

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENT MANAGEMENT PLAN

FOR OBTAINING

**Environmental Clearance under EIA Notification – 2006
Schedule Sl. No. 1 (a) (i): Mining Project**

**“B1” CATEGORY – MINOR MINERAL — NON-FOREST LAND-PATTA LAND-
LEASE PERIOD-5 YEARS**

CLUSTER EXTENT – 11.05.9 Ha

(4 Proposed Quarries+ 1 Existing Quarry)

THIRU.R.S. SENTHILKUMAR ROUGH STONE AND GRAVEL QUARRY

| PROJECT PROPONENT | PROPOSED PROJECT | PROPOSED PRODUCTION |
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| Thiru.R.S. Senthil Kumar S/o R.R Subbaiyan No.31, Sathyamoorthy Road Ramnagar Coimbatore District, Tamil Nadu – 641 009 | Extent: 1.95.0 ha S.F. Nos: 285/3(P) & 286/2(P) Pachapalayam Village, Suler Taluk, Coimbatore District | Rough Stone= 75830m ³ Peak Production =16856m ³ Proposed Depth=52m bgl Restricted Depth=47m bgl (as per ToR) Existing Depth=38m bgl |

ToR obtained vide

File No. 11522 TOR Identification No. TO24B0108TN5943650N Dated:11.01.2025

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| Environmental Consultant GEO EXPLORATION AND MINING SOLUTIONS  Old No. 260-B, New No. 17, Advaitha Ashram Road, Alagapuram, Salem – 636 004, Tamil Nadu, India Accredited for sector 1 Cat ‘A’, sector 31 & 38 Cat ‘B’ Certificate No : NABET/EIA/2225/RA 0276 Phone: 0427-2431989, Email: ifthiahmed@gmail.com, geothangam@gmail.com Web: www.gemssalem.com  | Laboratory  EHS 360 LABS PRIVATE LIMITED, NABL Accredited laboratory 10/2 Ground floor, 50 th street, 7 th Avenue, Ashok Nagar, Chennai – 600 083.  |
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Baseline Monitoring Period

March 2023 to May 2023

FEBRUARY 2025

UNDERTAKING

I, R.S. Senthilkumar given undertaking that this EIA & EMP report prepared for our Rough stone and Gravel quarry situated in S.F. No 285/3(P) &286/2(P) over an extent of 1.95.0 Ha in Pachapalayam Village, Sulur Taluk and Coimbatore District based on the ToR issued by the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu vide File No.11522 TOR Identification No.TO24B0108TN5943650N Dated: 11.01.2025

I hereby assured that the Data's submitted and information given by me is true and correct to the best of my knowledge.

Signature of the Project Proponent



Thiru.R. S Senthikumar

Place: Coimbatore

Dated:

DECLARATION

I Dr. M. Ifthikhar Ahmed – EIA Co Ordinator declare that the EIA & EMP report for the Rough stone and Gravel quarry in S.F. No 285/3(P) &286/2(P) over an extent of 1.95.0 Ha in Pachapalayam Village, Suler Taluk and Coimbatore District has been prepared by Geo Exploration and Mining Solutions, Salem, Tamil Nadu.

The Data's provided in the EIA report are true and correct to the best of my knowledge.

Signature of the EIA Co-ordinator



Dr. M. Ifthikhar Ahmed

Managing Partner

M/s. Geo Exploration and Mining Solutions

Place : Salem

Dated :

- For easy representation of Proposed and Existing, Expired and Abandoned Quarries in the Cluster are given unique codes and identifies and studied in this EIA/ EMP Report.

| PROPOSED QUARRIES | | | | | |
|-----------------------------|------------------------------|----------------|--|---------------------|----------------------------|
| CODE | Name of the Owner | Village | S.F. Nos | Extent in Ha | Status |
| P1 | R.S.SenthilKumar | Pachapalayam | 285/3(P) & 286/2(P) | 1.95.0 | Applied area (Rough Stone) |
| P2 | Tvl.Gomuki Blue Metals L.L.P | | 238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) | 2.47.9 | Pending with SEIAA |
| P3 | V.Shanmugam | | 238/1 | 1.98.0 | Precise area communicated |
| P4 | T.Ragupathi | | 273/1B,273/2,273/3E,274/1A & 274/2A | 2.62.0 | Application is in Process |
| TOTAL EXTENT | | | | 9.02.9 | |
| EXISTING QUARRIES | | | | | |
| CODE | Name of the Owner | Village | S.F. Nos | Extent in Ha | Status |
| E-1 | S.G.Aakash Arumugam | Pachapalayam | 273/2A & 281/2 | 2.03.0 | 27.06.2024 to 26.06.2029 |
| TOTAL EXTENT | | | | 2.03.0 | |
| EXPIRED QUARRIES | | | | | |
| Ex-1 | Thiru.K.Chinnasamy | Pachapalayam | 282/1A & 282/1B(P) | 1.73.0 | 06.12.2017 to 05.12.2022 |
| TOTAL EXTENT | | | | 1.73.0 | |
| ABANDONED QUARRIES | | | | | |
| A-1 | Thiru.M.Muralikrishnan | Pachapalayam | 281/1 & 286/1B4 | 2.30.0 | 02.06.2014 to 01.06.2018 |
| A-2 | Thiru.A.Velusamy | | 285/1B1 | 1.72.5 | 09.02.2005 to 08.02.2010 |
| A-3 | V.Gopalakrishnan | | 282/2A2 | 1.28.5 | 02.06.2014 to 01.06.2018 |
| A-4 | B.Sakthivel | | 280/1(P),280/2(P) | 1.34.5 | 06.06.2016 to 05.06.2021 |
| A-5 | S.A.Ramachandran | | 273/3B, 273/3C & 271/1 | 1.83.0 | 09.01.2004 to 08.01.2009 |
| TOTAL EXTENT | | | | 8.48.50 | |
| TOTAL CLUSTER EXTENT | | | | 11.05.9 | |

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

TERMS OF REFERENCE (ToR) COMPLIANCE

Thiru.R.S. Senthikumar

File No.11522 TOR Identification No. TO24B0108TN5943650N Dated:11.01.2025

| SPECIFIC CONDITIONS | | |
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| 1 | As the quarrying was carried out without benches of appropriate geometry in accordance with the provisions of the MMR 1961 and considering the safety aspects, the SEAC have decided to restrict the depth of mining to 47m. Hence, the PP shall furnish the Modified Mining Plan incorporated with proper bench geometry and slope stability action plan duly approved by the competent authority. | Noted & agreed. The modified mining plan relevant of revised depth of 47m(as per ToR) will be submitted in Final EIA Report. |
| 2 | The PP shall furnish the Compliance Certificate Report for the EC obtained earlier from the DEIAA, duly audited by the RO, MoEF & CC, Chennai with the percentage of non-compliances, reasons for non-compliances, status on half-yearly compliance report submitted during the mine operation, actions taken on the non-compliances, etc during the EIA appraisal without fail. | Noted & agreed. The Certified compliance report will be submitted during the appraisal meeting. |
| 3 | A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (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. | Noted and agreed Affidavit of cluster management committee (CMC) Will be submitted during the appraisal meeting. |
| 4 | The PP shall erect DGPS reference pillars as per MCDR Rules, 1988 and furnish photographic evidences of the same at the time of EIA appraisal | Noted and agreed. PP agreed to erect DGPS reference pillars as per MCDR Rules,1988 and Concerned photographs will be submitted during the appraisal meeting. |
| 5 | As this is an existing quarry, the PP shall ensure that the CCTV Cameras are installed inside the mine premises and the photographs of the same shall be submitted at the time of EIA appraisal. | Noted and agreed. PP agreed to install CCTV cameras inside the mine premises and Concerned photographs will be submitted during the appraisal meeting. |
| 6 | The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. | Noted and agreed. Greenbelt development and Fencing photographs furnished. The Barbed Wire fencing has been erected all around the boundary. No trees within the project site, hence transplantation not required. |
| 7 | The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report. | Noted and agreed. Biodiversity study has been carried out by Functional Area Expert by the NABET accredited consultant. The detailed study is given in the Chapter No.3 |
| 8 | The PP shall prepare the EMP for the entire project life of mine, and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine. | Noted and agreed. |

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| 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 | Noted and agreed. |
| 2.SEAC STANDARD CONDITIONS | | |
| 1 | In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. | It is an Existing quarry lease. Existing quarry Pit Dimension:146(L)*145(W)*38m(D) bgl Previous EC details: Lr.No. DEIAA-CBE-II/F.No.101/2(a)/Ec.No.03/2017 dated:16.09.2017 Permitted depth -38m bgl There is no violation during past quarrying activity. |
| 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. | Noted & agreed. The PP obtained VAO Certificate regarding the location of habitations within 300m radius from the periphery of the site and enclosed with as annexure. |
| 3 | The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc. | Noted and agreed The structure study has been carried out within the radius of 300m. There is no habitation within the radius of 300m from the project site the details of the structures is given in the EIA report, Chapter No.III |
| 4 | The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry. | Noted and agreed The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the water bodies around the project area. Details are discussed under Chapter No. 3 <ul style="list-style-type: none"> • Seasonal Odai-90m West • Odai-290m SW • Seasonal Odai-450m NE |
| 5 | The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report. | Noted and agreed Biodiversity study has been carried out by Functional Area Expert by the NABET accredited consultant. The detailed study is given in the Chapter No.3 |
| 6 | The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site. | Noted and agreed DFO letter will be submitted along with the Final EIA/EMP report |
| 7 | In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions CSIR-Central Institute of Mining & Fuel Research / | Noted and agreed Proponent requested as will be carrying the slope stability Plan after commencement of quarrying operation and ensure that the reports will be submitted along with HYCR. |

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| | Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC. | |
| 8 | However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level. | Noted and agreed Proponent requested as will be carrying the slope stability Plan after commencement of quarrying operation and ensure that the reports will be submitted along with HYCR. |
| 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. | Noted and agreed Proponent given affidavit stating that the blasting will be carried out under the supervision of Competent person. |
| 10 | The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffled 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. | Noted and agreed |
| 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 | Noted and agreed. There is no other quarry except this proposal operated by Proponent Thiru.R.S.Senthilkumar |
| 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, | Noted and agreed |
| 13 | What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines? | Noted and agreed. |
| 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. | Noted and agreed |
| 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). | Noted and agreed Satellite imagery of the project area along with boundary coordinates is given in the Chapter No 2, Figure No.2.2, Page No.11. Geomorphology of the area is given in Chapter No 2, Figure No.2.10, Page No.23 Land use pattern of the project area is tabulated in the Chapter No.2. Table no 2.4, Pg.No.18 |
| 16 | The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc., | Noted and agreed. PP carried out the drone video survey and will be submitted during the appraisal while obtaining the EC. |
| 17 | The proponent shall furnish photographs of adequate fencing, green belt along the periphery including | Noted and agreed The area has been fenced and plantation activities carried out within the project site. |

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| | 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. | Noted and agreed The details of mineral reserves have been provided in Chapter No 1, Mineable reserves– 75,830 m ³ Peak Production – 16856m ³ Depth – 47m bgl |
| 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. | Noted and agreed. The PP provided 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 |
| 20 | The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. | Noted and agreed The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the water bodies around the project area. Details are discussed under Chapter No. 3, |
| 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 | Noted and agreed Baseline Data were collected for One Season (Pre Monsoon) March to May 2023 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3 |
| 22 | The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind. | Noted and agreed The Cumulative impact study due to mining operations is explained in chapter - 7 |
| 23 | Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted. | Noted and agreed |
| 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. | Noted and agreed Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2 |
| 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. |
| 26 | Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court | Not Applicable. |

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| | restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered. | Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range. |
| 27 | Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided. | Noted and agreed Part of the working pit will be allowed to collect rain water during the spell of rain will be used for greenbelt development and dust suppression. The Mine Closure Plan is prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season. |
| 28 | Impact on local transport infrastructure due to the Project should be indicated. | Noted and agreed Transportation details mentioned in Chapter -2 |
| 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. | Noted and agreed Details of the trees in the buffer zone given in Chapter No.3&4 |
| 30 | A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific | Noted and agreed After the completion of mining operation, the part of the quarried-out land will be utilized as temporary storage reservoir. The details are given in the Chapter No.4 |
| 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 | Noted and agreed Details are given in the Chapter No.3 |
| 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. | Noted and agreed Noted & agreed. It is proposed to plant a 1000 nos of trees in the 7.5m safety barrier and village roads. |
| 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 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 | Noted and agreed No trees within the project site. it is proposed to plant 1000 Nos of Trees in the safety barrier and Village roads. |
| 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 | Noted and agreed Disaster management Plan details in Chapter-7 |
| 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 | Noted and agreed A Risk Assessment and management Plan Chapter- 7 |
| 36 | Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical | Noted and agreed Occupational Health impacts chapter- 10 |

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| | 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. | Noted and agreed No Public Health Implications anticipated due to this project. Details of CER are discussed under Chapter 8 |
| 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. | Noted and agreed It is explained in Chapter -3 |
| 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. | Noted and agreed No, Litigation against the project |
| 40 | Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc. | Noted and agreed Chapter-8 discussed about benefits of projects. |
| 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. | Noted and agreed. |
| 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. | Noted and agreed The EMP prepared for the life of the mine and discussed in chapter 10. |
| 43 | Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986. | Noted & agreed. |

| SEIAA STANDARD CONDITIONS | | |
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| Cluster Management Committee | | |
| 1 | Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry. | Noted and agreed Cluster management committee has been formed with mutual agreement with the proponents including Proposed quarry at present are framed. |
| 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., | Noted and agreed As per the committee agreement proponents will coordinates for the Greenbelt development, Water sprinkling and tree plantation activities combined. |
| 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. | Noted and agreed The formation of committee with list of members has been submitted to the AD mines office, Coimbatore and the same will be update in every year. |
| 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 | Noted and agreed As per the committee agreement the blasting frequency will be discussed and carryout by the Mines Manager appointed by the |

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| | roads by the individual quarry in the form of route map and network. | proponents and the same will be updated in the committee minutes. Transport details in chapter-2 |
| 5 | The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan. | Noted and agreed Details discussed in chapter 7 of Draft EIA report |
| 6 | The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report. | Noted and agreed Details discussed in chapter-6 of Draft EIA report |
| 7 | The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner. | Noted & agreed |
| 8 | The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity. | Noted and agreed Details discussed in chapter 10. |
| Agriculture & Agro-Biodiversity | | |
| 9 | Impact on surrounding agricultural fields around the proposed mining Area. | Noted and agreed Detailed discussed in chapter 4. |
| 10 | Impact on soil flora & vegetation around the project site. | Detailed discussed in chapter 4. |
| 11 | Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP. | Noted and agreed The area is proposed Lease & Few trees present with in lease. |
| 12 | The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem. | Details in Chapter 3 |
| 13 | Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services. | Noted & agreed |
| 14 | The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock | Noted and agreed The project area is dry barren land no agriculture activities carried out. This is a proposed lease area. |
| Forests | | |
| 15 | The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife | Noted and agreed. Nearest Reserve Forest is Bolampatti R.F – 13km- NW |
| 16 | The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna. | Noted and agreed The area is surrounded by Barren land. Details of flora and fauna studies given in the Chapter No.3. |
| 17 | The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection | No major trees within the project area. |
| 18 | The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site | Noted & agreed. Nanjарayan Lake Birds Sanctuary – 42km – North East |

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| | | Indira gandhi (Anamalai) Wildlife Sanctuary – 43km – South |
| Water Environment | | |
| 19 | Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface 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 | Noted and agreed There are 8 open wells and 7 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method |
| 20 | Erosion Control measures | Noted & agreed |
| 21 | Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas. | Details in Chapter 2 |
| 22 | The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir | Details in Chapter 2 and 4 impact of bio diversity |
| 23 | The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities. | Noted & agreed |
| 24 | The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts. | Noted & agreed. Detailed under Chapter 3. |
| 25 | The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components | Details in Chapter 3 Soil environment. |
| 26 | The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites | Details in Chapter 3 Water environment. |
| 27 | The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams. | Noted and agreed There are 8 open wells and 7 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method |
| Energy | | |
| 28 | The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished. | Noted and agreed Details in Chapter 3 environmental monitoring details. |
| Climate Change | | |
| 29 | The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities | Noted and agreed Details of carbon emission and mitigation activities are given in the Chapter No.4 |
| 30 | The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features | Noted and agreed Details in Chapter-3 for meteorological and climate/weather data representation of graphs. |
| 31 | Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood. | Noted and agreed Details of GHGs emissions and mitigation activities are given in the Chapter No.4 |

| Mine Closure Plan | | |
|---------------------------------|--|--|
| 32 | Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued. | Details in Chapter 2 mine closure plan |
| EMP | | |
| 33 | Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs | Detailed under Chapter 10 |
| 34 | The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan. | Details in Green belt development in chapter 4 |
| Risk Assessment | | |
| 35 | To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining. | Detailed under Chapter 7 |
| Disaster Management Plan | | |
| 36 | To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/unfavorable accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued. | Details in Study 7.3 Disaster Management Plan in Chapter -7 |
| Others | | |
| 37 | The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc. | Noted & agreed. Detailed under Chapter 4 |
| 38 | As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan. | Noted and agreed |
| 39 | The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported | Details of carbon emission and mitigation activities are given in the Chapter No.4 |

| Standard Terms of Reference for (Mining of minerals) | | |
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| S.No | Terms of Reference | Reply |
| 1.1 | An EIA-EMP Report shall be prepared for peak capacity (.....MTPA) operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006. | Peak Production – 16,856m ³ Depth– 47m bgl (As per ToR) Mine Lease area – 1.95.0 Ha |

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| 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. | Peak capacity of 16,856m ³ operation to cover the impacts and environment management plan in chapter- IV and Chapter 10 covered in project specific activities. Baseline Data were collected for Pre Monsoon Season March to May 2023 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. III |
| 1.3 | Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided. | Noted, Google earth image showing lease area with Coordinates of pillars in |
| 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 and land cover of the 10km Radius of study area is discussed in Chapter No. III. Geology map of the project area covering 10km radius Figure No. 2.9, Page No. 22. Geomorphology of the area is given in Chapter No 2 Figure No 2.10, Page No. 23 There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area. |
| 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 and land cover of the study area is discussed in Chapter No. III with Physical features such as waterbodies, odai, canal etc., |
| 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. | DEM data using Drainage pattern around 10km radius showing streams and lakes etc., discussed in Chapter No. 3. |
| 1.7 | Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be diverted. | Drainage pattern around 10km radius showing streams and lakes etc., is discussed in Chapter No. 3. |

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| 1.8 | <p>(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.</p> | <p>Details in chapter-2 showing the land features. And also enclosed Approved mining plan in annexure.</p> |
| 1.9 | <p>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.</p> | <p>It is an opencast quarrying operation proposed to operate in Mechanized method. The height and width of the bench will be maintained as 5m with 90⁰ bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.</p> |
| 1.10 | <p>Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.</p> | <p>Impact Studies and Mitigation Measures of Water Environment including Surface Water and Ground Water are discussed in Chapter 4.</p> |
| 1.11 | <p>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.</p> | <p>Not Applicable. The details of waste dump management are given in the Chapter No. 4</p> |

| 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 | | | | | Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, | | | | | | | | | | | | | | | | | | | | |
|------|--|-----------------------------|--------------------------------------|-------------------------------------|-----------------------------|---|--------------------------|---|---|-----------|--|---|----------------|--|---|-------|--|---|------------------|--|--|-------|--|--|--|--|
| | | | | | | Description | Present area (Ha) | Area at the end of lease period (Ha) | | | | | | | | | | | | | | | | | | |
| | Sno | ML. project Land use | Area under Surface Rights(ha) | Area Under Mining Rights(ha) | Area under Both (ha) | Area Under Quarry | 1.90.0 | 1.90.0 | | | | | | | | | | | | | | | | | | |
| | 1 | Agriculture Land | | | | Site Services | Nil | Nil | | | | | | | | | | | | | | | | | | |
| | 2 | Forest Land | | | | Roads | 0.02.0 | 0.02.0 | | | | | | | | | | | | | | | | | | |
| | 3 | Grazing Land | | | | Green Belt | Nil | Nil | | | | | | | | | | | | | | | | | | |
| | 4 | Settlements | | | | Unutilized Area | 0.03.0 | 0.03.0 | | | | | | | | | | | | | | | | | | |
| | 5 | Others (Specify) | | | | Grand Total | 1.95.0 | 1.95.0 | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>S.No</th> <th>Details</th> <th>Area (Ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Buildings</td> <td></td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td></td> </tr> <tr> <td>3</td> <td>Roads</td> <td></td> </tr> <tr> <td>4</td> <td>Others (Specify)</td> <td></td> </tr> <tr> <td></td> <td>Total</td> <td></td> </tr> </tbody> </table> | | | | | S.No | Details | Area (Ha) | 1 | Buildings | | 2 | Infrastructure | | 3 | Roads | | 4 | Others (Specify) | | | Total | | | | |
| | S.No | Details | Area (Ha) | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Buildings | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Infrastructure | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Roads | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Others (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. | | | | | Detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] was carried out and discussed under Chapter No. 3. There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. | | | | | | | | | | | | | | | | | | | | |
| 1.14 | One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided. | | | | | Baseline Data were collected for Pre Monsoon Season March to May 2023 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3. | | | | | | | | | | | | | | | | | | | | |

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| 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 in chapter-3 showing the various sampling stations As per CPCB guidelines. |
| 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 10km buffer zone i.e., dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison | Noted and agreed Air Quality Modelling and wind rose pattern for prediction of incremental GLC's of pollutant was carried out using AERMOD view 13 Model. Details in Chapter No. 4. |
| 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. | Noted and agreed Traffic density survey was carried out to analyses the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details in Chapter-II. |
| 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. | Noted and agreed Detailed in chapter-3 socio-economic study with occupational status & economic status of the study area. The study should also include the status of infrastructural facilities and amenities present in the study area CSR are discussed under Chapter 8. |
| 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. | Noted and agreed Detailed Ecology and biodiversity study in chapter-3 |
| 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. | Detailed in chapter-4 population in the impact zone and measures for occupational health and safety and proposed occupational health in chapter-X |
| 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. | Noted and agreed |

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| 1.22 | Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone. | The ground water table is at 65-70m below ground level. In these projects, ultimate depth is 47 m Bgl 9 (as per ToR) It is inferred the quarrying activities in the Cumulative EIA project (Quarry) will not intersect the Ground water table. |
| 1.23 | Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out. | Noted and agreed Detailed in Chapter-IV Anticipated and mitigation measures of in the study area. |
| 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. | Noted and agreed Total Water Requirement: 1.5 KLD Discussed under Chapter 2, The required water will be met from rainwater accumulated in mine pit (when available) and from the approved water vendors. |
| 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 | Noted and agreed Methodology And Instrument Used for Air Quality Analysis in chapter-3and Air Pollution control equipment (APCEs) in chapter-10 sub 10.2 Environmental policy. |
| 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. | Details in Machinery and equipment details in Chapter-2 Table No 2.16 |
| 1.27 | PP to evaluate the green house emission gases from the mine operation/ washery plant and corresponding carbon absorption plan. | Noted and agreed |
| 1.28 | Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided. | A Risk Assessment and Disaster Preparedness and management Plan Chapter- 7 |
| 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. | Detailed in Machinery and technology used Chapter-3.Methodology and Instrument Used for Air Quality Analysis Detailed study in chapter-4 Impact of choice of mining method and impact on air quality and blasting and noise and vibrations. |
| 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. | Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed transportation from the project area. Details in Chapter 2. Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2. |

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| 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. | Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2 |
| 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. | Detailed in chapter-2 for mineral transportation route with approach roads etc., and impacting air quality detailed given chapter-4 |
| 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. | Discussed under Chapter 2. Mine Closure Plan is a part of Approved Mining Plan enclosed as Annexure Volume – 1. |
| 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. | Noted and agreed Greenbelt Development Plan is discussed under Chapter 4, |
| 1.35 | Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan. | Noted and agreed The total cost and the details are given in the Chapter No. 10 |
| 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. There are no approved habitations within a radius of 300 meters. Therefore, R&R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project. |
| 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 are discussed under Chapter 8. And specific budgetary provisions (capital and recurring) for specific activities over the life of the project in chapter-10 |
| 1.38 | Corporate Environment Responsibility: | CER are discussed under Chapter 8. |
| 1.39 | a) The Company must have a well laid down Environment Policy approved by the Board of Directors. | Detailed in chapter-10 The Environment Policy |
| 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. | The Environment Monitoring Cell discussed under Chapter 6 |
| 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 | The Environment Monitoring Cell discussed under Chapter 6 |
| 1.43 | e) Environment Management Cell and its responsibilities to be clearly spell out in EIA/ EMP report | The Environment Monitoring Cell discussed under Chapter 6 |

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| 1.44 | f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated. | The Environment Monitoring Cell discussed under Chapter 6 |
| 1.45 | Status of any litigations/ court cases filed/pending on the project should be provided. | No litigation is pending in any court against this project |
| 1.46 | PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary. | Nanjarayan Lake Birds Sanctuary – 42km – North East DFO Letter will be Submitted final EIA/EMP report |
| 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 and agreed |
| 1.48 | Details on the Forest Clearance should be given as per the format given: Total Mine lease area (ha): Total Forest Land (Ha) : Date of FC : Extent of Forest Land : Balance area for which FC is yet to be obtained: Status of application for diversion of forest Land: If more than one provides details of each FC | Noted and agreed Bolampatti I RF – 13km – North West Total Mine Lease area 1.95.0ha Details on the Forest Clearance will Submit final EIA/EMP report. |
| 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. | Enclosed Approved mining plan in Annexure volume-I |
| 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. | The outcome of public hearing will be updated in the final EIA/AMP report. |
| 1.51 | PP shall carry out survey through drone highlighting the ground reality for at least 10 minutes. | Noted and agreed |
| 1.52 | Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form. | Fresh lease |
| 1.53 | The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification) | Noted and agreed As per detailed in front page of Draft EIA/EMP, NABET, NABL certification detailed given in the report. |
| 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 chapters section. | As per Tor compliance each chapter wise page and table, figure no given in the EIA/EMP report. |

