description		AMBIENT AIR QUALITY			
Sampling Procedure		S – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location A		A3-Senalur			
Positioned height of	Sampler	1.5 M above Ground Lev	el		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2861	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 ₁₀ )	IS:5182: Part 23:2006	$\mu g/m^3$	47.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	23.5	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m³	5.2	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/286	2	Report Date	e. 25.05.2024	
Customer Name	& Address		Quarry of Thiru.V. Nagarajan n S.F.Nos. 34/1B1, 35/2B, 35/3 and	35/4	
		of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description	ion	AMBIENT AIR QUALITY			
Sampling Proced	lure	IS - 5182 (Part - 14: 2	2000 & Part – V: Reaffirmed - 2003)	), CPCB Guide lines	
Sample Location	1	A4-Kunnapakkam			
Positioned height	t of Sampler	1.5 M above Ground Level			
Customer Refere	ence	By Mail	Sampling Duration	24 hrs	

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2862	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 ₁₀ )	IS:5182: Part 23:2006	µg/m ³	44.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	22.3	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	4.6	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	6.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/2863	Report Date.	25.05.2024		
Customer Name & Address ex		Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description	A	MBIENT AIR QUALITY			
Sampling Procedure	IS	5 – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location A3		3-Senalur			
Positioned height of Sampler 1.5		M above Ground Level			

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2863	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 ₁₀ )	IS:5182: Part 23:2006	µg/m ³	52.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	24.9	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.6	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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## **TEST REPORT**

Report No.	SARL/24/	2864		Report Date	25.05.2024	
	0 4 1 1	Ų	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
Customer Name	& Address			· · · ·		
of Nalmukkal Village, Marakkanam Taluk, ViluppuranSample DescriptionAMBIENT AIR QUALITY			iani Taiuk, viiuppurani D	Istrict, Taimi Nadu.		
Sampling Proced			5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sampling 110000	ure	15 5162 (1	at 14. 2000 & 1 a	t v. Reallined - 2005)	, er en oulde lilles	
Sample Location		A4-Kunnapa	kkam			
Positioned height	t of Sampler	1.5 M above	1.5 M above Ground Level			
		·				
Customer Refere	nce	By Mail		Sampling Duration	24 hrs	

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2864	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 ₁₀ )	IS:5182: Part 23:2006	$\mu g/m^3$	48.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	25.1	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m³	5.1	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	$\mu g/m^3$	7.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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**

Customer Name & Add	dress exter	n stone & Gravel Quarry of Thiru.V. Na t of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2 lmukkal Village, Marakkanam Taluk, V	2B, 35/3 and 35/4	
Sample Description	AMI	MBIENT AIR QUALITY		
Sampling Procedure	IS –	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	A5-H	A5-Ravanapuram		
Positioned height of Sa	mpler 1.5 M	M above Ground Level		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2865	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 ₁₀ )	IS:5182: Part 23:2006	µg/m³	45.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	22.6	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

**Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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## **TEST REPORT**

Report No.	rt No. SARL/24/2866			Report Date.	25.05.2024
Customer Name & Address exte			Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4		
Sample Descripti Sampling Proced		AMBIENT A	Jalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil NaduBIENT AIR QUALITY5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location		A6-Tennam		2000), ei	
Positioned height		1	Ground Level		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2866	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 ₁₀ )	IS:5182: Part 23:2006	$\mu g/m^3$	51.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	24.1	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

**Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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## **TEST REPORT**

Report No.	SARL/24/2867			Report Date.	25.05.2024
Customer Name & .	Address ext	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
Sample Description Sampling Procedure	AN	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu AMBIENT AIR QUALITY IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
Sample Location Positioned height of		-Ravanapuram M above Ground I	Level		
Customer Reference	<u> </u>	Mail	Sampling	Sumation (	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2867	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 $(PM_{10})$	IS:5182: Part 23:2006	µg/m³	47.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	23.5	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	$\mu g/m^3$	8.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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.	Io. SARL/24/2868			Report Date.	25.05.2024
Customer Name & Address extent of 4.		extent of 4.75.0	Gravel Quarry of Thiru.V. N 0 Ha in S.F.Nos. 34/1B1, 35 'illage, Marakkanam Taluk,	5/2B, 35/3 and 35/4	
Sample Descript	ion		AMBIENT AIR QUALITY		
Sampling Procee			IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
		· ·			
Sample Location		A6-Tennampundi			
Positioned height of Sampler		1.5 M above Gr	5 M above Ground Level		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-2868	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 ₁₀ )	IS:5182: Part 23:2006	$\mu g/m^3$	47.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	22.4	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m³	4.4	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	$\mu g/m^3$	7.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



& Rea **END OF THE REPORT*** 10 *

**Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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## **TEST REPORT**

Report No.	SARL/24/3004	Report Date. 01.06	5.2024	
Customer Name & Address ex		Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Description A		MBIENT AIR QUALITY		
Sampling Procedure	IS	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location		5-Ravanapuram		
Positioned height of Sampler 1.5		5 M above Ground Level		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-3004	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 ₁₀ )	$18.5182.92006$ $100/m^3$		43.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019 μ		21.7	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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## **TEST REPORT**

