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 |
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Global

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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

| HARET | 5 T T Z | tional Accreditatio or Education and Tr | Sector Sectors | | RAB | 22 |
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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. | - |
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| 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 |
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| 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 |
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| 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. | - |
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| 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. | |
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| 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 | | |

| | The Environmental In 1 | Compliant The datable | [] |
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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 |
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| | 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. | - |
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| 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 |

| | - | | |
|------|---|---|-----|
| 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 |
|------|--|--|-----|
| 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.

| | Nº THE | | | STER QUARRIES U. V.NAGARAJAN |
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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.

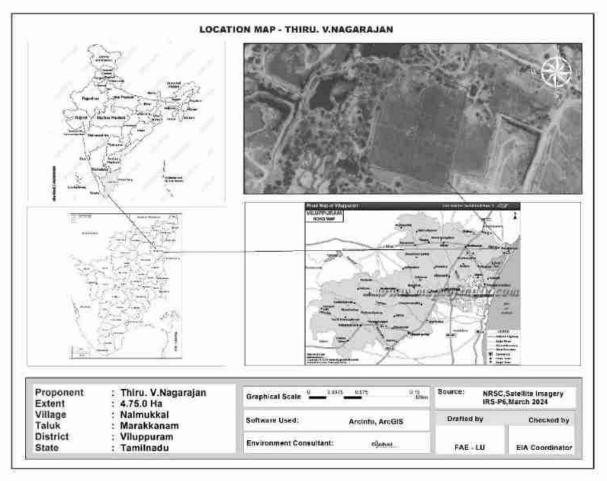
| Table 2.1a Salient features of the project | | | |
|--|------------------------|----------------------|--|
| S.No. | Type of Detail | Description | |
| 1 | Sector | 1(a) Non coal mining | |
| 2 | Fresh/Existing project | Proposed | |
| 3 | Category | B1 | |

| 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

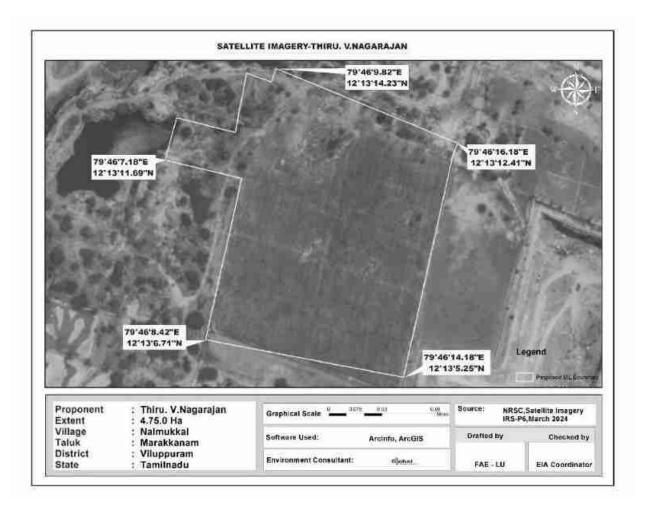


| Table 2.2 Co-Ordinates of the Project Site | | | | | |
|--|-----------------|-----------------|-------|----------------------|--------|
| Corners | Co- ordinates | | Dista | Distance between the | |
| | Latitude | Longitude | | CO | rners |
| 1 | 12° 13' 06.70"N | 79° 46' 08.42"E | 1-2 | = | 136.8m |
| 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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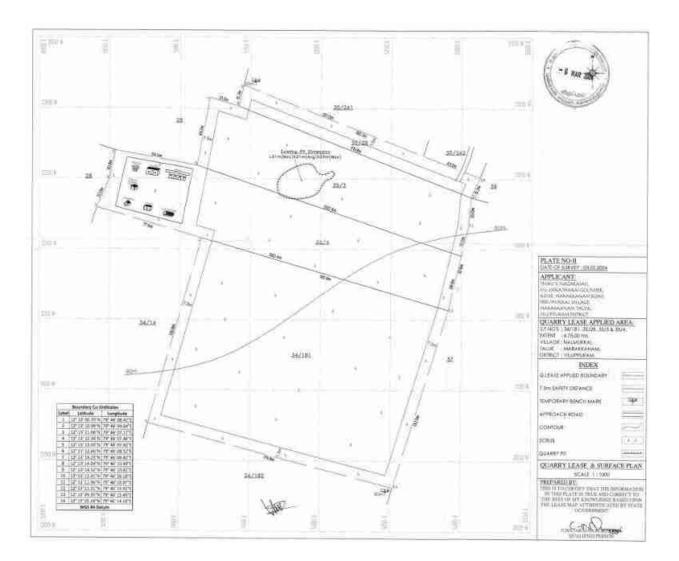


FIGURE 2.3 SURFACE PLAN OF THE PROJECT AREA

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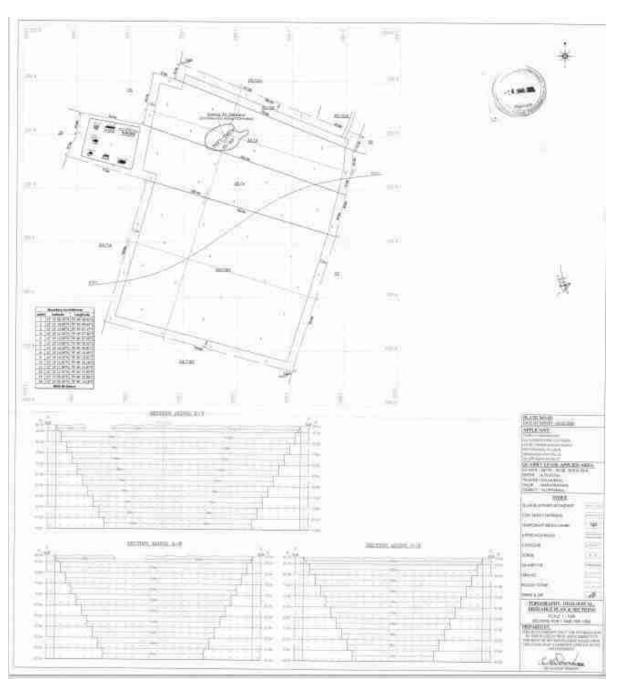


FIGURE - 2.4 GEOLOGY MAP OF PROJECT AREA

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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 |

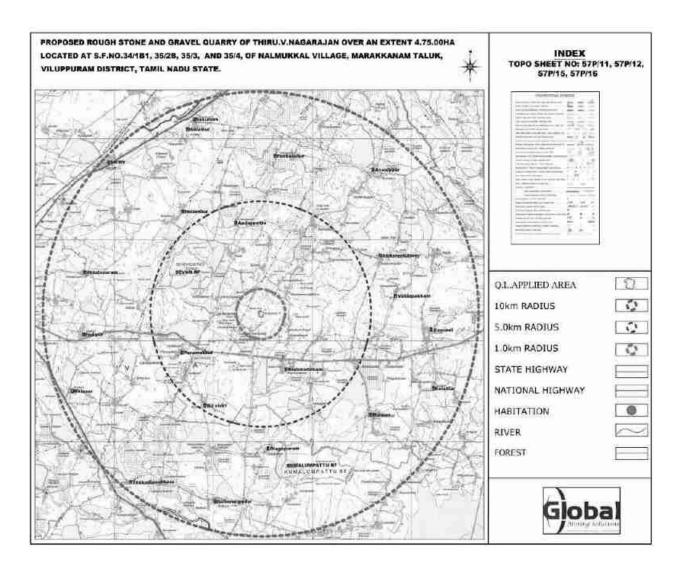
2.3.3 SALIENT FEATURES OF THE LEASE AREA

| 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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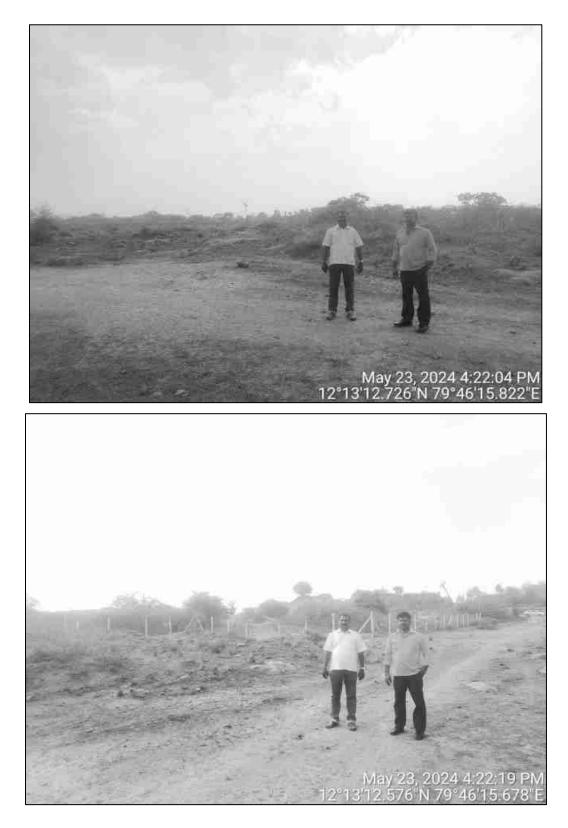
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Figure 2.5 Topo Map showing existing site features



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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

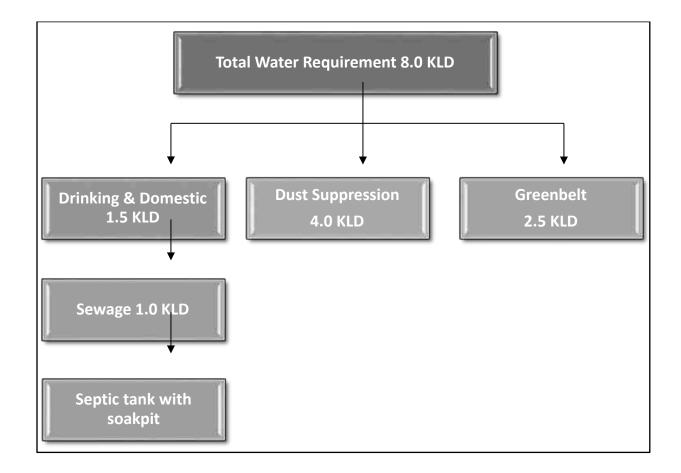


Table - 2.7 Water Requirement

| 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.

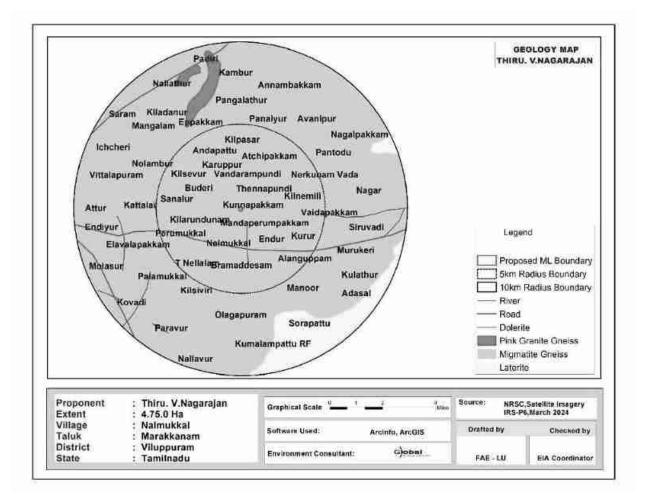
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2.6.7 Regional Geology

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.

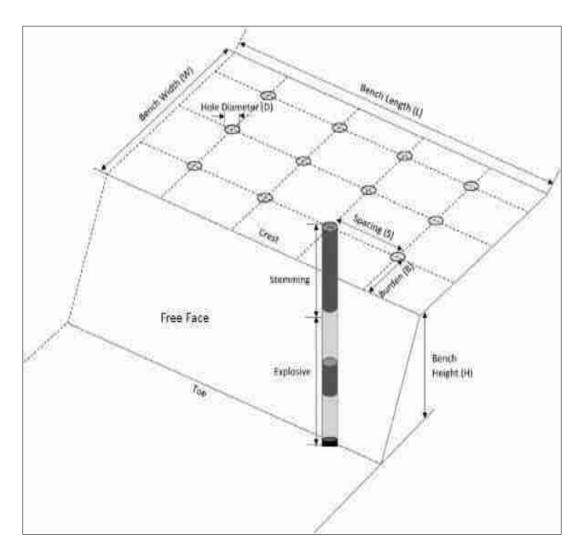
DEVELOPMENT OF MINING FACES

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

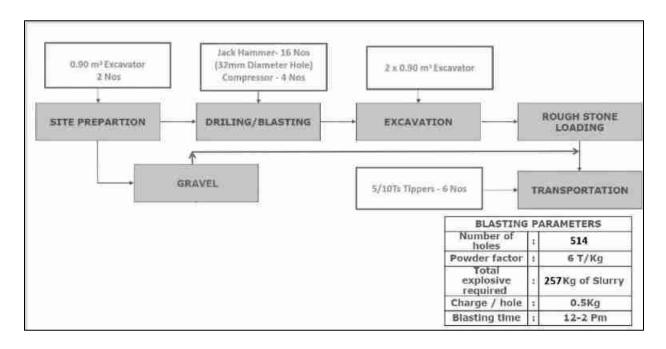


TABLE - 2.9 MINING DETAILS

| 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 |

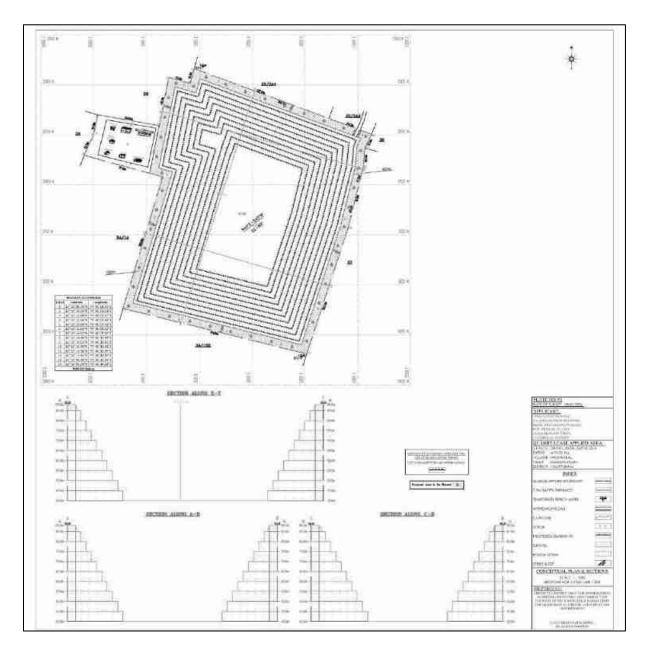
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2.7.3 <u>CONCEPTUAL PERIOD</u>

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 | | | |

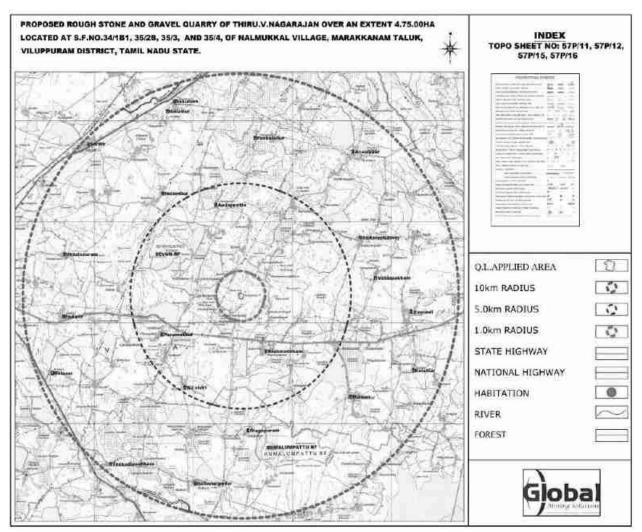
ENVIRONMENTAL SETTING OF THE STUDY AREA

| 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.

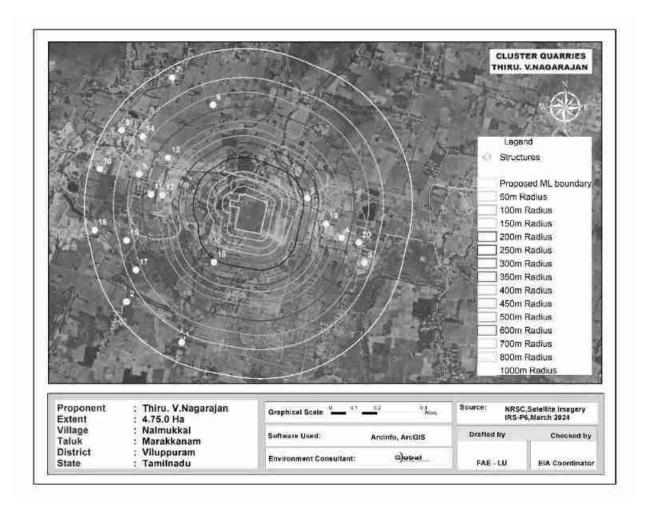
- Respirable Dust Sampler with attachment for gaseous Pollutants, Envirotech APM 460.
- Fine Particulate Matter (FPS) Sampler APM 550
- Sound Level Meter Model Envirotech SLM 100
- Digital D.O. Meter Model 831 E (CPCB Kit)
- Weather Monitoring Station Model Enviro WM 271
- Water Level Indicator and
-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

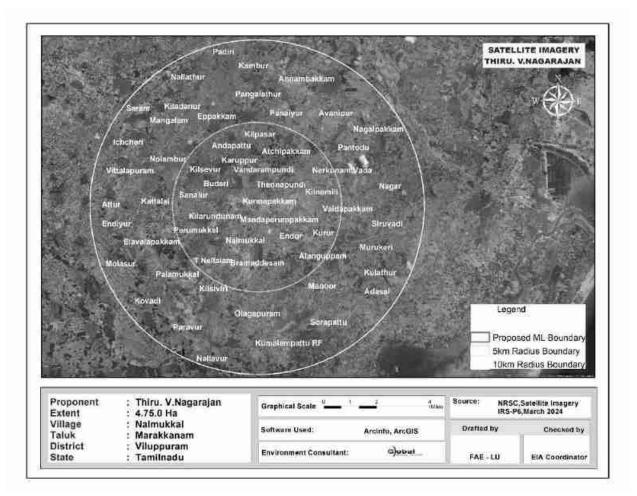
A site survey has been conducted to identify and list structures located within a 1 Km radius from the proposed Quarry and are detailed below. There are permanent structures within a 1 km radius from the project site. The PP has obtained a letter from Village Administrative Office (VAO), Nalmukkal stating 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.

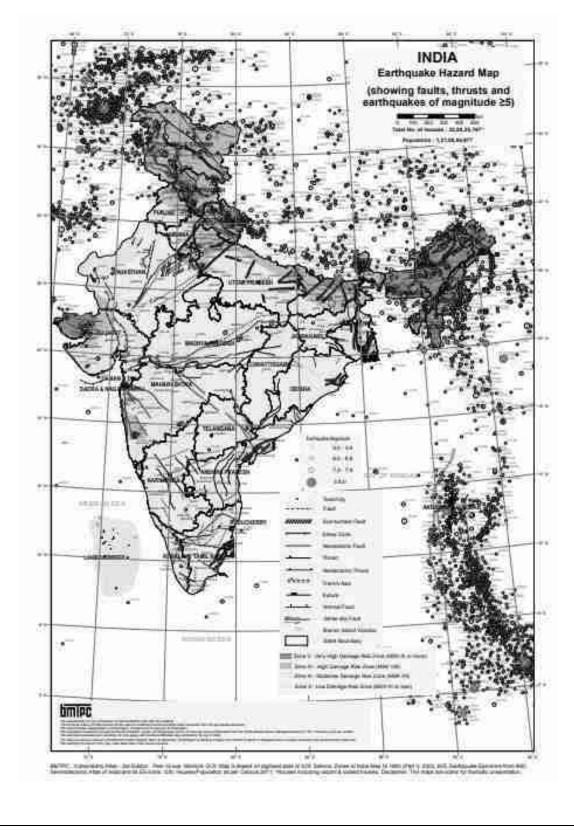
Relative Humidity

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.

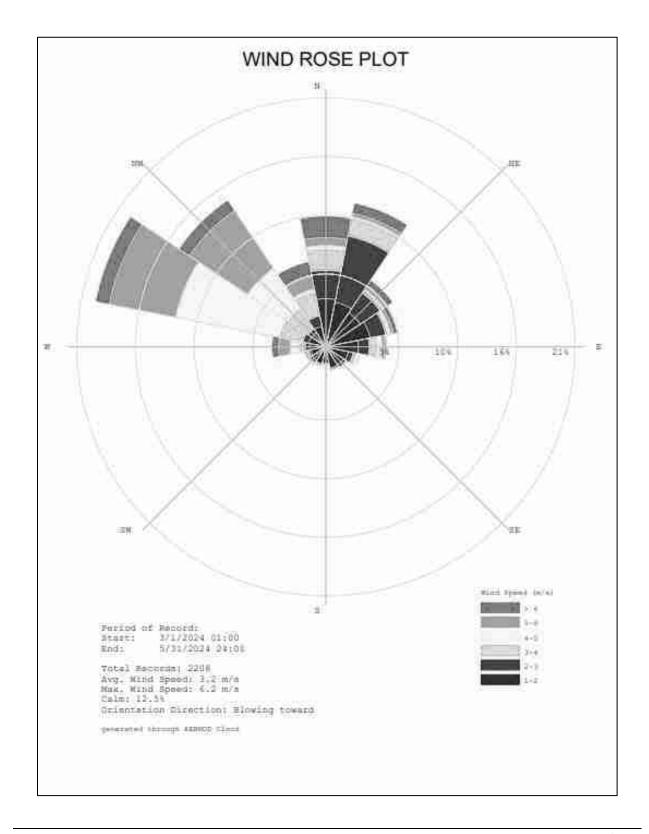




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FIG 3.4 WIND ROSE PLOT DURING MARCH TO MAY 2024



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.

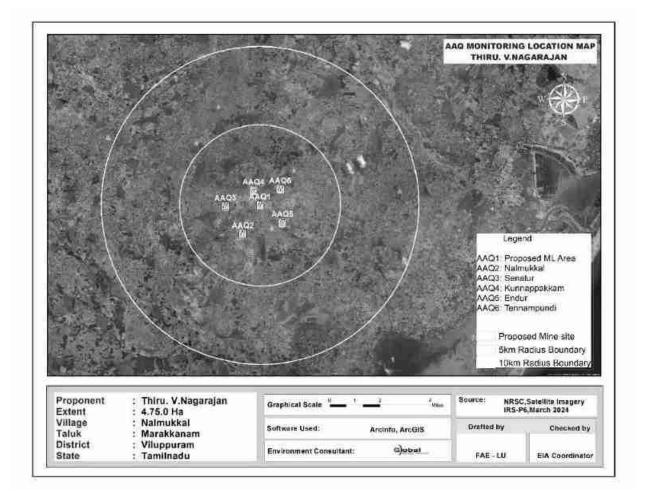
The regional climatologically data, was used as a guideline to know the predominant wind direction during study period. The locations were identified keeping in view predominant wind directions prevailing during study period, sensitive receptors, human settlements, and mining activities around.