STANDARD TERMS OF REFERENCE

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| 1 | Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA | Not applicable. This is not a violation category project. This proposal falls under B1 Category |
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| | Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994. | |
| 2 | A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given. | The applied land for quarrying is a Patta Land. Document is enclosed along with Approved Mining Plan as Annexure Volume 1. |
| 3 | All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee. | Noted & agreed. |
| 4 | All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone). | Map showing – Project area is with adjacent quarries details is enclosed in Figure No.1.1 Project area boundary coordinates superimposed on Toposheet – Figure No. 1.1A Toposheet of the project area covering 10km radius – Figure No. 1.2 Geology map of the project area covering 10km radius - Figure No. 2.11 |
| 5 | Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics. | Map showing – Geology map of the project area covering 10km radius - Figure No. 2.11 Geomorphological features are incorporated in the Toposheet map covering 10km radius around the project area Figure No. 2.12 |
| 6 | Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority. | The applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government. |
| 7 | It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report. | The proponent has framed their Environmental Policy and the same is discussed in the Chapter No 10.1. |
| 8 | Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided. | It is an opencast quarrying operation proposed to operate in Mechanized method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90° bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance. |
| 9 | The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period. | Noted & agreed. The study area considered for this study is 10 km radius and all data contained in the EIA report such as waste generation etc., is for the Life of the Mine / lease period. |

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| 10 | Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given. | Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.3 |
| 11 | Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given | Not Applicable. There is no waste anticipated during this quarry operation. The entire quarried out rough stone will be transported to the needy customers. No Dumps is proposed outside the lease area. |
| 12 | A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees. | Not Applicable. There is no Forest Land involved in the proposed project area. The proposed project area is a Patta land. Approved Mining Plan is enclosed as Annexure Volume 1. |
| 13 | Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished. | Not Applicable. The proposed project area does not involve any Forest Land. |
| 14 | Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated. | Not Applicable. The project doesn't attract Recognition of Forest Rights Act, 2006. |
| 15 | The vegetation in the RF / PF areas in the study area, with necessary details, should be given. | No Reserve Forest within the Study Area. |
| 16 | A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted. | Not Applicable. There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area. |
| 17 | Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 KM of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished | Not Applicable. There are no National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area. |
| 18 | A detailed biological study of the study area [core zone and buffer zone (10 KM radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for | Detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] was carried out and discussed under Chapter No. 3. |

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| | core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost. | There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. |
| 19 | Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered. | Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range'. |
| 20 | Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority). | Not Applicable. The project doesn't attract The C. R. Z. Notification, 2018. |
| 21 | R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report. | Not Applicable. There are no approved habitations within a radius of 300 meters. Therefore, R&R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project. |
| 22 | One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the predominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The | Baseline Data were collected for Summer Season (March 2023-May 2023) as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3. |

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| | mineralogical composition of PM10, particularly for free silica, should be given. | |
| 23 | Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map. | Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD Model. Details in Chapter No. 4, |
| 24 | The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated. | Total Water Requirement for this project is given in the chapter No 2, Table No 2.13. |
| 25 | Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided. | Water for dust suppression, greenbelt development and domestic use will be obtained from accumulated rainwater/seepage water in mine pits. Drinking water will be sourced from the approved water vendors, No 2, Table No 2.13. |
| 26 | Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided. | The rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression. |
| 27 | Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided. | Impact Studies and Mitigation Measures of Water Quality discussed in Chapter No. 4. |
| 28 | Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished. | The ground water table is at 65-70m below ground level. The ultimate depth of this projects is XY-AB: 79m (L) X 150m (W) X 52m (D) (as per Mining Plan) XY-CD: 65m (L) X 95m (W) X 52m (D) (as per Mining Plan) Maximum depth is proposed in this EIA project is 47m. |
| 29 | Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out. | Details in Chapter 3 Water Environment |
| 30 | Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same. | Progressive greenbelt development plan has been prepared and discussed along with Recommended Species details are given in the Chapter 4, Table No.4.9 |
| 31 | A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The | Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed transportation from the project area. Details in Chapter 2. |

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| | details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution. | |
| 32 | Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines. | Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2. . |
| 33 | Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report. | Discussed in chapter No 2. |
| 34 | Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report. | Details in Chapter 10. |
| 35 | Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed. | Details in Chapter 10. |
| 36 | Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations. | Details in Chapter 4, |
| 37 | Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation. | Environment Management Plan Chapter 10. |
| 38 | Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project. | The outcome of public hearing will be updated in the final EIA/AMP report |
| 39 | Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project. | No litigation is pending in any court against this project. |
| 40 | Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given. | The proposed capital cost for Environmental Monitoring Programme is Rs 3,80,000/- and the recurring cost is Rs 76,000/- per annum. Details in Chapter 6 . |

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| 41 | The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out. | Details in Chapter 10. |
| 42 | A Disaster management Plan shall be prepared and included in the EIA/EMP Report. | Details in Chapter 7. |
| 43 | Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc. | Details in Chapter.8. |
| 44 | Besides the above, the below mentioned general points are also to be followed: - | |
| A | Executive Summary of the EIA/EMP Report | Encloses as separate volume |
| B | All documents to be properly referenced with index and continuous page numbering. | All the documents are properly referenced with index and continuous page numbering. |
| C | Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. | List of Tables and source of the data collected are given properly. |
| D | Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC / NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project | Baseline monitoring reports are enclosed with mining plan |
| E | Where the documents provided are in a language other than English, an English translation should be provided. | Not Applicable. |
| F | The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. | Will be enclosed along with Final EIA /EMP Report. |
| G | While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA. II(I) Dated: 4th August, 2009, which are available on the website of this Ministry, should be followed. | Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) Dated: 4th August, 2009 are followed. |
| H | Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF & CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation | Noted & agreed. |
| I | As per the circular no. J-11011/618/2010-IA. II(I) Dated: 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable. | Not applicable. |
| J | The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area. | Surface Plan – Figure No. 2.2. Geological Plan – Figure No 2.9. Working Plan – Figure No 2.9. Closure Plan – Figure No.2.10. |

TABLE OF CONTENTS

| | |
|---|-----|
| 1.INTRODUCTION..... | 11 |
| 1.0 PREAMBLE..... | 11 |
| 1.1 PURPOSE OF THE REPORT..... | 12 |
| 1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT..... | 3 |
| 1.3 BRIEF DESCRIPTION OF THE PROJECT..... | 3 |
| 1.4 ENVIRONMENTAL CLEARANCE..... | 8 |
| 1.5 TERMS OF REFERENCE (ToR)..... | 8 |
| 1.6 POST ENVIRONMENT CLEARANCE MONITORING..... | 9 |
| 1.7 GENERIC STRUCTURE OF EIA DOCUMENT..... | 9 |
| 1.8 THE SCOPE OF THE STUDY..... | 9 |
| 2.0 GENERAL..... | 11 |
| 2.1 DESCRIPTION OF THE PROJECT..... | 11 |
| 2.2 LOCATION OF THE PROJECT..... | 11 |
| 2.3 GEOLOGY..... | 19 |
| 2.4 RESOURCES AND RESERVES..... | 27 |
| 2.5 METHOD OF MINING..... | 30 |
| 2.6 GENERAL FEATURES..... | 31 |
| 2.7 PROJECT REQUIREMENT..... | 32 |
| 2.8 EMPLOYMENT REQUIREMENT:..... | 33 |
| 2.9 PROJECT IMPLEMENTATION SCHEDULE..... | 33 |
| 3. DESCRIPTION OF ENVIRONMENT..... | 34 |
| 3.0 GENERAL..... | 34 |
| 3.1 LAND ENVIRONMENT..... | 35 |
| 3.2 WATER ENVIRONMENT..... | 45 |
| 3.3 AIR ENVIRONMENT..... | 61 |
| 3.4 NOISE ENVIRONMENT..... | 80 |
| 3.5 ECOLOGICAL ENVIRONMENT..... | 84 |
| 3.6 SOCIO ECONOMIC ENVIRONMENT..... | 101 |
| 4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES..... | 114 |
| 4.0 GENERAL..... | 114 |
| 4.1 LAND ENVIRONMENT:..... | 114 |
| 4.2 WATER ENVIRONMENT..... | 115 |

| | | |
|------|--|-----|
| 4.3 | AIR ENVIRONMENT | 116 |
| | 10°54'25.78"N 77° 4'8.34"E | 120 |
| | 10°54'11.51"N 77° 4'29.65"E | 120 |
| | 10°54'37.41"N 77° 2'20.12"E | 120 |
| 4.4 | NOISE ENVIRONMENT..... | 122 |
| 4.5 | ECOLOGY AND BIODIVERSITY..... | 126 |
| 4.6 | SOCIO ECONOMIC | 129 |
| 4.7 | OCCUPATIONAL HEALTH AND SAFETY | 130 |
| 4.8 | MINE WASTE MANAGEMENT | 131 |
| 4.9 | MINE CLOSURE..... | 131 |
| 5. | ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE) | 133 |
| 5.0 | INTRODUCTION..... | 133 |
| 5.1 | FACTORS BEHIND THE SELECTION OF PROJECT SITE..... | 133 |
| 5.2 | ANALYSIS OF ALTERNATIVE SITE | 133 |
| 5.3 | FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY..... | 133 |
| 5.4 | ANALYSIS OF ALTERNATIVE TECHNOLOGY..... | 133 |
| 6. | ENVIRONMENTAL MONITORING PROGRAMME..... | 134 |
| 6.0 | GENERAL | 134 |
| 6.1 | METHODOLOGY OF MONITORING MECHANISM..... | 134 |
| 6.2 | IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES..... | 135 |
| 6.3 | MONITORING SCHEDULE AND FREQUENCY | 135 |
| 6.4 | BUDGETARY PROVISION FOR EMP..... | 136 |
| 6.5 | REPORTING SCHEDULES OF MONITORED DATA..... | 137 |
| 7. | ADDITIONAL STUDIES..... | 138 |
| 7.0 | GENERAL | 138 |
| 7.1. | PUBLIC CONSULTATION | 138 |
| 7.2 | RISK ASSESSMENT | 138 |
| 7.3 | DISASTER MANAGEMENT PLAN..... | 139 |
| 7.4 | CUMULATIVE IMPACT STUDY | 142 |
| 7.5 | PLASTIC WASTE MANAGEMENT PLAN..... | 151 |
| 7.6 | Cluster Management Committee..... | 152 |
| 8. | PROJECT BENEFITS | 157 |
| 8.0 | GENERAL | 157 |
| 8.1 | EMPLOYMENT POTENTIAL..... | 157 |
| 8.2 | SOCIO-ECONOMIC WELFARE MEASURES PROPOSED | 157 |

| | | |
|---------|--|-----|
| 8.3 | IMPROVEMENT IN PHYSICAL INFRASTRUCTURE | 157 |
| 8.4 | IMPROVEMENT IN SOCIAL INFRASTRUCTURE | 157 |
| 8.5 | OTHER TANGIBLE BENEFITS | 157 |
| 9. | ENVIRONMENTAL COST BENEFIT ANALYSIS | 159 |
| 10. | ENVIRONMENTAL MANAGEMENT PLAN | 160 |
| 10.0. | GENERAL | 160 |
| 10.1. | ENVIRONMENTAL POLICY | 160 |
| 10.2. | LAND ENVIRONMENT MANAGEMENT – | 161 |
| 10.3. | SOIL MANAGEMENT..... | 161 |
| 10.4. | WATER MANAGEMENT..... | 161 |
| 10.5. | AIR QUALITY MANAGEMENT | 162 |
| 10.6. | NOISE POLLUTION CONTROL | 162 |
| 10.7. | GROUND VIBRATION AND FLY ROCK CONTROL..... | 163 |
| 10.8. | BIOLOGICAL ENVIRONMENT MANAGEMENT | 163 |
| 10.9. | OCCUPATIONAL SAFETY & HEALTH MANAGEMENT..... | 164 |
| 10.10.: | CONCLUSION – | 173 |
| 11. | SUMMARY AND CONCLUSION | 174 |

LIST OF TABLES

| | |
|---|----|
| TABLE 1.1: SALIENT FEATURES OF THE PROPOSED PROJECT | 3 |
| TABLE 1.2: DETAILS OF PROJECT PROPONENT | 3 |
| TABLE 1.3: BRIEF DESCRIPTION OF THE PROJECT..... | 3 |
| TABLE 1.5: ENVIRONMENT ATTRIBUTES..... | 9 |
| TABLE 2.1: SITE CONNECTIVITY | 11 |
| TABLE 2.2: BOUNDARY CO-ORDINATES OF PROPOSED PROJECT | 11 |
| TABLE 2.3: LAND USE PATTERN OF THE PROPOSED PROJECT | 19 |
| TABLE 2.4: OPERATIONAL DETAILS FOR PROPOSED PROJECT | 19 |
| TABLE 2.5: RANGE OF AQUIFER PARAMETERS | 22 |
| TABLE 2.6: AVAILABLE GEOLOGICAL RESOURCES OF PROPOSED PROJECT | 27 |
| TABLE 2.7: YEAR-WISE PRODUCTION PLAN | 27 |
| TABLE 2.8: ULTIMATE PIT DIMENSION..... | 27 |
| TABLE 2.9: MINE CLOSURE BUDGET | 30 |
| TABLE 2.10. PROPOSED MACHINERY DEPLOYMENT | 31 |
| TABLE.2.11: TRAFFIC SURVEY LOCATIONS | 31 |
| TABLE 2.12: EXISTING TRAFFIC VOLUME..... | 31 |
| TABLE 2.13: ROUGH STONE & GRAVEL HOURLY TRANSPORTATION REQUIREMENT..... | 31 |
| TABLE 2.14: SUMMARY OF TRAFFIC VOLUME | 32 |
| TABLE 2.15: WATER REQUIREMENT FOR THE PROJECT | 32 |
| TABLE 2.16: PROJECT COST OF PROPOSED PROJECT | 33 |
| TABLE 2.17: PROPOSED MANPOWER DEPLOYMENT | 33 |
| TABLE 2.18: EXPECTED TIME SCHEDULE | 33 |
| TABLE 3.1: MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING | 35 |
| TABLE 3.2: LAND USE / LAND COVER TABLE 10 Km RADIUS..... | 36 |
| TABLE 3.3: DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE CLUSTER..... | 40 |
| TABLE 3.4: NEARBY WATER BODIES FROM THE PROPOSED PROJECT SITE | 40 |
| TABLE 3.5: SOIL SAMPLING LOCATIONS..... | 41 |
| TABLE 3.6: METHODOLOGY OF SAMPLING COLLECTION | 41 |
| TABLE 3.7: SOIL QUALITY OF THE STUDY AREA | 44 |
| TABLE 3.8: WATER SAMPLING LOCATIONS | 46 |

| | |
|---|----|
| TABLE 3.9: GROUND WATER SAMPLING RESULTS..... | 48 |
| TABLE 3.10: SURFACE WATER SAMPLING RESULTS..... | 49 |
| TABLE 3.11: SUMMER SEASON WATER LEVEL OF OPEN WELLS 1 KM RADIUS | 50 |
| TABLE 3.12: SUMMER SEASON WATER LEVEL OF BOREWELLS 1 KM RADIUS | 51 |
| TABLE 3.13: RAINFALL DATA..... | 62 |
| TABLE 3.14: METEOROLOGICAL DATA RECORDED AT SITE | 62 |
| TABLE 3.15: METHODOLOGY AND INSTRUMENT USED FOR AAQ ANALYSIS..... | 64 |
| TABLE 3.16: NATIONAL AMBIENT AIR QUALITY STANDARDS | 64 |
| TABLE 3.17: AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS | 65 |
| TABLE 3.18 AMBIENT AIR QUALITY DATA LOCATION AAQ1..... | 67 |
| TABLE 3.19 AMBIENT AIR QUALITY DATA LOCATIO NAAQ2..... | 68 |
| TABLE 3.20 AMBIENT AIR QUALITY DATA LOCATION AAQ3..... | 69 |
| TABLE 3.21 AMBIENT AIR QUALITY DATA LOCATIO NAAQ4..... | 70 |
| TABLE 3.22 AMBIENT AIR QUALITY DATA LOCATIO NAAQ5..... | 71 |
| TABLE 3.23 AMBIENT AIR QUALITY DATA LOCATIO NAAQ6..... | 72 |
| TABLE 3.24 AMBIENT AIR QUALITY DATA LOCATIO NAAQ7..... | 73 |
| TABLE 3.25 AMBIENT AIR QUALITY DATA LOCATIO NAAQ8..... | 74 |
| TABLE 3.27: SUMMARY OF AAQ 1 to AAQ 8 | 75 |
| TABLE 3.28: ABSTRACT OF AMBIENT AIR QUALITY DATA | 75 |
| TABLE 3.29: AVERAGE FUGITIVE DUST SAMPLE VALUES | 79 |
| TABLE 3.30: FUGITIVE DUST SAMPLE VALUES IN $\mu\text{g}/\text{m}^3$ | 79 |
| TABLE 3.31: DETAILS OF SURFACE NOISE MONITORING LOCATIONS..... | 80 |
| TABLE 3.32: AMBIENT NOISE QUALITY RESULT..... | 83 |
| Table No: 3.33. Flora in the Core zone of Rough Stone and gravel quarries | 86 |
| Table No: 3.34. Flora in Buffer Zone of Rough Stone and gravel quarries..... | 89 |
| Table 3.35: Number of floral life forms in the Study Area..... | 93 |
| Table No: 3.36. Fauna in the Core zone of Rough Stone and gravel quarries..... | 96 |
| Table 3.37. List of Fauna & Their Conservation Status, | 97 |
| Mammals: (*directly sighted animals & Secondary data) | 97 |
| Table 3.38. Listed birds | 97 |
| Table 3.39. List of Reptiles either spotted or reported from the study area | 98 |

| | |
|--|-----|
| Table.3.40. List of Butterflies reported from the study area | 98 |
| Table 3.41. List of insects either spotted or reported from the study area | 99 |
| Table No.3.42 Description of Macrophytes..... | 99 |
| Table : 3.43. Amphibians Observed/Recorded from the Study Area | 100 |
| TABLE 3.44: PACHAPALAYAM VILLAGE POPULATION FACTS..... | 102 |
| TABLE 3.45: DEMOGRAPHICS POPULATION OF PACHAPALAYAM VILLAGE..... | 102 |
| TABLE 3.46: PACHAPALAYAM VILLAGE CENSUS 2011 DATA..... | 103 |
| TABLE 3.47: PACHAPALAYAM WORKING POPULATION ---CENSUS 2011 | 103 |
| TABLE 3.48: POPULATION DATA OF STUDY AREA | 104 |
| TABLE 3.49: WORKERS PROFILE OF STUDY AREA..... | 105 |
| TABLE 3.50: COMMUNICATION & TRANSPORT FACILITIES IN THE STUDY AREA | 106 |
| TABLE 3.51: WATER & DRAINAGE FACILITIES IN THE STUDY AREA | 107 |
| TABLE 3.52: OTHER FACILITIES IN THE STUDY AREA | 108 |
| TABLE 3.53: EDUCATIONAL FACILITIES IN THE STUDY AREA..... | 109 |
| TABLE 3.54: MEDICAL FACILITIES IN THE STUDY AREA | 110 |
| Table No 3.53 Structures details in the study area around 300m Radius..... | 112 |
| TABLE 4.1: WATER REQUIREMENT..... | 116 |
| TABLE 4.2: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS | 118 |
| TABLE 4.3: INCREMENTAL & RESULTANT GLC OF PM ₁₀ | 120 |
| TABLE 4.4: INCREMENTAL & RESULTANT GLC OF PM _{2.5} | 120 |
| TABLE 4.5: INCREMENTAL & RESULTANT GLC OF SO ₂ | 121 |
| TABLE 4.6: INCREMENTAL & RESULTANT GLC OF NO _X | 121 |
| TABLE 4.7: INCREMENTAL & RESULTANT GLC OF FUGITIVE DUST | 121 |
| TABLE 4.8: ACTIVITY AND NOISE LEVEL PRODUCED BY MACHINERY..... | 123 |
| TABLE 4.9: PREDICTED NOISE INCREMENTAL VALUES..... | 123 |
| TABLE 4.10: PREDICTED PPV VALUES DUE TO BLASTING | 124 |
| Table No 4.11. List of plant species proposed for Greenbelt development | 126 |
| Table 4.12: Overall Ecological impact assessments of Pachapalayam Village, Rough Stone and Gravel quarry, Coimbatore District, Tamil Nadu..... | 128 |
| TABLE 4.13: RECOMMENDED SPECIES FOR GREENBELT DEVELOPMENT PLAN | 129 |
| TABLE 4.14: GREENBELT DEVELOPMENT PLAN | 129 |
| TABLE 4.15: BUDGET FOR GREENBELT DEVELOPMENT PLAN | 129 |

| | |
|---|-----|
| TABLE 6.1 IMPLEMENTATION SCHEDULE FOR ALL PROPOSED PROJECT..... | 135 |
| TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC..... | 136 |
| TABLE 6.3 ENVIRONMENT MONITORING BUDGET | 136 |
| TABLE 7.1 RISK ASSESSMENT& CONTROL MEASURES | 138 |
| TABLE 7.2: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION | 140 |
| TABLE 7.3: PROPOSED FIRE EXTINGUISHERS AT DIFFERENT LOCATIONS | 141 |
| TABLE 7.4: LIST OF QUARRIES WITHIN 500 METER RADIUS | 142 |
| TABLE 7.5: SALIENT FEATURES OF PROPOSAL “P1” | 144 |
| TABLE 7.5: SALIENT FEATURES OF PROPOSAL “P2” | 145 |
| TABLE 7.12: CUMULATIVE PRODUCTION LOAD OF ROUGH STONE | 147 |
| TABLE 7.13: CUMULATIVE PRODUCTION LOAD OF GRAVEL | 148 |
| TABLE 7.15: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS | 148 |
| TABLE 7.19: INCREMENTAL & RESULTANT GLC WITHIN CLUSTER | 149 |
| TABLE 7.20: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER..... | 149 |
| TABLE 7.21: NEAREST HABITATION FROM EACH MINE..... | 150 |
| TABLE 7.22: GROUND VIBRATIONS AT 5 MINES..... | 150 |
| TABLE 7.23: SOCIO ECONOMIC BENEFITS FROM 5 MINES | 150 |
| TABLE 7.24: EMPLOYMENT BENEFITS FROM 5 MINES..... | 151 |
| TABLE 7.25: GREENBELT DEVELOPMENT BENEFITS FROM 5 MINES..... | 151 |
| TABLE 7.26: ACTION PLAN TO MANAGE PLASTIC WASTE | 151 |
| TABLE 8.1 CER – ACTION PLAN | 158 |
| TABLE 10.1.B: PROPOSED CONTROLS FOR LAND ENVIRONMENT | 161 |
| TABLE 10.2.B: PROPOSED CONTROLS FOR SOIL MANAGEMENT | 161 |
| TABLE 10.3.B: PROPOSED CONTROLS FOR WATER ENVIRONMENT | 161 |
| TABLE 10.4.B: PROPOSED CONTROLS FOR AIR ENVIRONMENT..... | 162 |
| TABLE 10.5.: PROPOSED CONTROLS FOR NOISE ENVIRONMENT | 162 |
| TABLE 10.6.: PROPOSED CONTROLS FOR GROUND VIBRATIONS & FLY ROCK..... | 163 |
| TABLE 10.7: PROPOSED GREENBELT ACTIVITIES FOR 5 YEAR PLAN PERIOD..... | 164 |
| TABLE 10.8.B: RECOMMENDED SPECIES TO PLANT IN THE GREENBELT | 164 |
| TABLE 10.9.B: MEDICAL EXAMINATION SCHEDULE | 165 |
| TABLE 10.10.B: LIST OF PERIODICAL TRAININGS PROPOSED FOR EMPLOYEES..... | 166 |

TABLE 10.11: EMP BUDGET FOR PROPOSED PROJECT 168

LIST OF FIGURES

| | |
|---|----|
| FIGURE 1.1 SATELLITE IMAGERY CLUSTER QUARRIES | 13 |
| FIGURE 1.2 KEY MAP SHOWING THE LOCATION OF THE PROJECT SITE | 5 |
| FIGURE 1.3: TOPOSHEET MAP OF THE STUDY AREA 10 KM RADIUS | 6 |
| FIGURE 1.4: TOPOSHEET MAP OF THE STUDY AREA 2KM RADIUS | 7 |
| FIGURE 2.1: TOPOGRAPHICAL VIEW OF PROJECT AREA..... | 12 |
| FIGURE 2.2: PHOTOGRAPHS OF GREEN BELT & FENCING | 12 |
| FIGURE 2.3: GOOGLE IMAGE OF THE PROJECT AREA | 13 |
| FIGURE 2.4: QUARRY LEASE PLAN / SURFACE PLAN..... | 14 |
| FIGURE 2.5: VILLAGE MAP SUPERIMPOSED ON GOOGLE EARTH IMAGE..... | 15 |
| FIGURE 2.6: IMAGE SHOWING SURFACE FEATURES AROUND 10 KM RADIUS..... | 16 |
| FIGURE 2.7: IMAGE SHOWING SURFACE FEATURES AROUND 5KM RADIUS..... | 17 |
| FIGURE 2.8: IMAGE SHOWING SURFACE FEATURES AROUND 1 KM RADIUS..... | 18 |
| FIGURE 2.9: REGIONAL GEOLOGY MAP..... | 23 |
| FIGURE 2.10: GEOMORPHOLOGY MAP..... | 24 |
| FIGURE 2.11: TOPOGRAPHY, GEOLOGICAL, YEAR-WISE DEVELOPMENT PRODUCTION PLAN AND SECTIONS | 25 |
| FIGURE 2.12: CLOSURE PLAN AND SECTIONS..... | 26 |
| FIGURE.2.13: MINERAL TRANSPORTATION ROUTE MAP | 32 |
| FIGURE 3.1: PIE DIAGRAM OF LAND USE AND LAND IN STUDY AREA | 36 |
| FIGURE 3.2: PHYSIOGRAPHIC MAP 10KM RADIUS | 38 |
| FIGURE 3.3: LAND USE LAND COVER MAP 10KM RADIUS | 39 |
| FIGURE 3.3: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS | 42 |
| FIGURE 3.4: SOIL MAP | 43 |
| FIGURE 3.5: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS..... | 47 |
| FIGURE 3.6: OPEN WELL CONTOUR MAP – MARCH 2023 | 52 |
| FIGURE 3.7: OPEN WELL CONTOUR MAP – APRIL 2023 | 53 |
| FIGURE 3.8: OPEN WELL CONTOUR MAP – MAY 2023 | 54 |
| FIGURE 3.9: BOREWELL CONTOUR MAP – MARCH 2023..... | 55 |
| FIGURE 3.10: BOREWELL CONTOUR MAP – APRIL 2023..... | 56 |
| FIGURE 3.11: BOREWELL CONTOUR MAP – MAY 2023 | 57 |
| FIGURE 3.12: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE..... | 58 |

| | |
|---|-----|
| FIGURE 3.13: GROUND WATER PROSPECT MAP | 59 |
| FIGURE 3.14: WINDROSE DIAGRAM..... | 63 |
| FIGURE 3.15: AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS | 66 |
| FIGURE 3.16: BAR DIAGRAM OF SUMMARY OF AAQ 1 – AAQ8..... | 76 |
| FIGURE 3.17: BAR DIAGRAM OF PARTICULATE MATTER PM _{2.5} | 77 |
| FIGURE 3.18: BAR DIAGRAM OF PARTICULATE MATTER PM ₁₀ | 77 |
| FIGURE 3.19: BAR DIAGRAM OF GASEOUS POLLUTANT SO ₂ | 78 |
| FIGURE 3.20: BAR DIAGRAM OF GASEOUS POLLUTANT NO _x | 78 |
| FIGURE 3.21: LINE DIAGRAM OF AVERAGE SPM VALUES | 79 |
| FIGURE 3.22: BAR DIAGRAM OF SPM VALUES | 80 |
| FIGURE 3.23: NOISE MONITORING STATIONS AROUND 10 KM RADIUS | 82 |
| FIGURE 3.24: DAY TIME NOISE LEVELS IN CORE AND BUFFER ZONE | 83 |
| FIGURE 3.25: NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE | 84 |
| Fig No: 3.26 Flora species observation in the core zone area..... | 88 |
| Fig No. 3.27: Graph showing % distribution of floral life forms | 93 |
| Fig No: 3.28. Flora species observation in the Buffer zone area | 95 |
| Fig No:3.29 Structure Map 300m..... | 111 |
| FIGURE 4.1: AERMOD TERRAIN MAP..... | 118 |
| FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM ₁₀ | 118 |
| FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF PM ₂₅ | 119 |
| FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF NO _x | 119 |
| FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF SO ₂ | 119 |
| FIGURE 4.6: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST | 120 |
| FIGURE 4.6: GROUND VIBRATION PREDICTION | 125 |
| FIGURE 6.1: PROPOSED ENVIRONMENTAL MONITORING CELL | 135 |
| FIGURE 7.1: DISASTER MANAGEMENT TEAM LAYOUT | 140 |
| FIGURE 10.1.: PERSONAL PROTECTIVE EQUIPMENT TO THE MINE WORKERS | 166 |

1.INTRODUCTION

1.0 PREAMBLE

Project History

The project proponent Thiru.R.S. Senthilkumar has applied for Rough stone and Gravel quarry over an extent of 1.95.0 Ha in S.F.Nos. 285/3(P)& 286/2(P), Pachapalayam Village, Sulur Taluk & Coimbatore District.