Report No.	SARL/24/3	005	Report	Date.	01.06.2024
Customer Name & Address		extent of 4.75.00 Ha	el Quarry of Thiru.V. Nagarajan in S.F.Nos. 34/1B1, 35/2B, 35/3	and 35/4	
of Nalmukkal Village, Marakkanam Taluk, ViluppuraSample DescriptionAMBIENT AIR QUALITYSampling ProcedureIS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2					
Sample Location		A6-Tennampundi			
Positioned height	t of Sampler	1.5 M above Ground	Level		
Customer Refere	nce	By Mail	Sampling Duration		24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-3005	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 $(PM_{10})$	IS:5182: Part 23:2006	µg/m³	50.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	23.7	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	$\mu g/m^3$	8.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/	3006		Report Date.	01.06.2024	
			stone & Gravel Quarry of Thir			
Customer Name	& Address	extent of	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Naln	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description		AMBIE	AMBIENT AIR QUALITY			
Sampling Procedure IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB G			PCB Guide lines			
			·			
Sample Location A5-Ravanapuram						
Positioned height of Sampler 1.5 M above Ground Level						

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-3006	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 ₁₀ )	IS:5182: Part 23:2006	µg/m³	41.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	20.8	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



****END OF THE REPORT***

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### **TEST REPORT**

Report No.	SARL/24/30	07	Report Date	01.06.2024		
		Rough stone & Gravel	Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in	S.F.Nos. 34/1B1, 35/2B, 35/3 and 3	5/4		
		of Nalmukkal Village,	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Descript	ion	AMBIENT AIR QUA	AMBIENT AIR QUALITY			
Sampling Proced	lure	IS - 5182 (Part - 14: 2	000 & Part – V: Reaffirmed - 2003),	CPCB Guide lines		
		· · ·				
Sample Location	1	A6-Tennampundi				
Positioned heigh	t of Sampler	1.5 M above Ground Level				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
		• • • • • • •	· · · · ·			

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-3007	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 ₁₀ )	IS:5182: Part 23:2006	$\mu g/m^3$	53.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	25.0	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.6	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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## **TEST REPORT**

Report No.	SARL/24/3008		Re	eport Date.	01.06.2024
Customer Name & Address exter		extent o	ugh stone & Gravel Quarry of Thiru.V. Nagarajan ent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu		
Sample Description		AMBIE	BIENT AIR QUALITY		
Sampling Procedure	Sampling Procedure IS –		5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location A3-S		A3-Sena	Senalur		
Positioned height of Sampler 1.5 M		1.5 M a	M above Ground Level		

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-3008	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 ₁₀ )	IS:5182: Part 23:2006	$\mu g/m^3$	45.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	22.3	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m³	5.0	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	$\mu g/m^3$	7.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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**TEST REPORT** 

Report No.	SARL/24/3	009	09 Report Date. 01.06.2		
Customer Name &	z Address	extent of 4.75.00 l	avel Quarry of Thiru.V. Na Ia in S.F.Nos. 34/1B1, 35/ age, Marakkanam Taluk, V	2B, 35/3 and 35/4	
Sample Descriptio		AMBIENT AIR QUALITY			,
Sampling Procedu	re	IS – 5182 (Part –	4: 2000 & Part – V: Reaff	irmed - 2003), Cl	PCB Guide lines
Sample Location Positioned height	of Sampler	A4-Kunnapakkam 1.5 M above Grou			
0					241
Customer Referen	ce	By Mail	Sampling I	Juration	24 hrs

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-3009	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 ₁₀ )	IS:5182: Part 23:2006	µg/m ³	46.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	23.2	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Reserved to the report***

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TEST REPORT

SARL/24/3010 01.06.2024 Report No. Report Date. Rough stone & Gravel Quarry of Thiru.V. Nagarajan Customer Name & Address extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu AMBIENT AIR QUALITY Sample Description IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines Sampling Procedure Sample Location A3-Senalur 1.5 M above Ground Level Positioned height of Sampler

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-3010	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 ₁₀ )	IS:5182: Part 23:2006	$\mu g/m^3$	43.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	21.2	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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### **TEST REPORT**

Report No.	SARL/24/30	11	Report Date	. 01.06.2024
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan	
Customer Name	& Address	extent of 4.75.00 Ha in S.F.	Nos. 34/1B1, 35/2B, 35/3 and 3	35/4
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description AMBIENT AIR QUALITY				
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
<u> </u>		· · · ·	·	
Sample Location	l	A4-Kunnapakkam		
Positioned height	sitioned height of Sampler 1.5 M above Ground Level			
Customer Refere	ence	By Mail	Sampling Duration	24 hrs
Sample Reference	e No	SARL/A/CHE-3011	Sample Received on	27.05.2024
			*	

Sample Reference No	SARL/A/CHE-3011	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 ₁₀ )	IS:5182: Part 23:2006	µg/m ³	40.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	20.2	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	6.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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/24/3	3012	Report Dat	te. 01.06.2024		
		Rough stone & Gravel	Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu						
Sample Description AMBIENT AIR QUALITY						
Sampling Proced	ure	IS – 5182 (Part – 14: 2)	000 & Part – V: Reaffirmed - 2003	), CPCB Guide lines		
		X		· ·		
Sample Location		A1-PROPOSED MINE	E LEASE AREA			
Positioned height	t of Sampler	1.5 M above Ground L	1.5 M above Ground Level			
Customer Refere	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-3012	Sample Received on	27.05.2024		
Sample Collecter	1 hv	LABORATORY	Test Commenced 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 $(PM_{10})$	IS:5182: Part 23:2006	$\mu g/m^3$	50.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	24.2	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	$\mu g/m^3$	8.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



Terral 45

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### **TEST REPORT**

Report No.	SARL/24/30	)13	Report Date	e. 01.06.2024		
		Rough stone & Gravel Qua	rry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha in S.F.	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
		of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	ion	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 -	& Part – V: Reaffirmed - 2003)	, CPCB Guide lines		
Sample Location	l	A2-Nalmukkal				
Positioned height	t of Sampler	1.5 M above Ground Level				
		•				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-3013	Sample Received on	27.05.2024		