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



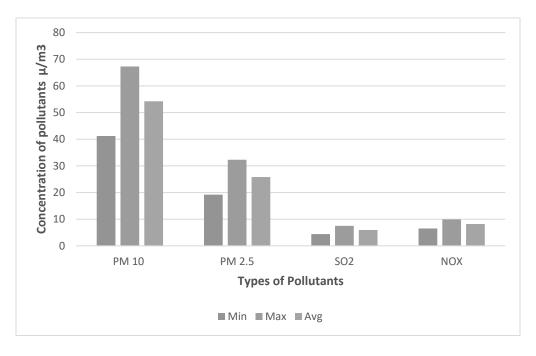
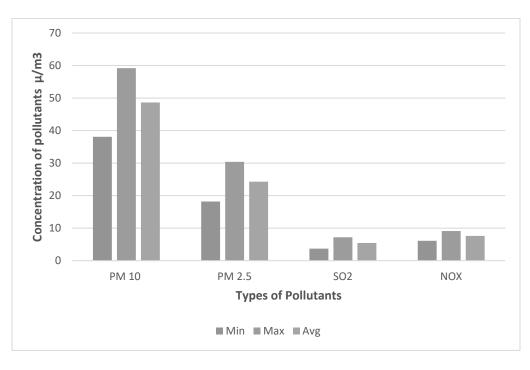


FIG 3.7 AMBIENT AIR QUALITY DATA A2 - NALMUKKAL VILLAGE



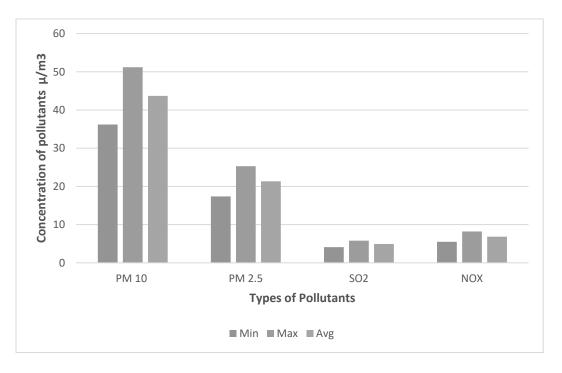


FIG 3.8 AMBIENT AIR QUALITY DATA A3 - SENALUR VILLAGE

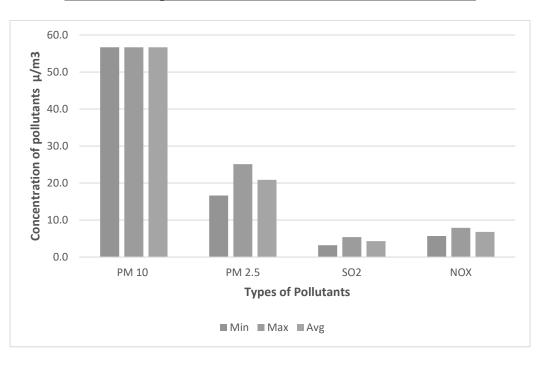


FIG 3.9 AAO DATA A4 - KUNNAPPAKKAM VILLAGE

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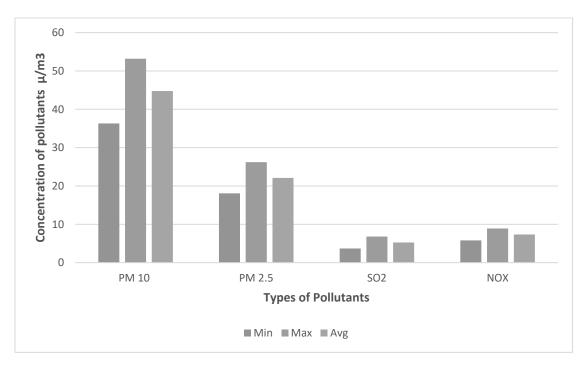
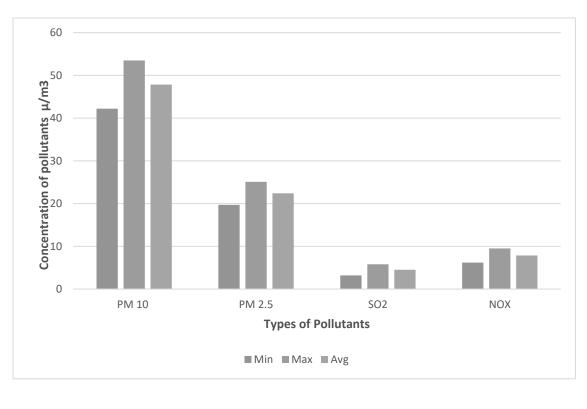


FIG 3.10 AMBIENT AIR QUALITY DATA A5 - ENDUR VILLAGE

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

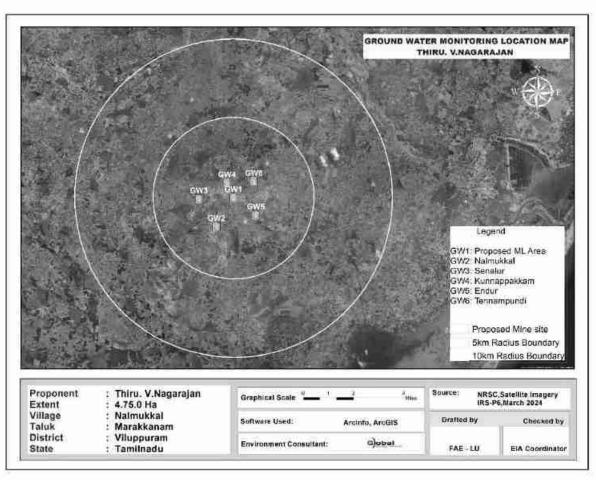
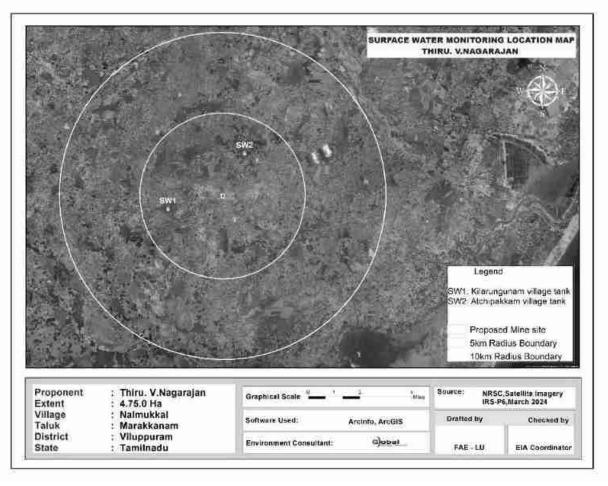


FIG 3.12 BASE MAP OF GROUND WATER SAMPLING LOCATIONS

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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

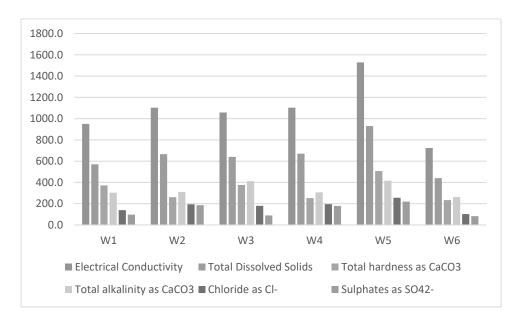
summarized below.

| 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

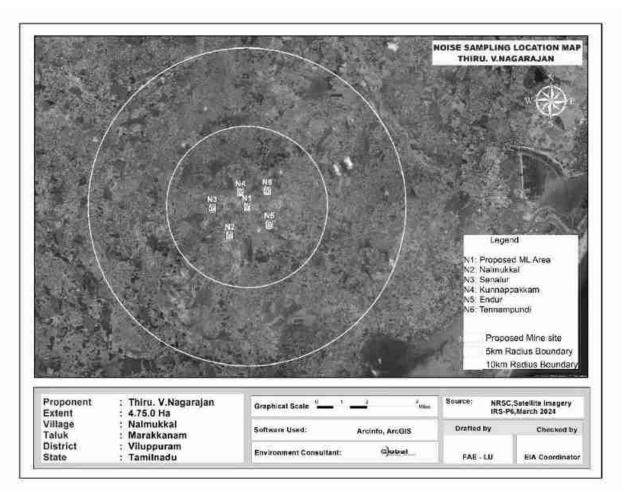


FIG 3.14 BASE MAP OF NOISE MONITORING LOCATIONS

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.

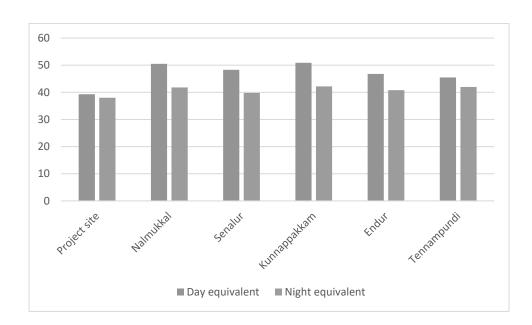


FIG 3.15 DAY AND NIGHT EQUIVALENT VALUES IN 6 LOCATIONS

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.

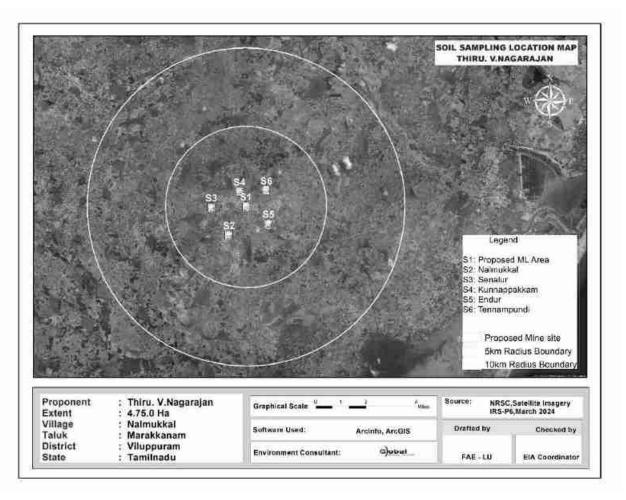


FIG 3.16 BASE MAP OF SOIL SAMPLING LOCATIONS

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.

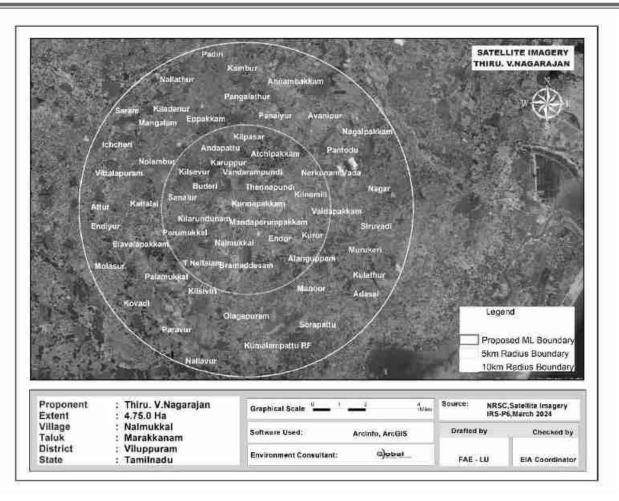


Figure No. 3.17: Remote Sensing Satellite Image

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.

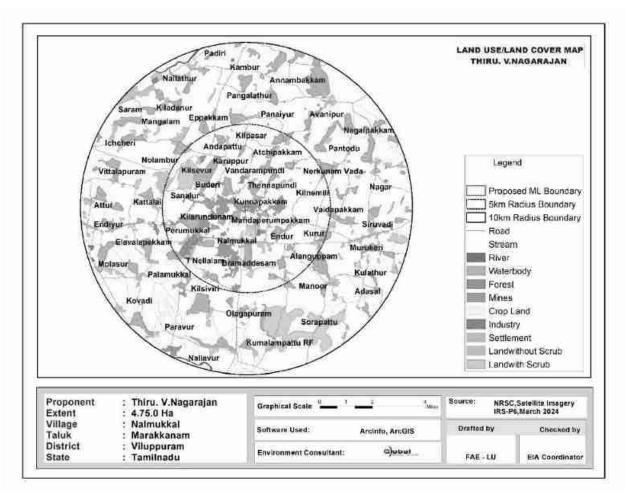


FIG 3.18 LAND USE/LAND COVER MAP OF THE STUDY AREA

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>

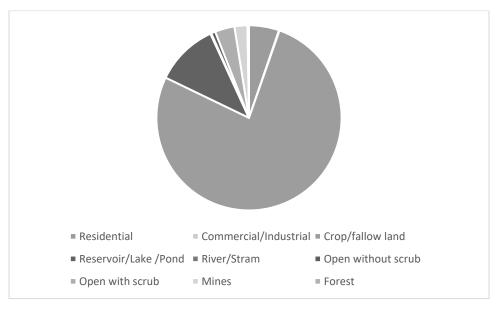
Mining area seen in the study area distributed all over the study area. Major domestic income from mining business. Spatial extent of mining is estimated at 7.28 sq.km 2.26 %.

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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.

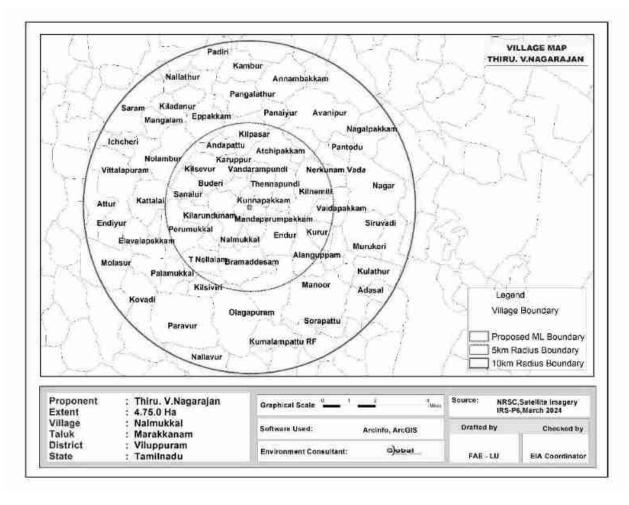


FIG 3.19 VILLAGE MAP OF THE STUDY AREA

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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.

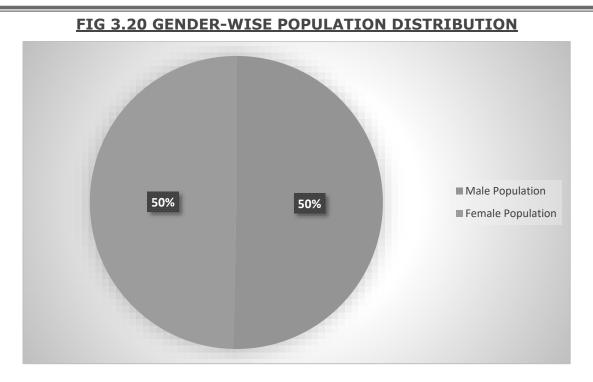


FIG 3.21 GENDER WISE LITERACY DISTRIBUTION

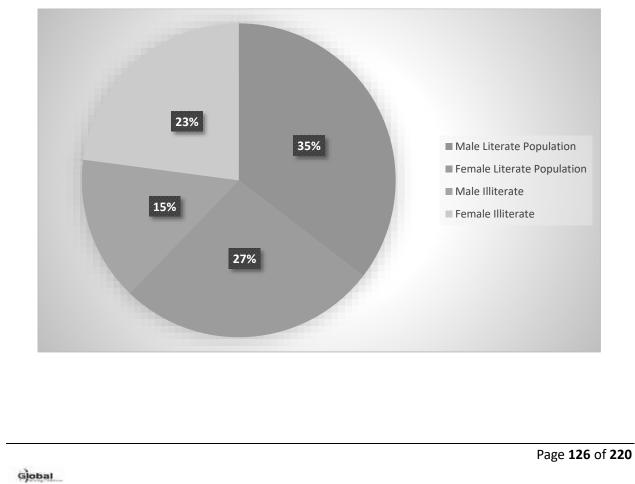
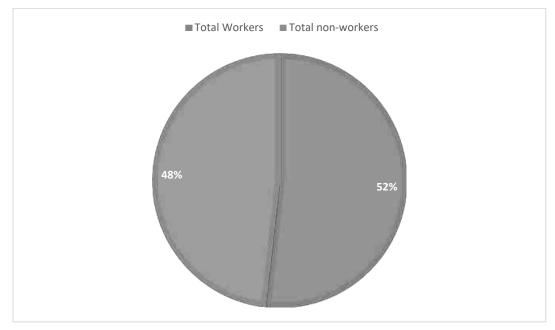


FIG 3.22 OCCUPATIONAL STRUCTURE WITHIN BUFFER ZONE



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.

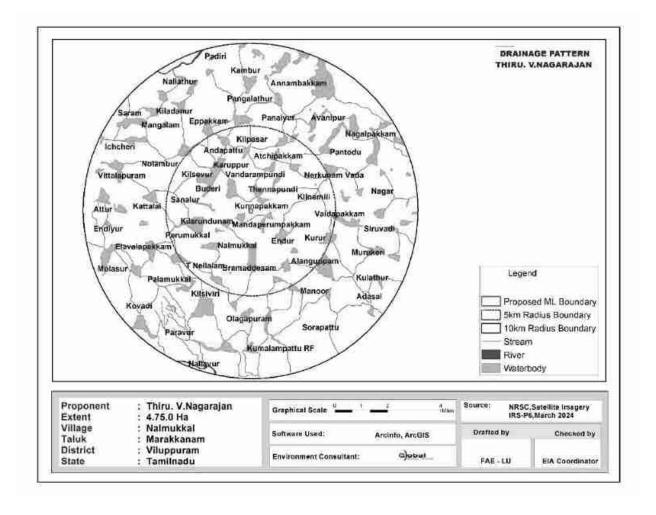
3.3.9 HYDROGEOLOGY OF THE STUDY AREA

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.

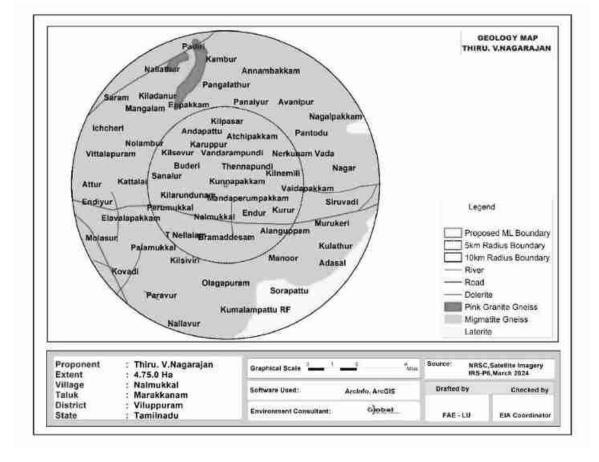
GEOLOGY, GEOMORPHOLOGY AND SOIL

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.

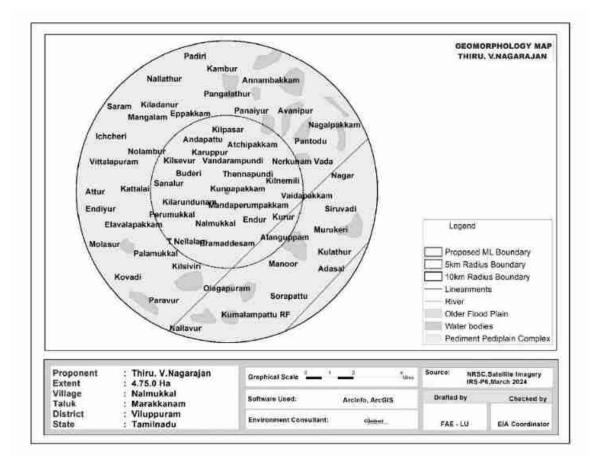


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FIGURE 3. 24 10 KILOMETER RADIUS OF THE GEOLOGY MAP

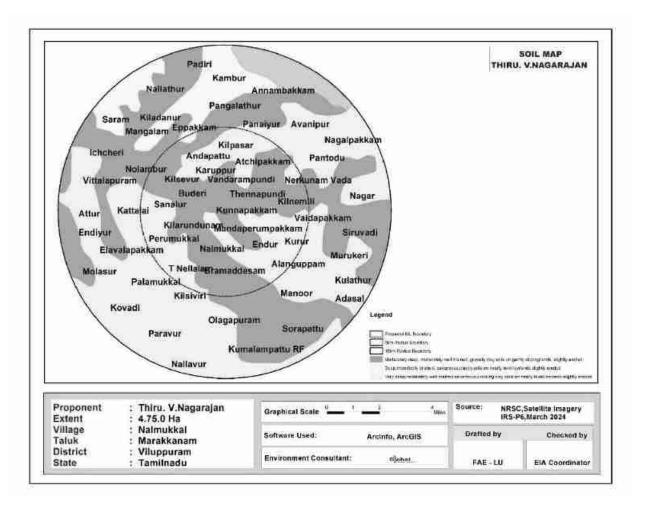
Geomorphology: The Core and 10 Km buffered zone geomorphological features (Figure 3.22)shows that the viluppuraml district forms part of the upland plateau region of Tamil Nadu with many hill ranges, hillocks and undulating terrain with a gentle slope towards east. The prominent geomorphic units identified 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



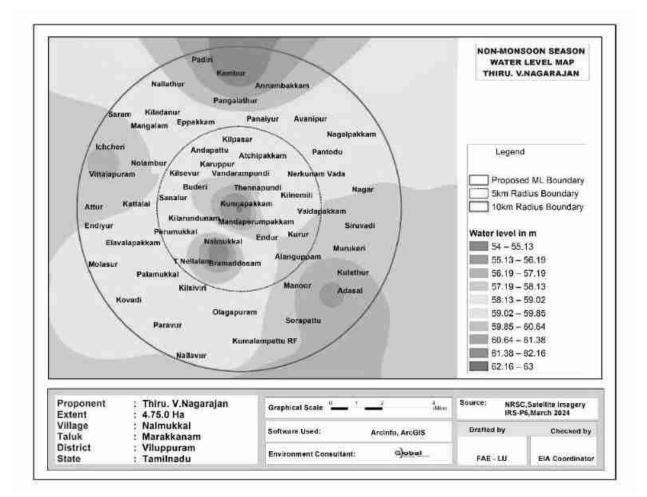
Soil: The soil types in the study area are mostly Calcareous black soil, Red loamy soil, clayey soil and Calcareous clayey soil (Figure 3.23.). Calcareous black soil (177.25 sq.km) was distributed over the study area. Red loamy soil is found in north, east, west and central part of the study area (108.43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

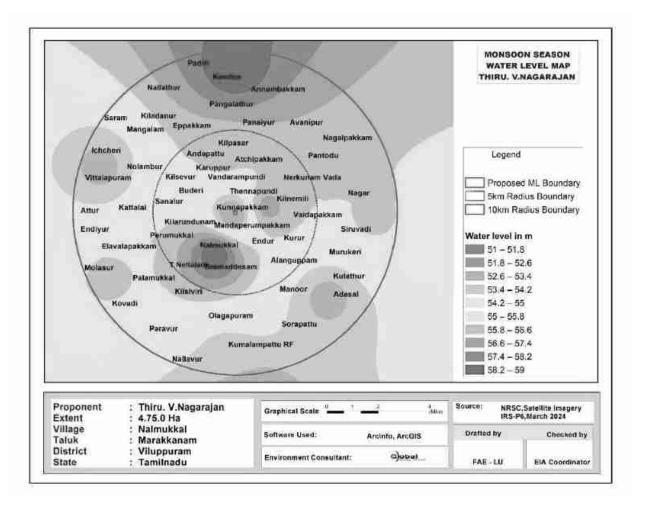


FIGURE 3.28 MONSOON WATER LEVEL MAP OF THE STUDY AREA

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.