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 13.05.2022
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc. No 557/Mines/2022, Dated: 12.11.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc. No 557/Mines/2022, Dated: 12.11.2024.
- Proponent applied for ToR for Environmental Clearance vide online Proposal No.SIA/TN/MIN/508364/2024 dated: 26.11.2024.and the ToR Was Granted vide Letter No File No.11522 TOR Identification No. TO24B0108TN5943650N Dated: 11.01.2025
- The proposal was placed in 523rd SEAC meeting held on 27.12.2024 and the committee recommended for issue of ToR.
- The proposal was considered in 787th SEIAA meeting held on 08.01.2025 and issued ToR vide File No.11522 TOR Identification No. TO24B0108TN5943650N Dated: 11.01.2025
- As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries – 4 proposals, 1 Existing quarry and 5 Abandoned quarries forming Cluster Category {Total Extent of the Cluster is 11.05.9 Ha}- Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

Based on the ToR Baseline Monitoring study has been carried out for one season (Pre Monsoon) i.e., **March to May 2023** and this EIA and EMP report is prepared for considering cumulative impacts arising out of these projects, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) to minimize those adverse impacts.

It is a fresh application but the applied area has been considered quarrying operation earlier. The quarry lease was previously granted for quarrying Rough Stone and Gravel with lease granted details are given below.

| S.No | Name of Ex Lessee | District collector's Proceeding Number and date | S.F.Nos | Validity | Lease Period |
|------|------------------------|---|---|----------|--------------------------------|
| 1 | Thiru.R.R.Subbaiyan | Rc.No.126575/1995/L1 Dated: 21.12.1995 | 285/3,286/2, 286/1B1B | 5 Years | 18.03.1996 To 17.03.2001 |
| 2 | Thiru.R.S.Senthilkumar | Rc.No.409/2001/MM1 Dated: 23.05.2001 | 285/1B2,285/3, 286/1B1B,286/2 | 5 Years | 23.05.2001 To 22.05.2006 |
| 3 | Thiru.R.S.Senthilkumar | Rc.No.675/2006/X1 Dated: 27.06.2006 | 285/1B2,285/3, 286/1B1A, 286/1B1B,286/2 | 5 Years | 05.07.2006 To 04.07.2011 |
| 4 | Thiru.R.S.Senthilkumar | Rc.No.509/2011/MM2 Dated: 15.05.2013 | 285/1B2,285/3 & 286/2 | 4 Years | 15.05.2013 to 14.05.2017 |
| 5 | Thiru.R.S.Senthilkumar | Rc.No.101/Mines/2017 Dated: 11.01.2017 | 285/3 & 286/2 | 5 Years | 11.11.2017 to 10.11.2022 |

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for any project. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are

taken into account during the project designing. It also reduces conflicts by promoting community participation, information, decision makers, and helps in developing the base for environmentally sound project.

1.1 PURPOSE OF THE REPORT

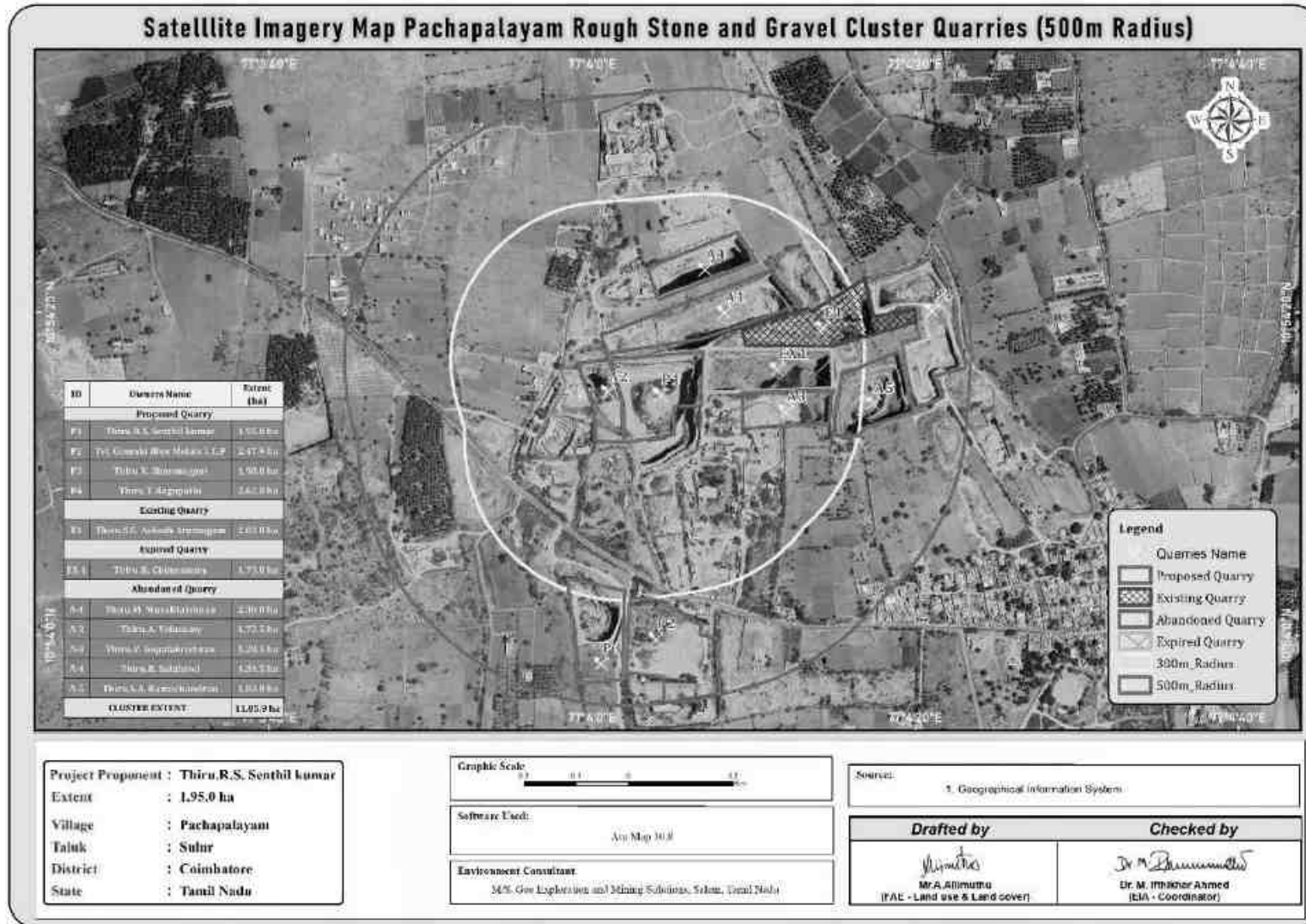
The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 1889 of 20th April 2022, Mining Projects are classified under two categories i.e. A (> 250 Ha) and B (\leq 250 Ha), and Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation in Appendix–XI.

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No. 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed projects are categorized under category “B1” Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance.

“Draft EIA report prepared on the basis of ToR Issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu”

FIGURE 1.1 SATELLITE IMAGERY CLUSTER QUARRIES



1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

1.2.1 Identification of Project

TABLE 1.1: SALIENT FEATURES OF THE PROPOSED PROJECT

| | |
|----------------------------|---|
| Name of the Project | Thiru.R.S.Senthilkumar Rough stone and Gravel quarry |
| S.F. No. | 285/3(P) & 286/2(P) |
| Extent | 1.95.0 ha |
| Land Type | Patta Land |
| Village Taluk and District | Pachapalayam Village, Sulur Taluk, Coimbatore District. |

Source: Approved Mining Plan

1.2.2 Identification of Project Proponent

TABLE 1.2: DETAILS OF PROJECT PROPONENT

| | |
|-------------------------------|---|
| Name of the Project Proponent | Thiru.R.S.Senthilkumar |
| Address | S/o. R.R.Subbaiyan, No.31, Sathyamoorthy Road, Ramnagar Coimbatore District – 641 201 |
| Mobile | +91 98422 59519 |
| Status | Individual |

Source: Approved Mining Plan.

1.3 BRIEF DESCRIPTION OF THE PROJECT

1.3.1 Nature and Size of the Project

The quarrying operation is proposed to be carried out by Opencast Mechanized Mining method with 5.0m bench height and 5.0m bench width by deploying Jack Hammer Drilling & Slurry Explosive during blasting. Hydraulic Excavator and tippers are used for Loading and transportation. Rock Breakers are deployed to avoid secondary blasting.

TABLE 1.3: BRIEF DESCRIPTION OF THE PROJECT

| Name of the Project | Thiru. R.S. Senthikumar Rough Stone & Gravel Quarry | | | | |
|--------------------------|---|--|---|------------------------------------|--------------------------|
| Land type | It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation | | | | |
| Land owner details | It is a Patta land, Registered in the name of the applicant Thiru.R.S.Senthikumar vide Patta no.178 | | | | |
| Previous lease details | It is a fresh application. But the applied area has been considered quarrying operation earlier | | | | |
| | S.No | Name of Lessee | District collector's Proceeding Number and date | Extent and S.F.Nos | Lease Period |
| | 1 | Thiru.R.S.Senthilkumar | Rc.No.509/2011/MM2 Dated: 15.05.2013 | 3.84.0ha and 285/1B2,285/3 & 286/2 | 15.05.2013 to 14.05.2017 |
| 2 | Thiru.R.S.Senthilkumar | Rc.No.101/Mines/2017 Dated: 11.01.2017 | 3.15.0Ha and 285/3 & 286/2 | 11.11.2017 to 10.11.2022 | |
| Toposheet No | 58 - F/01 | | | | |
| Latitude between | 10°54'11.91"N to 10°54'17.17"N | | | | |
| Longitude between | 77°04'01.21"E to 77°04'06.86"E | | | | |
| Highest Elevation | 435m AMSL | | | | |
| Mining Plan period | 5 years | | | | |
| Existing Pit Depth | 38m Bgl | | | | |
| Proposed Depth of Mining | 52m below ground level. | | | | |

| | | | | |
|--------------------------------------|---|-----------------|----------------|----------------|
| Restricting Depth as per ToR | 47m below ground level | | | |
| Geological Resources | Rough Stone in m ³ | | | |
| | 2,17,014 | | | |
| Mineable Reserves | Rough Stone in m ³ | | | |
| | 75,830 | | | |
| Yearwise Production | Rough Stone in m ³ | | | |
| | 75,830 | | | |
| Existing Pit Dimension | 146m (L) x 145m (W) x 38m(D) bgl | | | |
| Ultimate Pit Dimension | Section | Length(m) (Max) | Width(m) (Max) | Depth(m) (Max) |
| | XY-AB | 79 | 150 | 52 |
| | XY-CD | 65 | 95 | 52 |
| Water Level in the surrounding areas | 65-70m bgl | | | |
| Method of Mining | Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives | | | |
| Topography | The lease applied area is exhibits plain terrain. The area has gentle sloping towards Eastern side. The altitude of the area is 435m (Max) above Mean sea level. The area is covered by the Gravel which is about 2m thickness. Massive Charnockite is found after 2m (Gravel) which is clearly inferred from the existing quarry pits. | | | |
| Machinery proposed | Jack Hammer | 2 Nos | | |
| | Compressor | 1 Nos | | |
| | Excavator with Bucket and Rock Breaker | 1 No | | |
| | Tipper | 2 Nos | | |
| Blasting Method | Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed. | | | |
| Proposed Manpower Deployment | 19 Nos | | | |
| Project Cost | Rs. 89,66,000/- | | | |
| EMP Cost | Rs. 10,22,000/- | | | |
| Total Project cost | Rs. 99,88,000/- | | | |
| CER Cost | Rs. 5,00,000,- | | | |
| Nearby Water Bodies | Seasonal Odai | 90m West | | |
| | Odai | 290m SW | | |
| | Seasonal Odai | 450m NE | | |
| | Odai | 3km SE | | |
| | Noyyal River | 9.3km North | | |
| | Pallapalayam Lake | 9.2km NE | | |
| Greenbelt Development Plan | As per Mining plan it is Proposed to plant 1000 trees in the 7.5 m Safety Zone, approach road and panchayat roads. | | | |
| Proposed Water Requirement | 1.5 KLD | | | |
| Nearest Habitation | 440m – North West | | | |

Source: Approved Mining Plan, PFR.

1.3.2 Location of the Project

- All the proposed quarry projects fall in Pachapalayam Village, Sular Taluk and Coimbatore District. The lease applied area is located about 18km Southeast of Coimbatore, 15km Southwestern side of Sular and 850m Northwestern side of Pachapalayam Village.

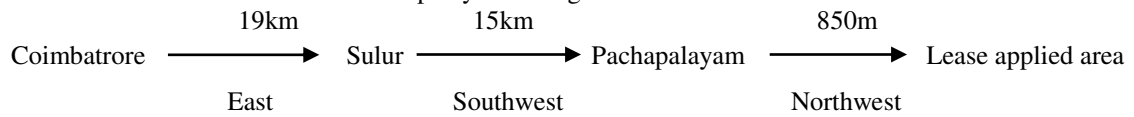
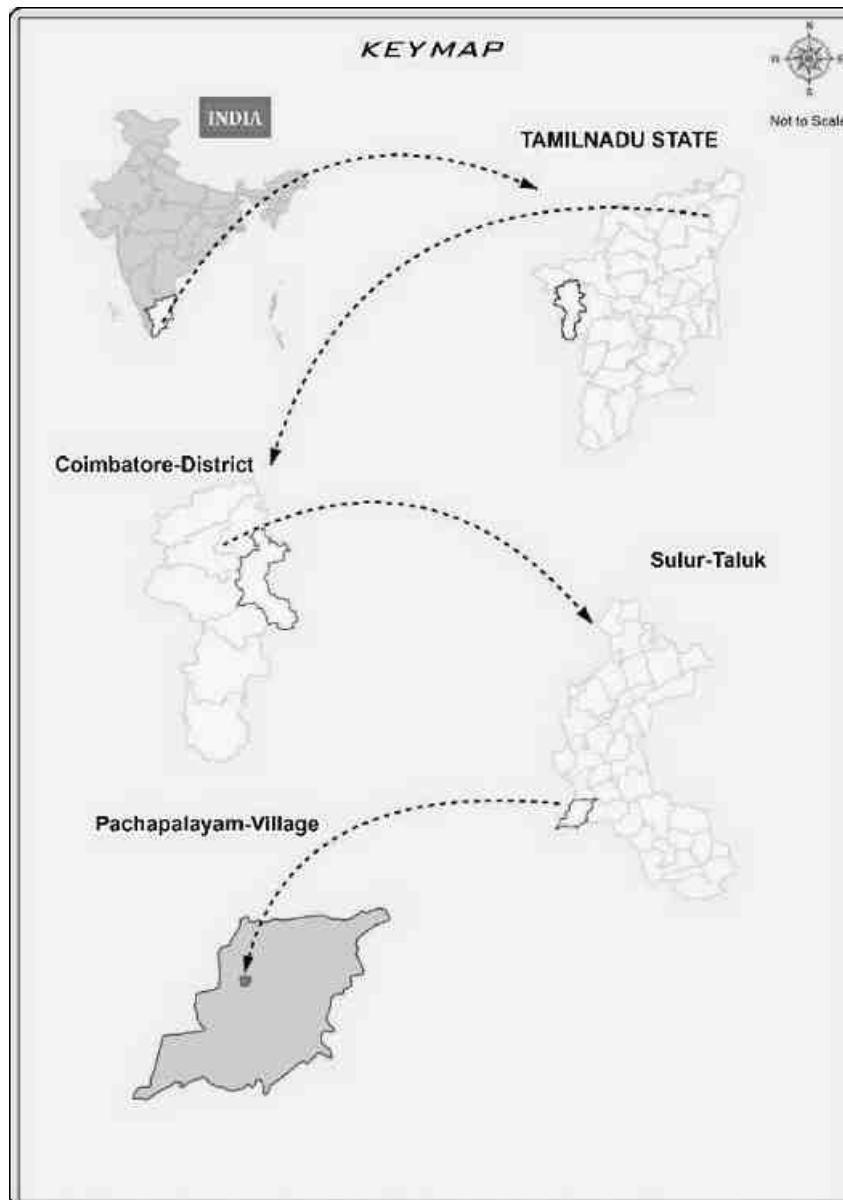
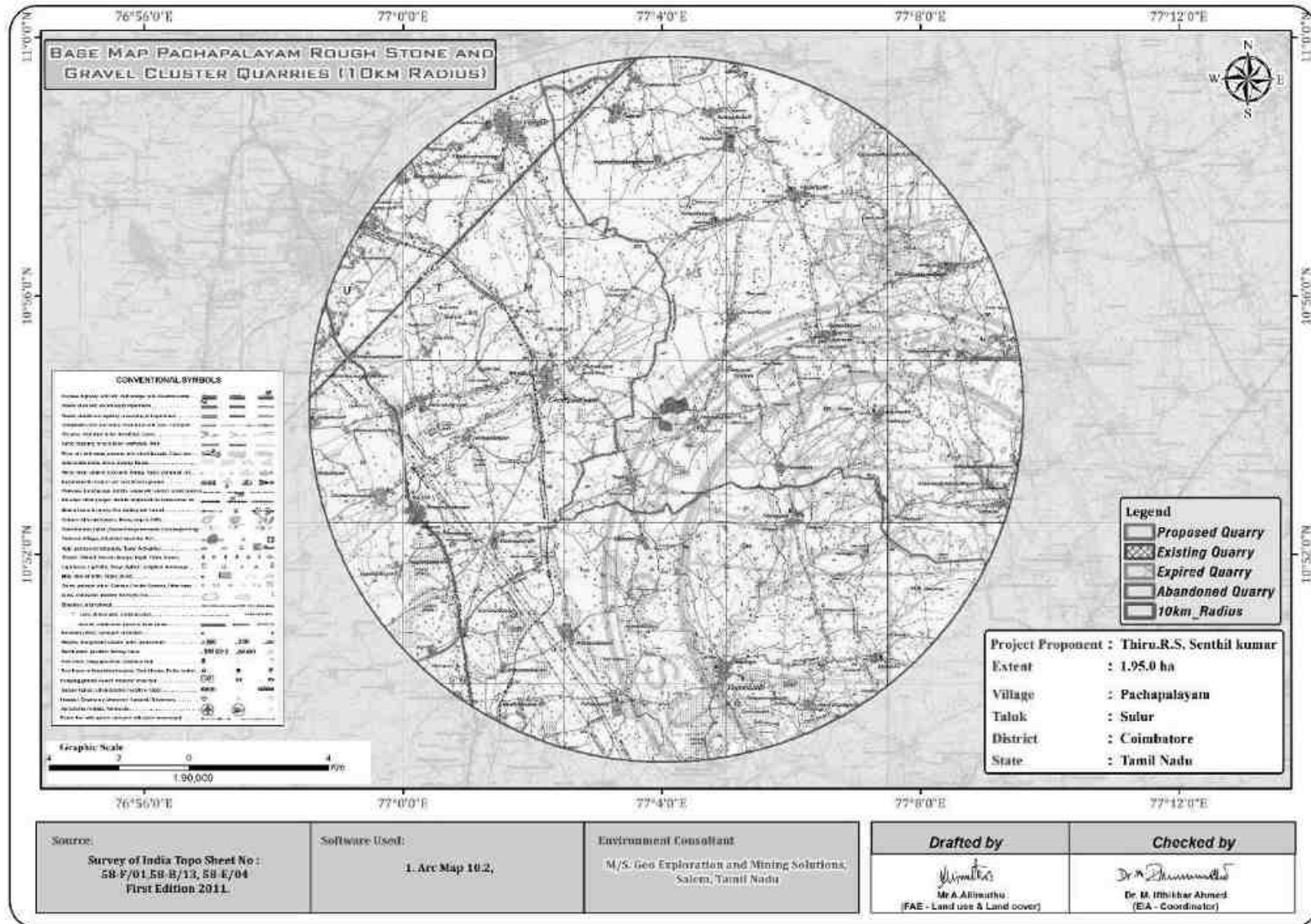


FIGURE 1.2 KEY MAP SHOWING THE LOCATION OF THE PROJECT SITE



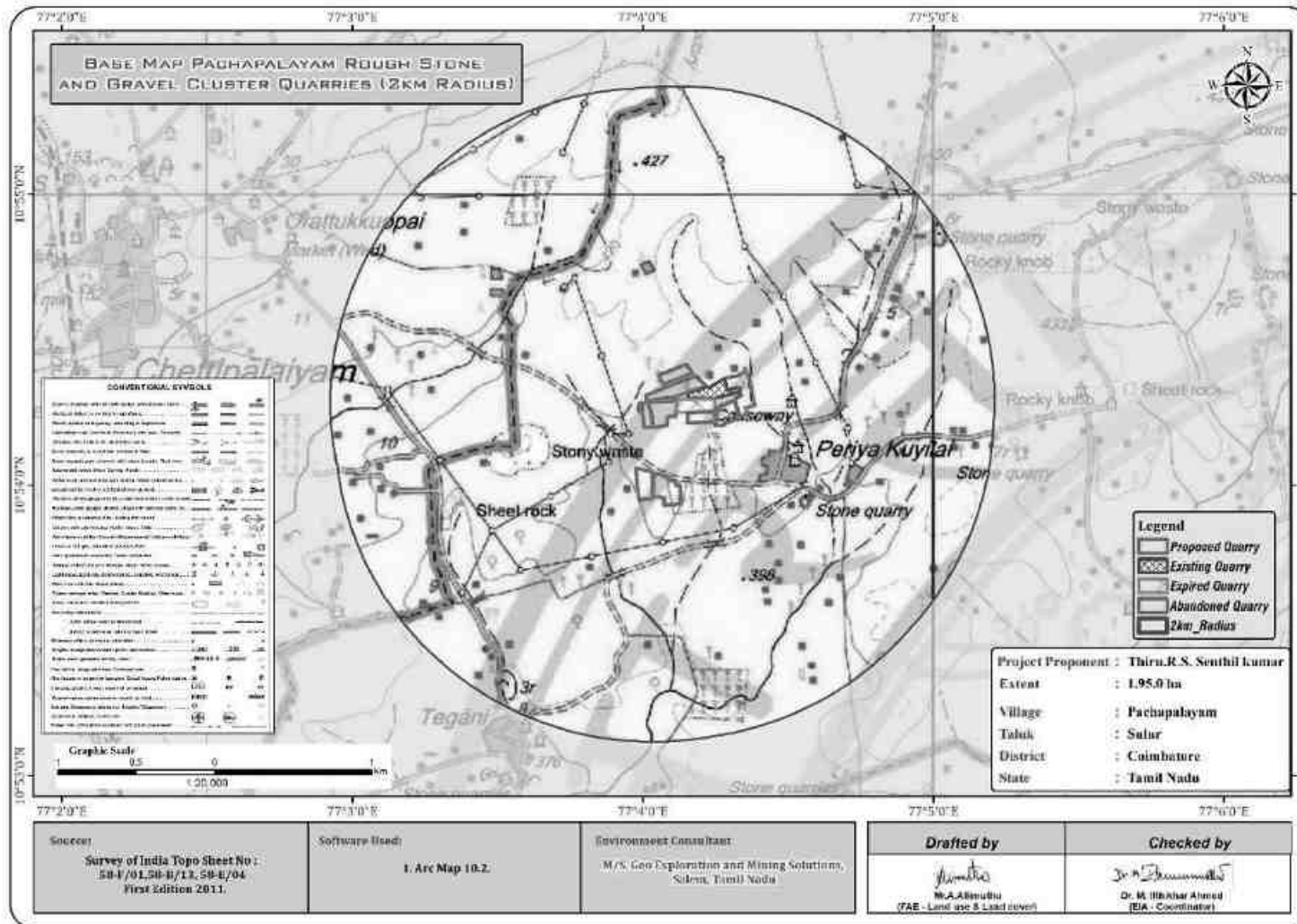
Source: Survey of India Toposheet 58-A/15 & 16

FIGURE 1.3: TOPOSHEET MAP OF THE STUDY AREA 10 KM RADIUS



Source: Survey of India Toposheet 58-A/15 & 16

FIGURE 1.4: TOPOSHEET MAP OF THE STUDY AREA 2KM RADIUS



1.4 ENVIRONMENTAL CLEARANCE

The Environmental Clearance process for the project will comprise of four stages. These stages in sequential order are given below: -

- Screening,
- Scoping
- Public consultation &
- Appraisal

SCREENING:

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 13.05.2022
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc. No 557/Mines/2022, Dated: 12.11.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc. No 557/Mines/2022, Dated: 12.11.2024.
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No.SIA/TN/MIN/508364/2024 dated: 26.11.2024.