	5	1 0	
Sample Reference No	SARL/A/CHE-3013	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 $(PM_{10})$	IS:5182: Part 23:2006	$\mu g/m^3$	54.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	26.9	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m³	6.6	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	$\mu g/m^3$	8.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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## **TEST REPORT**

Report No.	SARL/24/.	3014	Report Dat	e. 01.06.2024		
	·					
		Rough stone & Grav	el Quarry of Thiru.V. Nagarajan			
Customer Name	& Address	extent of 4.75.00 Ha	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu						
Sample Description AMBIENT AIR QUALITY						
Sampling Proced	lure	IS – 5182 (Part – 14	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines			
<u> </u>		· · · ·				
Sample Location		A1-PROPOSED MI	NE LEASE AREA			
Positioned height	t of Sampler	1.5 M above Ground	1.5 M above Ground Level			
Customer Refere	nce	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-3014	Sample Received on	27.05.2024		
Sample Collected	d by	LABORATORY	Test Commenced 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	Parameters Protocol		Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀ )	IS:5182: Part 23:2006	µg/m ³	44.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	20.8	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	7.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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### **TEST REPORT**

Report No.	SARL/24/3	015	Report Date	e. 01.06.2024		
			uarry of Thiru.V. Nagarajan			
Customer Name	& Address		.F.Nos. 34/1B1, 35/2B, 35/3 and 2			
		of Nalmukkal Village, M	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu			
Sample Description	ion	AMBIENT AIR QUALITY				
Sampling Proced	lure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines				
Sample Location	L	A2-Nalmukkal				
Positioned height of Sampler		1.5 M above Ground Level				
Customer Refere	ence	By Mail	Sampling Duration	24 hrs		
Sample Reference	e No	SARL/A/CHE-3015	Sample Received on	27.05.2024		

Sample Reference No	SARL/A/CHE-3015	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	Parameters Protocol		Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀ )	IS:5182: Part 23:2006	µg/m³	41.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5} )	IS 5182 (Part 24):2019	µg/m ³	20.2	60
3	Sulphur dioxide (SO ₂ )	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂ )	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	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



***END OF THE REPORT***

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**TEST REPORT** 

-				ESI KEF				
Rej	port No.	SARL/24/3028			Rep	ort Date.	01.06.2024	
Cu	stomer Name & Ac	ldress	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu					
Sar	nple Description		NOISE LEVE		, 11		,	
	stomer Reference nple Reference No		As per work SARL/N/CH		Sampling Metho Date of Monitor		RL/IOP/023 05.2024/ 26.05.2024	
	nple Collected by		LABORATO		Date of Monitor	ing 25.0	JJ.2024/ 20.0J.2024	
	Time in hrs	N1	N2	N3	N4	N5	N6	
	06.00	37.7	42.7	39.8	41.7	43.2	42.2	
	07.00	37.9	45.5	40.6	39.4	45.5	44.2	
	08.00	38.7	53.7	45.8	42.7	45.7	44.0	
	09.00	38.1	50.7	50.7	43.5	50.1	41.9	
	10.00	41.4	48.5	50.4	51.1	47.9	40.1	
	11.00	39.6	51.6	49.0	58.1	47.3	39.8	
	12.00	41.6	49.3	47.2	47.0	46.2	43.6	
	13.00	38.2	51.6	47.0	47.8	44.4	44.3	
	14.00	37.5	50.6	48.3	53.4	46.2	46.7	
	15.00	35.6	50.9	47.4	54.5	48.3	52.8	
	16.00	38.9	51.9	50.3	52.1	46.0	45.0	
	17.00	42.8	52.1	50.8	51.8	48.1	46.0	
	18.00	40.0	51.9	51.9	49.7	44.0	44.5	
	19.00	37.4	49.7	46.9	46.3	50.4	43.2	
	20.00	36.5	49.5	46.2	45.5	43.3	45.1	
	21.00	40.0	47.7	44.0	43.8	42.2	44.6	
	22.00	38.4	46.0	40.0	45.3	41.1	44.1	
	23.00	38.8	43.1	39.1	43.3	39.5	44.5	
	24.00	39.1	40.7	40.1	41.1	40.6	44.4	
	01.00	39.4	38.8	38.8	42.7	39.6	41.6	
	02.00	38.2	39.1	39.0	41.6	38.5	40.2	
	03.00	37.0	41.9	39.7	40.7	40.8	39.5	
	04.00	34.4	40.6	40.4	39.9	41.6	37.8	
	05.00	36.5	38.9	40.7	39.4	42.9	37.5	

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## TEST REPORT

Report No. SARL/24/3028 Report Date.

01.06.2024

	N1	N2	N3	N4	N5	N6
DAY EQUIVALENT	39.3	50.5	48.3	50.9	46.8	45.5
NIGHT EQUIVALENT	38.0	41.8	39.8	42.2	40.8	42.0
DAY & NIGHT EQUIVALENT	38.9	49.0	46.9	49.4	45.6	44.6

Remarks:

**LOCATIONS:** N1-PROPOSED MINE LEASE AREA N2-Nalmukkal

N3-Senalur

N4-Kunnapakkam

N5-Ravanapuram

N6-Tennampundi

For Shrient Analytical and Research Labs Pvt. Ltd

& Ro **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** END OF THE REPORT*** 10 +

Please Contact:

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For any Technical Issues & Complaints: 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



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## TEST REPORT

Report No.	SARL/24/3022	2	Report Date.	01.06.2024		
		Rough stone & Gravel Qua				
Customer Name &	Address		Nos. 34/1B1, 35/2B, 35/3 and 3.			
		of Nalmukkal Village, Mar	akkanam Taluk, Viluppuram Di	strict, Tamil Nadu		
Sample Description	l	SOIL				
Sample Mark		S1-PROPOSED MINE LEASE AREA				
Customer Reference	e	By Mail	Sampling Procedure	-		
Sample Reference 1	No	SARL/SO/CHE-3022	Sample Received on	27.05.2024		
Sample Collected by		LABORATORY	ABORATORY Test Commenced on 27.05.2			
Sample Collected o	n	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	-	5.94
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	70.24
3	Dry matter content	IS 15106: 2002	%	91.06
4	Water Content	IS 15106: 2002	%	8.94
5	Organic Matter	IS 2720: Part 22: 1972	%	1.63
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	Grain Size Distribution i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	36.95
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	53.74
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	9.31
9	Phosphorus as P	IS 10158: 1982	mg/kg	1.21
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	845
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	412
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	%	12.50
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	42

BDL – Below Detectable limit (DL - Detectable limit).