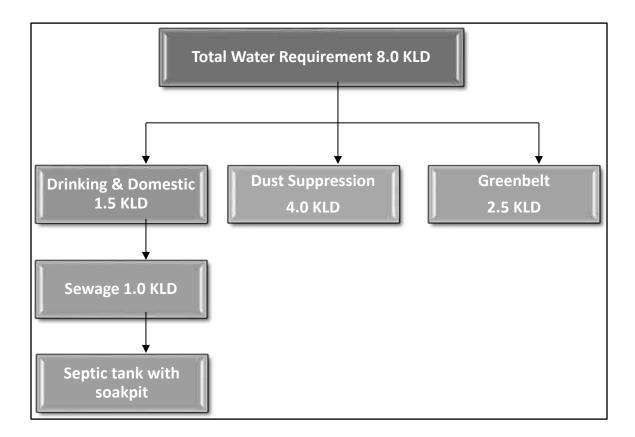
Vada Penniyaru is located at a distance of 10.9km in North east direction. Water table is found at a depth of 68m.

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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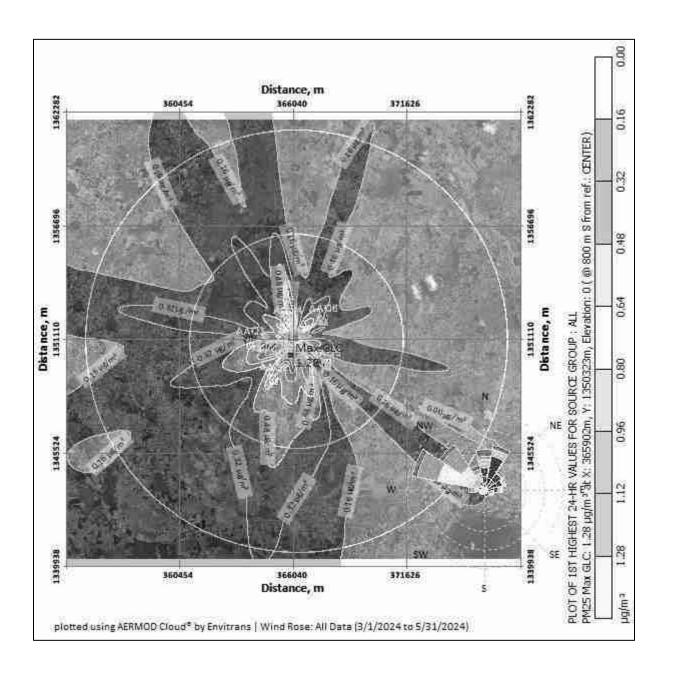


FIG 4.2 Isopleth of GLC Prediction for PM_{2.5}

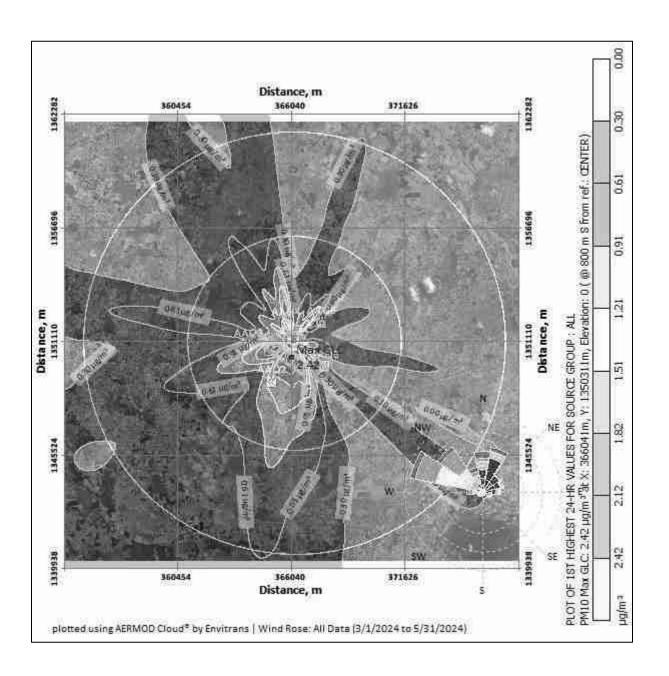


FIG 4.3 Isopleth of GLC Prediction for PM₁₀

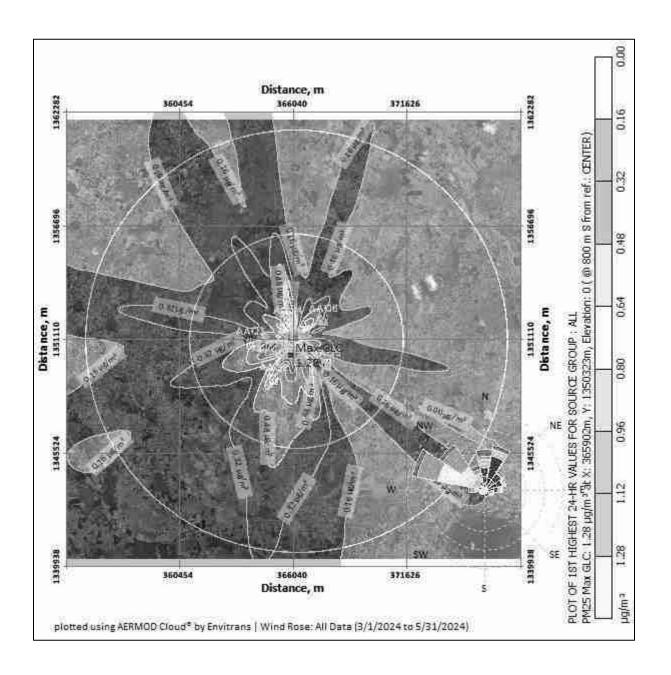


FIG 4.4 Isopleth of GLC Prediction –Cumulative for PM_{2.5}

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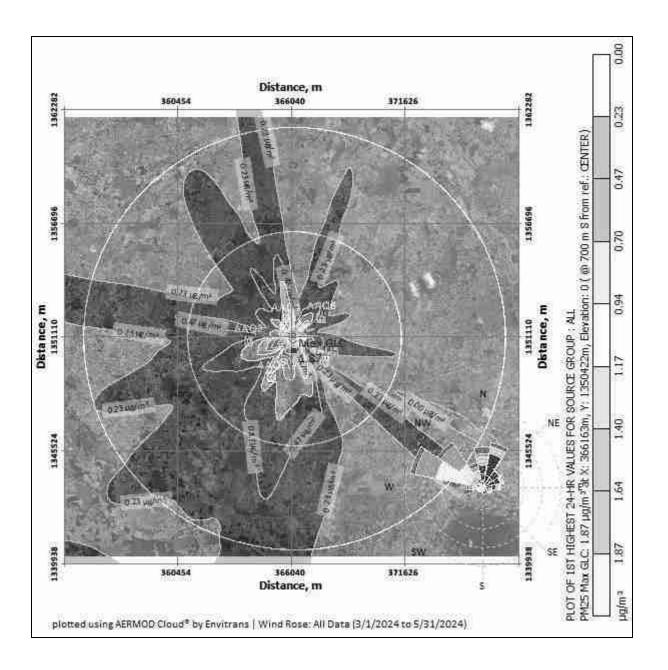


FIG 4.5 Isopleth of GLC Prediction –Cumulative for PM₁₀

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

Global

6

Tennampundi

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48.46

| | 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 %

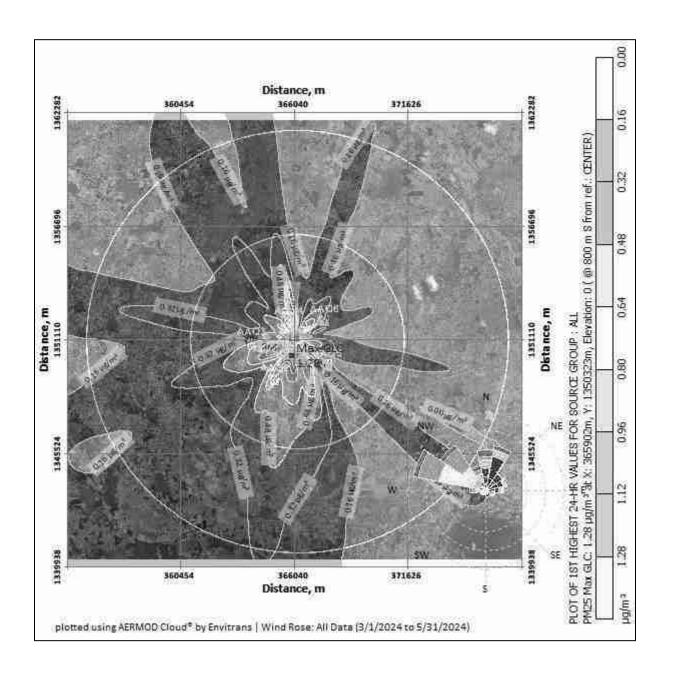


FIG 7.1 Isopleth of GLC Prediction for PM_{2.5}

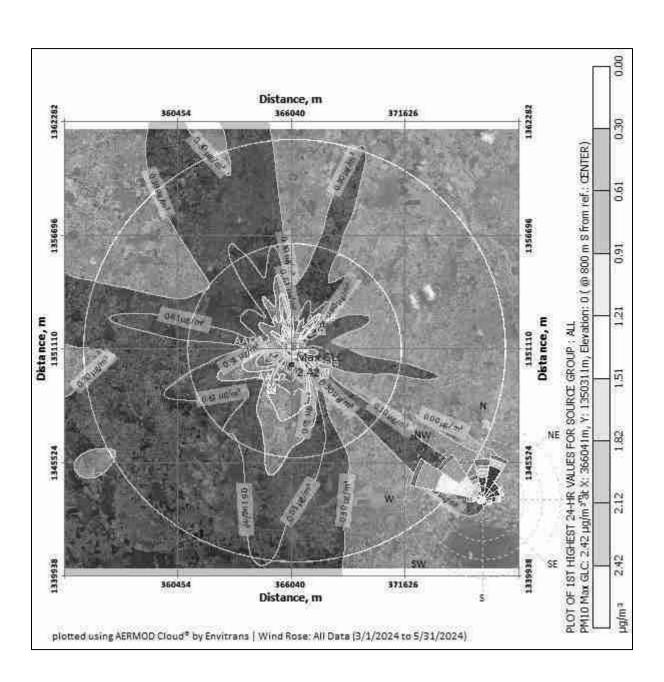


FIG 7.2 Isopleth of GLC Prediction for PM₁₀

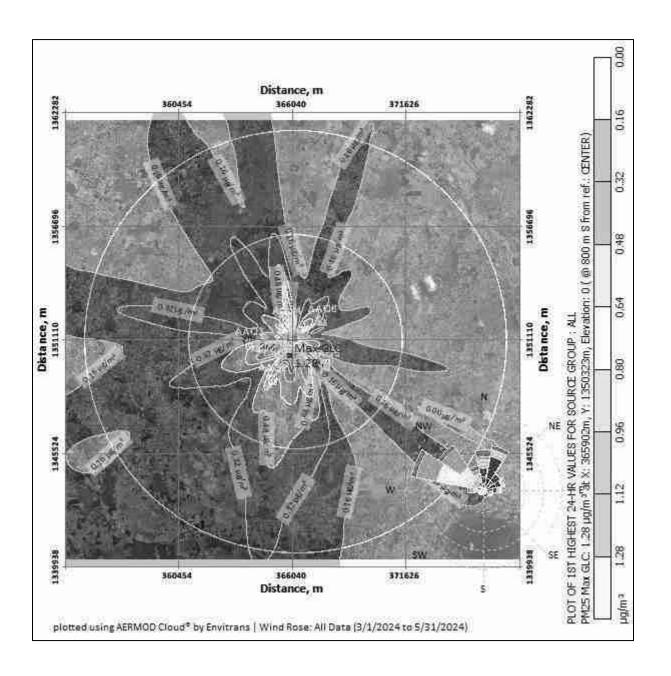


FIG 7.3 Isopleth of GLC Prediction –Cumulative for PM_{2.5}

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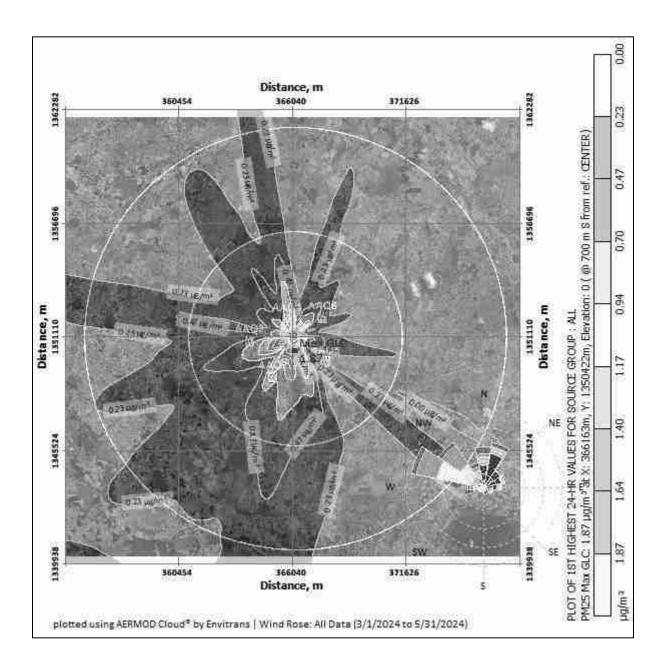


FIG 7.4 Isopleth of GLC Prediction –Cumulative for PM₁₀

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. | | | | |

Gjobal

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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. | |

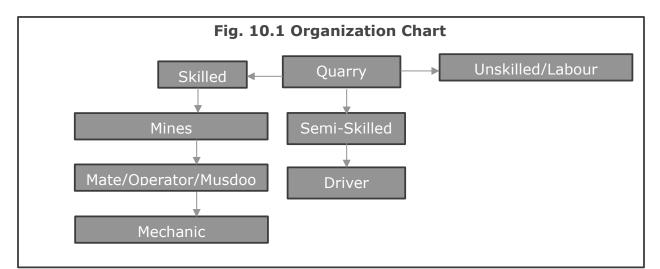
| | No external dumping i.e., outside the project area. The entire material will be sold. |
|---|---|
| | Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands. |
| | The periphery of Project area will be planted 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

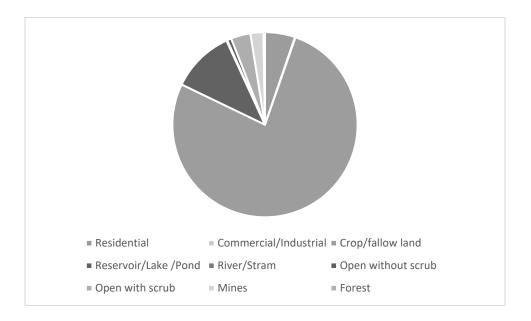
In the study area, commonly found animals like dogs, cats, bush rat, cows, birds like crow, Myna, Sparrow, etc were found.

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 |
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| 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 |
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| | 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 | |
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| | 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 | | |
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| 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 | | | |
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| | 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 | | |
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| | 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)

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| S. No | Terms of Reference | | | |
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| 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 | | | |
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| | 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) | | | |

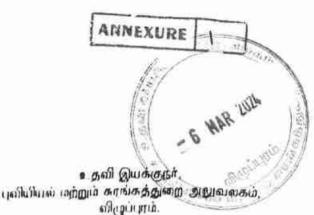
| S. No | Terms of Reference | | | |
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| | S.N.DetailsArea (ha)1Buildings2Infrastructure3Roads4Others (specify)Total | | | |
| 1.13 | Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. 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 | | | |
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| | 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 | | | |
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| | 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 | | | |
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| | 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.

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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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SUSTAINABILITY



SAFETY

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 |
| A. Fit B. Op C. EN The area are clear Corners 1 2 | xed Assets Cost perational Cost MP Cost applied for lease is bo ly marked in plate no II s Co- or Latitude 12° 13' 06.70"N 12° 13' 10.99"N | l. rdinate 79° 79° | Rs. 92,50,000 Rs. 6,70,000 Total Project co I by fourteen co s Longitude 2 46' 08.42"E 2 46' 09.64"E | /- st(A+B+C)= prners an Distan 1-2 2-3 | d the co cce betwo corners = 13 = 77 | ordinates een the 6.8m .6m |
| 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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| A. Fit B. Op C. EN The area are clear Corners 1 2 3 4 5 | xed Assets Cost perational Cost MP Cost applied for lease is bo y marked in plate no II Co- or Latitude 12° 13' 06.70"N 12° 13' 10.99"N 12° 13' 11.68"N 12° 13' 12.34"N 12° 13' 13.00"N | i. rdinate 79° 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 46' 07.17"E 46' 07.46"E 46' 07.46"E | /- st(A+B+C)= orners an Distan 1-2 2-3 3-4 4-5 5-6 | d the co corners = 13 = 77 = 22 = 20 = 59 | ordinates een the 6.8m .6m .0m .8m .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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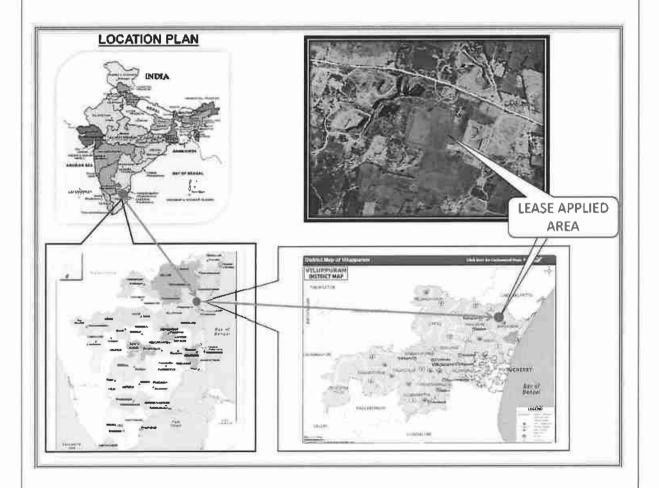
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|----|--|---|---|
| a. | Classification of the Area (Ryotwari / poramboke / others) | 1.0 | Patta land |
| b. | Ownership / Occupancy of the Applied area (Surface rights) | | It is patta land registered in the name of applicant vide patta no.425, Please 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 |

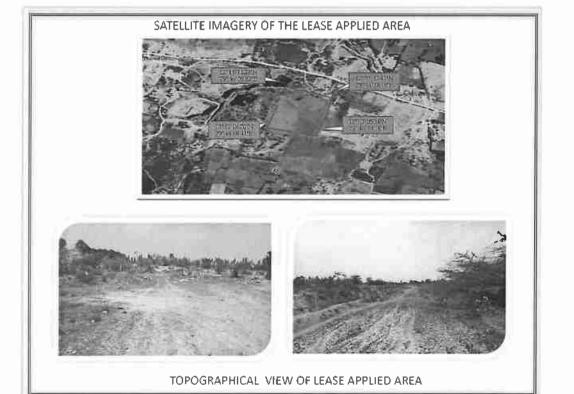


Fig. Location of the lease applied area

| | | 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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| | | | | - 6 HAR TULA |
|-----|----|---------------------|---|---|
| 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 |
|---------|------|
|---------|------|