SCOPING:

- The proposal was placed in 523rd SEAC meeting held on 27.12.2024 and the committee recommended for issue of ToR.
- The proposal was considered in 787th SEIAA meeting held on 08.01.2025 and issued ToR vide File No.11522 TOR Identification No. TO24B0108TN5943650N Dated: 11.01.2025

PUBLIC CONSULTATION

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district is submitted along with this Draft EIA/ EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

APPRAISAL –

- Appraisal is the detailed scrutiny by the State Expert Appraisal Committee (SEAC) of the application and other documents like the final EIA & EMP Report, outcome of the Public Consultations including Public Hearing Proceedings, submitted by the proponent to the regulatory authority concerned for grant of environmental clearance.
- The report has been prepared using the following references:
 - Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, 2010
 - EIA Notification, 14th September, 2006
 - ToR vide File No.11522 TOR Identification No. TO24B0108TN5943650N Dated: 11.01.2025
 - Approved Mining Plan

1.5 TERMS OF REFERENCE (ToR)

Compliance to ToR issued vide –

- ToR vide File No.11522 TOR Identification No. TO24B0108TN5943650N Dated: 11.01.2025

1.6 POST ENVIRONMENT CLEARANCE MONITORING

The respective proposed project proponents shall submit a half-yearly compliance report in respect of stipulated Environmental Clearance terms and conditions to MoEF & CC Regional Office & SEIAA after grant of EC on 1st June and 1st December of each calendar year as per MoEF & CC Notification S.O. 5845 (E) Dated: 26.11.2018.

1.7 GENERIC STRUCTURE OF EIA DOCUMENT

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the “Environmental Impact Assessment Guidance Manual for Mining of Minerals” published by MoEF & CC.

1.8 THE SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the summer season (March 2023 to May 2023) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

TABLE 1.5: ENVIRONMENT ATTRIBUTES

| Sl.No. | Attributes | Parameters | Source and Frequency |
|--------|------------------------|--|--|
| 1 | Ambient Air Quality | PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ | Continuous 24-hourly samples twice a week for three months at 8 locations (2 Core & 6 Buffer) |
| 2 | Meteorology | Wind speed and direction, temperature, relative humidity and rainfall | Near project site continuous for three months with hourly recording and from secondary sources of IMD station |
| 3 | Water quality | Physical, Chemical and Bacteriological parameters | Grab samples were collected at 6 locations – 2 Surface water and 4 Ground water samples; once during study period. |
| 4 | Ecology | Existing terrestrial and aquatic flora and fauna within 10 km radius circle. | Limited primary survey and secondary data was collected from the Forest department. |
| 5 | Noise levels | Noise levels in dB(A) | 8 locations – data monitored once for 24 hours during EIA study |
| 6 | Soil Characteristics | Physical and Chemical Parameters | Once at 6 locations during study period |
| 7 | Land use | Existing land use for different categories | Based on Survey of India topographical sheet and satellite imagery and primary survey. |
| 8 | Socio-Economic Aspects | Socio-economic and demographic characteristics, worker characteristics | Based on primary survey and secondary sources data like census of India 2011. |
| 9 | Hydrology | Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas | Based on data collected from secondary sources as well as hydro-geology study report prepared. |

| | | | |
|----|--|---|--|
| 10 | Risk assessment and Disaster Management Plan | Identify areas where disaster can occur by fires and explosions and release of toxic substances | Based on the findings of Risk analysis done for the risk associated with mining. |
|----|--|---|--|

Source: Field Monitoring Data

1.8.1 Regulatory Compliance & Applicable Laws/Regulations for all Proposed Quarries

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959.
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance.
- The Mining Plan has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959.
- ToR vide File No.11522 TOR Identification No. TO24B0108TN5943650N Dated: 11.01.2025

2. PROJECT DESCRIPTION

2.0 GENERAL

The Proposed Rough Stone Quarry requires Environmental Clearance. There are 4 proposed, and 1 existing quarries forming a cluster; calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016 and the total extent of cluster is 11.05.9 ha.

As the extent of cluster are more than 5 ha, the proposal falls under B1 Category as per the Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018, and requirement for EIA, EMP and Public Consultation for obtaining Environmental Clearance.

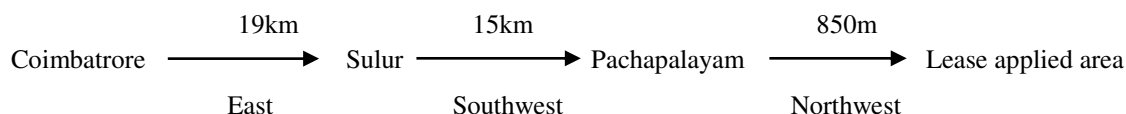
2.1 DESCRIPTION OF THE PROJECT

The proposed projects are site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarries.

Method of mining is common for all the quarries. Rough Stone is proposed to be excavated by opencast mechanized method involving 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 and rock breakers to avoid secondary blasting.

2.2 LOCATION OF THE PROJECT

- All the proposed quarry projects fall in Pachapalayam Village, Suler Taluk and Coimbatore District. The lease applied area is located about 18km Southeast of Coimbatore, 15km Southwestern side of Suler and 850m Northwestern side of Pachapalayam Village.



The project does not fall within 10 km radius of any Eco – sensitive zone, National Park, Tiger Reserve, Elephant Corridor and Biosphere Reserves.

TABLE 2.1: SITE CONNECTIVITY

| | |
|-------------------------|--|
| Nearest Roadway | NH83- Coimbatore – Dindigul Road -7.0km-SW SH163- Palladam– Chettipalayam Road-3.0km-NW |
| Nearest Village | Pachapalayam – 440m- NW |
| Nearest Town | Coimbatore – 10kmNW |
| Nearest Railway Station | Chettipalayam – 3km-NW |
| Nearest Airport | Coimbatore – 14.0km – NW |
| Seaport | Kochi- 139 km – South West |

Source: Survey of India Toposheet

TABLE 2.2: BOUNDARY CO-ORDINATES OF PROPOSED PROJECT

| Corner Nos. | Latitude | Longitude |
|--|---------------|---------------|
| 1 | 10°54'11.91"N | 77°04'02.00"E |
| 2 | 10°54'14.35"N | 77°04'01.91"E |
| 3 | 10°54'16.73"N | 77°04'01.21"E |
| 4 | 10°54'17.17"N | 77°04'06.86"E |
| 5 | 10°54'14.18"N | 77°04'06.75"E |
| 6 | 10°54'14.15"N | 77°04'05.09"E |
| 7 | 10°54'12.39"N | 77°04'05.07"E |
| Datum: UTM-WGS84, Zone 43 North | | |

Source: Approved Mining Plan

FIGURE 2.1: TOPOGRAPHICAL VIEW OF PROJECT AREA



FIGURE 2.2: PHOTOGRAPHS OF GREEN BELT & FENCING



FIGURE 2.3: GOOGLE IMAGE OF THE PROJECT AREA



FIGURE 2.4: QUARRY LEASE PLAN / SURFACE PLAN



Source: Approved Mining Plan

FIGURE 2.5: VILLAGE MAP SUPERIMPOSED ON GOOGLE EARTH IMAGE

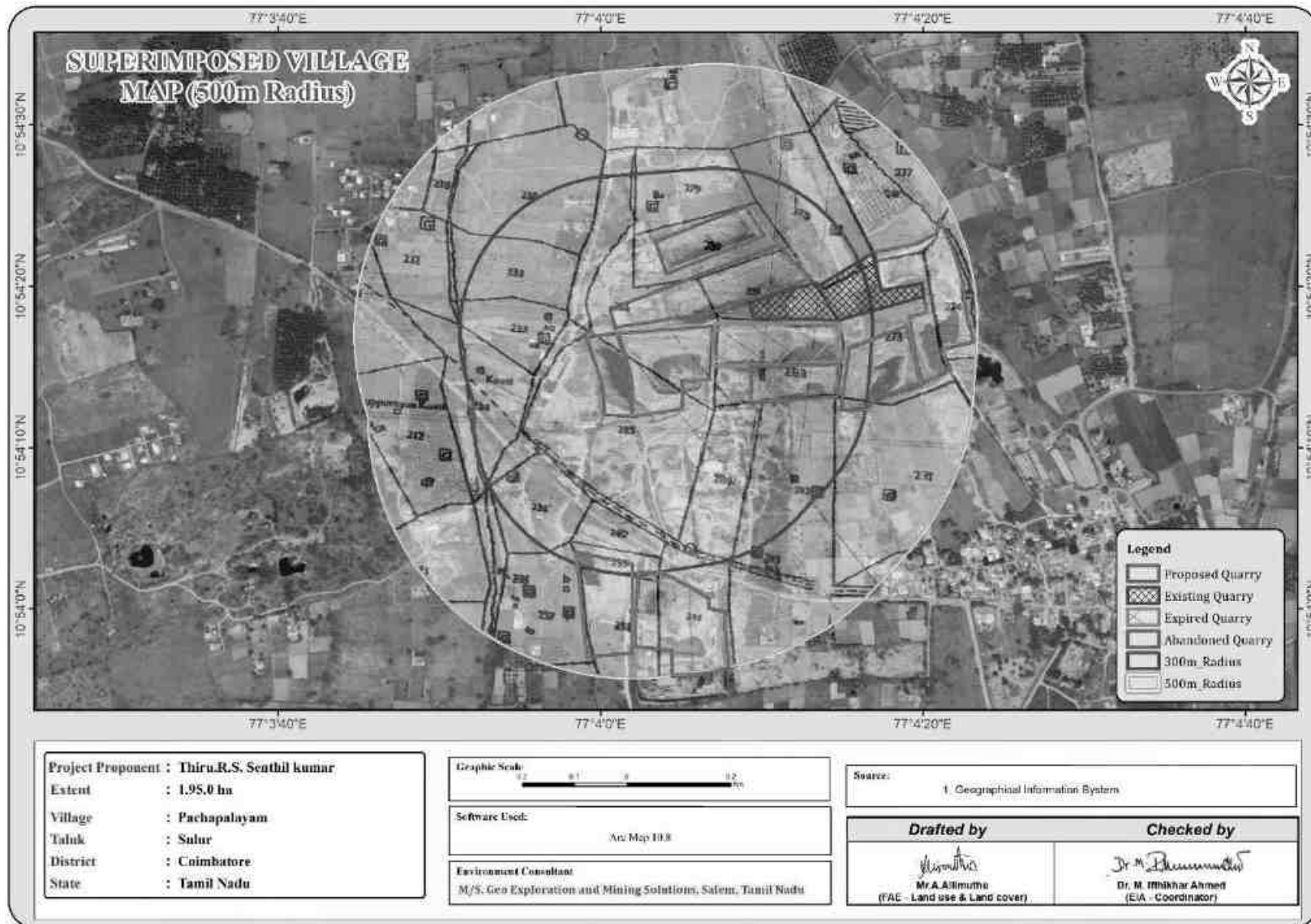


FIGURE 2.6: IMAGE SHOWING SURFACE FEATURES AROUND 10 KM RADIUS

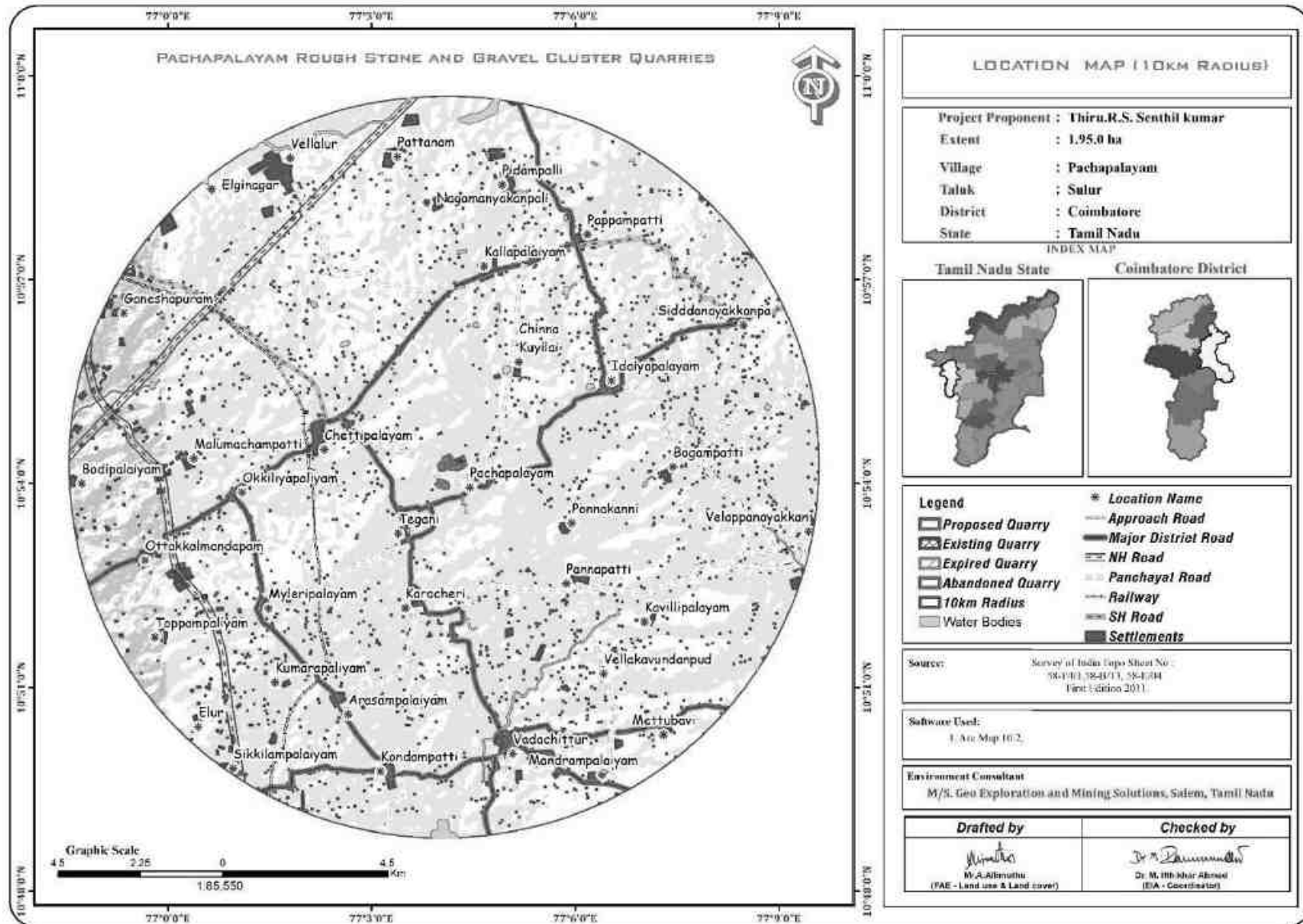


FIGURE 2.7: IMAGE SHOWING SURFACE FEATURES AROUND 5KM RADIUS

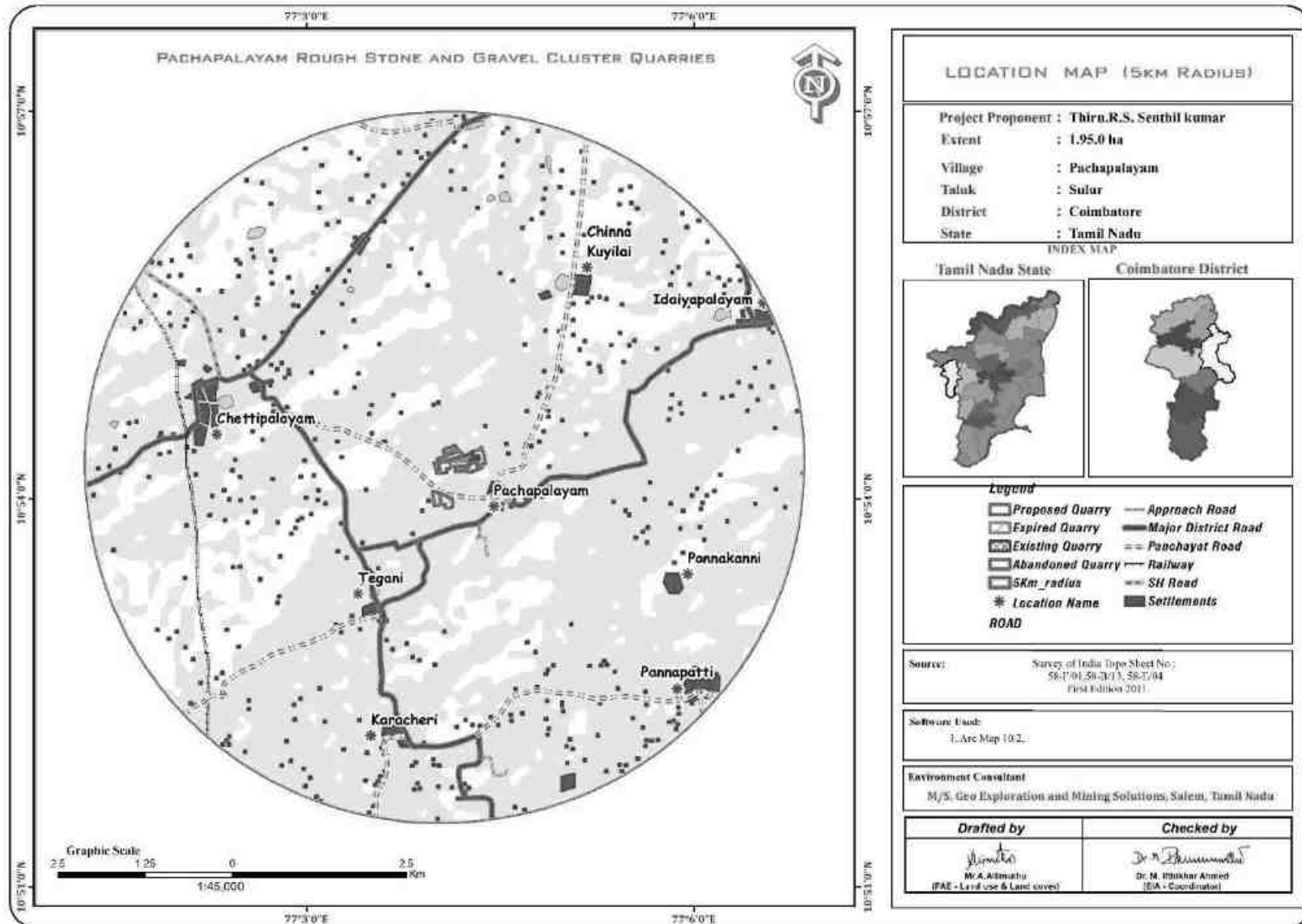
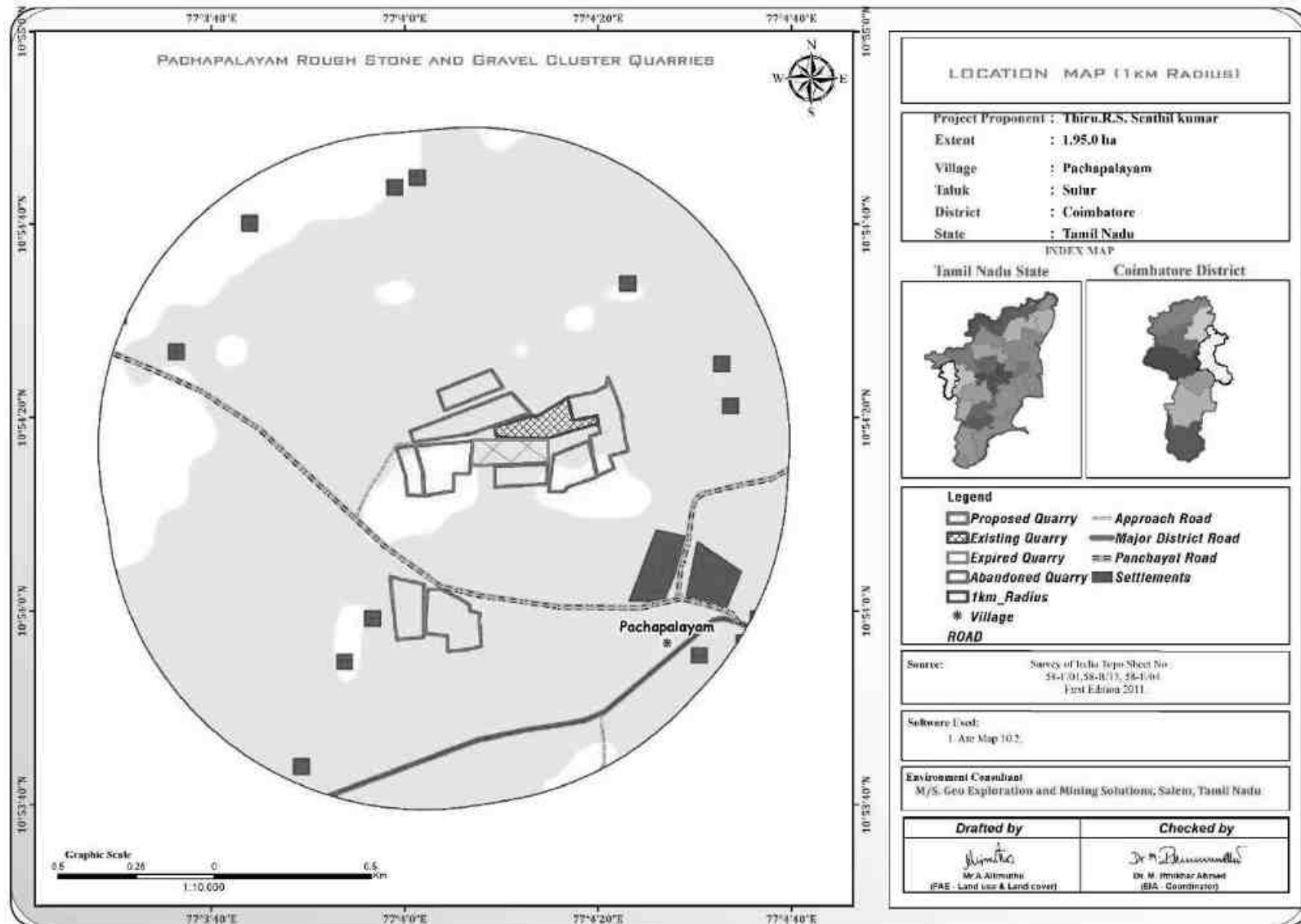


FIGURE 2.8: IMAGE SHOWING SURFACE FEATURES AROUND 1 KM RADIUS



2.2.1 Project Area

- All the Proposed Projects are site specific.
- There is no beneficiation or processing proposed inside all the project area.
- There is no forest land involved in the proposed projects and is devoid of major vegetation and trees.