#### For Shrient Analytical and Research Labs Pvt. Ltd

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& Rea Cherryli - 45 ***END OF THE REPORT*** 48 * 94

T. X **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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## TEST REPORT

Report No.		SARL/24/3023		Report	Date.	01.06.2024	
				arry of Thiru.V. Nagarajan			
Customer Name &	z Ado	dress	extent of 4.75.00 Ha in S.I	F.Nos. 34/1B1, 35/2B, 35/3	and 35/4	4	
			of Nalmukkal Village, Ma	rakkanam Taluk, Viluppura	am Distr	ict, Tamil Nadu	
Sample Description	n		SOIL				
Sample Mark			S2-Nalmukkal				
Customer Referen	ce		By Mail	Sampling Procedure		-	
Sample Reference	Sample Reference No		SARL/SO/CHE-3023	Sample Received on		27.05.2024	
Sample Collected by			LABORATORY	BORATORY Test Commenced on 27.05.		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	-	7.68
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	492.7
3	Dry matter content	IS 15106: 2002	%	88.49
4	Water Content	IS 15106: 2002	%	11.51
5	Organic Matter	IS 2720: Part 22: 1972	%	2.30
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	260
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	LOAM
8	Grain Size Distribution i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	4.89
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	57.45
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	66.25
9	Phosphorus as P	IS 10158: 1982	mg/kg	28.86
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	0.59
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	921
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	%	13.1
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	45.6

DL – Below Detectable limit (DL - Detectable limit).

#### For Shrient Analytical and Research Labs Pvt. Ltd

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& Rea Chernal - 45 ***END OF THE REPORT*** 48 * 94

7.7 **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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### TEST REPORT

Report No.		SARL/24/3024		Report Date.	01.06.2024		
			Rough stone & Gravel Qua				
Customer Name &	& Add	dress	extent of 4.75.00 Ha in S.F	Nos. 34/1B1, 35/2B, 35/3 and	35/4		
			of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description	on		SOIL				
Sample Mark			S3-Senalur				
Customer Referen	nce		By Mail	Sampling Procedure	-		
Sample Reference	e No		SARL/SO/CHE-3024	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	1		Fit for Analysis				

S. No. Parameters		Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.03
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	100.8
3	Dry matter content	IS 15106: 2002	%	90.40
4	Water Content	IS 15106: 2002	%	9.60
5	Organic Matter	IS 2720: Part 22: 1972	%	1.71
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	312
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	CLAY LOAM
8	Grain Size Distribution i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	41.47
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	50.41
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	8.12
9	Phosphorus as P	IS 10158: 1982	mg/kg	1.03
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	976
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	724
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	%	11.9
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	44

BDL – Below Detectable limit (DL - Detectable limit).

#### For Shrient Analytical and Research Labs Pvt. Ltd

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T. X **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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## TEST REPORT

			_				
Report No.	SARL/24/.	3025	Report Date.	01.06.2024			
Customer Name & Address			Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4				
		of Nalmukkal Village, N	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				
Sample Description		SOIL					
Sample Mark		S4-Kunnapakkam	S4-Kunnapakkam				
Customer Referen	nce	By Mail	Sampling Procedure	-			
Sample Reference No		SARL/SO/CHE-3025	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	l	Fit for Analysis					

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	6.99
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	150.7
3	Dry matter content	IS 15106: 2002	%	85.94
4	Water Content	IS 15106: 2002	%	14.06
5	Organic Matter	IS 2720: Part 22: 1972	%	1.59
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	405
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	SILT LOAM
8	Grain Size Distribution i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	6.56
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	42.69
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	43.60
9	Phosphorus as P	IS 10158: 1982	mg/kg	1.22
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	732
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	456
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	%	12.6
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	49

BDL – Below Detectable limit (DL - Detectable limit).

#### For Shrient Analytical and Research Labs Pvt. Ltd

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& Rea Chernal - 45 ***END OF THE REPORT*** 48 * 9

7. 4 **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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#### **TEST REPORT**

Report No.	SARL/24/3	3026	Report Date.	01.06.2024		
			arry of Thiru.V. Nagarajan			
Customer Name &	2 Address	extent of 4.75.00 Ha in S.F	F.Nos. 34/1B1, 35/2B, 35/3 and 3	35/4		
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				istrict, Tamil Nadu		
Sample Description	n	SOIL	SOIL			
Sample Mark		S5-Ravanapuram	S5-Ravanapuram			
Customer Referen	ce	By Mail	Sampling Procedure	-		
Sample Reference	No	SARL/SO/CHE-3026	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	-	8.14
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	214.0
3	Dry matter content	IS 15106: 2002	%	88.09
4	Water Content	IS 15106: 2002	%	11.91
5	Organic Matter	IS 2720: Part 22: 1972	%	0.68
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	Grain Size Distribution i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	4.27
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	44.48
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	62.07
9	Phosphorus as P	IS 10158: 1982	mg/kg	0.74
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	610
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	795
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	%	13.6
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	46

BDL – Below Detectable limit (DL - Detectable limit).