| 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 |
| S.No Type Nos Dia Hole mm Make More power 1 Jack hammer 16 32 Atlas Copco Compressed air 2 Compressor 4 Atlas Capco Diseal Drive b. Loading Excavator of 0.90m ³ bucket capacity (with Rock is breaker attachment) (2No). Excavator of Cravel, 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 i Conceptual Mining Plan for the entire lease period 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, Ultimate Pit dimension is given as under, Vitimate Pit dimension (M) end of Mining plan Period Period Period Pit Length Width (Avg) Depth(max) in(m) 1 227 170 38 Ultimate pit dimension End of the lease period Pit Length Width (Avg) Depth(max) in(m) 1 227 170 48 Afforestation has been proposed on all along the boundary barrire by | 5.5 | | | | ies to l | be used | | T - | | | 6 11 | • | | | 15 |
| S.No Type Nos Dia Hole mm Make Motive power Gram 1 Jack hammer 16 32 Atlas Copco Compressed air 2 Compressor 4 - Atlas Copco Dissel Drive 5.6 Loading 2 Tipper 6Nos (5/10Ts) capacity. 5 5.6 Disposal of 0verburden 2 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 2 Conceptual Mining Plan for the entire lease period 2 Conceptual Mining, ultimate pit sipe, selection of sites for construction of ultimate pit limit, depth of quarying, ultimate pit slope, selection of sites for construction of infrastructures etc. Ultimate Pit dimension (M) end of Mining plan practical factors such as the economical depth of mining, safety zones, permissible areas etc. VItimate Pit dimension (M) end of Mining plan Preciod Pit Length No Width (Avg) Depth(max) in(m) 1 227 170 48 Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration moninoring, Water Analysis studies will be | | a. Drilling | | | | 1 | | | | | nng n | achine | Pano in | 3 | |
| Image: | | S.No Type | | | | | No | _ | | | | Motiv | e power | | |
| b. Loading Excavator of 0.90m³ bucket capacity (with Rock c. Transportation 2 Tipper 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 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 size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under, Ultimate Pit dimension End of the lease period Pit Length Width (Avg) Depth(max) in (m) in (m) 1 227 170 38 Ultimate pit dimension End of the lease period Pit Length Width (Avg) Depth(max) in (m) 1 227 170 48 Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Water Analysis studies will be | | 1 Jack hammer | | | | | | 32 | | | | air | - | | |
| i i breaker attachment) (2No). i c. Transportation i Tipper 6Nos (5/10Ts) capacity. 5.6 J Disposal of i 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 i 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 size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under, Ultimate Pit dimension is given as under, IUtimate Pit dimension End of the lease period Pit Length Width (Avg) Depth(max) in (m) i | | 1. | | | Com | pressor | 4 | | - | | | | | 1. D 1. | í. |
| c. Transportation 1 Tipper 6Nos (5/107s) capacity. 5.6 Disposal of 1 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 1 Conceptual Mining Plan for the entire lease period Brief for the entire lease period Construction of infrastructures etc. Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under, Ultimate Pit dimension End of the lease period Pit Length Width (Avg) Depth(max) in (m) No (max) in (m) in (m) in (m) in (m) In(m) I 227 170 38 Ultimate pit dimension End of the lease period Pit Length Width (Avg) Depth(max) in (m) No (max) in (m) In(m) I 227 170 38 Ultimate pit dimension End of the lease period Pit Length Width (Avg) Depth(max) in (m) In(m) I 227 170 38 Ultimate pit dimension fas been | | b. | Loa | ading | | | | | | | | capa | city (wit | n Rock | |
| 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 size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under, Iltimate Pit dimension (M) end of the lease period Pit Length Width (Avg) Depth(max) in (m) No (max) in (m) in (m) in (m) in (m) in (m) Iltimate pit dimension has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be | | | | | | | 2 | br | eaker attachn | nent | t) (2No). | | | | |
| Overburdenexcavation 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.5.7BriefNoteon:Conceptual Mining Depth of the entire lease period: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 size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension (M) end of Mining plan PeriodVitimate PitLength Width (Avg)Depth(max) in(m) in(m)I22717038Ultimate pit limension End of the lease period Pit Length No (max) in (m)Midth (Avg) in (m)I22717048Afforestation has been proposed on all along the boundary barrier by planting trees. All the bascline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be | - | c. | Tra | nsport | ation | | * | Ti | pper 6Nos (5/ | 10T | 's) capaci | ty. | | | |
| 5.7 Brief Note on : Conceptual Mining Flam Conceptual Mining : Conceptual Mining : Conceptual Mining Plan for the entry entry image (image (| 5.6 | | Dis | posal | | of | 8 | Tł | ne overburden | in | the form | of G | ravel, at | fter the | |
| 5.7BriefNoteon:Conceptual Mining5.7BriefNoteon: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 size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under,Ultimate Pit dimension is given as under,Iltimate Pit dimension is given as under,Ultimate Pit dimension is given as under,Iltimate Pit dimension End of the lease period Pit I 227 170 38 Ultimate pit dimension End of the lease period Pit I 227 170 48 Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be | | | Ove | erburd | en | | | ex | cavation grav | el · | will be o | direct | ly loade | ed into | |
| 5.7BriefNoteon:Conceptual Mining5.7BriefNoteon: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 size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under,Ultimate Pit dimension is given as under,Iltimate Pit dimension is given as under,Ultimate Pit dimension is given as under,Iltimate Pit dimension End of the lease period Pit I 227 170 38 Ultimate pit dimension End of the lease period Pit I 227 170 48 Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be | | | | | | | | tiı | oper to the ne | edy | buyers t | for ro | ad proje | ect and | |
| 5.7 Brief Note on : Conceptual Mining Plan for the entire bench lay outs, selection of ultimate pit limit, lease period istes for construction of infrastructures etc. Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under, VIItimate Pit dimension is given as under, Interpret is dimension is given as under, VIItimate Pit dimension is given as under, Interpret is | | | | | | | | ço | nstruction wo | rks | for filling | g and | leveling | g of low | |
| 5.7 Brief Note on : Conceptual Mining Plan for the entire bench lay outs, selection of ultimate pit limit, depth of quarrying, ultimate pit slope, selection of sites for construction of infrastructures etc. Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under, Ultimate Pit dimension is given as under, Ultimate Pit dimension is given as under, Ultimate Pit dimension End of the lease period Pit Length Width (Avg) Depth(max) in (m) I 227 170 38 Ultimate pit dimension End of the lease period Pit Length No (max) in (m) I 227 170 38 Ultimate pit dimension End of the lease period Pit Length No (max) in (m) I 227 170 48 Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be < | | | | | | | | | | | , | _ | - | | |
| ConceptualMining Plan for the entire lease periodobject 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 size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under,Ultimate Pit dimension (M) end of Mining plan PeriodPitLength No (max) in (m)I22717038 Ultimate pit dimension End of the lease periodPit Length No (max) in (m)I22717048Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be | 57 | | Brid | ⊳f | Note | 07 | 2 | -9. | | Min | ing Plan | is nre | nared v | with an | |
| Plan for the entire lease periodbench lay outs, selection of ultimate pit limit, depth of quarrying, ultimate pit slope, selection of sites for construction of infrastructures etc. Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under,Ultimate Pit dimension is given as under,Ultimate Pit dimension (M) end of Mining plan PeriodPitLength No (max) in (m) in (m) in (m)Depth(max) in(m) in (m) in (m)1227 170 38 Ultimate pit dimension End of the lease periodPitLength Width (Avg) in (m) in (m)Depth(max) in(m) in (m)1227 170 48Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Water Analysis studies will be | 0.7 | | | | | | | _ 1 | - | | - | - | - | | |
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| of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under, Ultimate Pit dimension (M) end of Mining plan Period Pit Length Width (Avg) Depth(max) No (max) in (m) in (m) in(m) I 227 170 38 Ultimate pit dimension End of the lease period Pit Length Width (Avg) Depth(max) No (max) in (m) in (m) in(m) I 227 170 48 Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be | | | | | | | | | Ultimate pit | size | is design | ied ba | used on | certain | |
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| PeriodPitLengthWidth (Avg)Depth(max)No(max) in (m)in (m)in(m)I22717038Ultimate pit dimension End of the lease periodPitLengthWidth (Avg)PitLengthWidth (Avg)Depth(max)No(max) in (m)in (m)in(m)I22717048Afforestation has been proposed on all alongthe boundary barrier by planting trees.All the baseline information studies like AirQuality monitoring, Noise and Vibrationmonitoring, WaterAnalysis studies will be | | | | | | | | U | ltimate Pit dim | ens | ion is giv | en as | under, | | |
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| the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be | | | | | | | | | | | | | | | |
| 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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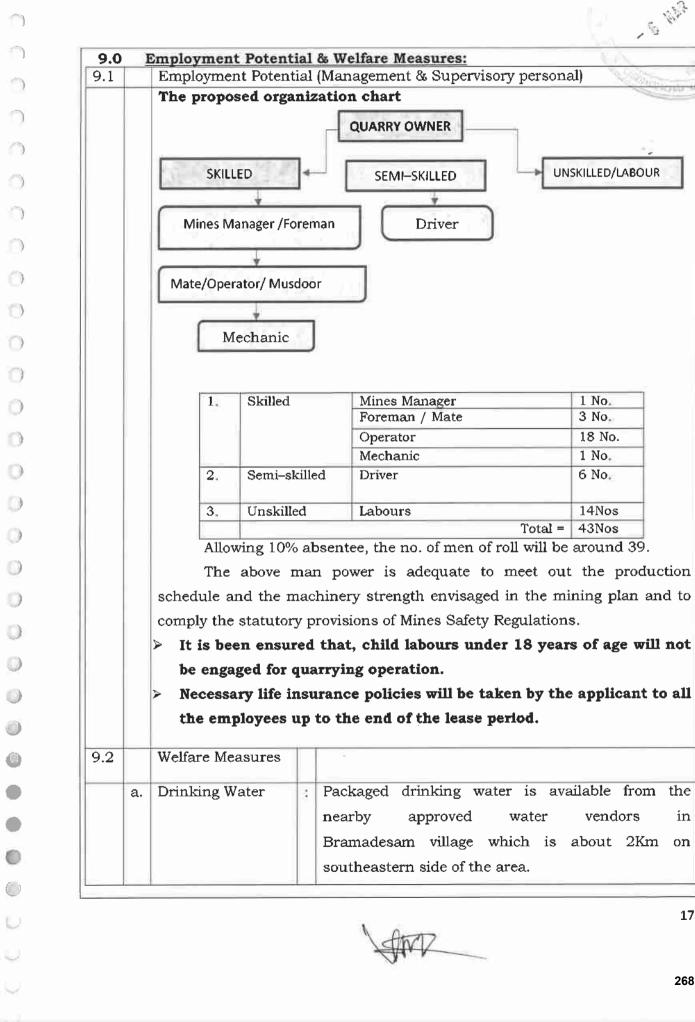
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| 8.0 | Other Permanent Structu | | NAR 2 |
|-----|---|------|---|
| 8.1 | Habitations / Village | | There are no habitations within a radius of |
| 0.1 | Theoreanons / Village | ÷ | 300m. |
| 8.2 | Power lines (HT/LT) | | There is no Power line (HT/LT) 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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| d. Labour Health is 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. Image: Precision of the help of the provide the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation. Image: Precision of the help of the provide the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation. Image: Precision of the help of the provide the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation. Image: Precision of the provide the precision of the provide the precision of | d. Labour Health is 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. Decessary 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. FERSONAL PROTECTIVE OUP MENT (PPE) Image: Comparison of the periodic medical examination of the help of qualified and experienced officers to train about the safe and systematic quarrying operation. FUNCTIONAL PROTECTIVE OUP MENT (PPE) Image: Comparison of the periodic medical examination of the help of qualified medical experienced officers to train about the safe and systematic quarrying operation. FUNCTION OF THE OUP MENT (PPE) Image: Comparison of the help of the periodic medical examination of the help of the periodic medical examination of the help of the help of the periodic medical examination of the help of the help of the periodic medical examination of the help of the help of the help of thelp of the help of the help | b. Sanitary facilitie | maintained at convenient places for use of labours as per the provisions of Rule (33) of the Mules Rules, 1960 separately for males and females. Washing facilities shall also be arranged as per rule. | | | | | | | | | | |
| 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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| 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. | nuffs 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. | v v | e. Precautionary safety measures to the Labourers: | | | | | | | | | | |
| | | 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. | | | | | | | | | | |
| SAFETY SAFETY SAFETY SAFETY SHURAN SAFETY SHURAN SAFETY SHURAN SHURAN SHURAN SHURAN SAFETY SHURAN | | EQUIP And PROTECTION And And Card A. C. And Card A. C. | MENT(PPE) | | | | | | | | | | |

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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.

AR BILL

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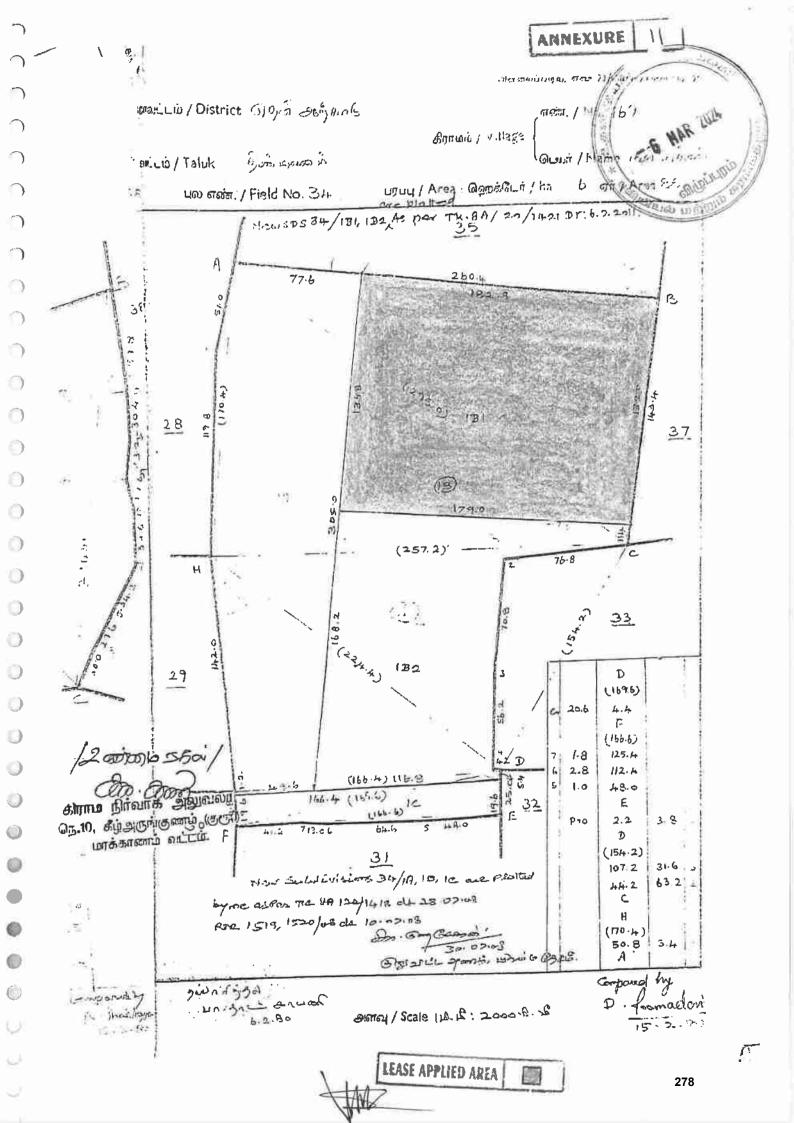
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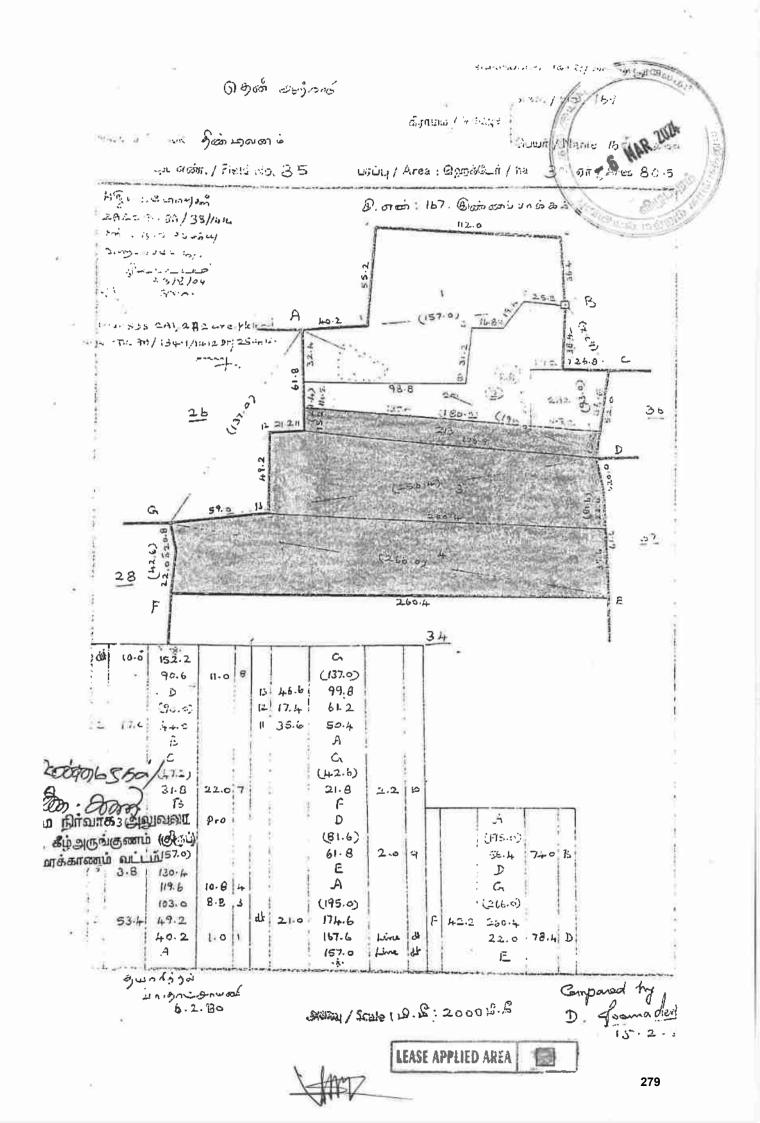
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திரு.வ.நாகராஜன், த⁄பெ.வரதராஜ் கவுண்டர், எண்.65, மரக்காணம் ரோடு, பெருமுக்கல் கிராமம், மரக்காணம் வட்டம், விழுப்புரம் மாவட்டம் <u>நகல்:-</u>

_____ 1. மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.

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





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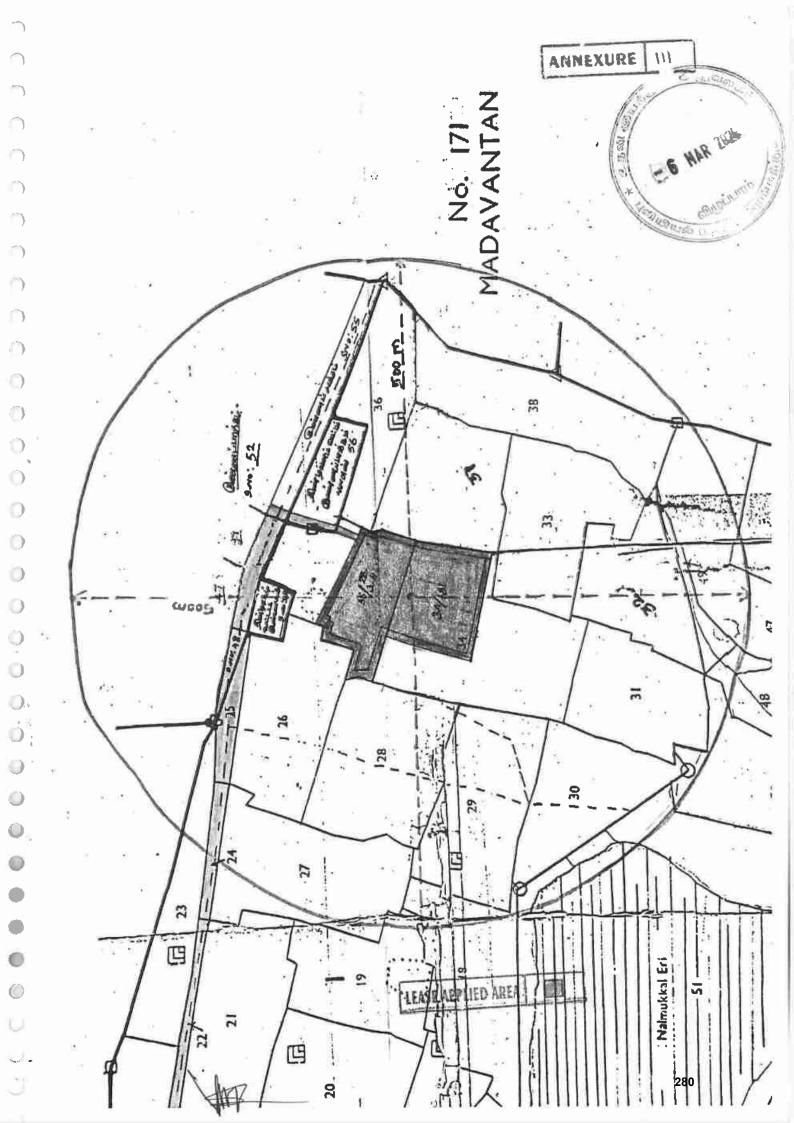
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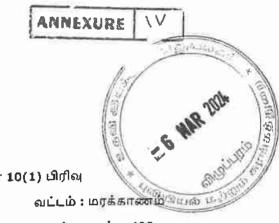
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தமிழக அரசு