TABLE 2.3: LAND USE PATTERN OF THE PROPOSED PROJECT

| Description | Present area (Ha) | Area at the end of this quarrying period (Ha) |
|--------------------|-------------------|---|
| Area under quarry | 1.90.0 | 1.90.0 |
| Site Services | Nil | Nil |
| Roads | 0.02.0 | 0.02.0 |
| Green Belt | Nil | Nil |
| Unutilized Area | 0.03.0 | 0.03.0 |
| Grand Total | 1.95.0 | 1.95.0 |

Source: Approved Mining Plan

2.2.2 Size or Magnitude of Operation

TABLE 2.4: OPERATIONAL DETAILS FOR PROPOSED PROJECT

| PARTICULARS | DETAILS |
|---|---------------------------------|
| | Rough Stone (5Year Plan period) |
| Geological Resources | 2,17,014 |
| Mineable Reserves | 75,830 |
| Production year wise plan period | 75,830 |
| Mining Plan Period / Lease Applied Period | 5 Years |
| Number of Working Days | 300 Days |
| Production per day | 51 |
| No of Lorry loads (12m ³ per load) | 4 |
| Total Depth of Mining As per ToR | 42 below the ground level |

Source: Approved mining plan

2.3 GEOLOGY

2.3.1 Regional Geology

Coimbatore district of Tamil Nadu forms a part of southern Granulitic terrain and is predominantly occupied by crystalline rocks of Archaean to late Proterozoic age. Regionally, the rocks can be grouped under five categories namely –

| | |
|-----|---|
| i. | Charnockite Group represented by Charnockite, Pyroxene Granulite and Magnetite Quartzite |
| ii | Peninsular Gneissic Complex (II) comprising hornblende-biotite gneiss |
| iii | Peninsular Gneissic Complex (II) comprising hornblende-biotite gneiss |
| iv | Younger intrusive comprising, Nepheline-Syenite, Pink Granite, Pegmatite and Quartz veins and |
| v | Younger intrusive comprising, Nepheline-Syenite, Pink Granite, Pegmatite and Quartz veins and |
| vi | Quaternary sediments of Kankar and soil |

Stratigraphy of the area –

| Age | Group | Lithology |
|------------------------------|--|--|
| Holocene | | Block cotton soil/clay±gypsum |
| Cenozoic | | Kankar/calc-tufa |
| Neoproterozoic | Acid intrusives | Quartz veins Pegmatite Pink Granite |
| | Sivamalai syenite Complex | Nepheline-syenite |
| | Chalk Hills (Basic Intrusives) | Pyroxenite/Dunite |
| Archaean – Palaeoproterozoic | Peninsular Gneissic Complex (II) PGC (II) | Pink Granite Gneiss Hornblende Biotite gneiss |
| Archaean | Charnockite Group | Charnockite (Unclassified) Pyroxene Granulite Banded Magnetite Quartzite |

Geologically, the district is covered by rocks belonging to Archean age comprising the khondalite group, Charnockite Group, migmatite group, Sathayamangalam group, Bhavani Group and Alkali complex of Proterozoic age and Recent to Late Pleistocene rocks of Cainozoic age.

The Charnockite Group of rocks consisting of Charnockite, pyroxene granulites and associated magnetite quartzite, the Knodalite Group comprising gametiferous – sillimanite gneiss, calc-granulite, crystalline limestone, sillimanite quartzites and associated migmatitic gneisses. The rocks are restricted to the central and southern portions of the district, especially around Suler, Suler and Pollachi taluks.

The fissile hornblende gneisses (Peninsular gneiss – younger phase) of Bhavani Group with enclaves of schistose, micaceous and amphibolitic rocks, fuchsite – kyanite quartzites, ferruginous quartzite (Sathayamangalam Group) intruded by a number of ultramafic and basic rocks and granites are seen in the Northern portions of the district especially around Mettupalayam and Northern areas of Coimbatore. The granites are Proterozoic age and occupy the Western end and Eastern Part of the District as separate bodies and are recognized as Maruthamalai Granite and Punjapuliampatti Granites respectively. The quaternary alluvium is seen in the Western areas of Coimbatore town. The alluvium is more than 30m thick in the Chinnathadagam valley northwest of Coimbatore and in the Siruvani valley west of Coimbatore.

Source: District Survey Report for Minor Minerals Coimbatore District – May 2019

(<https://www.tnmines.tn.gov.in/pdf/dsr/9.pdf>)

2.3.2 Local Geology: -

The study area follows the regional trend and mainly comprises of Hard Rock Formation as a homogeneous formation / Batholith formation of Charnockite. All the project areas are plain terrain, all the project areas are covered with gravel and weathered gravel formation of 1m-4m thickness (2m gravel & 2m Weathered gravel); Massive Charnockite formation is found after 1m-4m gravel and weathered gravel formation which is clearly inferred from the existing quarry pit.

2.3.3 Hydrogeology

Coimbatore District is underlain by crystalline metamorphic complex in the western parts of district and sedimentary tract in eastern side. An area of 4551 Sq.km is covered by crystalline rocks (63%) and 2671 Sq.km is covered by sediments (37%). The general geological sequence of formation is given below:

Quaternary - Laterites, Sands and Clays

Tertiary - Sandstone, Gravels and Clays

Cretaceous - Limestone, Calcareous Sandstone and Clay unconformity.

Archaean - Charnockites, Gneisses, Granites, Dolerites and Pegmatite

- The major part of the area is covered by metamorphic crystalline rocks of charnockite, granitic gneiss of Archaean age intruded by dolerite dykes and pegmatite veins. These rocks are highly metamorphosed and have been subjected to very severe folding, crushing and faulting.

- Ground Water occurs under the phreatic condition and wherever there are deep seated fractures, it occurs under semi-confined to confined conditions.
- Occurrence of Ground Water in hard rock depends upon the intensity and depth of weathering, fractures and fissures present in the rocks.
- Granites and gneisses yield moderately compared to the yield in Charnockites.
- Depth of well in hard rock generally ranges between 8 and 15m below ground level.
- Generally, yield in open wells ranges from 30 to 250m³ /day and in bore well between 260 and 430m³ /day. The weathered thickness varies from 2.5 m to 42m in general there are 3 to 5 fracture zones within 100 m and 1 to 4 fracture zones between 100 and 200 m.

The Cretaceous formation is represented by Arenaceous Lime stone, Calcareous sand - stone and marl.

The Tertiary formation is argillaceous comprising of Silty clay stones, argillaceous Lime stone.

The Quaternary deposits represented by the river deposits of Ponnaiyar and Varahanadhi spread over as patches in Tirupur District. The alluvium consists of unconsolidated sands, gravelly sands, clays and clayey sands. The thickness of the sands ranges between 15 and 25 m in the alluvial formation which also form potential aquifers. In some areas, sand stone of tertiary formation are the potential groundwater reservoirs.

Aquifer Systems:

Occurrence and storage of groundwater depend upon three factors viz., Geology, Topography and rainfall in the form of precipitation. Apart from Geology, wide variation in topographic profile and intensity of rainfall constitutes the prime factors of groundwater recharge. Aquifers are part of the more complex hydro geological system and the behaviour of the entire system cannot be interpreted easily. In hard rock terrain the occurrence of Ground Water is limited to top weathered, fissured and fractured zone which extends to maximum 30 m on an average it is about 10-15 m in Coimbatore District.

In Sedimentary formations, the presence of primary inter granular porosity enhances the transmitting capacity of groundwater where the yield will be appreciable. The sedimentary area which occupies the eastern part of the district along the coastal tract is more favourable for groundwater recharge. Ground Water occurs both in semi confined and confined conditions. A brief description of occurrence of groundwater in each formation is furnished below.

Alluvial Formations

In the river alluvium groundwater occurs under water table condition. The maximum thickness is 37 m and the average thickness of the aquifer is approximately 12 m. These formations are porous and permeable which have good water bearing zones.

Tertiary Cuddalore sandstone

Tertiary formations are represented by Cuddalore Sandstone and characterised as fluvial to brackish marine deposits. Predominantly this formation is divided into Lower and Upper Cuddalore formations. In the Upper Cuddalore formations the groundwater occurs in semi confined conditions, whereas in the Lower Cuddalore the groundwater occurs in confined condition with good groundwater potential.

Cretaceous Formations

Groundwater occurring in the lens shape in the sandy clay lenses and fine sand is underlain by white and black clay beds which constitute phreatic aquifer depth which ranges 10m to 15m below ground level. Phreatic aquifer in Limestone is potential due to the presence of Oolitic Limestone.

Hard Rock Formations

Groundwater occurs under water table conditions but the intensity of weathering, joint, fracture and its development is much less in other type of rocks when compared to gneissic formation. The groundwater potential is low, when compared with the gneissic formations

Granitic Gneiss

Groundwater occurs under water table conditions in weathered, jointed and fractural formations. The pore space developed in the weathered mantle acts as shallow granular aquifers and forms the potential water bearing and yielding zones water table is shallow in canal and tank irrigation regions and it is somewhat deeper in other regions.

Charnockite

Groundwater occurs under water table conditions but the intensity of weathering, joint, fracture and its development is much less when compared to gneissic formations. The groundwater potential is low, when compared with the gneissic formations.

Aquifer Parameters

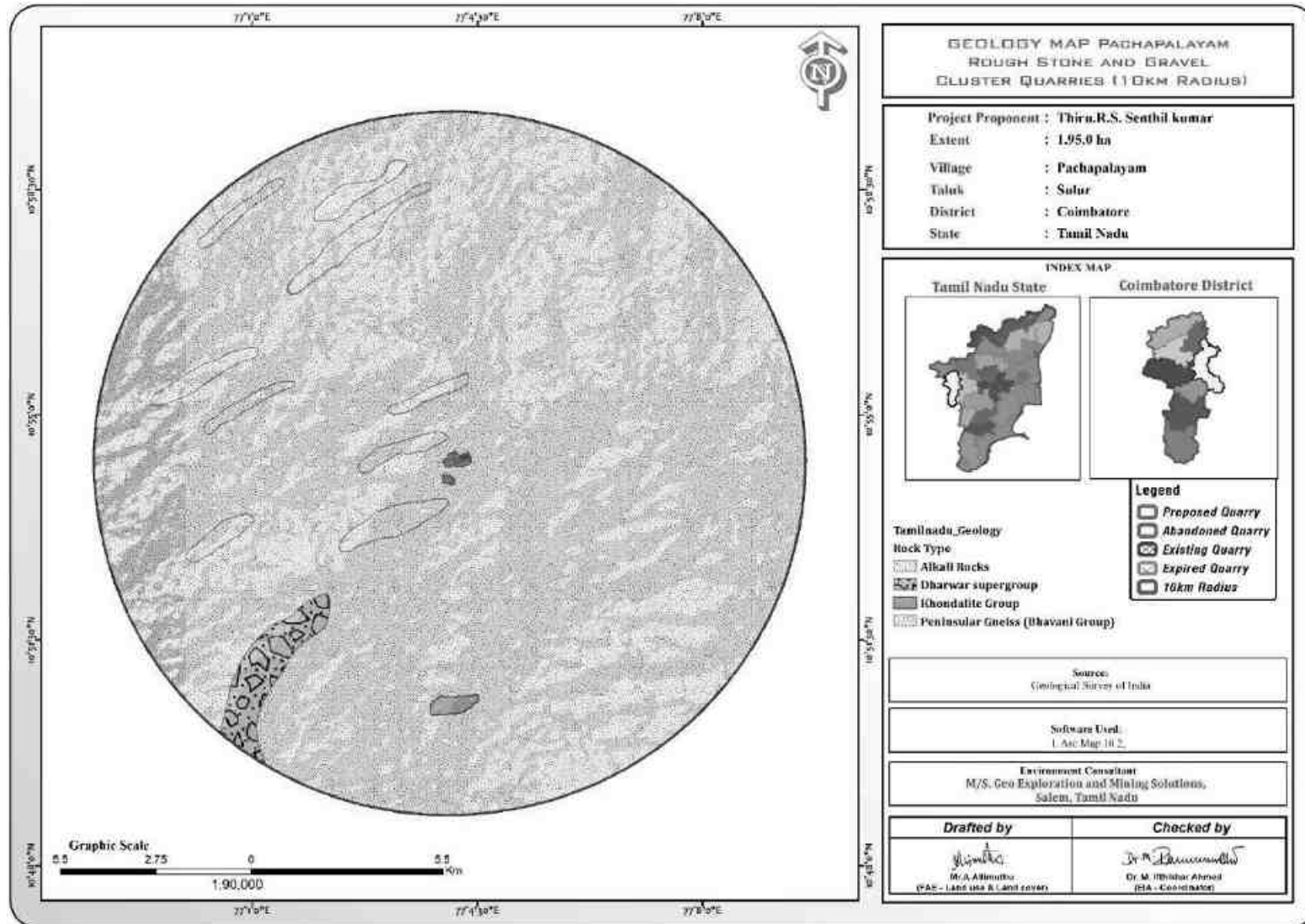
The thickness of aquifer in this district is highly erratic and varies between 15m to 40m below ground level. The intergranular Porosity is essentially dependent on the intensity and degree of weathering and fracture development in the bed rock. As discussed earlier deep weathering has developed in Gneissic formations and moderate weathering in charnockite formations. The range of aquifer parameters in hard rock and sedimentary formations are given below:

TABLE 2.5: RANGE OF AQUIFER PARAMETERS

| Type of Aquifer | Water Table conditions in hard rock areas |
|-------------------------|--|
| Aquifer paramters yield | 50 to 300 Lpm |
| Transmissivity (T) | 1.49 to 164.18 m ² /day |
| Permeability (K) | 0.25 to 26.75 m/day |
| Depth of water level | 7m to 25m |

Source: <http://nwm.gov.in/sites/default/files/Notes%20on%20Coimbatore%20District.pdf> and <https://www.twadboard.tn.gov.in/content/coimbatore>

FIGURE 2.9: REGIONAL GEOLOGY MAP



From the above map it is inferred that the cluster quarries fall in the hard rock terrain (Peninsular Gneiss)Source:

FIGURE 2.10: GEOMORPHOLOGY MAP

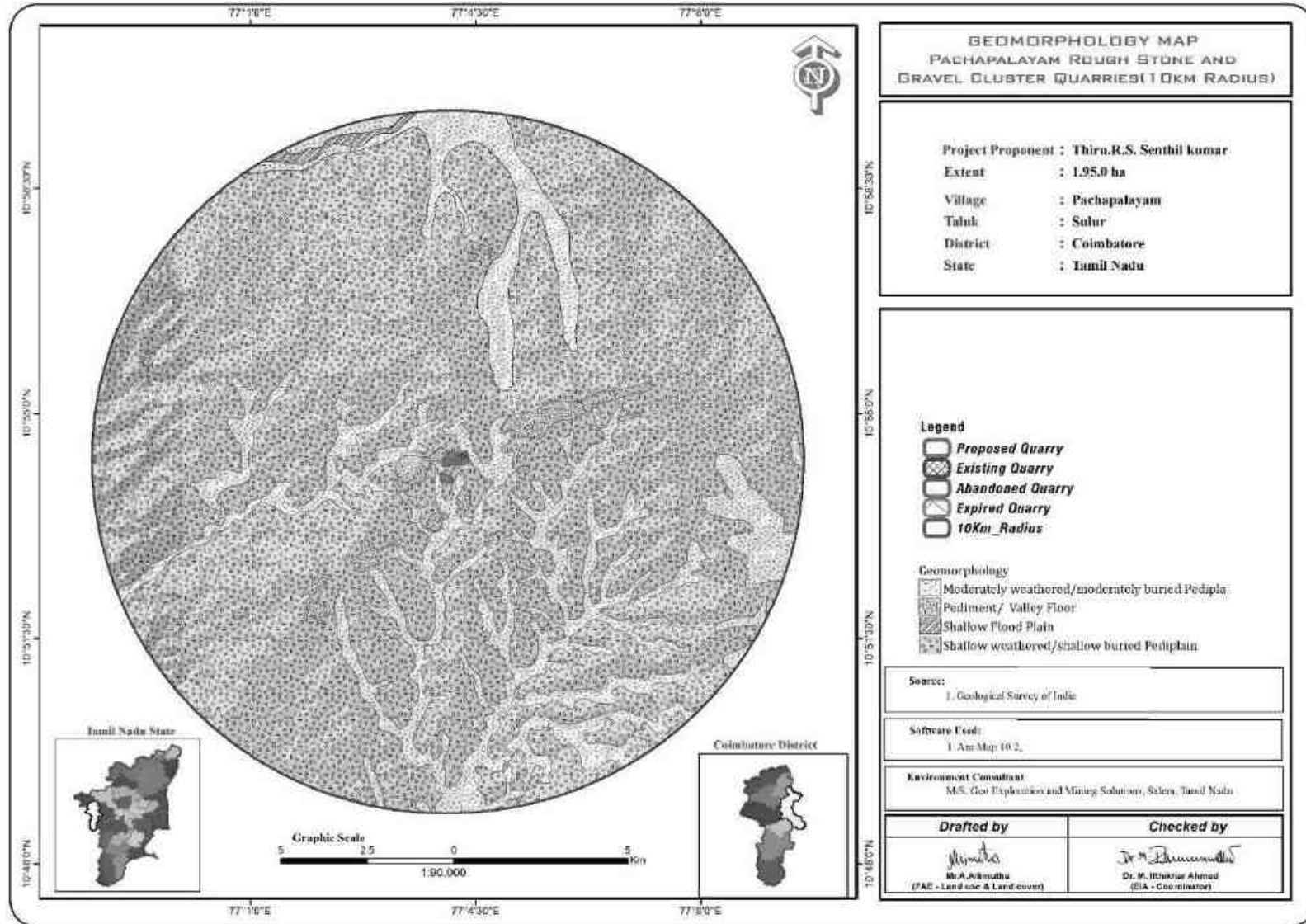
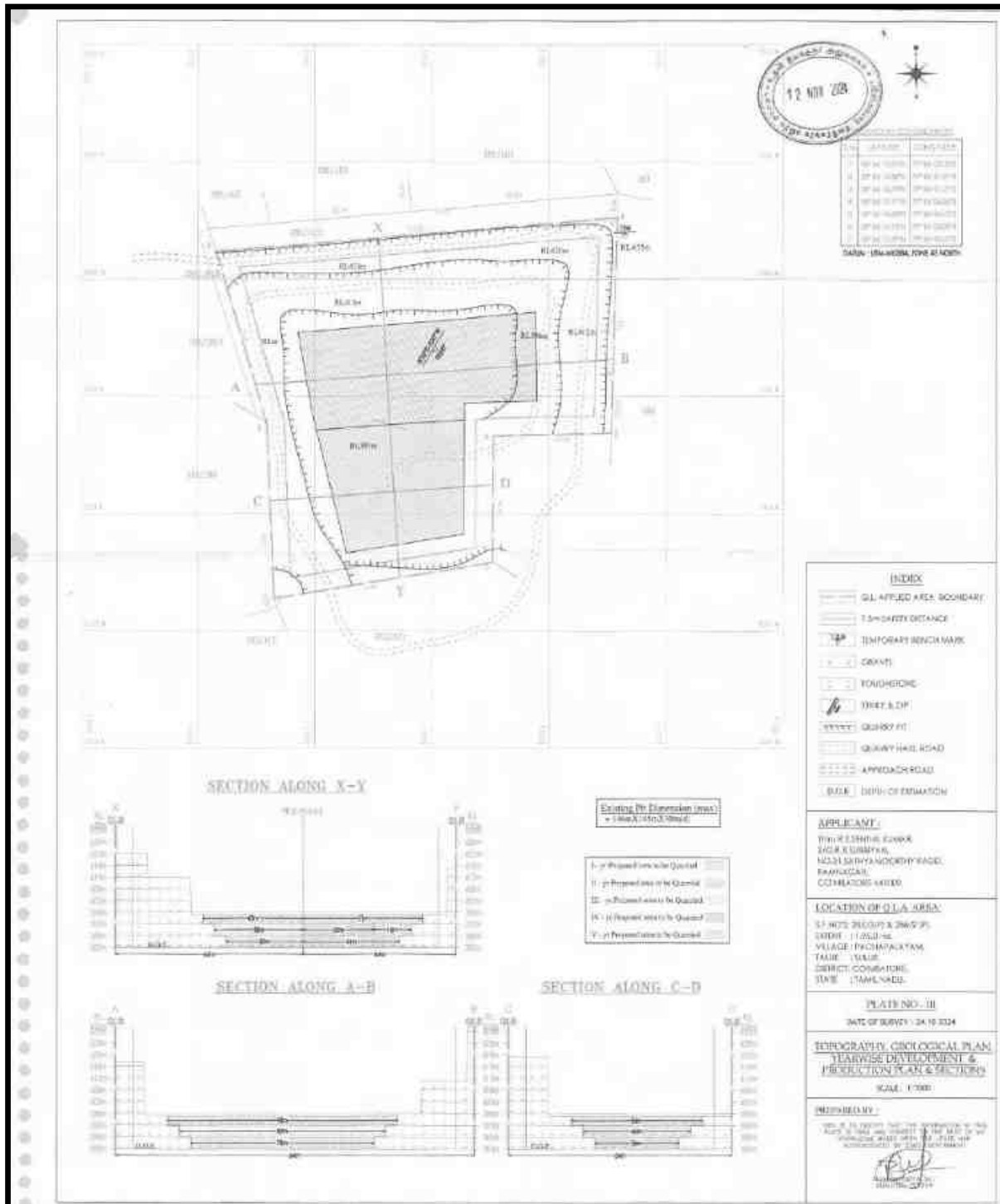
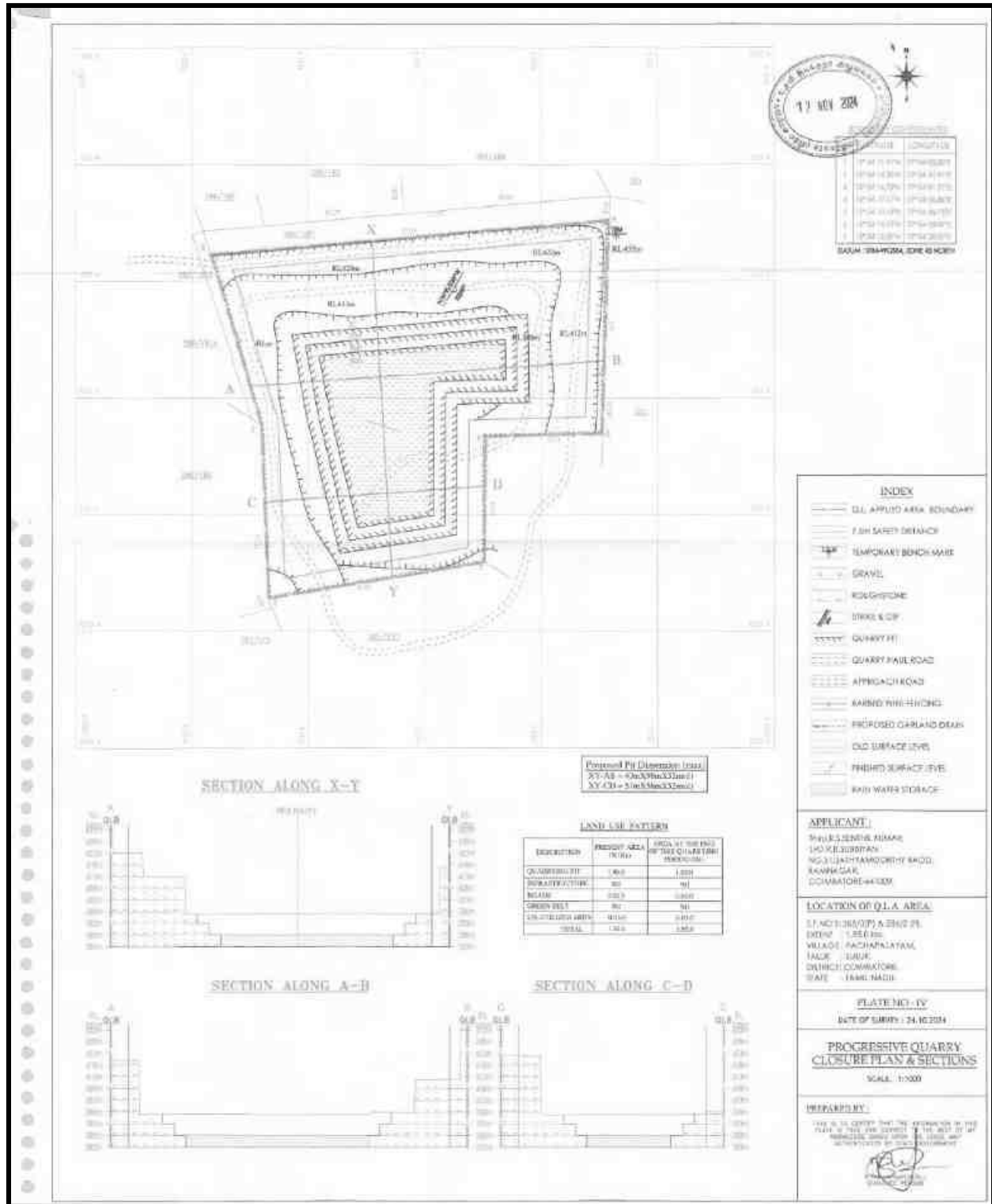


FIGURE 2.11: TOPOGRAPHY, GEOLOGICAL, YEAR-WISE DEVELOPMENT PRODUCTION PLAN AND SECTIONS



Source: Approved Mining Plan

FIGURE 2.12: CLOSURE PLAN AND SECTIONS



2.4 RESOURCES AND RESERVES

The Resources and Reserves of Rough Stone and Gravel were calculated based on Cross-Section Method by plotting sections to cover the maximum lease area for all the proposed projects.

Based on the availability of Geological Resources the Mineable Reserves are calculated by considering excavation system of bench formation and leaving essential safety distance of 7.5 m (Safety Barrier all around the applied area) and safety distance as per precise area communication letter and deducting the locked up reserves during bench formation (Also called as Bench Loss) and the Mineable Reserves is calculated considering there is no waste / overburden / side burden (100% Recovery Anticipated) for all the proposed projects.

TABLE 2.6: AVAILABLE GEOLOGICAL RESOURCES OF PROPOSED PROJECT

| | Rough Stone m ³ |
|--|----------------------------|
| Geological Resource in m ³ | 2,17,014 |
| Mineable Resource in m ³ | 75,830 |
| Year wise production for five-year plan period | 75,830 |

Source: Approved Mining Plan

TABLE 2.7: YEAR-WISE PRODUCTION PLAN

| YEAR | ROUGH STONE (m ³) |
|--------------|-------------------------------|
| I | 15104 |
| II | 16856 |
| III | 16720 |
| IV | 14280 |
| V | 12870 |
| TOTAL | 75830 |

Source: Approved Mining Plan

Disposal of Overburden/Waste:

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas. There is no disposal of Gravel. The excavated rough stone will be directly loaded into tippers to the needy customers.

Conceptual Mining Plan/ Final Mine Closure Plan

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.