#### For Shrient Analytical and Research Labs Pvt. Ltd

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Res Charges - 45 ***END OF THE REPORT*** 48 * 1

- T. - T **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

Please Contact:

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Phone Number +91 82208 36377 Email: - info@shrientanalytical.com www.shrientanalytical.com

#### TEST REPORT

Report No.	SARL/24/3	027	Report Date.	01.06.2024		
		Rough stone & Gravel Qua				
Customer Name &	& Address	extent of 4.75.00 Ha in S.F	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4			
of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu				strict, Tamil Nadu		
Sample Description	on	SOIL	SOIL			
Sample Mark		S6-Tennampundi	S6-Tennampundi			
Customer Referen	ice	By Mail	Sampling Procedure	-		
Sample Reference	e No	SARL/SO/CHE-3027	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	1	Fit for Analysis				

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	8.73
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	509.8
3	Dry matter content	IS 15106: 2002	%	91.15
4	Water Content	IS 15106: 2002	%	8.85
5	Organic Matter	IS 2720: Part 22: 1972	%	0.80
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	340
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	CLAY LOAM
8	<u>Grain Size Distribution</u> i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	5.78
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	47.66
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	55.84
9	Phosphorus as P	IS 10158: 1982	mg/kg	0.82
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	1002
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	669
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	%	13.2
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	48

DL – Below Detectable limit (DL - Detectable limit).

#### For Shrient Analytical and Research Labs Pvt. Ltd

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& Rea Chernal - 45 ***END OF THE REPORT*** 48 * 94

7.7 **Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

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### **TEST REPORT**

Report No. SARL/2024/3016

Report Date. 01.06.2024

Customer Name & Address	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu
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-3016	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.	Parameters	Protocol	Um:4	Result	*Limits
No.	rarameters	Protocol	Unit	Result	Permissible
А.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.17	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	949.9	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	570	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	372	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	106	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	25.7	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	265	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	107	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	303	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	139	1000



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#### **TEST REPORT**

Report No. SARL/2024/3016

Report Date. 01.06.2024

Sl.					*Limits
No ·	Parameters	Protocol	Unit	Result	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	97.0	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	2.39	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.26	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*** 40.5

**Authorized Signatory** 

J. GNANAPRAKASAM Technical Manager

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### **TEST REPORT**

 Report No.
 SARL/2024/3017
 Report Date.
 01.06.2024

 Rough stone & Gravel Quarry of Thiru V. Nagarajan

	Rough stone & Gravel Quarry of Thiru.V. Nagarajan
Customer Name & Address	extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4
	of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu
Sample Description	WATER
Sample Mark	W2-Nalmukkal

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-3017	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		

SI.	Deve meterre	Durate cal	T	Degul4	*Limits
No.	Parameters	Protocol	Unit	Result	Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.12	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	1103	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	666	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	261	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	82.4	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	13.3	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	206	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	55	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	311	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	194	1000



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#### **TEST REPORT**

Report No. SARL/2024/3017

Report Date. 01.06.2024

SI.	Devementaria	Protocol	Unit	Result	*Limits
No	Parameters	Frotocol	Umt	Kesun	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	186	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.06	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	2.14	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** 

J. GNANAPRAKASAM Technical Manager

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Report No.

SARL/2024/3018

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### **TEST REPORT**

Report Date. 01.06.2024

Customer Name & Address	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu
Sample Description	WATER
Sample Mark	W3-Senalur

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-3018	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		

SI.	Descent of any	Dectored	<b>T I  . . .</b>	Descrit	*Limits
No.	Parameters	Protocol	Unit	Result	Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.12	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	1058	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	640	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	376	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	63.4	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	52.3	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	158	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	218	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	412	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	180.0	1000



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#### **TEST REPORT**

 Report No.
 SARL/2024/3018

Report Date. 01.06.2024

SI.	_				*Limits
No	Parameters	Protocol	Unit	Result	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	89.2	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.02	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	1.69	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

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*END OF THE REPORT*** 150.4

**Authorized Signatory** J. GNANAPRAKASAM

**Technical Manager** 

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Sample Description

Shrient Analytical and Research Labs Pvt. Ltd

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### **TEST REPORT**

 Report No.
 SARL/2024/3019
 Report Date.
 01.06.2024

 Customer Name & Address
 Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu

WATER

Sample Mark	W4-Kunnapakkam		
Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-3019	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	-	

SI.	<b>D</b> (	Devery store	TT •4		*Limits
No.	Parameters	Protocol	Unit	Result	Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.48	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	1103	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	670	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	253	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	76.0	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	15.2	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	190	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	63.4	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	307	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	196	1000



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#### **TEST REPORT**

Report No. SARL/2024/3019

Report Date. 01.06.2024

SI.	D		<b>T</b> T •4		*Limits
No	Parameters	Protocol	Unit	Result	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	179.0	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	3.64	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.41	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*** 40.5

**Authorized Signatory** 

J. GNANAPRAKASAM Technical Manager

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### **TEST REPORT**

 Report No.
 SARL/2024/3020
 Report Date.
 01.06.2024

 Customer Name & Address
 Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu

 Sample Description
 WATER

#### Sample Mark W5-Ravanapuram **Customer Reference** Sampling Procedure IS 17614: Part 14: 2021 By Mail Sample Reference No SARL/W/CHE-3020 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

SI.	Devenuetors	Ducto col	TT <b>*4</b>	Result	*Limits
No.	Parameters	Protocol	Unit	Result	Permissible
А.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	6.98	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	1529	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	930	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	507	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	109	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	56.1	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	273	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	234	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	416	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	256	1000



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#### **TEST REPORT**

Report No.SARL/2024/3020Report Date.