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 |

| | _ | | | | | | | | | | | | | A | INR | EX | UR | E | V | |
|--|--|--------------------|------------------|------------------|------|------|------------------------------------|--------|-------|------------|---|------|----|----------|-----|--------|------|-------|---|--------------------|
| ľ | undi unteralicis separat Celetaran | 5 | Ť | 1.1 | Ť | f | î. | î a | U III | | | n 15 | a. | | | 1 | lesj | £ | 1 - | |
| ຮ່ວງເຂົ້າມີ ກາວສາຍ ດ້າງອາ ດ້າງການແກ່ນາຍແລະແມ່ນເຮັດ ລະຫາດ ມີແກ່ງເປັນເຮັດເຊື້ອກເຫັດ. ເມັນມີ | agrammi und Aufrika Aufrika Antonia (19) anarah Lay unushin unih Deinu (19) anarah Lay unushin unih Deinu (19) anarah (19) unih unih Deinu (19) Anaraunan unih anarah (19) Anaraunan unih anarah aniha Asa Saulatai Janisana (19) Anaraunan unihanan (19) Anaraunan unihanan (19) Anaraunan unihanan (19) Anaraunan unihanan (19) Anaraunan unihanan (19) Anaraunan unihanan | (**e)) | | | | | | | | | | | | | | Call . | 4 | (B) w | 6 WAR Lub | Contraction of the |
| IC 4110-14 | கல்பட்டு கல்கல் காண் குல்கல் கர்கத்தையில் பிர பிரிப்பட்ட இன்கையில் பிரிப்பட்ட இன்கையில் பிரிக்காக கல்வின் கல்கும் குண்டு கல்கும் வித்தன் பிரிக்கு ந்து குற்குக்கும் விரிக்கு கல்கல்பட்டிக்கும் நில்கல்பட்டிக்கும் கல்கல்பட்டிக்கும் நில்கல்பட்டு | 6.0 | | | | | | | | | | | | | | | | | | |
| (Janand) | விதேகாடு. விதேகாடு | 619 | | | T | 1 | | | + | T | | | | t | 1 | | | | | |
| | و موضحين الشوعي 1 موضحين الشوعي | 612 | | | 1 | | | | | 1 | | 1 | | 1 | | | | | | |
| nia Gunania mia Gunania | | 2 | | | 1 | 1 | | | 1 | \uparrow | | | Ť | | | i i | | | | |
| իեմ։ ությ Յկչմու ոմ | ப்பில்க் திரும். | | | - | - | 1 | \vdash | + | + | \vdash | | + | + | \vdash | | - | | | | |
| dhrad | ளந்த மாதத்தில் டூர்ச் வெயய்பட்டது ாதத சொதைதில் தூர்ச்பை சொய்பட்டதி | Ê | | | | | | | | | | | T | | | | | | | |
| આંદ છે હામ, છે છે. છે | விளாக்கல் அடிவு விழுக்காடு. | (13) | 4.4 | [i] | rl | | | | 1 | 1 | ł | | | | | | 1 | | | |
| L th 577, CF | ையுல் கூடி கிராஜ்கு தேல்யாப | ٤ , | L | Ł | I | | | | | | | T | | | 1 | | 1 | | - | |
| - 11 AN | மல்லா (ஆறுல்லட யான பாப்பு | Ê | 1 | 1 | 1 | | | | | | | | | | | 1 | | | | |
| نيسيري) 12010(11 | ப்பிரின் பெயர். | ē 1 | 1 | 1 | 127 | | - | | | | | | | | - | Ť | 1 | | | |
| Control 1 | ามากระบาทาง านากรณีซ์ พระวังว่ามา ชีวุธ ชีวากการ มูรูวา กรุรังวิมศ ชีวุษ | ê 1 | J. | Ŭ. | 0 | 3 | | 11 - N | | | T | | | | | 1 | | 1 | | |
| internation (1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/ | பசயலர் பாட்பமுரை கைய்யாங்கவேச வேள் குறை சிர்ய மைத்வத் | e 1 | | | 2000 | C-ut | A della transmission of the second | | | | | | | | | | | | | |
| | 2 | 7. | | 1 1 | T | P | C S S | 1 | | | | 1 | | | + | | T | | 1-201 | |
| 1 | ទាកប្រកាអ្នកទាក់នាប់ សិកមហ្គាម ទទុកក្មាត សិនិសេស្ស សួសសិកម សិនិនេស្ថា ស្លាស្រី សិនិនេស សិប្រតាំ សិនិនេស សិនិ | Fring, Characterit | | | 13 | | 28 | | | | | | | | | | | | Cps6aPMdu | |
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| the Breach | E Contraction of the second of | 242 6Te 495 | 43th cfcl425 | 1145 319 435 - 4 | | | | | | | | | | | | | | | 8 f 111-A-10-50,00,000 CptGePHdv-7-2018 | |
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| | | | 1 | 3 | 4 | 5 | ¢ | 7 | 3 | 1 1 | ļ | t) | 14 |) | 11 100 united to billing |
| | 1 | | | | | 11 | | | ~ | | | ्त (जे) 35-0 | | | 294 பு. சங்கள்பானரி |
| | 11 | | 25-2 31-2 | Ŧ | 4 | | 3-1 | 7 | 2 | 75 | | 33-0 | | | முதலியார் (1) . |
| | 15 | Ē | 21-1 | en) | 5.0 3 | | 172 | | 34 | | 0 | st v | | • 3 | 1-20 D-1-1 |
| | | (2) | -2 | J. | ч | m | 8-4 | 7 | 4 | 75 | 0 | <u>80-0</u> | 2 | 45 | 199 சி. ஜெகள் கு. செட்டியார். |
| | | 3 | | я | я. | | 8-4 | 2 | 2 | 15 | Q | 53-11 | 2 | -12 | 199 கி. ஜொகன்.ஐத ரெட்டியார் |
| | | 4 | -2 | | ч | (i+*) | 5-4 | 7 | ł | 75 | 1 | [6+0 | ١ | 19 | 28 சசு. கஸ்தூர அம்மாள். |
| | | | | | | | | | | |] | 86-5 | 6 | 06 | |
| | 30 | | 28-3 | σ | ч | | 3-4 | 7 | 3 | 75 | 3 | ()2+0 | ž | 31 | 105 . 23LF |
| | 37 | 1 | 27-1A | g | 4 | | 8-4 | 7 | 2 | 75 | 0 | 62-U | Į. | 71 | 105 ஆ. நட்ச கவு 179 சு. சாமல்ல ரொட்டியார். |
| | | 2 | | Ţ | ч. | | 5-4 | 7 | 2 | 75 | 0 | 58+0 | 1 | 60 | J. Grigueriz |
| | Ì | 3 | | T | ч | | 8-4 | 7 | 2 | 75 | 1 | 14-0 | 3 | 14 | 45 Cal Tar Bay Tar |
| 2 | | 4 | -10 -3 -10 | 5 | ч | | 8-4 | 7 | 2 | 75 | 0 | 6375 | 3 | \$8 | 597. 15. 6 St 2000 |
| 7 | | | -2 | ਰਾਂ | ч | | S-4 | 7 | 2 | 75 | 0 | 40-0 | 1 | 10 | ற்றத்தாக் இது 145 வே கோகுடிதான- ரெட்டியார். |
| 9. 14 | | | -4A | រ | 1 4 | | 8-4 | 7 | 2 | 75 | c | 31-0 | 0 | 85 | 17 சு. கண்ளுமாம் ரெட்டியார் |
| 12-005006 | 36 | :/ | -4B | σ | ч | | 8-4 | 7 | 2 | 75 | 0 | 77.Ú | 0 | 74 | 45 Gui Garganni |
| ADD. CO | æ | | | | | | | | | | | | | . 4 | |
| ாம நிர்வாக 'ஆ), கீழ்அருங்குள | | | | | | | | | | | | 00+5 | | | |
| மாக்காணம் வ | | | 29-1 | σ | ч | | 8-4 | Ţ | | 75 | E | | | | [26 தலேவர் பூரிதான இயக்கம் மதுரை பட்டிடாத |
| 2 | | 2 | -2 | Ø | 4 | ••• | 8-4 8-4 | 7 | | 75 75 | k – | 66+0 \$\$+0 | | 82 42 | 50 ரா. சம்பத்து 107 தி சராயணங் |
| -1 | | 3 | -3 30-LA | σ | ч | | | | | | | 04-5 | : * ! : 2 | | கவுண்டர். 132 வே. பெருமான் |
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| வட்டம் : மரக்காண | ف | | -6 - |
| ஞராமம் : நல்முக்க | ຄ່ | | Salara and |
| 1. പ്രാ எண் | 34 | 9. மண் வயனமும் ரகமும் | 8 - 4 |
| 2. உட்பிரிவு எண் | 181 | 10. மண் தரம் | 7 |
| 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/ |
|------------------------------|---|--|---|
| மாவட்டம் : விழுப்ப | ரம் | | S WAR CUL |
| 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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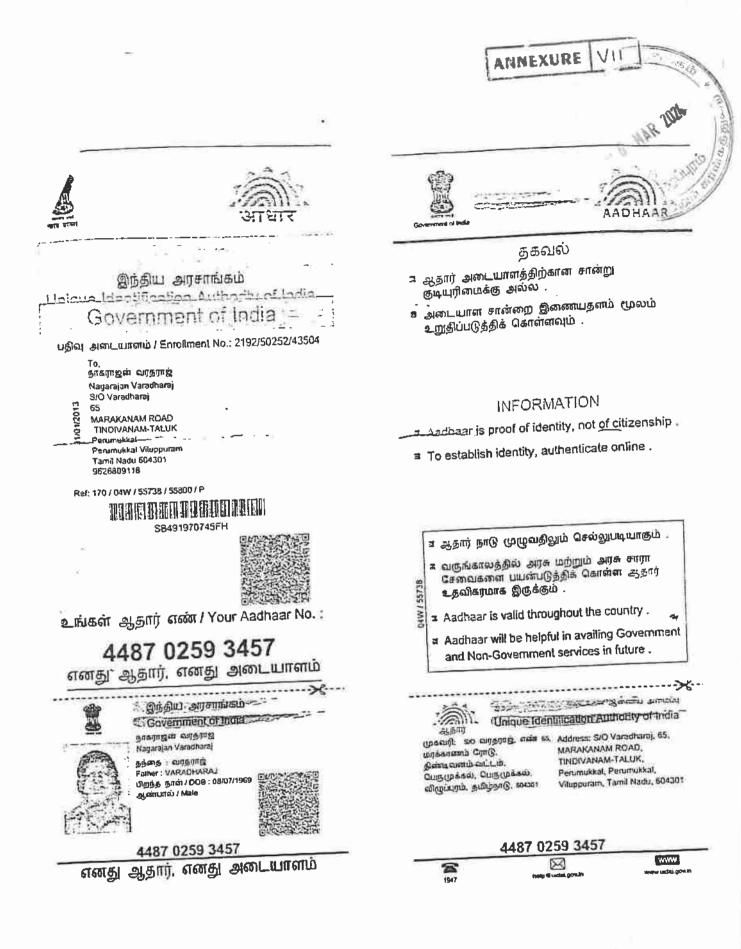
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| ANNEXURE | MA |
|----------|-------------------|
| | $1 \vee 1 \cup 1$ |

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.

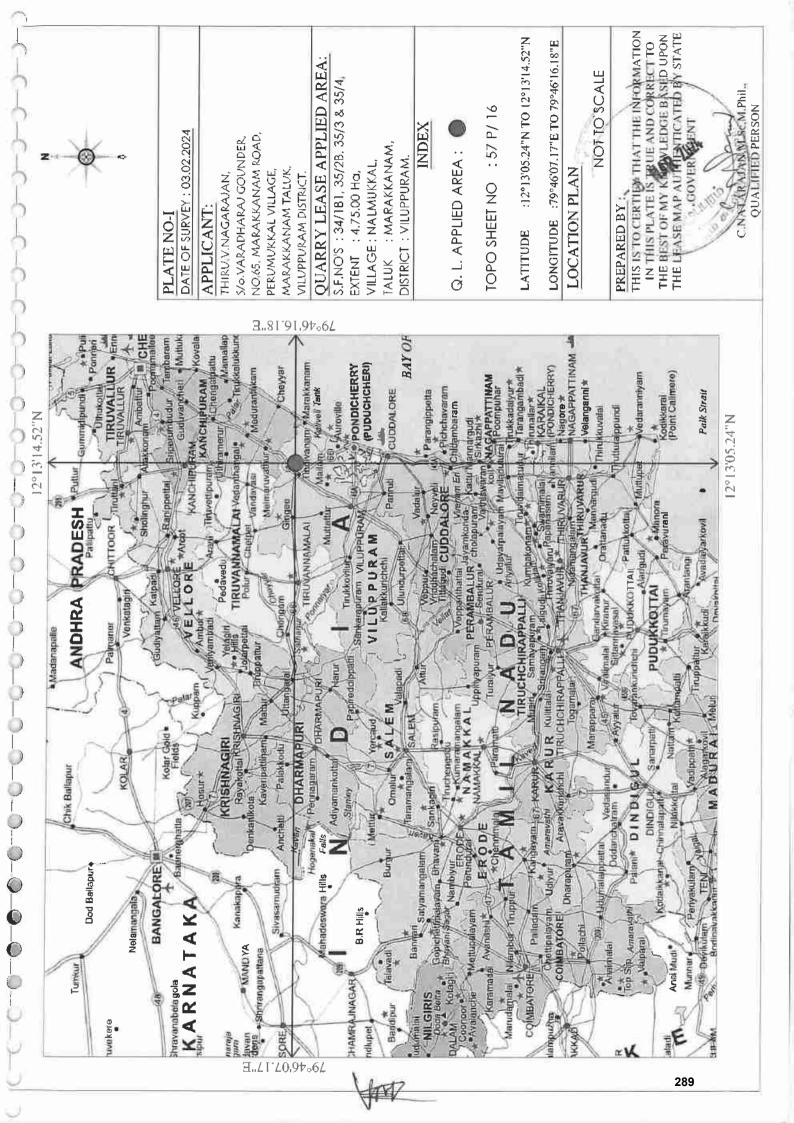
for CHETTINAD CEMENT CORPORATION LTD.,

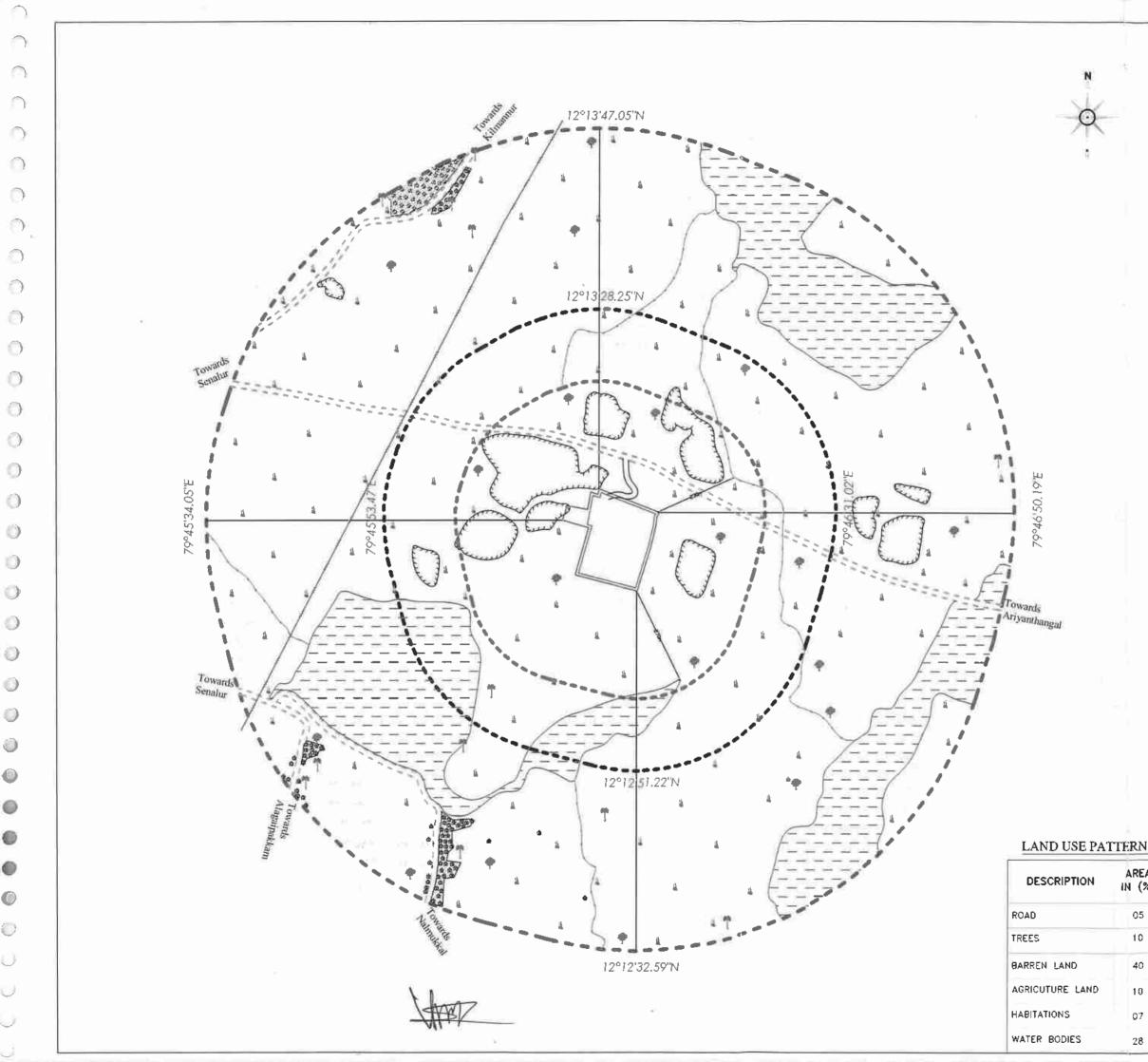
- PN

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

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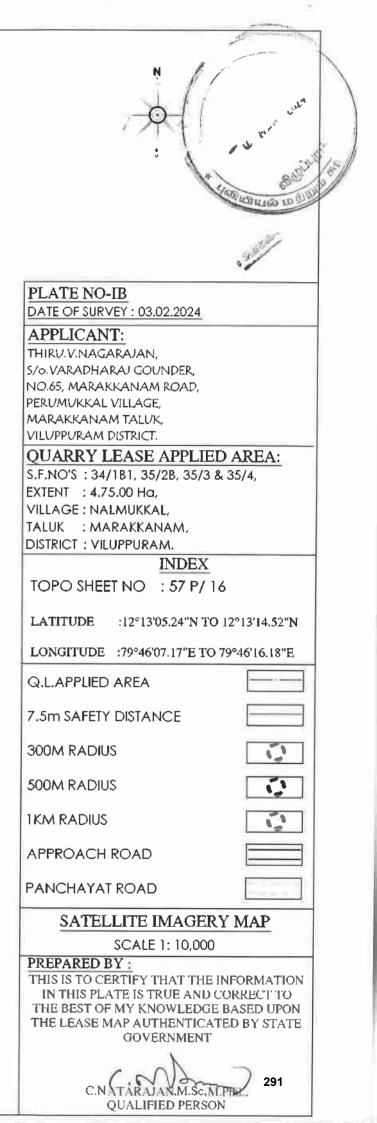
3209 Faculty of Science The Senate of the Annamalai University hereby makes to the Degrees of Muster of Science (by Ecomination) in _____ he having been certified by duly appointed Examiners at the examination held in April 1976. to be qualified to receive the same und that he was placed in the First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

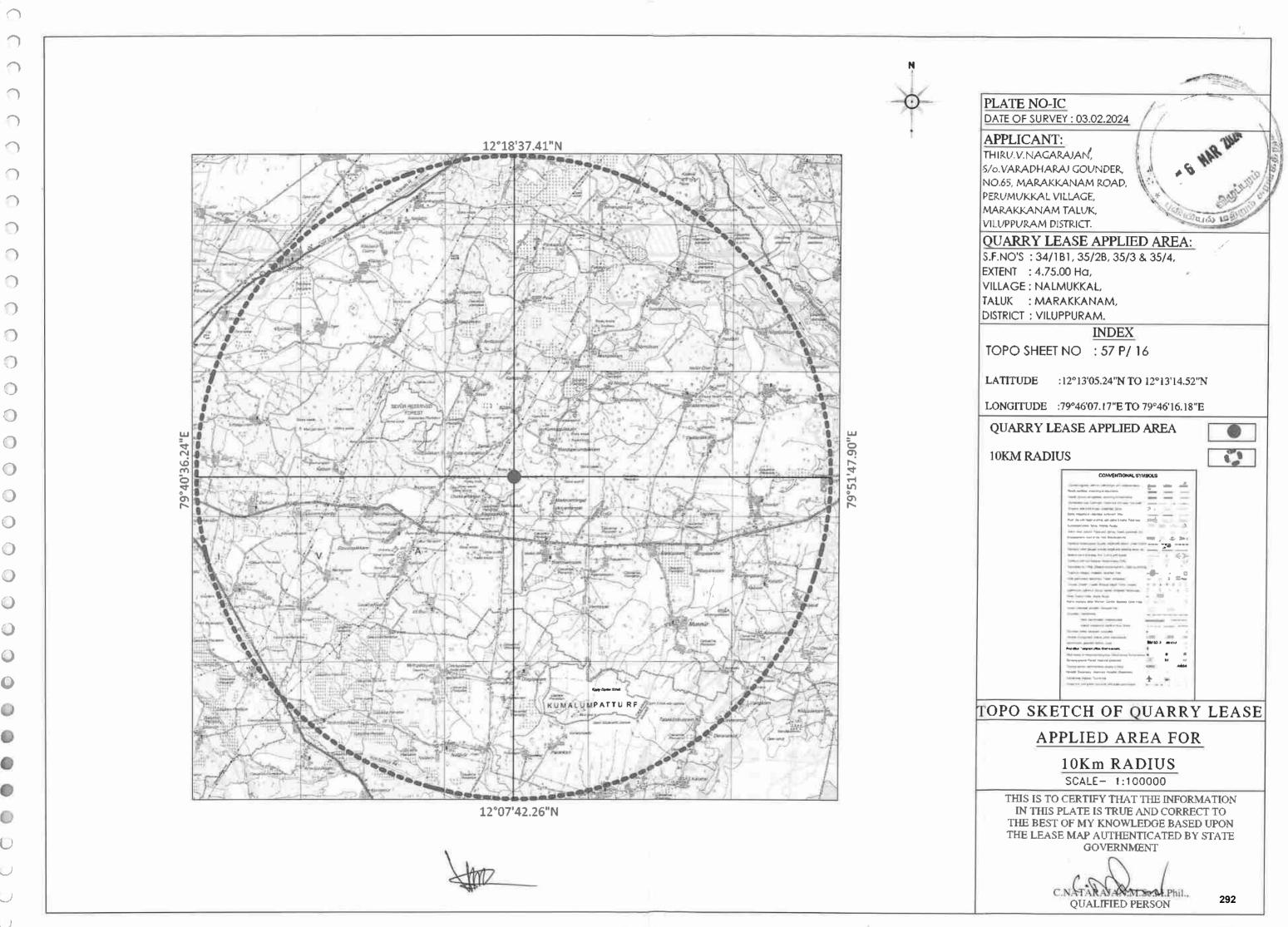




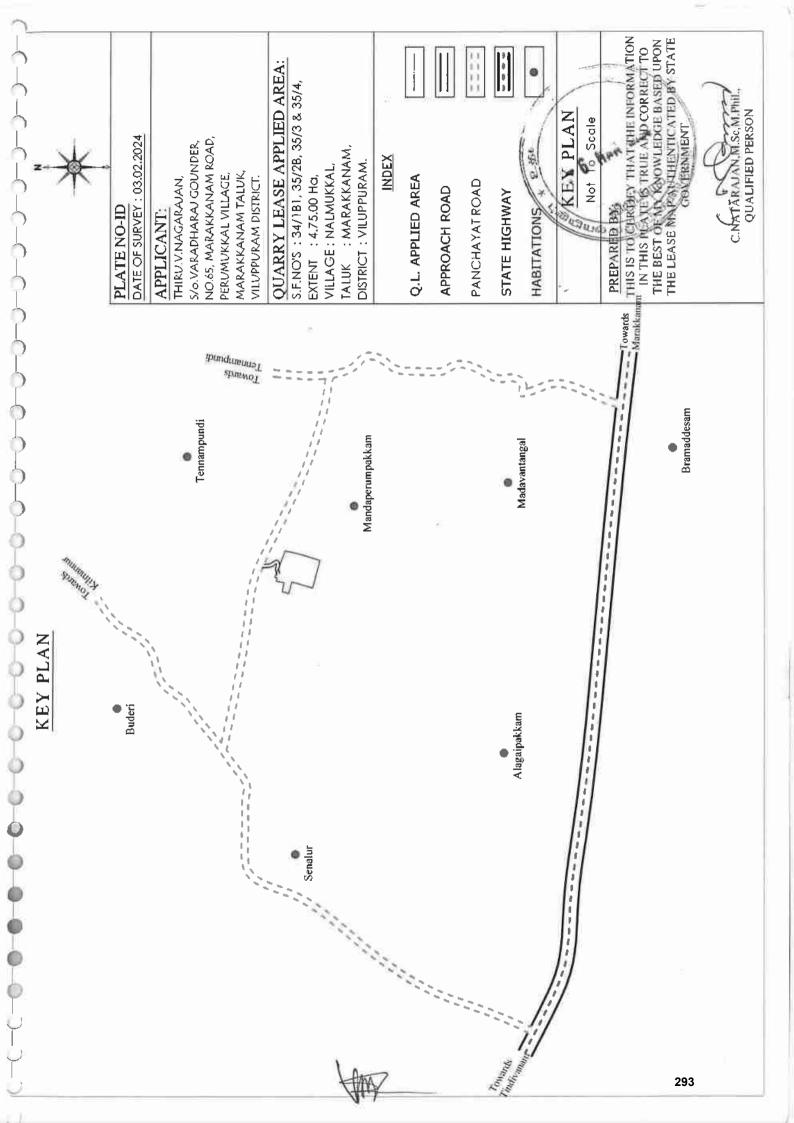
| PLATE NO-IA DATE OF SURVEY : 03.02.202 | 4 |
|--|---|
| APPLICANT: THIRU.V.NAGARAJAN, S/o.VARADHARAJ GOUNDER, NO.65, MARAKKANAM ROAD PERUMUKKAL VILLAGE, MARAKKANAM TALVK, VILUPPURAM DISTRICT. | 1 |
| QUARRY LEASE APPI S.F.NO'S : 34/181, 35/28, 35 EXTENT : 4.75.00 Ha, VILLAGE : NALMUKKAL, TALUK : MARAKKANAM, 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. |