TABLE 2.8: ULTIMATE PIT DIMENSION

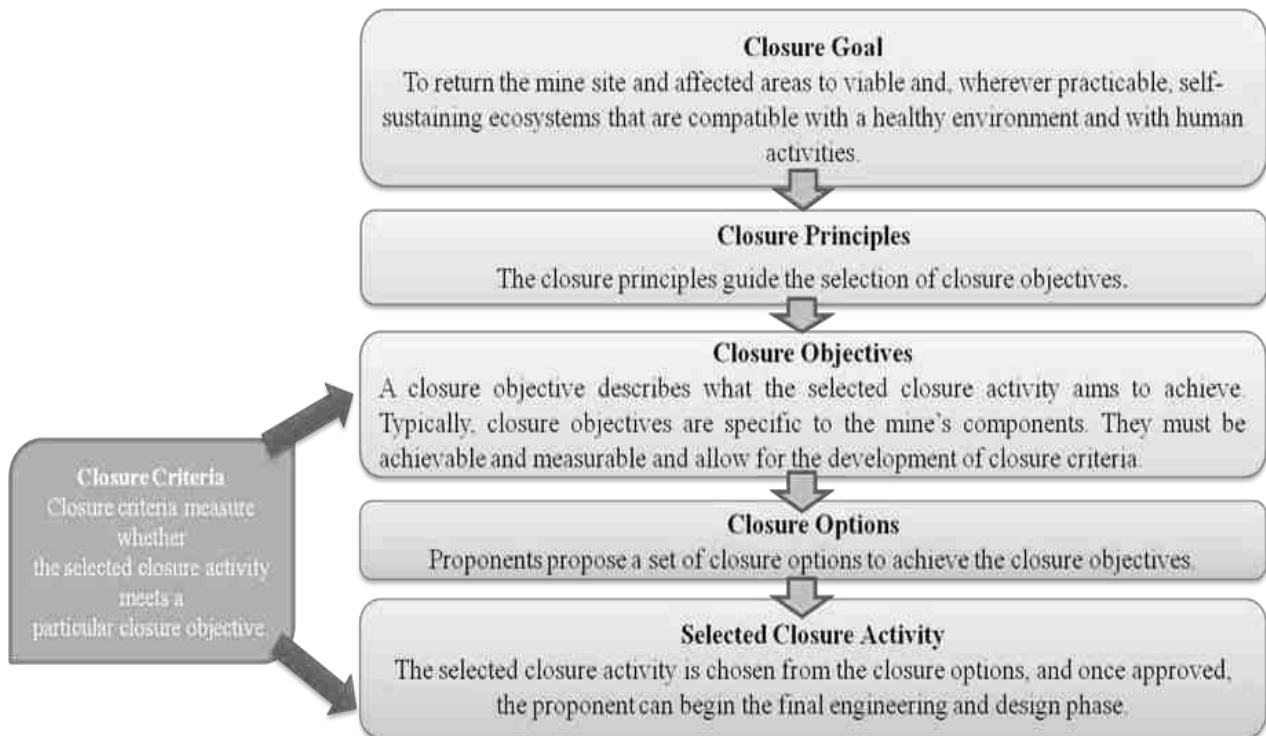
| Section | Length (Max) (m) | Width (Max) (m) | Depth (Max) |
|---------|------------------|-----------------|-------------|
| XY-AB | 79 | 150 | 52m bgl |
| XY-CD | 65 | 95 | 52m bgl |

Source: Approved Mining Plan

- At the end of life of mine, the excavated mine pit / void will act as artificial reservoir for collecting rain water and helps to meet out the demand or crises during drought season.
- After mine closure the greenbelt developed along the safety barrier and top benches and temporary water reservoir will enhance the ecosystem
- Mine Closure is a process of returning a disturbed site to its natural state or which prepares it for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.
- The principal closure objectives are for rehabilitated mines to be physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/ non-contaminating, and capable of sustaining an agreed post-mining land use.

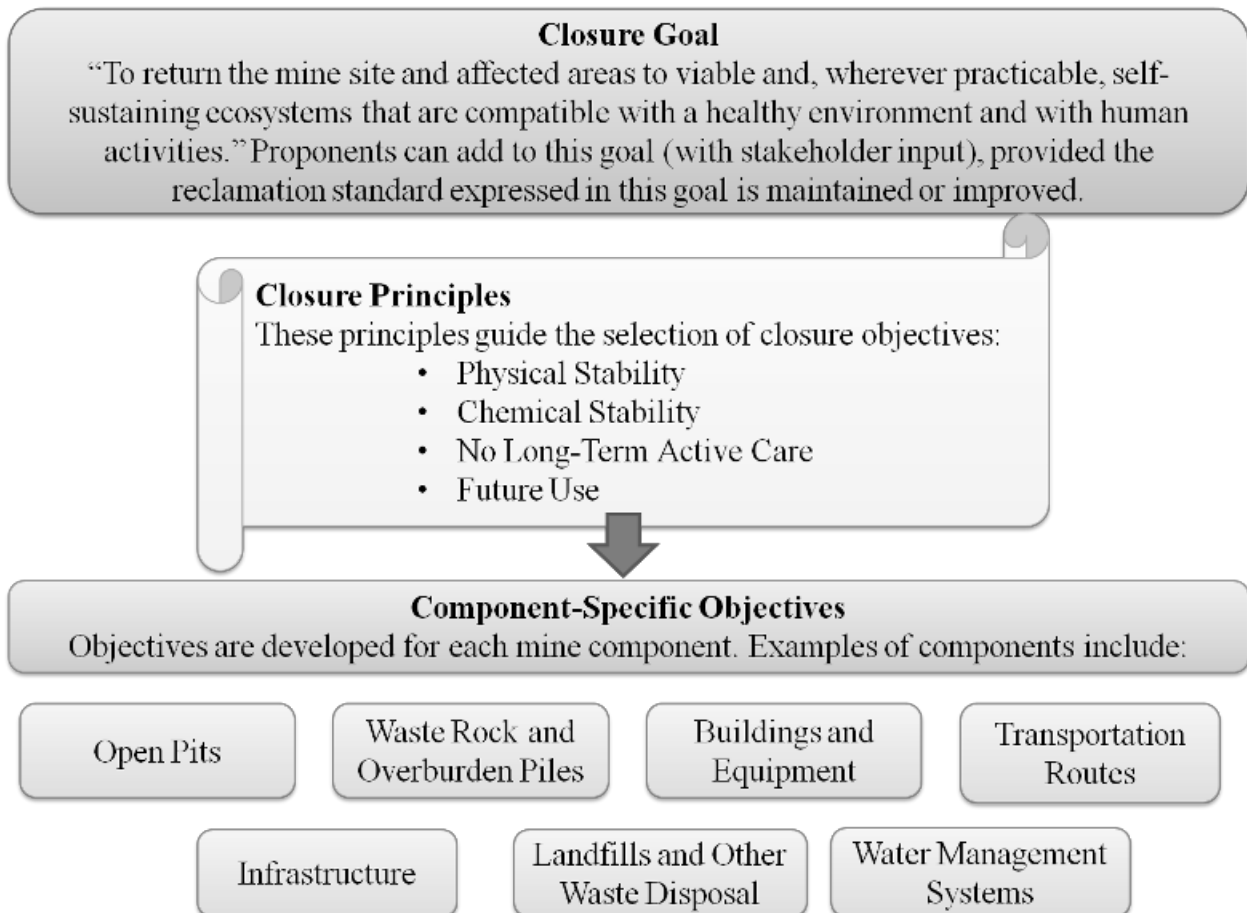
Closure Objectives –

- Access to be limited, for the safety of humans and wildlife.
- The open pit mine workings and pit boundary are physically and geo-technically stable.
- Water quality in flooded pits is safe for humans, aquatic life, and wildlife.
- Discharge of contaminated drainage has been minimized and controlled.
- Original or desired new surface drainage patterns have been established.
- For flooded pits, in-pit aquatic habitat has been established where practical and feasible.
- Emergency access and escape routes from flooded pits for humans and wildlife are in place. Dust levels are safe for people, vegetation, aquatic life, and wildlife.

**Closure Planning & Options Considerations in Mine Design –**

- The closure of mine is well planned at the initial stage of planning & design consideration by the internal and external stake holders
- Construction of 2m height bund all along the mine pit boundary and ensure its stability all time & construction of garland drain along the natural slope to avoid sliding and collection of soil to the pit & surface runoff during rainfall
- After complete exploitation of mineral, the lowest bench foot wall side will be maintained as plain surface without any sump pits to avoid any accidents
- All the sharp edges will be dressed to smoother face before the closure of mine and ensure no loose debris on hanging wall side
- There is a canal on Western side of the cluster project area. The river canal will not be hindered by any of mine closure activities
- The project proponent as a part of social responsibilities assures to supply the stored mine pit water to the nearby villages after effective treatment process as per the standards of TNPCB & TWAD
- Native species will be planted in 3 row patterns on the boundary barriers and 1st bench, a full-time sentry will be appointed at the gate to prevent inherent entry of public & cattle.
- The access road to the quarry will be cut-off immediately after the closure

- The layout design shall be prepared and get approved from Department of Geology and Mining.
- The proponent is instructed to construct as per the layout approved
- Physical and chemical stability of structures left in place at the site, the natural rehabilitation of a biologically diverse, stable environment, the ultimate land use is optimized and is compatible with the surrounding area and the requirements of the local community, and taking the needs of the local community into account and minimizing the socio-economic impact of closure
- There will be a positive change in the environmental and ecology due to the mine closure.



Post-Closure Monitoring –

The purpose of post-closure monitoring with respect to open pit mine workings is to ensure the attainment of closure objectives.

- Monitor physical and geotechnical stability of remnant pit walls.
- Monitor the ground regime in pit walls to confirm achievement of design objectives.
- Monitor water level in pit to confirm closure objectives regarding fish, fish habitat, and wildlife safety are being achieved.
- Sample water quality and quantity at controlled pit discharge points.
- Identify and test unanticipated areas where water management is an issue.
- Inspect integrity of barriers such as berms & fences.
- Monitor wildlife interactions with barriers to determine effectiveness.
- Inspect aquatic habitat in flooded pits where applicable.
- Monitor dust levels.

TABLE 2.9: MINE CLOSURE BUDGET

| ACTIVITY | | YEAR | | | | | RATE | COST (Rs.) |
|----------------------------------|------|----------|-------|-----|----|---|----------------------|-------------------|
| | | I | II | III | IV | V | | |
| Plantation in approach road | Nos. | 150 | 150 | - | - | - | @200 Rs | 60,000/- |
| | Cost | 30000 | 30000 | - | - | - | Per sapling | |
| Wire Fencing (In Mtrs) 610 Mtrs | | 1,83,000 | - | - | - | - | @300 Rs Per Meter | 1,83,000/- |
| Garland drain (In Mtrs) 605 Mtrs | | 1,82,000 | - | - | - | - | @300 Rs Per Meter | 1,82,000/- |
| TOTAL | | | | | | | | 4,25,000/- |

2.5 METHOD OF MINING

Proposed Method of Mining is common for all the Proposed Projects – The method of mining is Opencast Mechanized Mining Method is being proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. 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 petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act – 1952.

The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting. Hydraulic Excavators attached with Rock Breakers unit will be deployed for breaking large boulders to required fragmented sizes to avoid secondary blasting and hydraulic excavators attached with bucket unit will be deployed for loading the Rough Stone into the tippers and then the stone is transported from pithead to the nearby crushers.

2.5.1 Drilling & Blasting Parameters

Drilling & Blasting will be carried out as per parameters given below: -

| | | |
|------------------|---|---------------|
| Spacing | – | 1.0m |
| Burden | – | 0.75 m |
| Depth of hole | – | 1.5 m |
| Charge per hole | – | 0.5kg |
| Powder factor | – | 6.0 tonnes/kg |
| Diameter of hole | – | 32 mm |

Type of Explosives to be used –

Slurry explosives (An explosive material containing substantial portions of a liquid, oxidizers, and fuel, plus a thickener), NONEL / Electric Detonator & Detonating Fuse.

Storage of Explosives –

No proposal for storage of explosives within the project area, the respective project proponents have made agreement with authorized explosives agencies for carrying out blasting activities and competent person as per DGMS guidelines will be employed for safety and supervision of overall quarrying activities.

The explosives will be sourced from the blasting agency on daily basis and the blasting will be carried out under the supervision of competent qualified Blaster and it will be ensured that there shall be no balance of explosive stock; any balance stock will be taken back by the supplier.

2.5.2 Extent of Mechanization

TABLE 2.10. PROPOSED MACHINERY DEPLOYMENT

| S.NO. | TYPE | NOS | SIZE/CAPACITY | MOTIVE POWER |
|-------|--|-----|---------------|----------------|
| 1 | Jack hammers | 2 | 1.2m to 2.0m | Compressed air |
| 2 | Compressor | 1 | 400psi | Diesel Drive |
| 3 | Excavator with Bucket and Rock Breaker | 1 | 300 HP | Diesel Drive |
| 4 | Tippers | 2 | 20 Tonnes | Diesel Drive |

Source: Approved Mining Plan

2.6 GENERAL FEATURES

2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities will be constructed as per the Mine Rule after the grant of quarry lease in all the proposed quarries.

2.6.2 Drainage Pattern

Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin over time that reveals characteristics of the kind of rocks and geological structures in a landscape. They are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land.

Dendritic drainage pattern is one of the most common type that develop in areas where the rock (or unconsolidated material) beneath the stream has no particular fabric or structure and can be easily eroded equally in all directions.

There are no streams, canals or water bodies crossing within the project area. The drainage pattern of the area is dendritic – sub dendritic.

2.6.3 Traffic Density

The traffic survey conducted based on the transportation route of material, the Rough Stone is proposed to be transported mainly through

Traffic density measurements were performed at two locations

1. Chettipalayam - Pachapalayam Panchayat Road
2. Chettipalayam -Vadasithur District Road

Traffic density measurement were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., Heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift- one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

TABLE.2.11: TRAFFIC SURVEY LOCATIONS

| Station Code | Road Name | Distance and Direction | Type of Road |
|--------------|---|------------------------|----------------|
| TS1 | Chettipalayam - Pachapalayam Panchayat Road | 1.2km NW | Panchayat Road |
| TS2 | Chettipalayam -Vadasithur District Road | 3km SW | District Road |

Source: On-site monitoring by GEMS FAE & TM

TABLE 2.12: EXISTING TRAFFIC VOLUME

| Station code | HMV | | LMV | | 2/3 Wheelers | | Total PCU |
|--------------|-----|-----|-----|-----|--------------|-----|-----------|
| | No | PCU | No | PCU | No | PCU | |
| TS1 | 175 | 525 | 75 | 75 | 150 | 75 | 750 |
| TS2 | 225 | 675 | 125 | 125 | 200 | 100 | 900 |

Source: On-site monitoring by GEMS FAE & TM

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

TABLE 2.13: ROUGH STONE & GRAVEL HOURLY TRANSPORTATION REQUIREMENT

Transportation of Rough Stone & Gravel per day

| | | |
|--------------------|----------------------|---------------|
| Capacity of trucks | No. of Trips per day | Volume in PCU |
| 10 tonnes | 70 | 140 |

Source: Data analysed from Approved Mining Plan

FIGURE.2.13: MINERAL TRANSPORTATION ROUTE MAP



TABLE 2.14: SUMMARY OF TRAFFIC VOLUME

| Route | Existing Traffic volume in PCU | Incremental traffic due to the project | Total traffic volume | Hourly Capacity in PCU as per IRC – 1960 guidelines |
|------------------------------|--------------------------------|--|----------------------|---|
| Chettipalayam - Pachapalayam | 750 | 140 | 990 | 1500 |
| Chettipalayam -Vadasithur | 900 | 140 | 1040 | 1200 |

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

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

2.6.4 Mineral Beneficiation and Processing

There is no proposal for the mineral processing or ore beneficiation in any of the proposed project.

2.7 PROJECT REQUIREMENT

2.7.1 Water Source & Requirement

Detail of water requirements in KLD as given below:

TABLE 2.15: WATER REQUIREMENT FOR THE PROJECT

| Purpose | Quantity | Source |
|------------------|----------|---|
| Dust Suppression | 0.7 KLD | From Existing bore wells from nearby area |

| | | |
|-----------------------------|----------------|--|
| Green Belt | 0.5 KLD | From Existing bore wells from nearby area |
| Domestic & Drinking purpose | 0.3 KLD | From existing, bore wells and drinking water will be sourced from Approved water vendors |
| Total | 1.5 KLD | |

Source: Prefeasibility report

2.7.2 Power and Other Infrastructure Requirement

No proposed projects require power supply for the mining operations. The quarrying activity is proposed during day time only (General Shift 8 AM – 5 PM, Lunch Break 1 PM – 2 PM). Electricity for use in office and other internal infrastructure will be obtained from SEB by respective project proponent.

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

2.7.3 Fuel Requirement

High speed Diesel (HSD) will be used for mining machineries. Diesel will be brought from nearby Fuel Stations. Average diesel consumption is around = 500 Liters of HSD / day per proposed project.

2.7.4 Project Cost

TABLE 2.16: PROJECT COST OF PROPOSED PROJECT

| | |
|--------------------|-----------------|
| Total Project Cost | Rs. 99,88,000/- |
|--------------------|-----------------|

Source: Approved Mining Plan & Prefeasibility Report

2.8 EMPLOYMENT REQUIREMENT:

The following manpower's are proposed in the mining plan to carry out the day-to-day quarrying activities, the same employment is maintaining aimed at the proposed production target and also to comply with the statutory provisions of the Metalliferous mine's regulations, 1961 for all the proposed projects.

TABLE 2.17: PROPOSED MANPOWER DEPLOYMENT

| |
|-----------------------------|
| Employment Potential |
| 19 |

Source: Approved Mining Plan

2.9 PROJECT IMPLEMENTATION SCHEDULE

The commercial operation will commence after the grant of Environmental Clearance. CTO will be obtained from the Tamil Nadu State Pollution Control Board. The conditions imposed during the Environmental Clearance will be compiled before the start of mining operation.

TABLE 2.18: EXPECTED TIME SCHEDULE

| Sl.No. | Particulars | Time Schedule (In Month) | | | | | Remarks if any |
|--|-------------------------|--------------------------|-----------------|-----------------|-----------------|-----------------|-------------------------|
| | | 1 st | 2 nd | 3 rd | 4 th | 5 th | |
| 1 | Environmental Clearance | | | | | | |
| 2 | Consent to Operate | | | | | | Production Start Period |
| Time line may vary; subjected to rules and regulations /& other unforeseen circumstances | | | | | | | |

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

3. DESCRIPTION OF ENVIRONMENT

3.0 GENERAL

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions. The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering March 2023 to May 2023 with CPCB guidelines. Environmental data has been collected with reference to cluster quarries EHS 360 LABS PRIVATE LIMITED (NABL) Laboratory for the below attributes –

- Land
- Water
- Air
- Noise
- Biological
- Socio-economic status

Study Area

An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The data collection has been used to understand the existing environment scenario around the cluster against which the potential impacts of the project can be assessed. The study area has been divided into two zones viz **core zone** and **buffer zone** where core zone is considered as cluster and buffer zone taken as 10km radius from the periphery of the Cluster. Both Core zone and Buffer zone is taken as the study area.

Study Period

The baseline study was conducted during the summer season (Pre Monsoon) i.e., March 2023 to May 2023.

Study Methodology

- The project area was surveyed in detail with the help of Total Station and the boundary pillars were picked up with the help of GPS. The boundary coordinates were superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO)
 - Soil samples were collected and analysed for relevant physio-chemical characteristics, exchangeable Cations, nutrients & micro nutrients etc., in order to assess the impact due to mining activities and to recommend saplings for Greenbelt development.
 - Ground water samples were collected during the study period from the existing bore wells, while surface water was collected from ponds in the buffer zone. The samples were analysed for parameters necessary to determine water quality (based on IS: 10500:2012 criteria) and those which are relevant from the point of view of environmental impact of the proposed mines.
 - An onsite meteorological station was setup in cluster area, to collect data about wind speed, wind direction, temperature, relative humidity, rainfall and general weather conditions were recorded throughout the study period.
 - In order to assess the Ambient Air Quality (AAQ), samples of ambient air were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM₁₀ and SO₂, NO_x with gaseous attachments & Fine Dust Samplers (FDS) for PM_{2.5} and other parameters as per NAAQ norms and analysed for primary air pollutants to work out the existing status of air quality.
 - The Noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone.
 - Baseline biological studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area.
 - Socio-Economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project.
-

The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of samples analysis, etc., are given below Table 3.1.

TABLE 3.1: MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING

| Attribute | Parameters | Frequency of Monitoring | No. of Locations | Protocol |
|------------------------------|---|---|--------------------------------------|---|
| Land-use Land cover | Land-use Pattern within 10 km radius of the study area | Data's from census handbook 2011 and from the satellite imagery | Study Area | Satellite Imagery Primary Survey |
| *Soil | Physio-Chemical Characteristics | Once during the study period | 6 (1 core & 5 buffer zone) | IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi |
| *Water Quality | Physical, Chemical and Bacteriological Parameters | Once during the study period | 6 (2 surface water & 4 ground water) | IS 10500& CPCB Standards |
| Meteorology | Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall | 1 Hourly Continuous Mechanical/Auto matic Weather Station | 1 | Site specific primary data& Secondary Data from IMD Station |
| *Ambient Air Quality | PM10 PM2.5 SO2 NOX Fugitive Dust | 24 hourly twice a week (December 2020 – February 2021) | 8 (2 core & 6 buffer) | IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB |
| *Noise Levels | Ambient Noise | Hourly observation for 24 Hours per location | 8 (2 core & 6 buffer zone) | IS 9989 As per CPCB Guidelines |
| Ecology | Existing Flora and Fauna | Through field visit during the study period | Study Area | Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan |
| Socio Economic Aspects | Socio-Economic Characteristics, Population Statistics and Existing Infrastructure in the study area | Site Visit & Census Handbook, 2011 | Study Area | Primary Survey, census handbook & need based assessments. |

Source: On-site monitoring/sampling by EHS 360 LABS PRIVATE LIMITED in association with GEMS

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

3.1 LAND ENVIRONMENT

The main objective of this section is to provide a baseline status of the study area covering 10km radius around the proposed mine site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

3.1.1 Land Use/ Land Cover

A visual interpretation technique has been adopted for land use classification based on the keys suggested in the chapter – V of the guidelines issued by NNRMS Bangalore & Level III classification with 1:50,000 scale for the

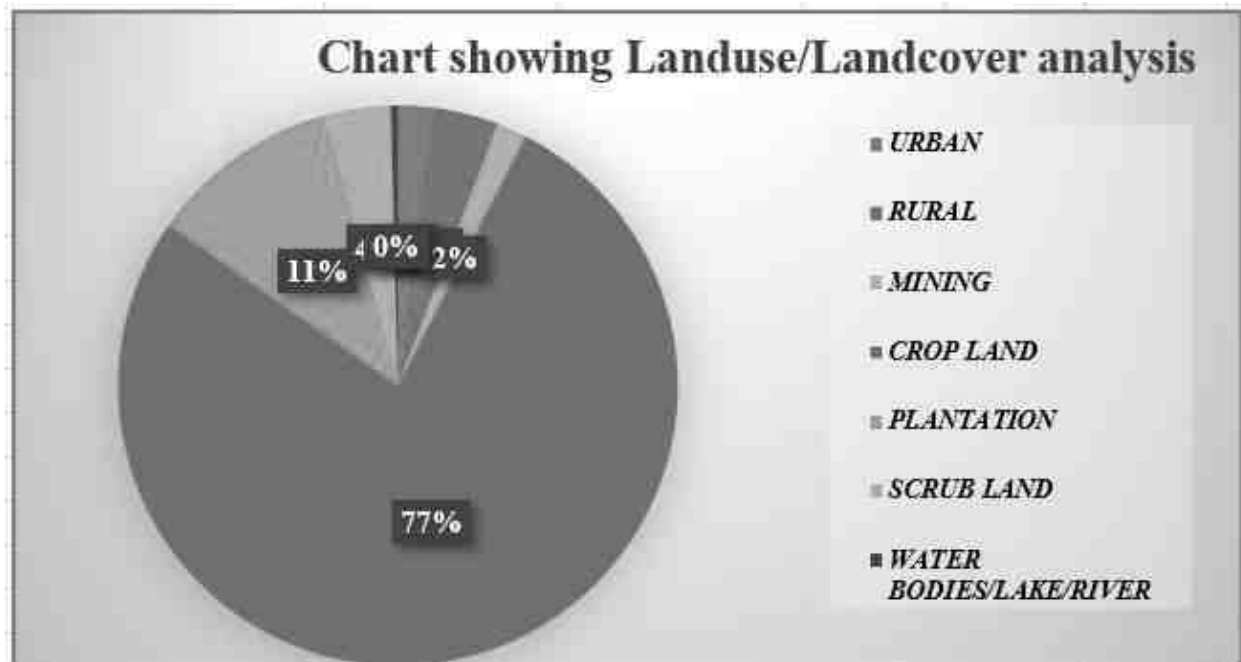
preparation of land use mapping. Land use pattern of the area was studied through LISS III imagery of Bhuvan (ISRO). The 10 km radius map of study area was taken for analysis of Land use cover.

TABLE 3.2: LAND USE / LAND COVER TABLE 10 Km RADIUS

| S.No | CLASSIFICATION | AREA_HA | AREA_% |
|-------------------------------|-------------------------|-------------|--------|
| BUILTUP | | | |
| 1 | URBAN | 646.18 | 2.03 |
| 2 | RURAL | 1207.34 | 3.79 |
| 3 | MINING | 544.10 | 1.71 |
| AGRICULTURAL LAND | | | |
| 4 | CROP LAND | 24599.52787 | 77.20 |
| 5 | PLANTATION | 3508.36 | 11.01 |
| BARREN/WASTE LANDS | | | |
| 6 | SCRUB LAND | 1225.24 | 3.85 |
| WETLANDS/ WATER BODIES | | | |
| 7 | WATER BODIES/LAKE/RIVER | 132.10 | 0.41 |
| TOTAL | | 31862.85 | 100.00 |

Source: Survey of India Toposheet and Landsat Satellite Imagery

FIGURE 3.1: PIE DIAGRAM OF LAND USE AND LAND IN STUDY AREA



Source: Table 3.2

Interpretation

From the above table, pie diagram and land use map it is inferred that the majority of the land in the study area is Agriculture and fallow land (includes crop land) 77.20% followed by Built-up Lands – 5.82%, Scrub land – 3.85%, and Water bodies 0.41%.