Report Date. 01.06.2024

Sl.					*Limits
No	Parameters	Protocol	Unit	Result	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	220	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	4.85	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

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Charrent - 45

*END OF THE REPORT*** 40.5

**Authorized Signatory** J. GNANAPRAKASAM

**Technical Manager** 

Please Contact:

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### **TEST REPORT**

Report No.SARL/2024/3021

Report Date. 01.06.2024

Customer Name & Address	Rough stone & Gravel Quarry of Thiru.V. Nagarajan extent of 4.75.00 Ha in S.F.Nos. 34/1B1, 35/2B, 35/3 and 35/4 of Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu
Sample Description	WATER
Sample Mark	W6-Tennampundi

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-3021	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		

SI.	Parameters	Protocol	Unit	Result	*Limits
No.	rarameters	FTOLOCOL	Unit	Kesuit	Permissible
А.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	6.97	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	723.7	-
В.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	440	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	234	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	64.9	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	17.1	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	162	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	71.3	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	263	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	102.0	1000



416/15, Dhargas Road, West Tambaram, Chennai- 600045 Phone Number +91 82208 36377 Email: - **info@shrientanalytical.com** www.shrientanalytical.com

#### **TEST REPORT**

Report No. SARL/2024/3021

Report Date. 01.06.2024

Sl.					*Limits
No ·	Parameters	Protocol	Unit	Result	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	82.6	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.02	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	3.26	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.42	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

8 Pal Verified

Charmal - 45

*END OF THE REPORT*** 150.4

**Authorized Signatory** J. GNANAPRAKASAM **Technical Manager** 

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com







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)

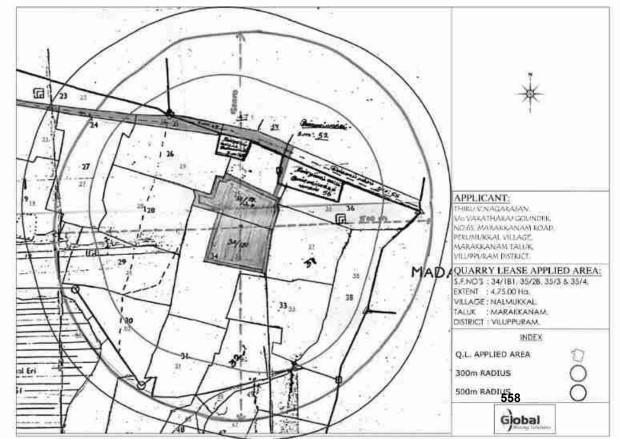
Name of Legal Entity: SHRIENT ANALYTICAL AND RESEARCH LABS PRIVATE LIMITED

#### Signed for and on behalf of NABL



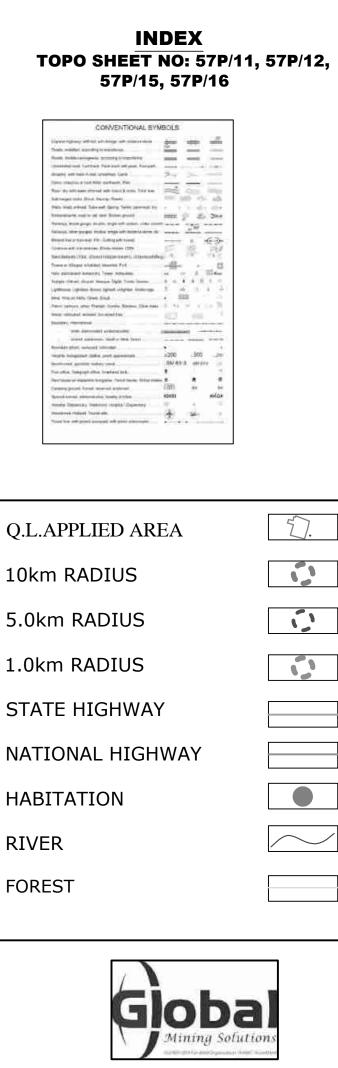
N. Venkateswaran Chief Executive Officer