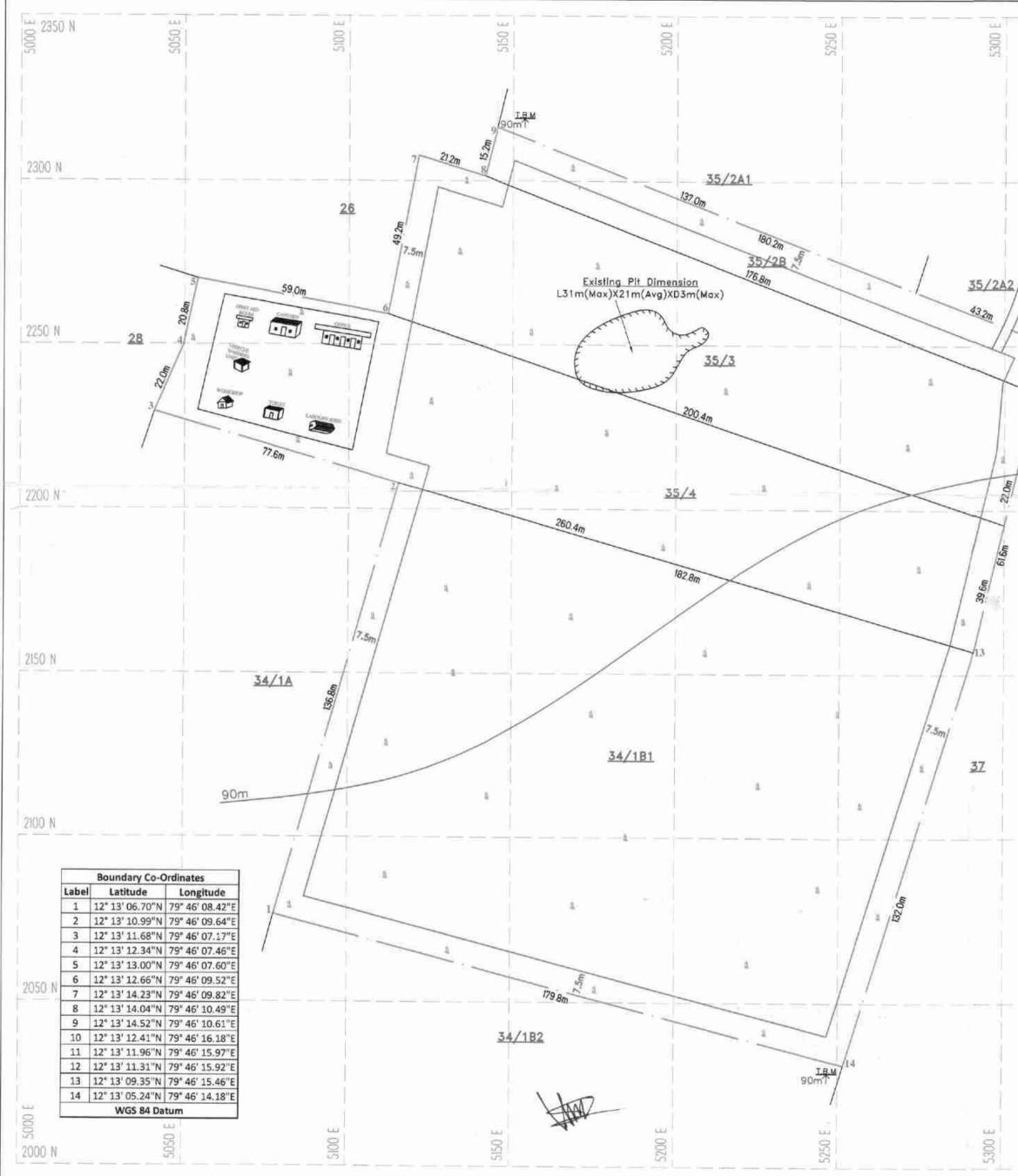




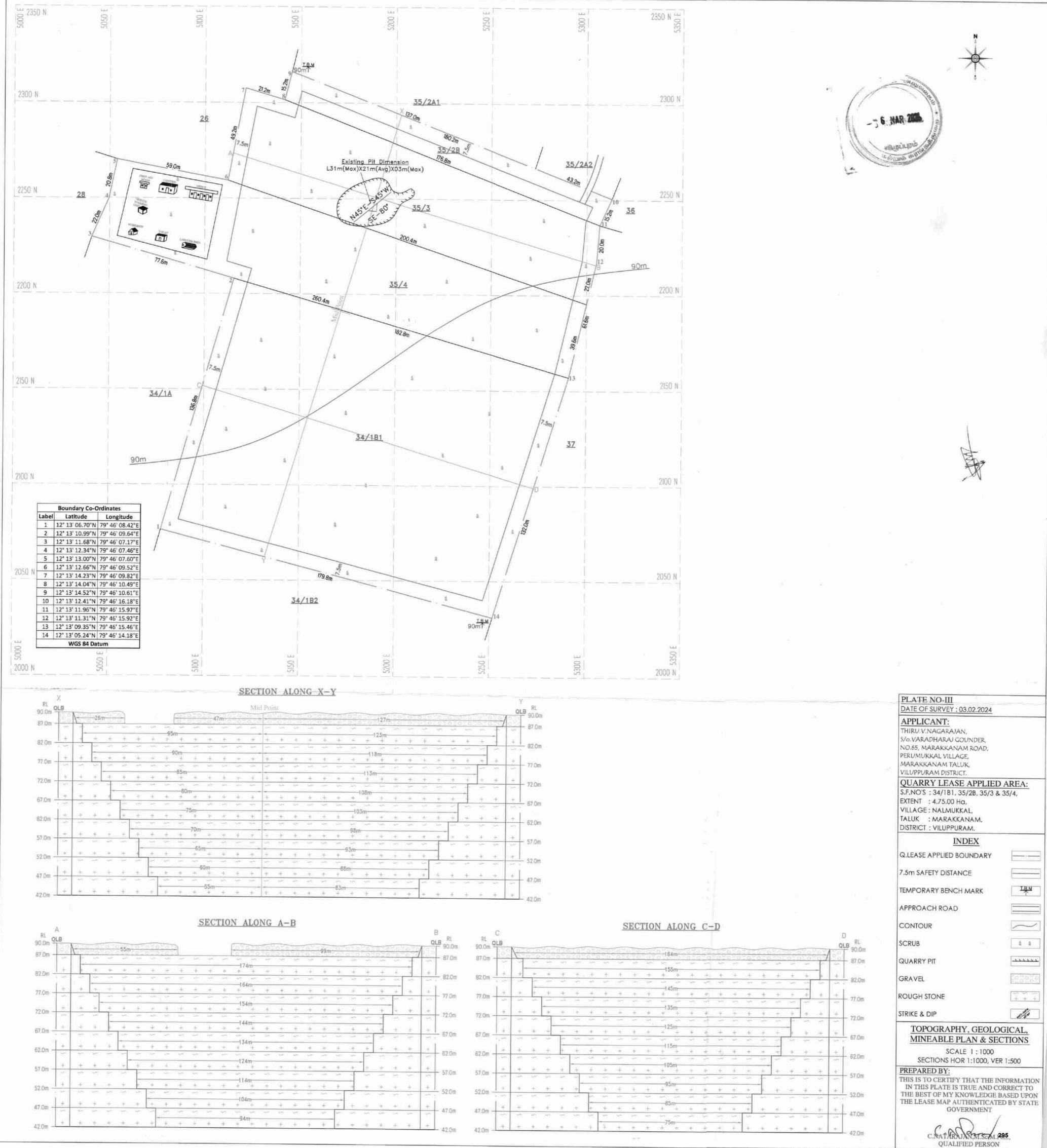


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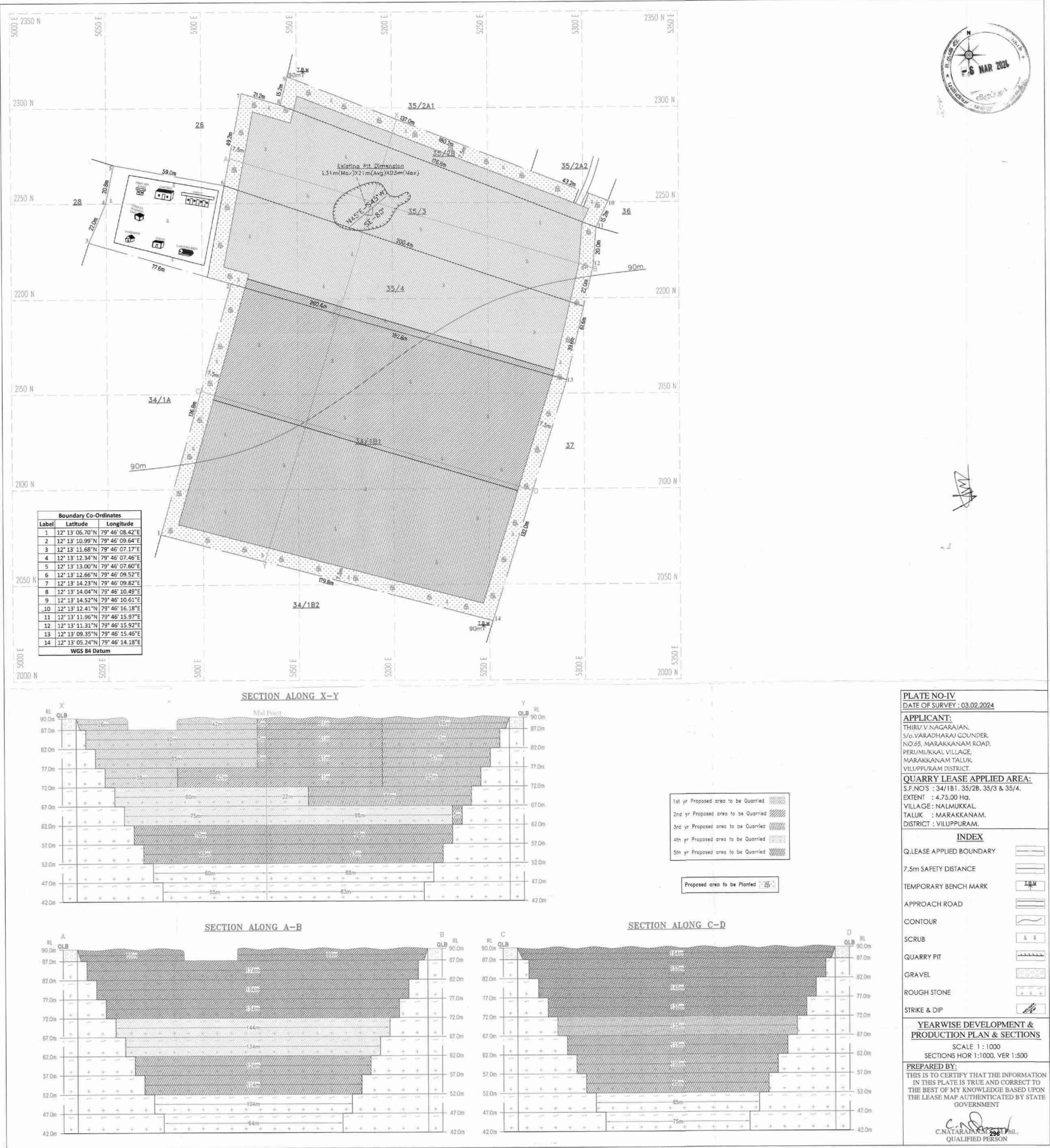


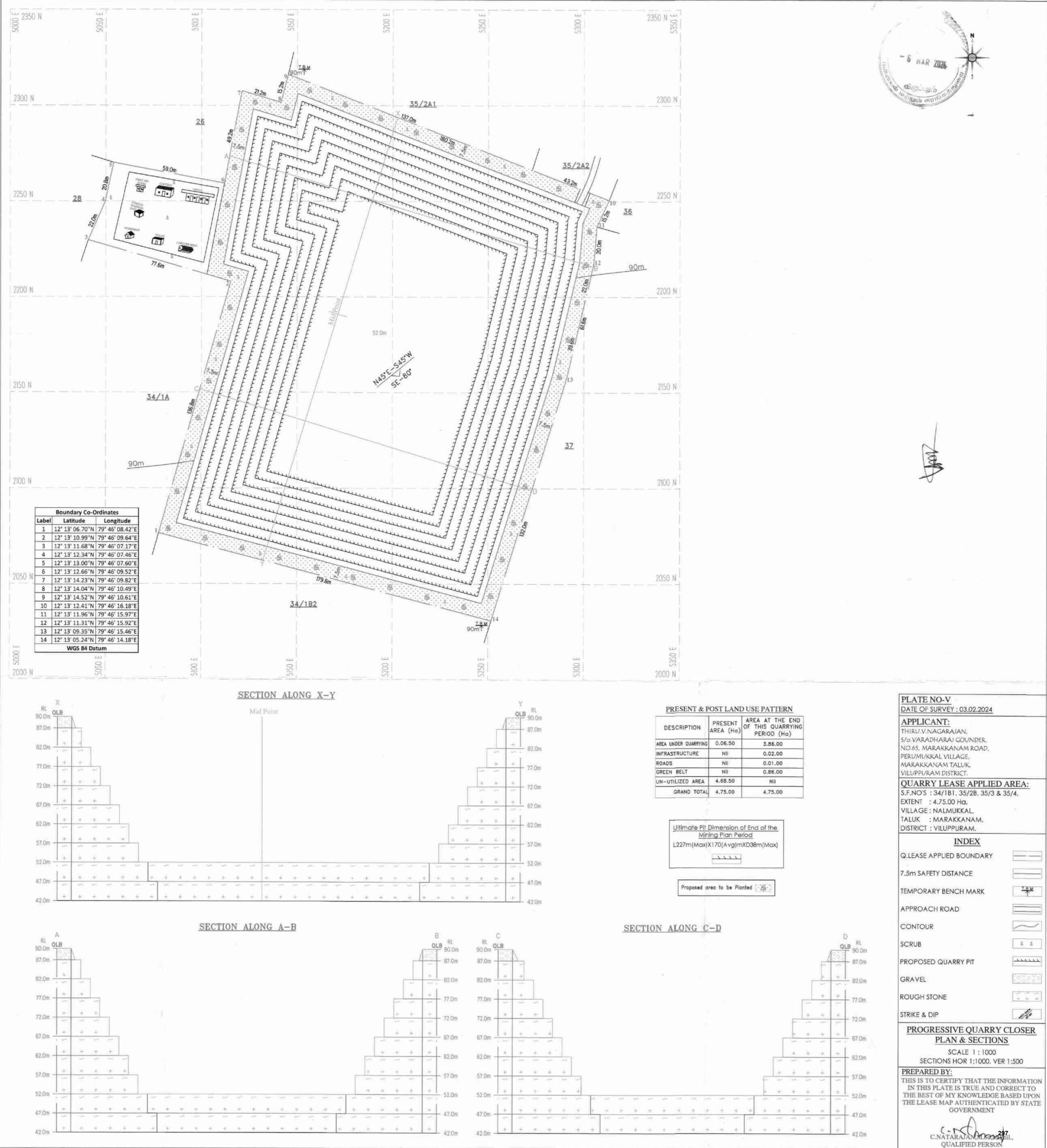
| 2350 N 955 | - 5 NAR ZOLA |
|---|---|
| 10 2250 N 2250 N 36 4 4 2250 N 36 | |
| 8 12 <u>90m</u> 2200 N | |
| 2150 N | PLATE NO-II DATE OF SURVEY : 03.02.2024 APPLICANT: THIRU.V.NAGARAJAN, S/o.VARADHARAJ GOUNDER, NO.65. MARAKKANAM ROAD, PERUMUKKAL VILLAGE, MARAKKANAM TALUK, VILUPPURAM DISTRICT. QUARRY 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 |



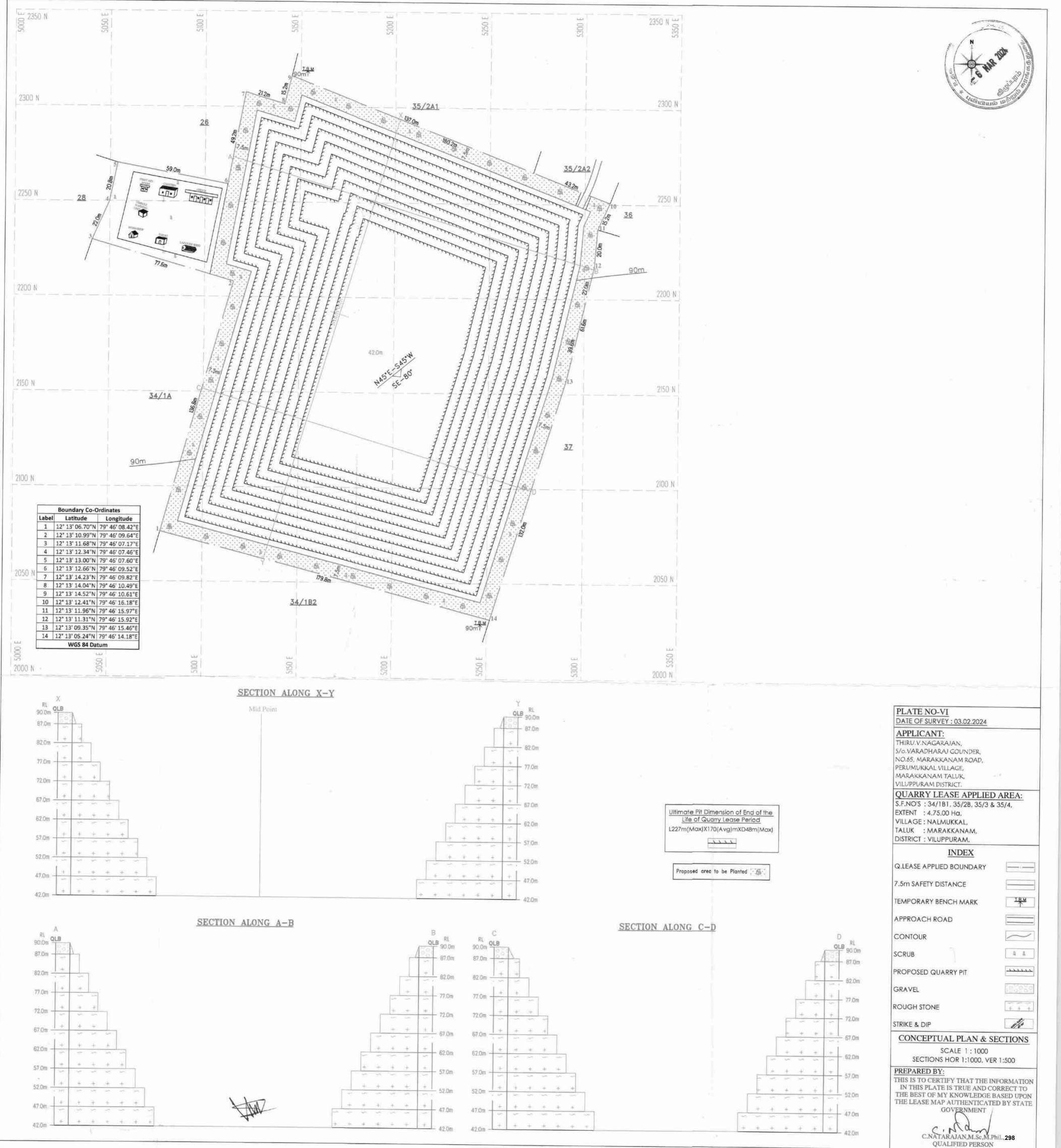
















From Tmt. S.Safiya, M.Sc., Assistant Director, Geology and Mining, Viluppuram.

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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 |
|------------|--|---------------------------|--------------------|--------------|-------------------------|-----------------|---------|
| | | ر پر ز | NIL | | E. | | E |

Assistant Director, Geology and Mining, Viluppuram. Mg 613/24



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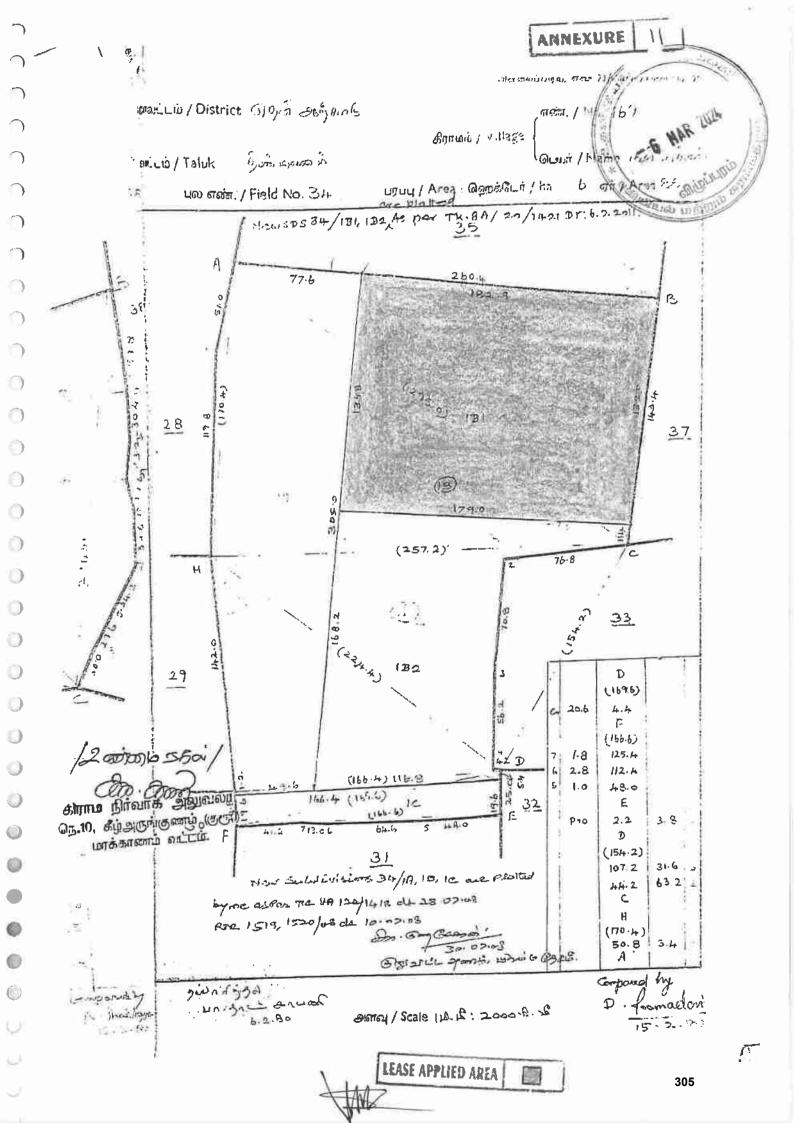
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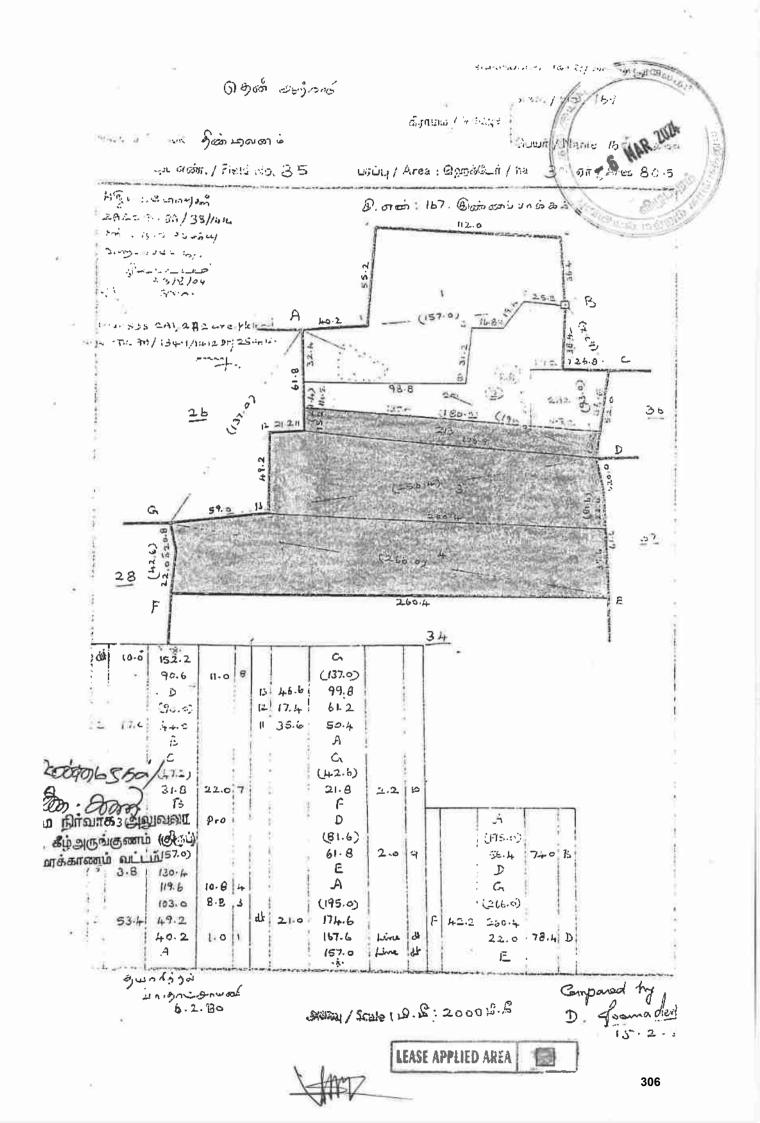
J