The total mining area within the study area is 544.10 ha i.e., 1.71%. The cluster area of 12.01.20 ha contributes about 0.02% of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

3.1.2 Topography

All the proposed project area is plain terrain, covered with gravel and weathered formation of 2 to 4m thickness; Massive Charnockite formation is found after 2 to 4m gravel and weathered formation which is clearly inferred from the existing quarry pits.

3.1.3 Drainage Pattern of the Area

Drainage pattern are created by stream erosion over time that reveals characteristics of the kind of rocks and geological structures in a landscape region drained by streams.

Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin. They are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land.

Dendritic patterns, which are by far the most common, develop in areas where the rock (or unconsolidated material) beneath the stream has no particular fabric or structure and can be eroded equally easily in all directions.

There are no streams, canals or water bodies crossing within the project area. The drainage pattern of the area is dendritic – sub dendritic.

3.1.4 Seismic Sensitivity

The proposed project site falls in the seismic Zone II, low damage risk zone as per BMTPC, Vulnerability Atlas of Seismic zone of India IS: 1893 – 2002. The project area falls in the hard rock terrain on the peninsular shield of south India which is highly stable.

(Source: https://moes.gov.in/writereaddata/files/LS_EN_20032020_385.pdf)

3.1.5 Environmental Features in the Study Area

There is no Wildlife Sanctuaries, National Park and Archaeological monuments within project area. No Protected and Reserved Forest area is involved in the project area. Therefore, there will be no need to acquisition/diversion of forest land. The details related to the environment sensitivity around the proposed mine lease area i.e. 10 km radius, are given in the below Table 3.3.

FIGURE 3.2: PHYSIOGRAPHIC MAP 10KM RADIUS

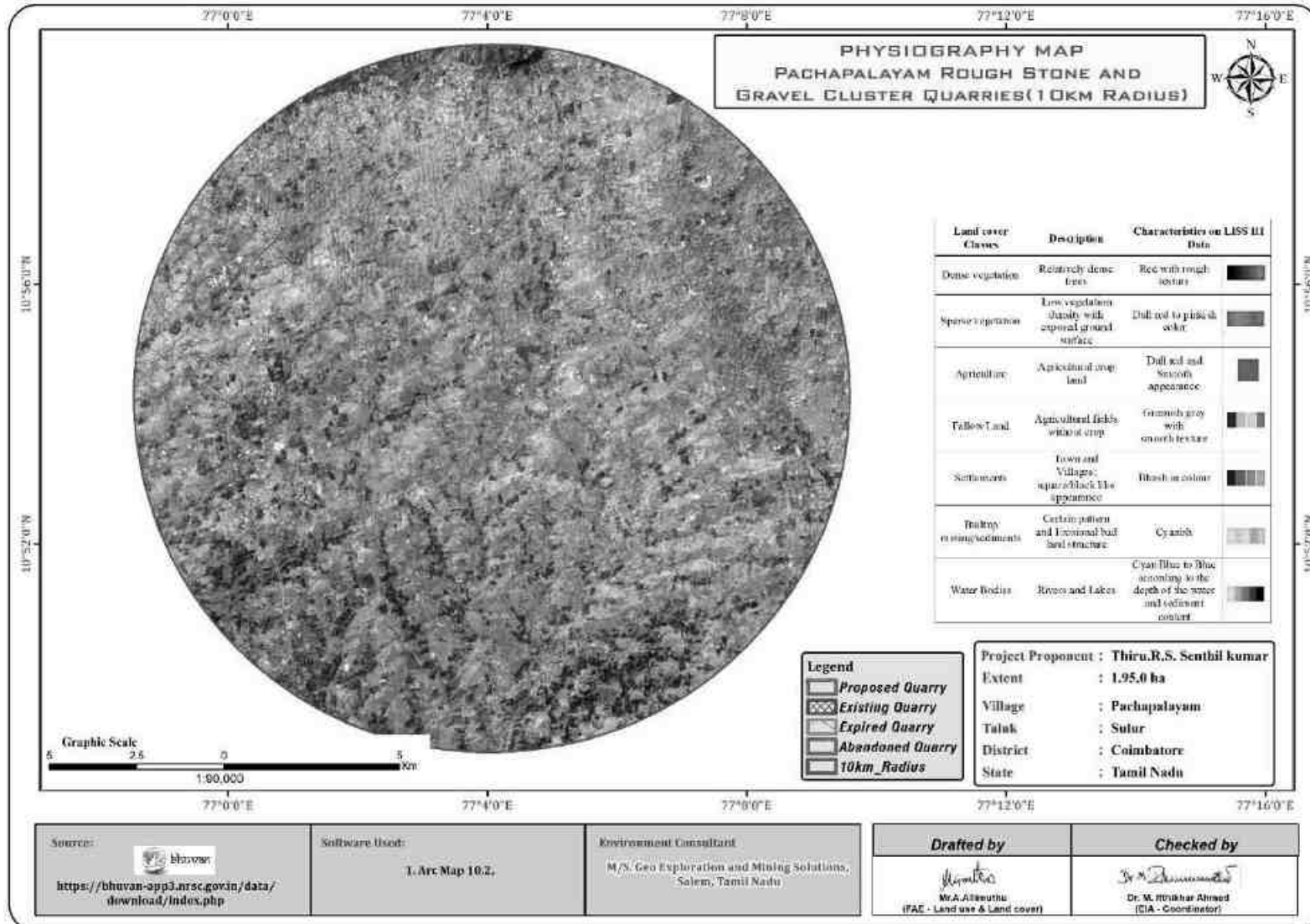


FIGURE 3.3: LAND USE LAND COVER MAP 10KM RADIUS

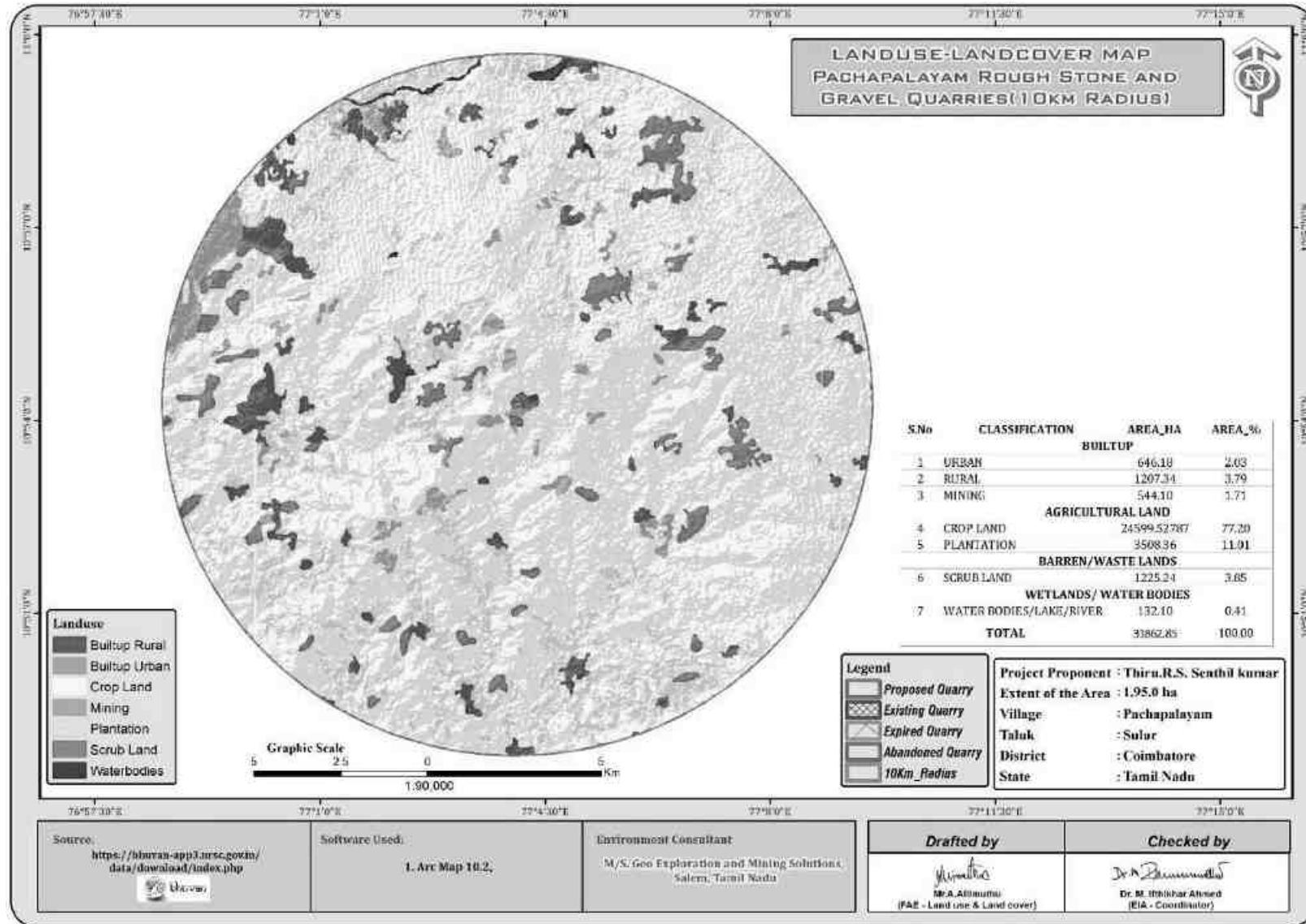


TABLE 3.3: DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE CLUSTER

| Sl.No | Sensitive Ecological Features | Name | Arial Distance in km from Cluster |
|-------|--|--------------------------------------|-----------------------------------|
| 1 | National Park / Wild life Sanctuaries | Indiragandhi (Anamalai) | 43km-S |
| 2 | Reserve Forest | Boluvampatti R.F | 13km-NW |
| 3 | Tiger Reserve/ Elephant Reserve/ Biosphere Reserve | None | Nil within 10Km Radius |
| 4 | Critically Polluted Areas | Coimbatore - SIDCO Industrial Estate | Around 10.5 km- NorthWest |
| 5 | Mangroves | None | Nil within 10km Radius |
| 6 | Mountains/Hills | None | Nil within 10km Radius |
| 7 | Notified Archaeological Sites | None | Nil within 10km Radius |
| 8 | Industries/ Thermal Power Plants | None | Nil within 10km Radius |
| 9 | Defence Installation | None | Nil within 10km Radius |

Source: Survey of India Toposheet

TABLE 3.4: NEARBY WATER BODIES FROM THE PROPOSED PROJECT SITE

| Sl.No | NAME | DISTANCE & DIRECTION |
|-------|-------------------|----------------------|
| 1 | Seasonal Odai | 90m West |
| 2 | Odai | 290m SW |
| 3 | Seasonal Odai | 450m NE |
| 4 | Odai | 3km SE |
| 5 | Noyyal River | 9.3km North |
| 6 | Pallapalayam Lake | 9.2km NE |

Source: Village Cadastral Map and Field Survey

3.1.6 Soil Environment

Soil quality of the study area is one of the important components of the land environment. The composite soil samples were collected from the study area and analysed for different parameters. The locations of the monitoring sites are detailed in Table 3.5 and Figure 3.3.

The objective of the soil sampling is -

To determine the baseline soil characteristics of the study area; study the impact of proposed activity on soil characteristics and study the impact on soil more importantly agriculture production point of view.

TABLE 3.5: SOIL SAMPLING LOCATIONS

| S. No | Location Code | Monitoring Locations | Distance & Direction | Coordinates |
|-------|---------------|----------------------|----------------------|-----------------------------|
| 1 | S-1 | Core Zone | Project Area | 10°54'24.94"N 77° 4'6.74"E |
| 2 | S-2 | Core Zone | 300m South | 10°54'5.74"N 77° 3'53.48"E |
| 3 | S-3 | Chettipalayam | 2.8km NW | 10°54'33.13"N 77° 2'26.60"E |
| 4 | S-4 | Panapatti | 4.5km SE | 10°52'41.74"N 77° 5'58.95"E |
| 5 | S-5 | Kallapalayam | 4.8km North | 10°57'3.30"N 77° 4'38.23"E |
| 6 | S-6 | Okkilipalayam | 5.5km SW | 10°53'36.89"N 77° 1'11.02"E |

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS.

Methodology –

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the project site representing various land use conditions. The samples were collected by auger boring into the soil up to 90-cm depth. Six (6) locations were selected for soil sampling on the basis of soil types, vegetative cover, industrial & residential activities including infrastructure facilities, which would accord an overall idea of the soil characteristics. The samples were analysed for physical and chemical characteristics. The samples were sent to laboratory for analysis. The samples were filled in Polythene bags, coded and sent to laboratory for analysis and the details of methodology in respect are given in below Table 3.6.

TABLE 3.6: METHODOLOGY OF SAMPLING COLLECTION

| Particulars | Details |
|-------------|--|
| Frequency | One grab sample from each station-once during the study period |
| Methodology | Composite grab samples of the topsoil were collected from 3 depths, and mixed to provide a representative sample for analysis. They were stored in airtight Polythene bags and analysed at the laboratory. |

Source: On-site monitoring/sampling by EHS360 Labs Private Limited in association with GEMS

Soil Testing Result –

The samples were analysed as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”. The important properties analysed for soil are bulk density, porosity, infiltration rate, pH and Organic matter, kjeldahi Nitrogen, Phosphorous and Potassium. The standard classifications of soil are presented below in Figure 3.4 and the physico-chemical characteristics of the soil & Test Results in Table 3.7.

FIGURE 3.3: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

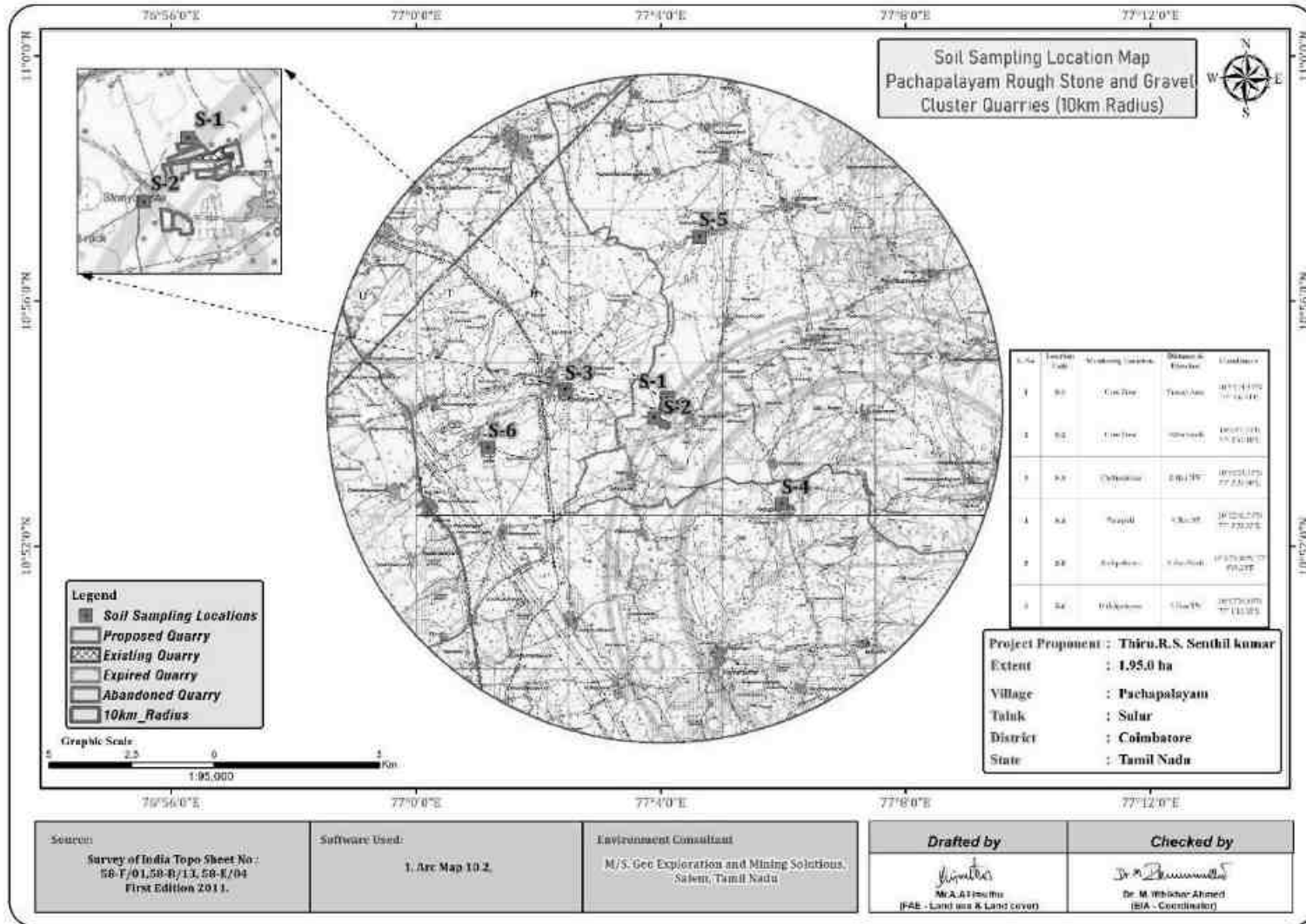


FIGURE 3.4: SOIL MAP

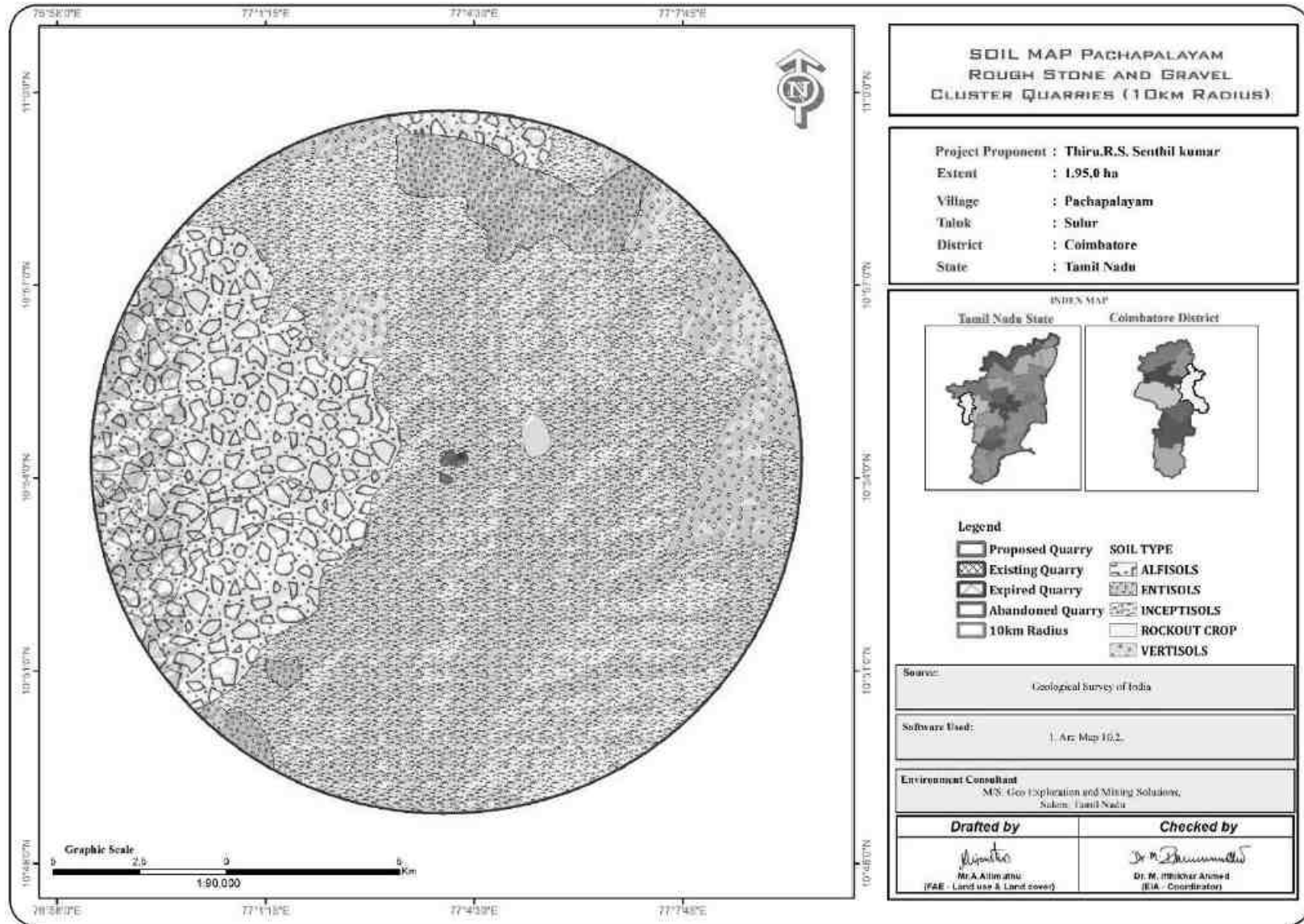


TABLE 3.7: SOIL QUALITY OF THE STUDY AREA

Source: Sampling Results by EHS 360 LABS PRIVATE LIMITED.

| S. No | Test Parameters | Protocols | S-1 Core Zone | S-2 Core Zone | S-3 Chettipalayam | S-4 Panapatti | S-5 Kallapalayam | S-6 Okkilpalayam |
|-------|---|-------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| 01 | pH @ 25°C | IS 2720 Part 26 - 1987 (Reaff:2016) | 8.25 | 7.85 | 8.19 | 8.19 | 7.91 | 8.21 |
| 02 | Conductivity @ 25°C | IS 14767 - 2000 (Reaff : 2016) | 730 µmhos/cm | 578 µmhos/cm | 695 µmhos/cm | 629 µmhos/cm | 552 µmhos/cm | 515 µmhos/cm |
| 03 | Texture : | | | | | | | |
| | Clay | 34.6 % | 31.3 % | 29.5 % | 31.5 % | 27.5 % | 28.1 % | 30.5 % |
| | Sand | 38.1% | 34.6 % | 32.5 % | 34.6 % | 29.6 % | 31.8 % | 35.0 % |
| | Silt | 44.0 % | 34.1 % | 38.0% | 33.9 % | 42.9 % | 40.1 % | 34.5 % |
| 04 | Water Holding Capacity | 1.10 g/cm ³ | 44.8 % | 43.0 % | 40.8 % | 40.0 % | 40.6 % | 40.5 % |
| 05 | Bulk Density | 40.1 % | 1.22 g/cm ³ | 1.14 g/cm ³ | 0.99 g/cm ³ | 1.13 g/cm ³ | 1.13 g/cm ³ | 1.10 g/cm ³ |
| 06 | Porosity | 135 mg/kg | 40.3 % | 42.5 % | 43.5 % | 39.8 % | 40.2 % | 41.8 % |
| 07 | Calcium as Ca | 68.6 mg/kg | 136 mg/kg | 126 mg/kg | 116 mg/kg | 108.2 mg/kg | 112 mg/kg | 152.3 mg/kg |
| 08 | Magnesium as Mg | 15 mg/kg | 70.2 mg/kg | 53.5 mg/kg | 59 mg/kg | 33.5 mg/kg | 26.7 mg/kg | 59.5 mg/kg |
| 09 | Manganese as Mn | 0.8 mg/kg | 14.7mg/kg | 13.0 mg/kg | 16.8 mg/kg | 18.6 mg/kg | 19.3 mg/kg | 26.5 mg/kg |
| 10 | Zinc as Zn | 0.92 mg/kg | 1.0 mg/kg | 0.7 mg/kg | 3.9 mg/kg | 1.44 mg/kg | 3.8 mg/kg | 0.95 mg/kg |
| 11 | Boron as B | 146 mg/kg | 0.85 mg/kg | 0.95 mg/kg | 1.1 mg/kg | 1.12 mg/kg | 1.1 mg/kg | 1.02 mg/kg |
| 12 | Chloride as Cl | 0.004 % | 41.7 mg/kg | 129 mg/kg | 96.4 mg/kg | 30.5 mg/kg | 63.5 mg/kg | 135 mg/kg |
| 13 | Total Soluble Sulphate as SO ₄ | 35.4 mg/kg | 0.020 % | 0.004 % | 0.0015 % | 0.063 % | 0.006 % | 0.004 % |
| 14 | Potassium as K | 3.1 mg/kg | 18.5 mg/kg | 33.8 mg/kg | 49 mg/kg | 16.5 mg/kg | 105 mg/kg | 23.4 mg/kg |
| 15 | Total Phosphorus as P | 502 mg/kg | 2.1 mg/kg | 3.0 mg/kg | 1.65 mg/kg | 3.2 mg/kg | 3.2 mg/kg | 3.0 mg/kg |
| 16 | Total Nitrogen as N | BDL (DL : 1.0 mg/kg) | 256 mg/kg | 510 mg/kg | 638 mg/kg | 374 mg/kg | 568 mg/kg | 498 mg/kg |
| 17 | Cadmium as Cd | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) |
| 18 | Total Chromium as Cr | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) |
| 19 | Copper as Cu | 0.25 mg/kg | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) | BDL (DL : 1.0 mg/kg) |
| 20 | Lead as Pb | 1.16 mg/kg | 0.39 mg/kg | 0.21 mg/kg | 0.62 mg/kg | 0.35 mg/kg | 0.49 mg/kg | 0.75 mg/kg |
| 21 | Iron as Fe | 2.94 % | 1.10 mg/kg | 1.09 mg/kg | 1.13 mg/kg | 0.92 mg/kg | 1.38 mg/kg | 1.18 mg/kg |
| 22 | Organic Matter | 1.72 % | 1.95 % | 2.89 % | 1.87 % | 1.62 % | 2.01 % | 2.21 % |
| 23 | Organic Carbon | 38.8 meq/100g of soil | 1.13 % | 1.67 % | 1.08 % | 0.93% | 1.17 % | 1.28 % |
| 24 | Cation Exchange Capacity | USEPA 9080 – 1986 | 34.5 meq/100g of soil | 29.6 meq/100g of soil | 40.6 meq/100g of soil | 29.8 meq/100g of soil | 42.4 meq/100g of soil | 40.3 meq/100g of soil |

Interpretation & Conclusion

Physical Characteristics –

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay (27.5 % 31.5 %) to Sandy Loam Soil and Bulk Density of Soils in the study area varied between 0.99– 1.22 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 40.0 – 44.8 %. and 40.2-43.5 %.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline with pH range 7.85 to 8.25
- The available Nitrogen content range between 256 to 638 mg/kg
- The available Phosphorus content range between 1.65 to 3.2 mg/kg
- The available Potassium range between 16.5 mg/kg to 105 mg/kg

3.2 WATER ENVIRONMENT

The water resources, both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the water quality characteristics for critical parameters and evaluate the impacts on agricultural productivity, domestic community usage, recreational resources and aesthetics in the vicinity. The water samples were collected and transported as per the norms in pre-treated sampling cans to laboratory for analysis.