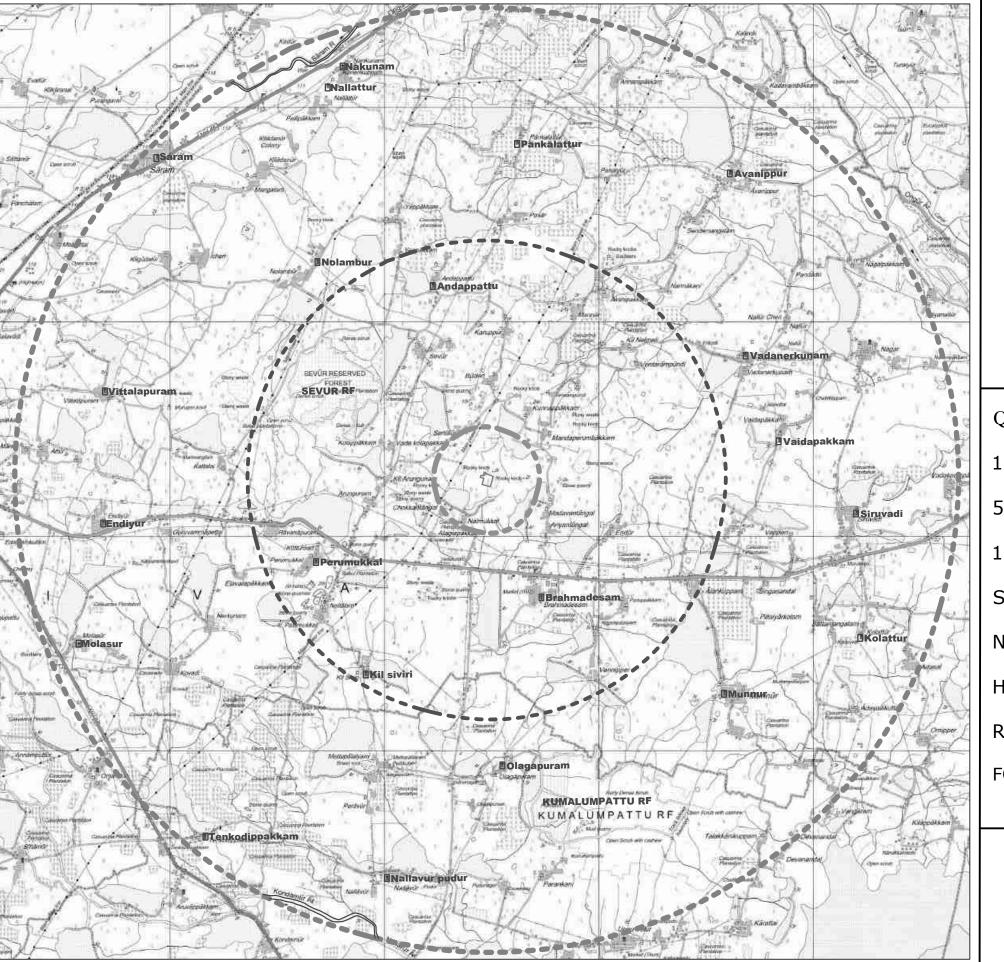




**PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.V.NAGARAJAN OVER AN EXTENT 4.75.00HA** LOCATED AT S.F.NO.34/1B1, 35/2B, 35/3, AND 35/4, OF NALMUKKAL VILLAGE, MARAKKANAM TALUK, VILUPPURAM DISTRICT, TAMIL NADU STATE.

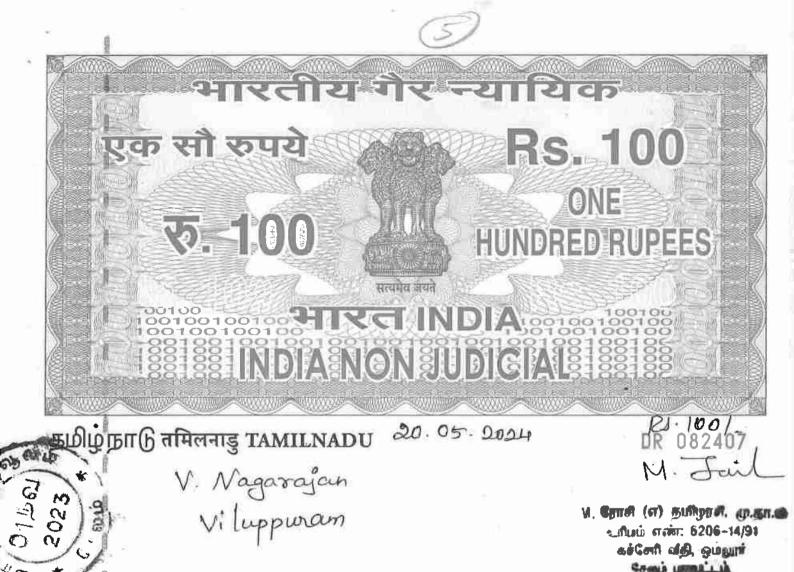


RIVER FOREST



560





# AFFIDAVIT TO SEIAA - TAMIL NADU

I, Thiru.V.Nagarajan, S/o. Varadharaj Gounder, residing at No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District, applying for Terms of Reference under Category B1 to SEIAA - Tamil Nadu for my proposed Rough stone and Gravel Quarry lease over an extent of 4.75.00 Ha located at the S.F.Nos.34/1B1, 35/2B, 35/3 and 35/4 in Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State, do hereby solemnly declare and sincerely affirm that;

**1.** There are no protected areas notified under the Wildlife (Protection) Act, 1972 (NBWL) is located within a 10 km radius from the proposed quarry site.

There are a few Reserve Forests and waterbodies located within a 10 km adius of the proposed quarry site are listed below.

Reserve Forest	
Kisevur R.F.	4.04 Km (NW)
S	

- **3.** There are no critically polluted areas as notified by the central pollution control board constituted under the Water (Prevention and Control of Pollution) Act 1974.
- **4.** 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	Rs.1,30,70,000/-	2,61,400/-
	EMP COST	6,70,000/-
Revised CER budget allotted	5,00,000 (3.8 %	of the project cost)

I assure you that, I will complete the above proposed Corporate Environment Responsibility (CER) activities before the commencement of the quarrying operations.

5. Details of quarries located within a 500m radius from the applied mine lease area:

S.No	Name of the Quarry Owner	S.F. Nos, Taluk, Village &	Lease Period	Remarks			
		Extent (Ha)					
а.	Abandoned Quarry						
	Nil						
b.	b. Existing Quarry						
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Thiru.N. Gopinath, S/o.Natarajan, No.19, Nattamaikarar Street, Polambakkam Village, Cheyyur Village, Kanchipuram District	S.F.No: 33/5 (0.545 Ha), 37/3(1.14 Ha), 37/4(0.685 Ha), 37/5(0.40 Ha), 37/6(0.31 Ha), 37/7(0.27 Ha) Marakkanam Taluk, Nalmukkal Village, Villupuram District	Lease period of 21.03.2022 to 20.03.2027	Existing Rough stone & Grave Quarry			
12.0	Thiru.D.Durai S/o, Dhanapal Gounder,	S.F.Nos 27/6 (0.40.5 Ha),	Lease period of 06.12.2022 to 05.12.2027	Existing Rough stone & Gravel			