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







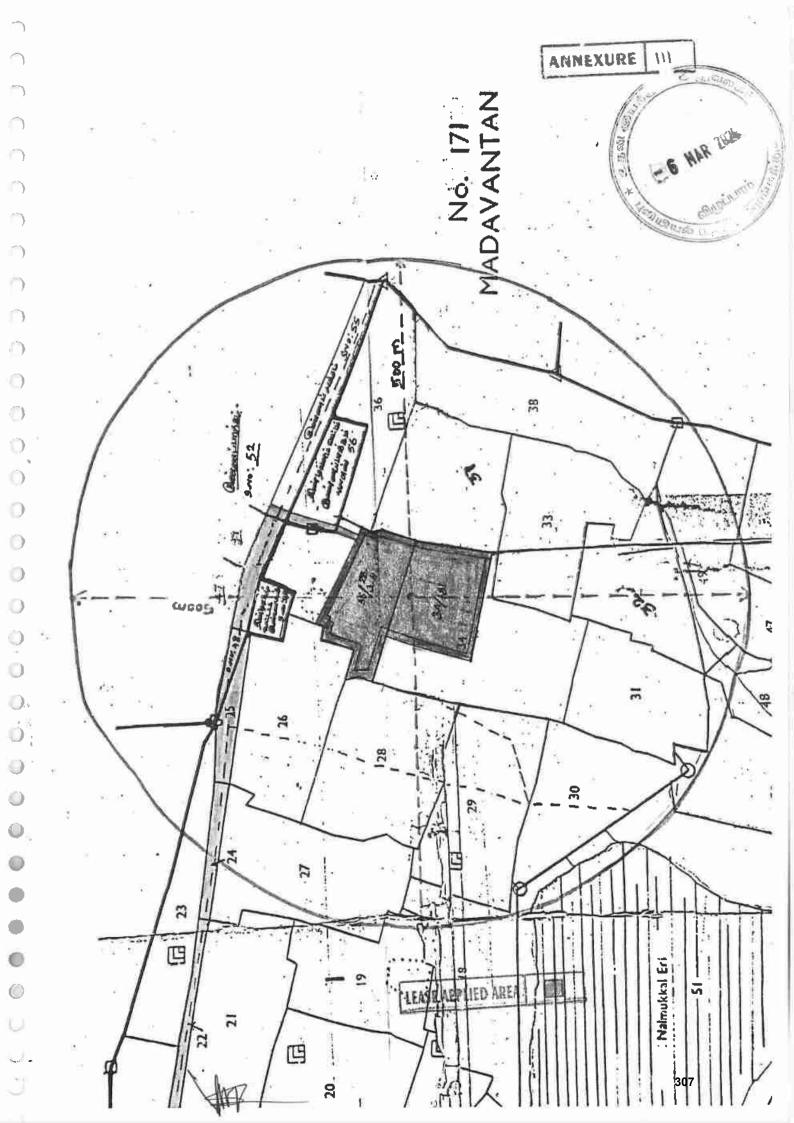
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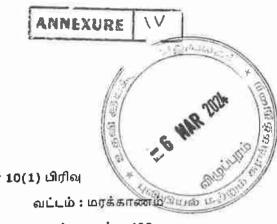
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தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : விழுப்புரம்

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பட்டா எண் : 425

வருவாய் திராமம் : நல்முக்கல்

உரிமையாளர்கள் பெயர்

| เ. ฉ | ரதராஜிகவ | புண்டர் | | | தந்ல | 1) 2) 2) | தாகரா | |
|---------|-----------|---------------|---------|------------------|-----------|----------------|---------|-----------------------------------|
| புல எண் | உட்பிரிவு | பன் | செய் | நன் ⁽ | செய் | மற்ற |)വെ | குறிப்புரைகள் |
| | | սյնկ | தீர்வை | սյմկ | தீர்வை | பரப்பு | தீர்வை | |
| - | | ஹெக் - ஏர் | ரூ - பை | ஹெக் - ஏர | ന്ദ്ര- അവ | 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 |

| | _ | | ANNEXURE |
|--|--|--|-------------------------------------|
| | nandiji sijinanini Gilinanan | | |
| เริ่มเคมั่ง (ค.ศ.ศ. ถึง(กรู ส.กฏการและ แนะคะสาทิต์ เป็นที่ให้ไป เม่น ค.ศ. ส.กฏการและ เป็นสุภิปิต์ เป็นที่ 2.ศ.ศ.ศ. เป็นสุขอ เป็นเป็นที่ เป็นเป็นการและ สะเป็นเป็นกระ 2.ศ.ศ. | and a second sec | | B WAR LUUB |
| aller der formen für | مەتد چىقىدىغ ويلىرىم. () بىلىغىشى دوقىغىلى بىر بىڭ ئىلىدى يېغىشى قىلى مەيلىغ بىلىر قىلىغىلىغ مەيلىك بىلىر () ئېغىلى مەيلىك بىلىدى () ئېغىلىك مەيلىك بىلىدى ئېڭ بىلىغى بىلىك بىلىدى ئېڭ بىلىغىنىڭ بىلىك | | |
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| ni ann | הזהו ההוענע / 20 יושר דע א | | |
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| dhine fr | ளிந்த மாதத்தில் டலில் தில்மப்பட்டது ா3த தொடிப்பட்டது செடியாட்டதி | | |
| แน่น เก่า 2777, CG, (ปราชี)เริ่า ก็อายี่ง | விளசுக்கம் ஆள்வு விழுக்காடு. | | |
| Lin Dry: Co | காலவுள் கூட்ச மிராஜ்க் விலலான பார்த்தில் திரார் | | |
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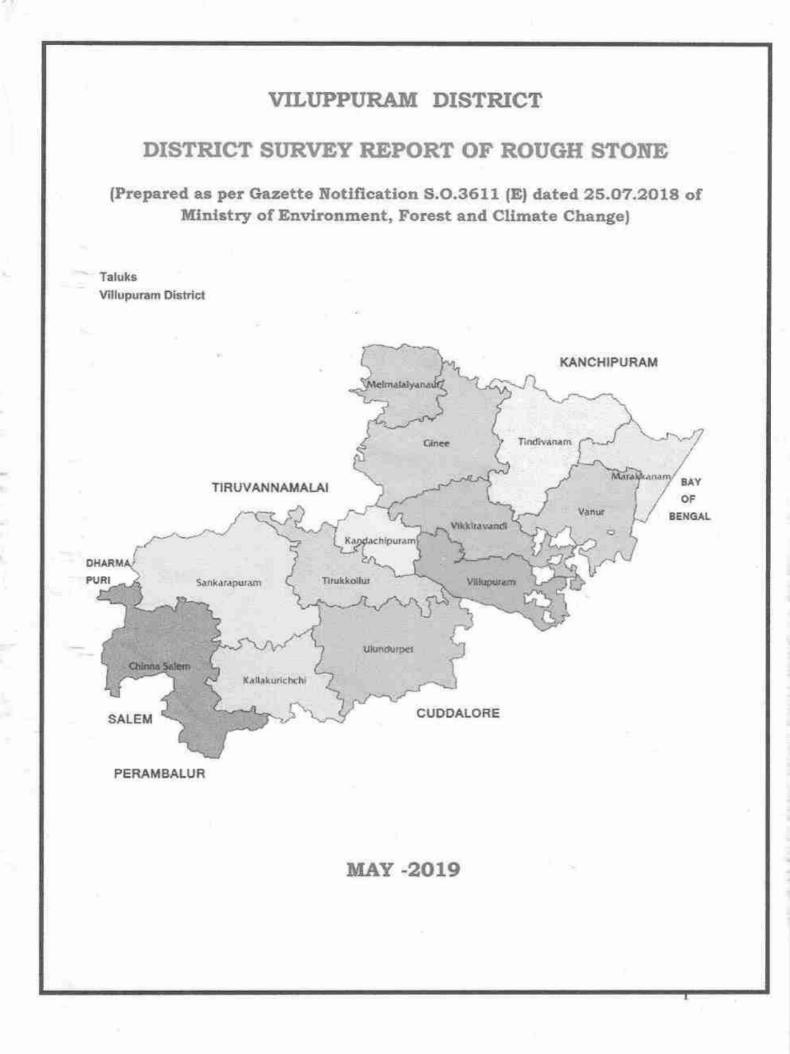
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VILUPPURAM DISTRICT

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.

ł

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

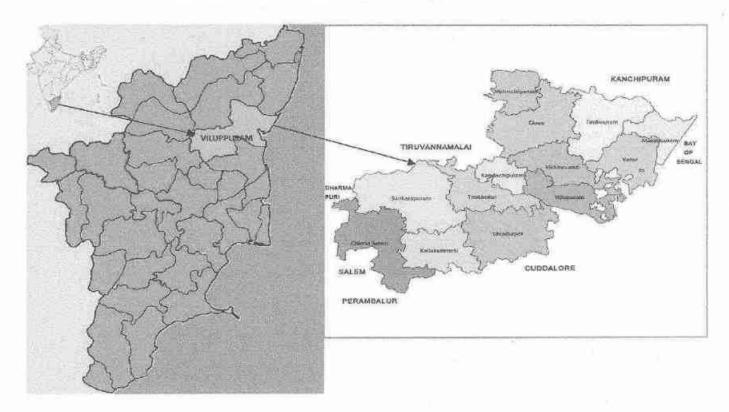
Viluppuram District was segregated from the South Arcot District on G.O.Ms.No.1486 Revenue Y(3), Dated 18.12.1992 and became a separate district on 30th September 1993.

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.

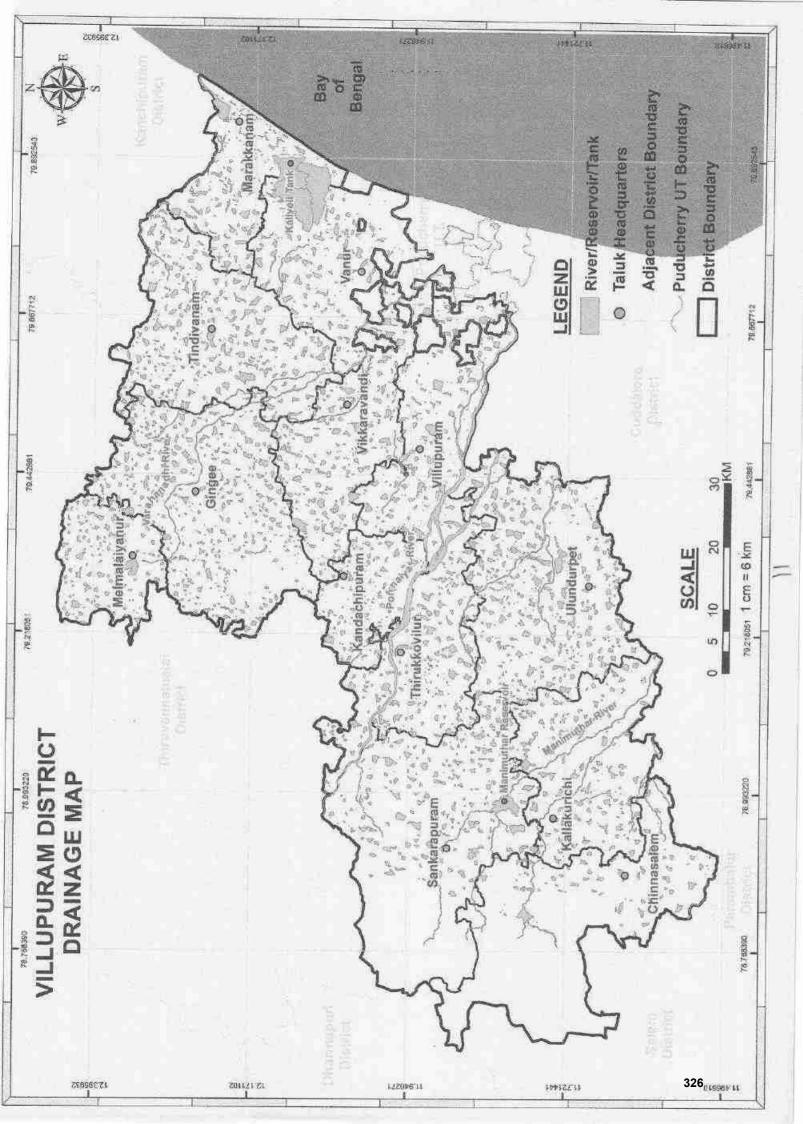
| S. No. | Block | Canals | Tanks | Tube wells | Ordinary wells |
|-----------|-----------------------|--------|-------|---------------|-------------------|
| 1 | Melmalayanur | 1 | 85 | 468 | 10911 |
| 2 | Gingee | 0 | 132 | 0 | 11821 |
| 3 | Vallam | 0 | 119 | 533 | 10509 |
| 4 | Olakkur | 1 | 116 | 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.

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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 |
|---|---------------------|---------------------------|--|--|--|--|---|--------------------------------------|
| Location of the Mining Lesse (Latifude & Longfinde) | 11.11× 11.110 | 15 | 12 ⁶ 00 ⁻³ 0 ⁻ N to 12 ⁶ 00 ⁻ 26 ⁻ N 78 ⁶ 55 ⁻ 28 ⁻ E to 78 ⁶ 55 ⁻ 23 ⁻ E (12 ⁶ 00 ⁻ 27 ⁻ T ⁻ N 78 ⁶ 55 ⁻ 21 ⁻ 8 ⁻ E) | H.19701.20,62 | 12°11'56''N to 12°11'366'N 79°45'33'TE 10'79°45'26'E (12°11'37''8 | 12'08'58.60'N to 12'09'04.64'N 79'44'58'38.34''E to 79'44'54''E (12'09'04.65'N 79'44'38.34''F | 01.01 X 82 100211 1.61 85.662 au 1.61 85.662 au 1.61 85.662 au 0.1.01 85.662 au 0.1.01 85.662 au | 12°04'12'N to |
| 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 |
| Starus Starus (Working Working /Temp working fat dispetch eft.) | | 12 | Working | working | Non waking | Non. working | Working | Working |
| Date of commence ment-of Mining Coperation | | 14 | 06.02.2017 | EV | 25.02.2016 | N | 18,09,2017 | 16.05.2018 |
| Period of Mining lease (1 ⁴⁷ /2 ⁶⁶ renesal) | a To | | • | | | ÷ | E. | ., |
| R aff a | From | 0 | a | | 2 | × | 10 | 30 |
| ning lense | To | 8 | 30.08.2021 | 22.01.2022 | 30.12.2020 | 1202-00-80 | 18.03.2020 | 18 03 2020 |
| . | From | 4 | 31,08,2016 | 23.01.2012 | 31.12.2015 | 09.09.2016 | 28.07.2017 | 28.07.2017 |
| Aren of Minuig icase (Ju) | | \$ | 1/30:0 | 1.20.0 | 2.23.0 | 1.95.5 | 1.08.0 | 2.62.5 |
| Mitting lease grant order No. & Dute | | 100 million (100 million) | B/G&M/ 2020/2010 dt 31.08.2016 | B/G&M/371/11 dt 26-11.2011 | B/G&M(1213/13 dt 31-12-2015 | A/G&M/522/2014 dated 09,09,2016 | A/G&M/977/2012 dt 28.07.2017, | A/G&M/822/2016 dated 22.08.2016 |
| 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, |
| Numue of the Lasses | ALL - DAY AND - AND | 3 | T.Muthimizhan | RSubramanian | K. Nateltinppan | K. Shuntayam | K. Attantisvelu | A. Ganesm, |
| Name of the Mineral | | 2 | Rongh Rone | Rongh stone | Ronigh stone | Rough stone | Rough stone & Earth | Rough stone & Earth |
| 15 <u>2</u> | | | તં | 2 | ë | 4 | นว่ | ê |

9. Details of Mining Lease Name of the Mineral: Rough stone

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a

| | Open cass | Open case | ហិរ្ខាគា លេខ | Open cest | Open clast |
|---|---|--|--|---|---|
| 79°38.39°E to 79°38'51°E (12°04'16'N 79°38'39'E) | 12,2,2,2,3,3,7,1,0 79 ⁰ 16,7,0,1,8,6,7,1 79 ⁰ 16,7,0,1,1,0 | 11 1025 22 78 70 1025 22 26 97 10 1026 11 25 25 26 97 10 1026 11 25 25 26 97 10 1026 11 25 25 26 97 10 1026 12 26 26 26 26 26 26 26 26 26 26 26 26 26 | 12°03°23°7°N to 12°03°23°7°N 19°40°31°E to 79°40°32°55°N 79°40°3265°E) | 12 ⁶ 03*25.80°N to 12 ⁹ 03*33.90°N 79 ⁶ 40°03.83°E to 79 ⁶ 40°13.75°E (12°03*20.53°N 79 ⁶ 40°10.84°E) | 11 ⁹ 49 ⁴ 7 ⁴ 8 ¹ 6 ⁴ 7 ⁴ 8 ⁴ 8 ¹ 6 ⁴ 7 ⁴ 8 ⁴ 8 ⁴ 8 ⁴ 7 ⁴ 8 |
| 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 |
| | Captive | Non Captive | Non Captive | Von Captiro | Captive |
| | Working | Working | Working | Working | Worsung |
| | 30.09.2015 | 22.06.2009 | 04.052015 | 08.03.2016 | 04.12.2018 |
| | ¥ | K | • | 4 | * |
| | 25.07.2019, | 18.06.2019 | 24-03.2020 | 30.12.2020 | - 07 10.2023 |
| | 25.07.2014 | 19.06.2(x)9 | 25.03.2015 | 31.12.2015 | 08.10.2018 |
| | 2.52.0 | 0.05.1 | 1,46.5 | 3.32.5 | 1.50.0 |
| | BAGARM/2007/10 dt. 26.07.2014, | BirG&M/ 195/09 dt. 25 05 2009 | AVG/05/15 dated 25,03,2015 | ArG&M/601/15 disted 31.12.2015 | B/G&M 369/2017 dt. 08.10.2018 |
| 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 |
| | P Ramesh | V.Guussekoran | R Alagurajim | Tint S.Nantlini | G. Sel vakumar |
| | Rough | Rough | Rough stons & Earth | stone | Rough |
| | 2. | có - | Ġ. | 10. | 11. |

| vpon one | Open cast | Opean cast | Open sust | Open cast | Open cast |
|---|--|---|---|--|---|
| 31.95 65.80,66 | 00 12 12 12 12 12 12 12 12 12 12 | (27) 22 25 10 25 20 20 20 20 20 20 20 20 20 20 | 12°07'21'N to 12°07'27"N 19°22'40"B to 79°22'45"E 79°22'40"E) | 11°37'09''N to 11°37'01''N (78°35'02'E 10''78''55'02'E | |
| | Yes, leater Ne.DEFAA-File Ne.DEFAA-File Ne.DEAT92017035 IAA/2017, dated 01.08.2017 | 14 | Yes, licitor No.SEIAA- No.SEIAA- INNF.No.26024 C/I(u)/1454201 4 duced 25.06.2014 | Yes. Later No.SELAA- TAGE No.1882/E CY(3)7459/201 4 dated 02.07/2014 | |
| 14 | Nen Capitye | Cuptive | Captive | Non Captive | Nom Captive |
| | Working | Working | Working | Working | Working |
| | 19.03.2618 | 01,07,2011 | 07.01.2019 | 11. | 21.072016 |
| .* | | | | Ŭ. | э. |
| 09.01.2021 | 23,09,2022 | 15.08.2020 - | 17.07.2019 | 05.02.2020 | 13.02.2021 - |
| 10.01.2011 | 24.09.2017 | 16.08.2010 | 18,07.2014 | 06.02.2015 | 14.02.2011 |
| 1.96.0 | 0.00 | 5,00,0 | 0.020 | 3.35.0 | 1.00.0 |
| 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 |
| R. Subsummin | C. Balanturugan | E. Sridhar | C.Selvam, | A.S.Strinvesan | A Muthueatmy |
| Rough | Rough stone & Earth | Rough stene | Rough stone & Earth | Rough stone & Earth | Rough |
| 12. | 13. | 14. | 15 | 16. | 17. |

| | Open cast | Open cast | Open nist | Opences | Openticals |
|----------|--|---|---|--|---|
| | 12%03*327%10 12%03*40*16*E 79%40*16*E 10~79%40*25*T (12%334*% | 12%03*597148°E) 12%03*507148°E 10~78%57148°E 10~78%57148°E) 112°03.729°W | 11 ⁶ 57'9,56'N 10 ⁶ 11 ⁶ 57'14,14'N 11 ⁶ 57'14,14'N 12 ⁶ 10 ⁶ 12 ⁹ 10 ⁶ 10 ⁸ 10 ⁹ 10 ⁸ 10 ⁸ 1 | 12 ⁰ 11 ⁵ 21 ⁹ 0 to 12 ⁰ 12 ⁵ 1 ⁵ 2 ⁶ 0 79 ⁰ 45 ⁵ 08 ⁵ 15 ⁶ 1 79 ⁰ 45 ⁴ 2 ⁶ 15 ⁶ 1 79 ⁰ 45 ⁴ 2 ⁶ 1 ⁵ 1 ⁵ 10 79 ⁰ 45 ⁴ 8 ⁴ 2 ¹ 1 ⁵ 10 | Jult 1 02:5966L N. 10356, 11671 |
| | 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 |
| | Non Capitive | Cuptive | Cuptive | Non Capitre | Non Captive |
| | Working | Working | Working | Working | Non Warking |
| | 28,09,2016 | 31.01.2017 | 22.12.2016 | 26,05.2015 | 27,01,2012 |
| | 08: | 1 | | <u></u> | - 14° (|
| | - 1202 303 | - 92.07.2026 | - 1202 2021 - | 10/04/2020 - | 25,12,2021 |
| | 20.09.2016 | 03.07.2016 | 09.09.2016 | 11.04.2015 | 26.12.2011 |
| | 3,665 | 2.00.0 | 1.02.5 | 1,03.0 | 1.10.0 |
| | A/G&M/3D0/2016 dated 20.09.2016 | dt 03.07.2016 dt 03.07.2016 | BrG&M/3342014 dt: 09.09.2016 | BCG&M/1898/12 dt.11.04.2015 | th/GRAM 365/11 dt 25,112011. |
| 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 |
| | Rough store & Earth | R ough stone | Rough store & Earth | Rough starte & Earth | Kough stone |
| | 18. | 19. | 20. | 21, | 22. |

| | Upen casi | Open cest | Open cast | Opein cast | Open cast |
|----------|--|--|--|---|--|
| | 11 ⁶ 39'59,60'7V to 10 ¹ 11 ⁶ 39'59,60'6V 79 ⁶ 12'16,538''E to 10 ¹ 12'12'12'85''70''V 79 ⁶ 12'18.64''Y 79 ⁶ 12'18.64''Y | 12°02'42.84'N to 12°02'48.45'N 79°28'49.05''E to 79°28'49.45'W (12°02'43.45'W 79°28'49.08''E) | (Lab7.7)g6L N.420.075(1) H.470.075(1) N.21.076L N.21.076L N.21.076 | 12°13'13'05'N to 12°13'11''N 12°13'12''13''11''N 13°43'26''E (12°13''13''17''N (12°13''17'') | 12011-357N to 12011-37N 12045-10713 12045-10713 12045-10713 12045-10713 |
| | 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 |
| - | Ven Captive | Nen Captive | Non Captive | Non Captive | Nan Capitre |
| | Working | Working | Working | Working | Working |
| | 28.09.2016 | 25.01.2018 | 24,08,2017 | 04.052016 | 19,08,2015 |
| | 1 | | э. | | æ |
| | 21.08.2021 | 22.01.2022 - | 13-10/2021 | - 12.03.2023 | 13.05.2020 |
| | 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 |
| | Rough Hone & Earth | Rough stone & Earth | Rough stone & Farth | Rough Rose & Earth | Rough stone & Earth |
| | 23. | 24. | 25, | 26. | 27. |

| Open cast | Open cast | Open cast | Open cast | Open cus | Open unit |
|---|--|--|--|---|---|
| 12°12'24'W10 12°12'19'W 79°44'55''E (12°12'19'W 79°44'55''E | 12913'58'N to 12914'03'N 19945'17'E to 72945'23'E (12 ⁹ 13'58'N 79 ⁸ 45'20'E) | 12"27.23.50" to to 12"27.25"27" 12"27.26"27" 12"27.26"29" 12"27.26"29" 12"27.26"29" 12"27.26"29" 12"27.26" 12"27" 1 | 12.015.22.70 to 79°44.03°E 10.79°44.07°E (12.013.22.70 79°44.04 E) | 1.75.85.01 N. 00.70, 75. | 12 ⁹ 13 ⁻ 15 ⁻ ¹ N to 12 ⁹ 13 ⁻ 09 ⁻ N 79 ⁹ 45 ⁻ 16 ⁻ E to 79 ⁹ 45 ⁻ 16 ⁻ E (12 ⁹ 13 ⁻ 12 ⁻ N |
| 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 |
| Non Capitve | Non Captivo | Captive | Non Capitive | Non Captive | Captive |
| Nothing | Working | Working | Working | Wotking | Working |
| 02.12.2(00) | 29.06.2016 | 22.03.2017 | | | 30.10.201.02 |
| // | | 10 | к | e | 90 |
| 22,09.2019, - | 12,11,2020 | 14-10.2021 | 23.04.2020 | 15.03.2020 - | 07.02.2021 |
| | 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. |

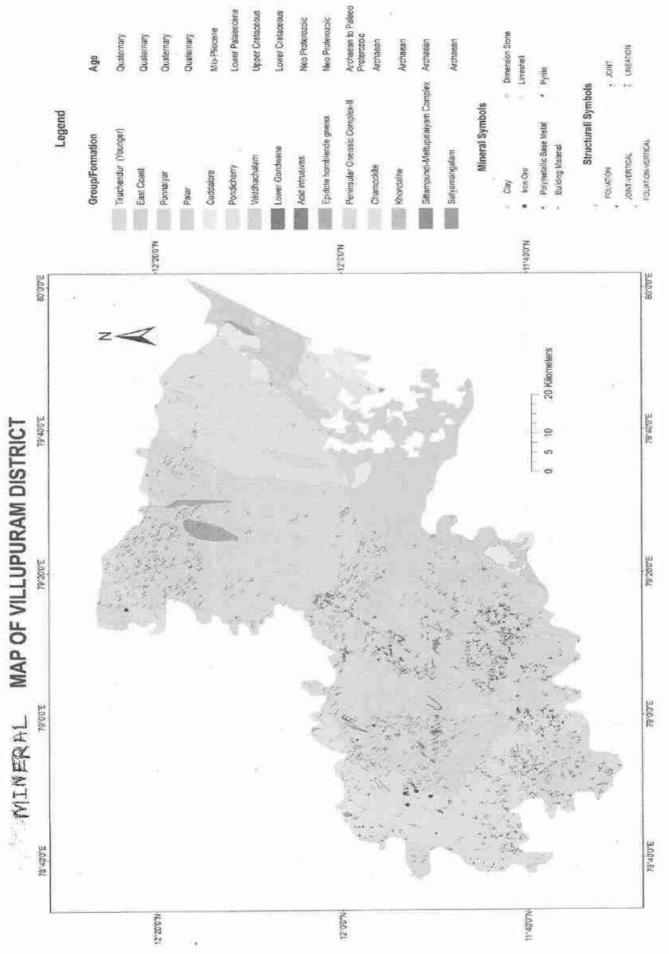
| Open cost | (Open cast |
|--|--|
| (H.01, 71, 64 N.42, 66, 111) H.51, 71, 66 M. H.60, 71, 66 N.447, 66, 11 N.447, 66, 11 | 12 ⁰ 13 ¹ 3 ¹ N to 12 ⁰ 13 ⁰ 8 ¹ N 79 ⁰ 46 ³ 44 ² E to 79 ⁰ 46 ³ 44 ² E |
| Yea, letter No.01//TN/MIN/ 6326/2017/DELAA 2017,Ec.No.1, 2017,Ec.No.1, Duted:01.08.201 | Yes, ke lietter 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 |



Fa

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. |

Ra

| 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. |

Y

| 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. |

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| | 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.

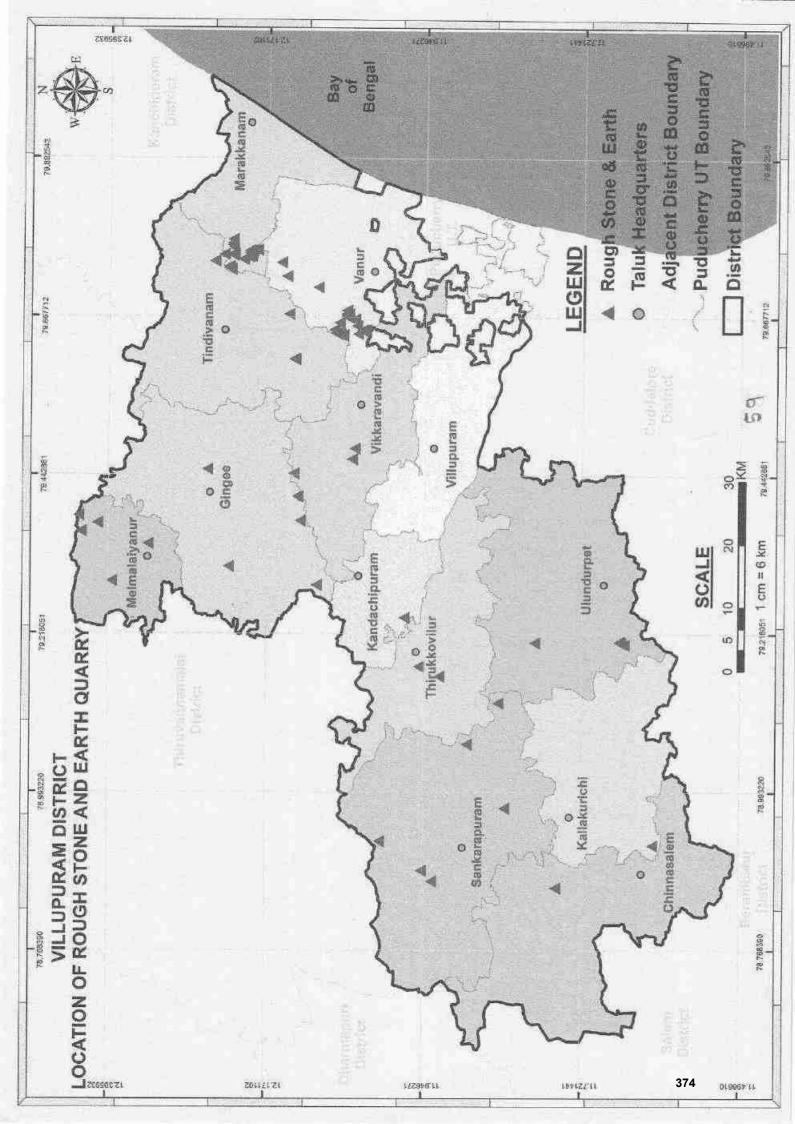
16. Use of Mineral

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.

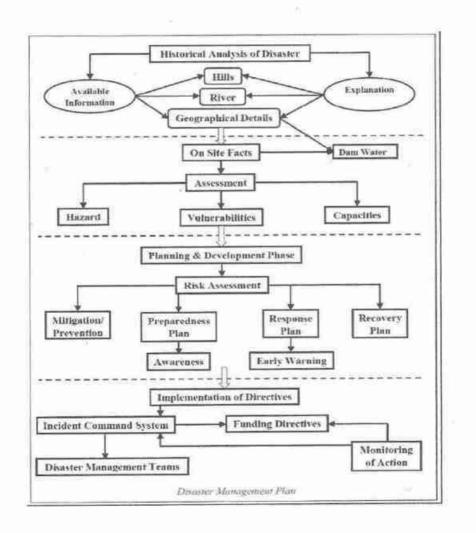
| SI. No | Name of the Taluk | Highly Vulner able | Vulnerable | Moderately Vulnerable | Low Vulnerability | Total No.of Vulnearable Location |
|-----------|-------------------|--------------------------|------------|--------------------------|----------------------|--|
| 1 | VILUPPURAM | 0 | 0 | 0 | 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.

-11

- 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



Res. **END OF THE REPORT*** Y8 * 9

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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

Fit for Analysis

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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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Please Contact:

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

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

For Shrient Analytical and Research Labs Pvt. Ltd



-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



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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



Ren. **END OF THE REPORT*** 10 + 9

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(1) The test items will not be retained for more than 15 days from the date of issue of test report. (2) The results relate only to the items tested (3) The test report shall not be reproduced except in full without the written approval of the laboratory (4) Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other production. For further details, please see testing and certification regulation, chapter A-3.4. (5) The correctness of the information related to sample(s) in the Test Request Form/Customer letterhead/Email is the customer's responsibility. The laboratory reports the said information in the test report and is not liable for the same.



Sample Condition

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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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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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

Fit for Analysis



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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

For Shrient Analytical and Research Labs Pvt. Ltd



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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

For Shrient Analytical and Research Labs Pvt. Ltd



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Please Contact:

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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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Please Contact:

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



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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

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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

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Sample Condition

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

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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



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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

For Shrient Analytical and Research Labs Pvt. Ltd



Ren. **END OF THE REPORT*** 10 + 9

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

For Shrient Analytical and Research Labs Pvt. Ltd



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

Please Contact:

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(1) The test items will not be retained for more than 15 days from the date of issue of test report. (2) The results relate only to the items tested (3) The test report shall not be reproduced except in full without the written approval of the laboratory (4) Any use for advertising purposes must be granted in writing. This technical report shall not be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4. (5) The correctness of the information related to sample(s) in the Test Request Form/Customer letterhead/Email is the customer's responsibility. The laboratory reports the said information in the test report and is not liable for the same.

END OF THE REPORT*



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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

For Shrient Analytical and Research Labs Pvt. Ltd



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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

For Shrient Analytical and Research Labs Pvt. Ltd



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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

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 | 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



END OF THE REPORT*

Authorized Signatory J. GNANAPRAKASAM Technical Manager

Please Contact:

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& Rea



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%



Rea **END OF THE REPORT*** 10.4

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Please Contact:

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

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%



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

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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

For Shrient Analytical and Research Labs Pvt. Ltd



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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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Please Contact:

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



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

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

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END OF THE REPORT

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Please Contact:

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



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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

For Shrient Analytical and Research Labs Pvt. Ltd



Terral 45

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Please Contact:

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



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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



Terral 45

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Temperature

Sample Condition

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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

For Shrient Analytical and Research Labs Pvt. Ltd

Relative Humidity

32%



END OF THE REPORT

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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**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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%

Please Contact:

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

48 * 94

38°C

Fit for Analysis



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www.shrientanalytical.com

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**

Please Contact:

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



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/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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



Temperature Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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

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**

Please Contact:

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



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/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

Please Contact:

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

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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**

Please Contact:

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



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/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

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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%



Charried - 45

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

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

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Please Contact:

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



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/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**

Please Contact:

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



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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**

Please Contact:

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



Temperature Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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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

For Shrient Analytical and Research Labs Pvt. Ltd

Relative Humidity



END OF THE REPORT*

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

20%

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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

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Please Contact:

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



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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

Please Contact:

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

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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/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



Remain 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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:

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

& Rea

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

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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:

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



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/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**

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



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

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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**

Please Contact:

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



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/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



Herral 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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



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

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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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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



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/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**

Please Contact:

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



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

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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



Tarral 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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**

Please Contact:

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



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/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**

Please Contact:

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



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

www.shrientanalytical.com

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**

Please Contact:

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



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

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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



Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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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**

Please Contact:

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



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

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**

Please Contact:

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



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/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



****END OF THE REPORT***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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*

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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

10 *

& Rea



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/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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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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**

Please Contact:

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

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**

Please Contact:

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



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/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

Please Contact:

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

10 *

& Rea



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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



Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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



Charrow - 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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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



Terral 44

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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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**

Please Contact:

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



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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Please Contact:

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

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**

Please Contact:

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



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/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

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END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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**

Please Contact:

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



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

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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



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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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**

Please Contact:

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



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/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**

Please Contact:

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



Temperature

Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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/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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Please Contact:

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

40°C

Fit for Analysis



Temperature

Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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

39°C

Fit for Analysis



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

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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**

Please Contact:

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



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

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**

Please Contact:

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



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/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



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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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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

For Shrient Analytical and Research Labs Pvt. Ltd



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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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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**

Please Contact:

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



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/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**

Please Contact:

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



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

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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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



Temperature

Sample Condition

Shrient Analytical and Research Labs Pvt. Ltd

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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***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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

10.4

42°C

Fit for Analysis



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

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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**

Please Contact:

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



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

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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**

Please Contact:

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



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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



END OF THE REPORT

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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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**

Please Contact:

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



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/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:

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



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/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



Remain 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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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**

Please Contact:

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



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/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**

Please Contact:

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



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/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**

Please Contact:

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



Temperature

Sample Condition

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

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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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Please Contact:

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

39°C

Fit for Analysis



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

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



Charry - 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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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**

Please Contact:

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



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

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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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

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END OF THE REPORT*

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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

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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/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



Remain 45

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Please Contact:

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



Temperature Sample Condition

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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/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

For Shrient Analytical and Research Labs Pvt. Ltd

Relative Humidity

33%



Charry 44

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Please Contact:

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

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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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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



Tarral - 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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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

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



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/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

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 Terms and conditions:



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

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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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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

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Renarch 1

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

www.shrientanalytical.com

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

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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



416/15, Dhargas Road, West Tambaram, Chennai- 600045

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

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

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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

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Channel -45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



416/15, Dhargas Road, West Tambaram, Chennai- 600045

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

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

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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

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Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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***

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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

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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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



Terral 45

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

Please Contact:

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



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/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

Authorized Signatory J. GNANAPRAKASAM **Technical Manager**

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



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

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

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



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/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**

Please Contact:

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



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/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**

Please Contact:

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



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/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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& Rea Cherryal - 45 ***END OF THE REPORT*** 48 * 9

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

Please Contact:

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



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/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**

Please Contact:

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



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/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:

For any Technical Issues & Complaints: vimalmath@shrientanalytical.com Terms and conditions:



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/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**

Please Contact:

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



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/2024/3016

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

Please Contact:

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



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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

Please Contact:

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



Report No.

SARL/2024/3018

Shrient Analytical and Research Labs Pvt. Ltd

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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 | T I . . . | 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

Please Contact:

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



Sample Description

Shrient Analytical and Research Labs Pvt. Ltd

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/2024/3019
 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. | D (| 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 | | T 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

Please Contact:

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



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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 *4 | 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:

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



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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 |



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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

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*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)

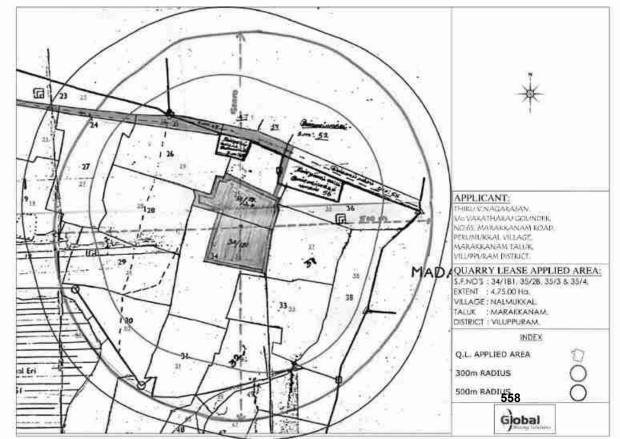
Name of Legal Entity: SHRIENT ANALYTICAL AND RESEARCH LABS PRIVATE LIMITED

Signed for and on behalf of NABL



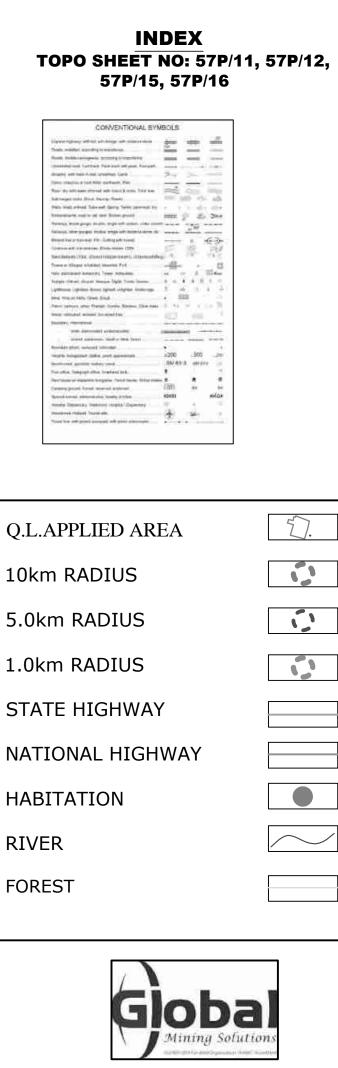
N. Venkateswaran Chief Executive Officer



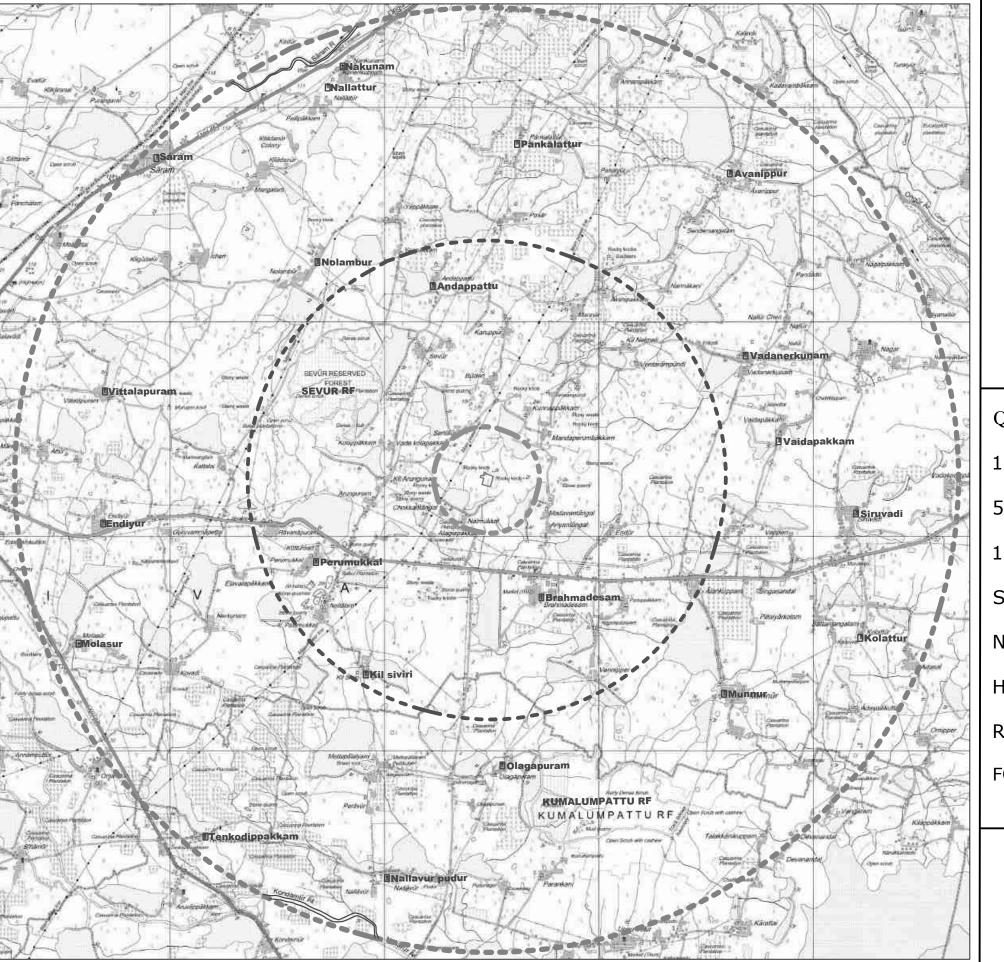




PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.V.NAGARAJAN OVER AN EXTENT 4.75.00HA LOCATED AT S.F.NO.34/1B1, 35/2B, 35/3, AND 35/4, OF NALMUKKAL VILLAGE, MARAKKANAM TALUK, VILUPPURAM DISTRICT, TAMIL NADU STATE.



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.

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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