Are	ea of Proposed Quarry	4.75.00 Ha		
_				
	Pin Code- 604301	Villupuram District		
	Viluppuram District.	Nalmukkal Village,		
	Marakkanam Taluk,	Marakkanam Taluk,		
	Perumukkal Village,	35/4(1.16 Ha),		
	No.65, Marakkanam Road,	35/3(0.88 Ha) and		
	S/o. Varadharaj Gounder,	Ha), 35/2B(0.28 Ha),		
1:	Thiru.V.Nagarajan	S.F.No.34/1B1 (2.43	×	Proposed
¢.	Proposed Quarry			
rea	of total Existing Quarry	5.90.00 Ha		
		Villupuram District		
	Viluppuram District	Nalmukkal Village,		
	Marakkanam Taluk,	Marakkanam Taluk,		
	Village & Post,	27/3B(0.435 Ha)		
	No.63/19, Perumukkal	27/3A(0.145 Ha),		Quarry
	S/o. Varatharaj Gounder,	26/1B1(0.77 Ha),	29.12.2022 to 28.12.2027	stone & Grave
3.	Thiru, Ravichandiran	S.F. Nos.	Lease period of	Existing Roug
		Villupuram District		
	Viluppuram District	Nalmukkal Village,		
	Marakkanam Taluk,	Marakkanam Taluk,		
	Perumukkal Post,	(0.405 Ha)		1
	Keelarungunam Village,	27/7 (0.39 Ha), 27/8		Quarry

The total lease within the 500m radius (Proposed + Existing) (1no + 3nos) works out to 10.65.00 Ha including this lease area.

- **6.** There will be no hindrance/disturbance due to the proposed quarrying activities to the people living nearby my proposed quarry site.
- There are no approved habitations within a 300m radius from the periphery
   of my proposed quarry lease.

R

ASITAS

Tassure you that the greenbelt will be developed and maintained before commencing the quarrying operations as proposed in the EC application.

9. I assure you that the required life insurance policy for the employees engaged in the quarrying operations will be taken without fail.

10. The existing main road connecting the quarry road will be maintained in

good condition and it will be utilized for mineral transportation.

- **11.** I assure you that I will not engage any child for labor in the quarrying operations and I am aware that engaging in child labor is punishable under the law.
- **12.** Personnel Protective Equipment (PPE) will be provided to all the employees engaged in the quarrying operations.
- **13.** No permanent structures, such as temples, etc., are located within a 300 meter radius of the periphery of our quarry.
- **14.** I will erect the wire fence with barbed wires all around the periphery of the quarry lease before the commencement of mining activities.
- **15.** The mining operations will be carried out in a systematic and scientific manner by employing a qualified statutory person as per the requirements of the Mines Act, Mines Rules, and other guidelines issued by the Govt.
- 16. I will inform DGMS before the commencement of mining activities.
- **17.** 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 & Seal







நம் பெருமை Bub usial பள்ளி மேலாண்மைக் குழ ஊராட்சி ஒன்றிய தொடக்கப் பள்ளி கீழ்அருங்குணம்–604 301,விழுப்புரம் மாவட்டீம் SIMPLICATION தனைவர் 15noin: Q 4. 22.24 R. MITEROM 1.66.0061 E more and mun அமையேசி என்ப9143451027 EN. 1. SEMANN துலைனத் தலைவர் E HE ALE IE AD - TL 2.cp.bnon MinavBud acts 6382352580 கூட்டதிழைப்பாளர் 四日 西西市 கும்). வ. நாக்ராக ஆ அரகராக்களும் (தலைமையாசிரியர்) 3. Don DIElog STA 65 DE BEBTANE BUTE මාසාභාගියේ සැක්ක 9842930978 DHADEBE AJUNE MARTINE, WELLS SULLASS, BANK உறுப்பினர்கள்: ஆசிரியர் பிரதீநிதீ DUMBAL I LOT - WAR ALLESS 4.க.லைவஜெயந்தி Table char 10. 50 FC பெற்றோர் பிரதிநீதிகள்: 5.நா.தீவ்யா E LO Mangal A Bolder 6.ச.சரவணன் ELEB FOR 7.வி.மங்கலட்சுமி 3 BENL connection 8.பூ.சூரியா 2017 Bats 8-6 9.ச.ஜீவிதா A SIBDE STOR 200 BELS 10.த.சத்யா Handers Sniny. 11.வே.சரிகா ALINT A - BEE 12.ச.புவனேஸ்வரி STANGED LOTANCLE DES 13.ச.காமாட்சி 14.வே.புனிதா WILLE BLIDE ME DIL 20. 3 ARA 15.வி. ஐயம்மாள் A HANDLES 35 LONDANSEN 16.கு.மகாதேவி HIGE Dommin Albun House m உள்ளாட்சிப் பிரதிநிதிகள்: BUSEBOOTL EBOARDE SOON KINA 17.ச.காமாட்சி Monor man Daway Dational 18.ப.சதிஷ் 500 mm Aprillin EBLOG கல்வியாளர்/அரசு சாரா DEnma Ener! அமைப்பினர்/ ஒய்வு பெற்ற அலுவனர் Bang Dem BEELS 19.ச.பாக்கியடைசுமி சய உதவிக்குமு உறுப்பினர்(பெற்றோர்) son Steering 20.வ. அம்பிகா ക്രബൈബെ ക്രാന്നി

ஊ ஒ.தொ.பள்ளி. கீழ்அருங்குணம், மரக்காணம் ஒன்றியத்7 604 301