3.2.1 Surface Water Resources:

Kumitipathi River is the major surface water body in the study area and the rainfall over the area is moderate, the rainwater storage in open wells and trenches are in practice over the area and the stored water acts as source of drinking water for few months after rainy season.

3.2.2 Ground Water Resources:

Groundwater occurs in all the crystalline formations of oldest Achaeans and Recent Alluvium. The occurrence and behaviour of groundwater are controlled by rainfall, topography, geomorphology, geology, structures etc.

Ground water occurring in pferatic conditions in weathered and fractured gneiss rock formation. The weathering is controlled by the intensity of weathering and fracturing. Dug wells as wells as bore wells are more common ground water abstraction structures in the area. The diameter of the dug well is in the range of 7 to 10 m and depth of dug wells range from 7.2 to 13 m bgl. 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.

3.2.3 Methodology

Reconnaissance survey was undertaken and monitoring locations were finalized based on;

- Drainage pattern;
- Location of Residential areas representing different activities/likely impact areas; and
- Likely areas, which can represent baseline conditions

Two (2) surface water and Four (4) 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 surface and ground water. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and ‘Standard methods for the Examination of Water and Wastewater’ published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.5.

TABLE 3.8: WATER SAMPLING LOCATIONS

| S.NO | CODE | LOCATIONS | DISTANCE & DIRECTION | CO-ORDINATES |
|----------------------|------|---------------------------|----------------------|-----------------------------|
| SURFACE WATER | | | | |
| 1 | SW-1 | Existing Quarry Pit Water | 280m SW | 10°54'15.74"N 77° 4'0.67"E |
| 2 | SW-2 | Pallapalayam Lake | 9km NE | 10°59'18.68"N 77° 4'25.61"E |
| GROUND WATER | | | | |
| 3 | WW-1 | Near Project Area | 380m NW | 10°54'33.65"N 77° 3'53.87"E |
| 4 | WW-2 | Panapatti | 4.5km SE | 10°52'41.07"N 77° 5'51.48"E |
| 5 | BW-1 | Near Project Area | 480m SE | 10°54'7.44"N 77° 4'8.81"E |
| 6 | BW-2 | Okkilipalayam | 5.5km SW | 10°53'41.76"N 77° 1'4.78"E |

Source: On-site monitoring/sampling by EHS 360 LABS PRIVATE LIMITED in association with GEMS

FIGURE 3.5: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS

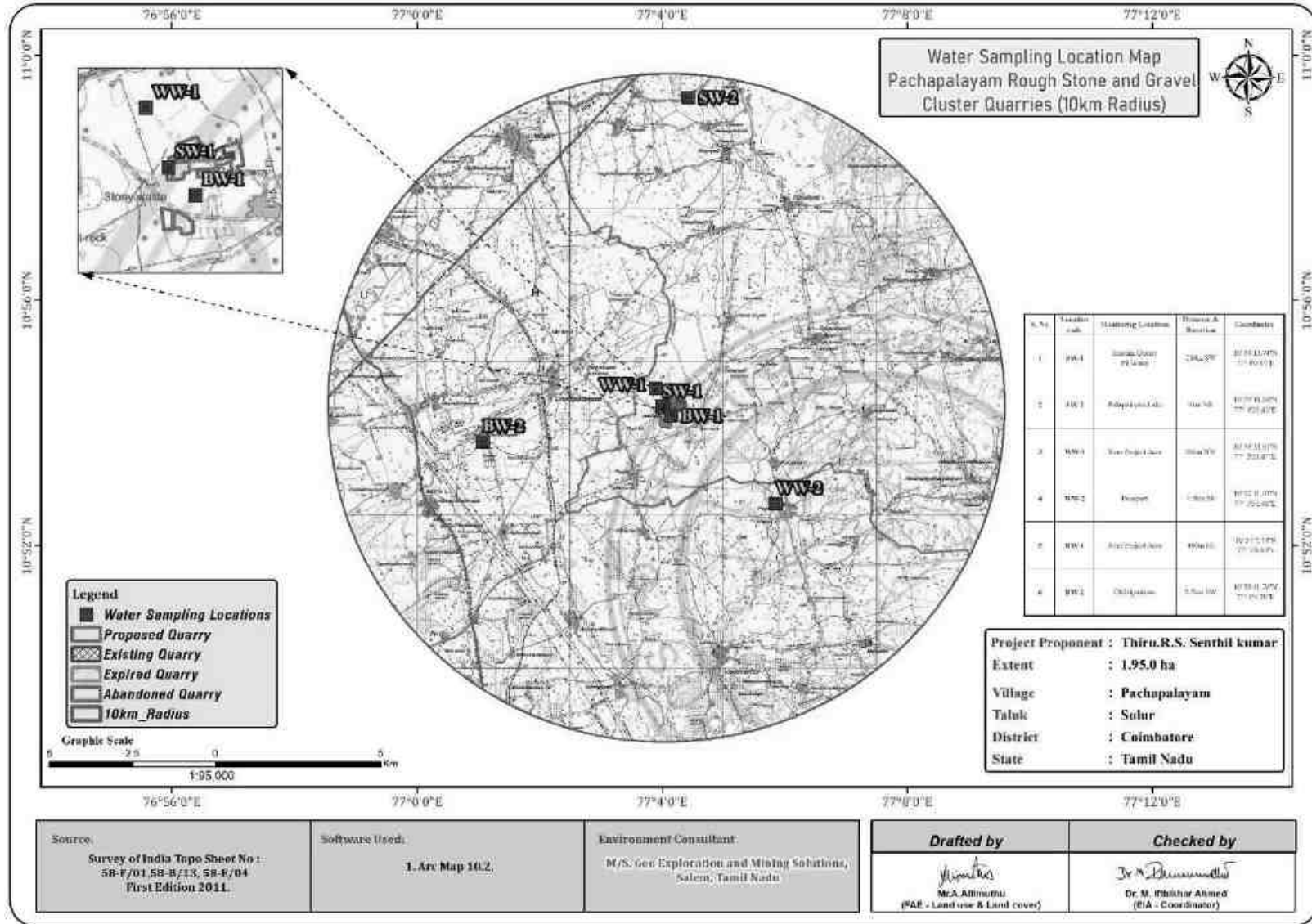


TABLE 3.9: GROUND WATER SAMPLING RESULTS

| S.NO | Parameter | BW-1 Near Project Area | BW-2 Okkilipalayam | WW-1 Near Project Area | WW-2 Panapatti |
|------|---|---------------------------|-----------------------|---------------------------|----------------------|
| 1 | Color | 5 Hazen | 5 Hazen | 5 | 5 Hazen |
| 2 | Odour | Agreeable | Agreeable | Agreeable | Agreeable |
| 3 | pH@ 25°C | 7.36 | 7.68 | 7.49 | 7.58 |
| 4 | Electrical Conductivity @ 25°C | 1128 µmhos/cm | 1085 µmhos/cm | 1214 µmhos/cm | 1018 µmhos/cm |
| 5 | Turbidity | 2.5 NTU | 6 NTU | < 1 NTU | 2.0 NTU |
| 6 | Total Dissolved Solids | 728 mg/l | 699 mg/l | 789 mg/l | 658 mg/l |
| 7 | Total Hardness as CaCO ₃ | 166 mg/l | 148 mg/l | 127.0mg/l | 159 mg/l |
| 8 | Calcium as Ca | 33.8 mg/l | 28.2 mg/l | 26.2 mg/l | 32.6 mg/l |
| 9 | Magnesium as Mg | 19.6 mg/l | 19.0 mg/l | 14.8 mg/l | 19.0 mg/l |
| 10 | Total Alkalinity | 142 mg/l | 130 mg/l | 137 mg/l | 196 mg/l |
| 11 | Chloride as Cl ⁻ | 88 mg/l | 121 mg/l | 114 mg/l | 126 mg/l |
| 12 | Sulphate as SO ₄ ⁻ | 39.4 mg/l | 40.6 mg/l | 32.8 mg/l | 29.4 mg/l |
| 13 | Iron as Fe | 0.35 mg/l | 0.25 mg/l | 0.20 mg/l | 0.20 mg/l |
| 14 | Free Residual Chlorine | BDL (DL:0.1 mg/l) | BDL (DL:0.1 mg/l) | BDL (DL:0.1 mg/l) | BDL (DL:0.1 mg/l) |
| 15 | Fluoride as F | 0.40 mg/l | 0.35 mg/l | 0.25 mg/l | 0.4 mg/l |
| 16 | Nitrates as NO ₃ | 7.8 mg/l | 8.0 mg/l | 5.4 mg/l | 4.8 mg/l |
| 17 | Copper as Cu | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) |
| 18 | Manganese as Mn | BDL (DL:0.02 mg/l) | BDL (DL:0.02 mg/l) | BDL (DL:0.02 mg/l) | BDL (DL:0.02 mg/l) |
| 19 | Mercury as Hg | BDL (DL:0.0005 mg/l) | BDL (DL:0.0005 mg/l) | BDL (DL:0.0005 mg/l) | BDL (DL:0.0005 mg/l) |
| 20 | Cadmium as Cd | BDL (DL:0.001 mg/l) | BDL (DL:0.001 mg/l) | BDL (DL:0.001 mg/l) | BDL (DL:0.001 mg/l) |
| 21 | Selenium as Se | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) |
| 22 | Aluminium as Al | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) |
| 23 | Lead as Pb | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) |
| 24 | Zinc as Zn | BDL(DL : 0.05 mg/l) | BDL(DL : 0.05 mg/l) | BDL(DL : 0.05 mg/l) | BDL(DL : 0.05 mg/l) |
| 25 | Total Chromium | BDL(DL : 0.02 mg/l) | BDL(DL : 0.02 mg/l) | BDL(DL : 0.02 mg/l) | BDL(DL : 0.02 mg/l) |
| 26 | Boron as B | BDL(DL : 0.05 mg/l) | BDL(DL : 0.05 mg/l) | BDL(DL : 0.05 mg/l) | BDL(DL : 0.05 mg/l) |
| 27 | Mineral Oil | BDL(DL : 0.01 mg/l) | BDL(DL : 0.01 mg/l) | BDL(DL : 0.01 mg/l) | BDL(DL : 0.01 mg/l) |
| 28 | Phenolic Compunds as C ₆ H ₅ OH | BDL (DL:0.0005 mg/l) | BDL (DL:0.0005 mg/l) | BDL (DL:0.0005 mg/l) | BDL (DL:0.0005 mg/l) |
| 29 | Anionic Detergents as | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) |
| 30 | Cynaide as CN | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) |
| 31 | Total Coliform | 95 MPN/100ml | 95 MPN/100ml | 70 MPN/100ml | 68 MPN/100ml |
| 32 | E-Coli | < 1.8 MPN/100ml | < 1.8 MPN/100ml | < 1.8 MPN/100ml | < 1.8 MPN/100ml |
| 33 | Barium as Ba | BDL(DL:0.05 mg/l) | BDL(DL:0.05 mg/l) | BDL(DL:0.05 mg/l) | BDL(DL:0.05 mg/l) |
| 34 | Ammonia (as Total | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) |
| 35 | Sulphide as H ₂ S | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) |
| 36 | Molybdenum as Mo | BDL (DL:0.02 mg/l) | BDL (DL:0.02 mg/l) | BDL (DL:0.02 mg/l) | BDL (DL:0.02 mg/l) |
| 37 | Total Arsenic as As | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) |
| 38 | Total Suspended Solids | BDL (DL:1.0 mg/l) | BDL (DL:1.0 mg/l) | BDL (DL:1.0 mg/l) | BDL (DL:1.0 mg/l) |

* IS: 10500:2012-Drinking Water Standards; # within the permissible limit as per the WHO Standard. The water can be used for drinking purpose in the absence of alternate sources. Note: SW- Surface water, GW – Ground water

TABLE 3.10: SURFACE WATER SAMPLING RESULTS

| Sl. No. | Parameter | Unit | RESULT | | CPCB Designated Best Use |
|---------|--|------------|--------------------------------|------------------------|--------------------------|
| | | | SW1- Existing Quarry Pit Water | SW2- Pallapalayam Lake | |
| 1 | Colour | Hazen | 5 Hazen | 10 Hazen | 300 |
| 2 | Odour | - | Agreeable | Agreeable | Not specified |
| 3 | pH@ 25°C | - | 7.31 | 7.58 | 6.5 – 8.5 |
| 4 | Electrical Conductivity @ 25°C | µs/cm | 895 µmhos/cm | 885 µmhos/cm | |
| 5 | Turbidity | NTU | 6.0 NTU | 7.5 NTU | Not specified |
| 6 | Total Dissolved Solids | mg/l | 571 mg/l | 570 mg/l | 1500 |
| 7 | Total Hardness as CaCO ₃ | mg/l | 129 mg/l | 154 mg/l | Not specified |
| 8 | Calcium as Ca | mg/l | 25.9 mg/l | 29.6 mg/l | Not specified |
| 9 | Magnesium as Mg | mg/l | 15.6 mg/l | 18.4 mg/l | Not specified |
| 10 | Total Alkalinity as CaCO ₃ | mg/l | 146 mg/l | 170 mg/l | Not specified |
| 11 | Chloride as Cl ⁻ | mg/l | 88.0 mg/l | 108 mg/l | 600 |
| 12 | Sulphate as SO ₄ ⁻ | mg/l | 29.6 mg/l | 39.6 mg/l | 400 |
| 13 | Iron as Fe | mg/l | 0.21 mg/l | 0.21 mg/l | 50 |
| 14 | Free Residual Chlorine | mg/l | BDL (DL:0.1 mg/l) | BDL (DL:0.1 mg/l) | 400 |
| 15 | Fluoride as F | mg/l | 0.18 mg/l | 0.30 mg/l | 1.5 |
| 16 | Nitrates as NO ₃ | mg/l | 8.4 mg/l | 6.8 mg/l | 50 |
| 17 | Copper as Cu | mg/l | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | 1.5 |
| 18 | Manganese as Mn | mg/l | BDL (DL:0.02 mg/l) | BDL (DL:0.02 mg/l) | Not specified |
| 19 | Mercury as Hg | mg/l | BDL (DL:0.0005 mg/l) | BDL (DL:0.0005 mg/l) | Not specified |
| 20 | Cadmium as Cd | mg/l | BDL (DL:0.001 mg/l) | BDL (DL:0.001 mg/l) | 0.01 |
| 21 | Selenium as Se | mg/l | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | Not specified |
| 22 | Aluminium as Al | mg/l | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | Not specified |
| 23 | Lead as Pb | mg/l | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | 0.1 |
| 24 | Zinc as Zn | mg/l | BDL(DL : 0.05 mg/l) | BDL(DL : 0.05 mg/l) | 15 |
| 25 | Total Chromium | mg/l | BDL(DL : 0.02 mg/l) | BDL(DL : 0.02 mg/l) | 0.05 |
| 26 | Boron as B | mg/l | BDL(DL : 0.05 mg/l) | BDL(DL : 0.05 mg/l) | Not specified |
| 27 | Mineral Oil | mg/l | BDL(DL : 0.01 mg/l) | BDL(DL : 0.01 mg/l) | Not specified |
| 28 | Phenolic Compounds as C ₆ H ₅ OH | mg/l | BDL (DL:0.0005 mg/l) | BDL (DL:0.0005 mg/l) | 0.005 |
| 29 | Anionic Detergents as MBAS | mg/l | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | Not specified |
| 30 | Cyanide as CN | mg/l | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | 0.05 |
| 31 | Biological Oxygen Demand, 3 days @ 27°C | | 11.6 mg/l | 10.5 mg/l | 3 |
| 32 | Chemical Oxygen Demand | | 38 mg/l | 32 mg/l | Not specified |
| 33 | Dissolved Oxygen | | 5.0 mg/l | 5.4 mg/l | 4 |
| 34 | Total Coliform | MPN/ 100ml | 590 MPN/100ml | 845 MPN/100ml | 5000 |
| 35 | E-Coli | | 70 MPN/100ml | 98 MPN/100ml | Not specified |
| 36 | Barium as Ba | mg/l | BDL (DL:0.5) | BDL (DL:0.5) | 300 |
| 37 | Ammonia (as Total Ammonia-N) | mg/l | BDL (DL:0.01 mg/l) | 3.0 mg/l | Not specified |
| 38 | Sulphide as H ₂ S | mg/l | BDL (DL:0.01 mg/l) | BDL (DL:0.01 mg/l) | Not specified |
| 39 | Molybdenum as Mo | mg/l | BDL (DL:0.02 mg/l) | BDL (DL:0.02 mg/l) | Not specified |
| 40 | Total Arsenic as As | mg/l | BDL (DL:0.005 mg/l) | BDL (DL:0.005 mg/l) | 0.2 |
| 41 | Total Suspended Solids | mg/l | 11.2 mg/l | 7.4 mg/l | - |

Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number.

3.2.4 Interpretation & Conclusion

Surface Water

Ph:

The pH varied from 7.31 to 7.58 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

Total Dissolved Solids:

Total Dissolved Solids varied from 570 to 571 mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

Other parameters:

Chloride content is 88.0 – 108mg/l. Nitrates varied from 6.8 to 8.4 mg/l, while sulphates varied from 29.6 to 39.6 mg/l.

Ground Water

The pH of the water samples collected ranged from 7.36 to 7.68 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. Total Dissolved Solids were found in the range of 658– 789mg/l in all samples. Total hardness varied between 127– 166mg/l for all samples.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

3.2.5 Hydrology and Hydrogeological studies

The district is underlain by hard rock formation fissured and fractured crystalline rocks constitute the important aquifer systems in the district. Geophysical prospecting was carried out in that area by SSRMP-80 Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth between 70-65m. The maximum depth proposed out of proposed projects is 41m (2m Gravel + 4m Weathered Gravel + 35m Rough stone) below ground level. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area. There is no necessity of stream, channel diversion due to these proposed projects.

During the rainy season there is a possibility of collection of seepage water from the subsurface levels which will be collected and stored in the mine sump pits and will be used for dust suppression and greenbelt development and during the end of the life of the mine this collected water will act as a temporary reservoir.

TABLE 3.11: SUMMER SEASON WATER LEVEL OF OPEN WELLS 1 KM RADIUS

| S.NO | LABEL | LONGITUDE | LATITUDE | Mar-23 | Apr-23 | May-23 |
|------|-------|--------------------|--------------------|--------|--------|--------|
| 1 | OW-1 | 77° 04' 15.1252" E | 10° 54' 28.0230" N | 12.8 | 13.4 | 14 |
| 2 | OW-2 | 77° 04' 26.4138" E | 10° 54' 30.6668" N | 12.5 | 13.1 | 13.7 |
| 3 | OW-3 | 77° 04' 14.2391" E | 10° 53' 58.3732" N | 13 | 13.6 | 14.2 |
| 4 | OW-4 | 77° 03' 51.5667" E | 10° 54' 33.4078" N | 12.6 | 13.2 | 13.8 |
| 5 | OW-5 | 77° 03' 51.8012" E | 10° 53' 51.0406" N | 12.2 | 12.8 | 13.4 |
| 6 | OW-6 | 77° 04' 21.6098" E | 10° 54' 51.1563" N | 12.4 | 13 | 13.6 |
| 7 | OW-7 | 77° 04' 35.6615" E | 10° 54' 06.3954" N | 13.2 | 13.8 | 14.4 |
| 8 | OW-8 | 77° 03' 19.8849" E | 10° 54' 28.6641" N | 13.1 | 13.7 | 14.3 |

Source: Onsite monitoring data

TABLE 3.12: SUMMER SEASON WATER LEVEL OF BOREWELLS 1 KM RADIUS

| S.NO | LABEL | LONGITUDE | LATITUDE | Mar-23 | Apr-23 | May-23 |
|------|-------|--------------------|--------------------|--------|--------|--------|
| 1 | BW-1 | 77° 04' 14.4228" E | 10° 54' 29.6742" N | 66.8 | 67.4 | 68 |
| 2 | BW-2 | 77° 04' 34.5215" E | 10° 54' 03.2477" N | 66 | 66.6 | 67.2 |
| 3 | BW-3 | 77° 04' 31.7715" E | 10° 54' 19.8928" N | 66.5 | 67.1 | 67.7 |
| 4 | BW-4 | 77° 04' 06.0430" E | 10° 54' 03.3744" N | 66.3 | 66.9 | 67.5 |
| 5 | BW-5 | 77° 03' 43.2180" E | 10° 54' 54.1335" N | 67 | 67.6 | 68.2 |
| 6 | BW-6 | 77° 03' 32.1144" E | 10° 54' 26.8624" N | 66.9 | 67.5 | 68.1 |
| 7 | BW-7 | 77° 03' 49.9282" E | 10° 53' 50.2520" N | 66.2 | 66.8 | 67.4 |

Source: Onsite monitoring data

FIGURE 3.6: OPEN WELL CONTOUR MAP – MARCH 2023

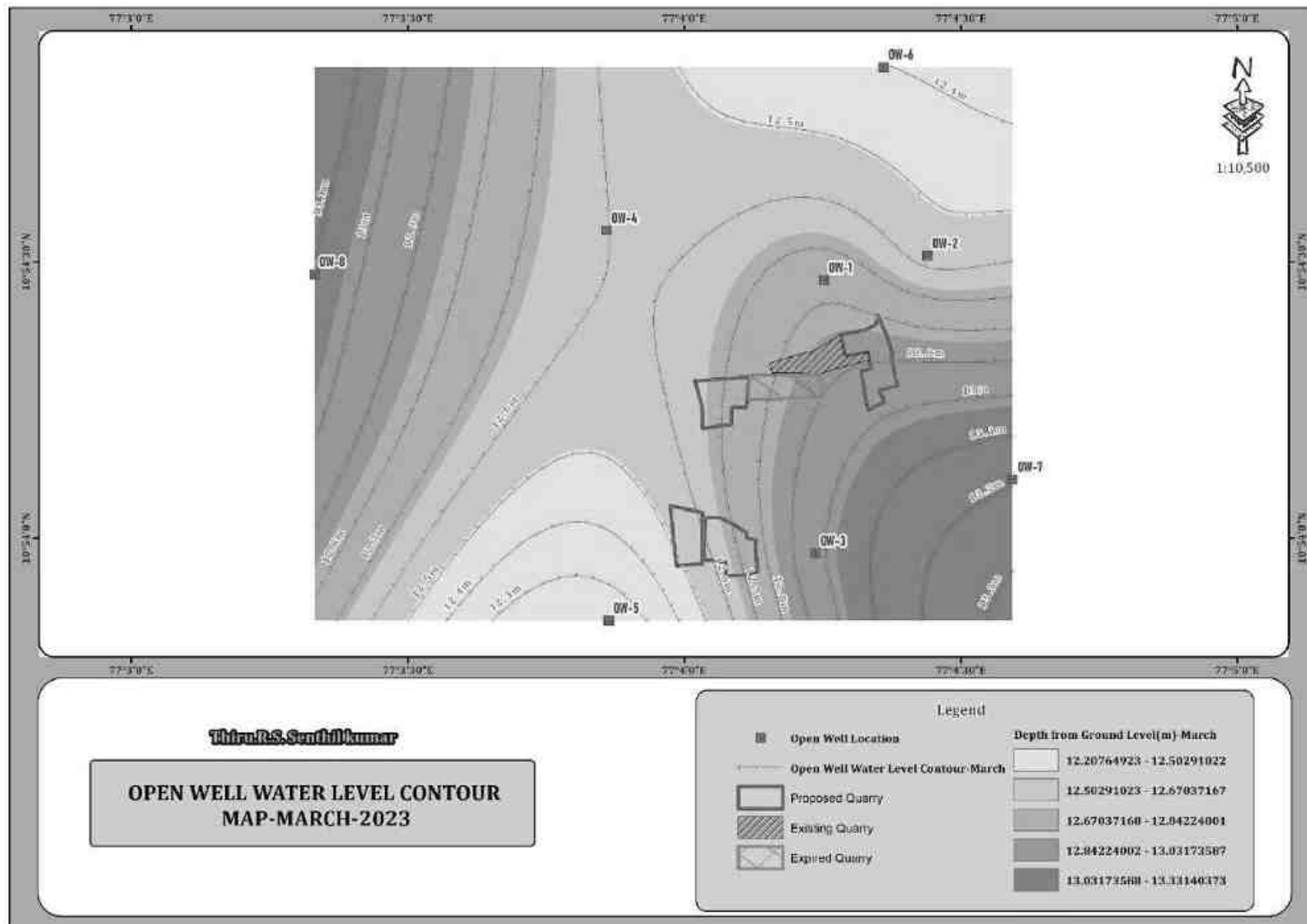


FIGURE 3.7: OPEN WELL CONTOUR MAP – APRIL 2023

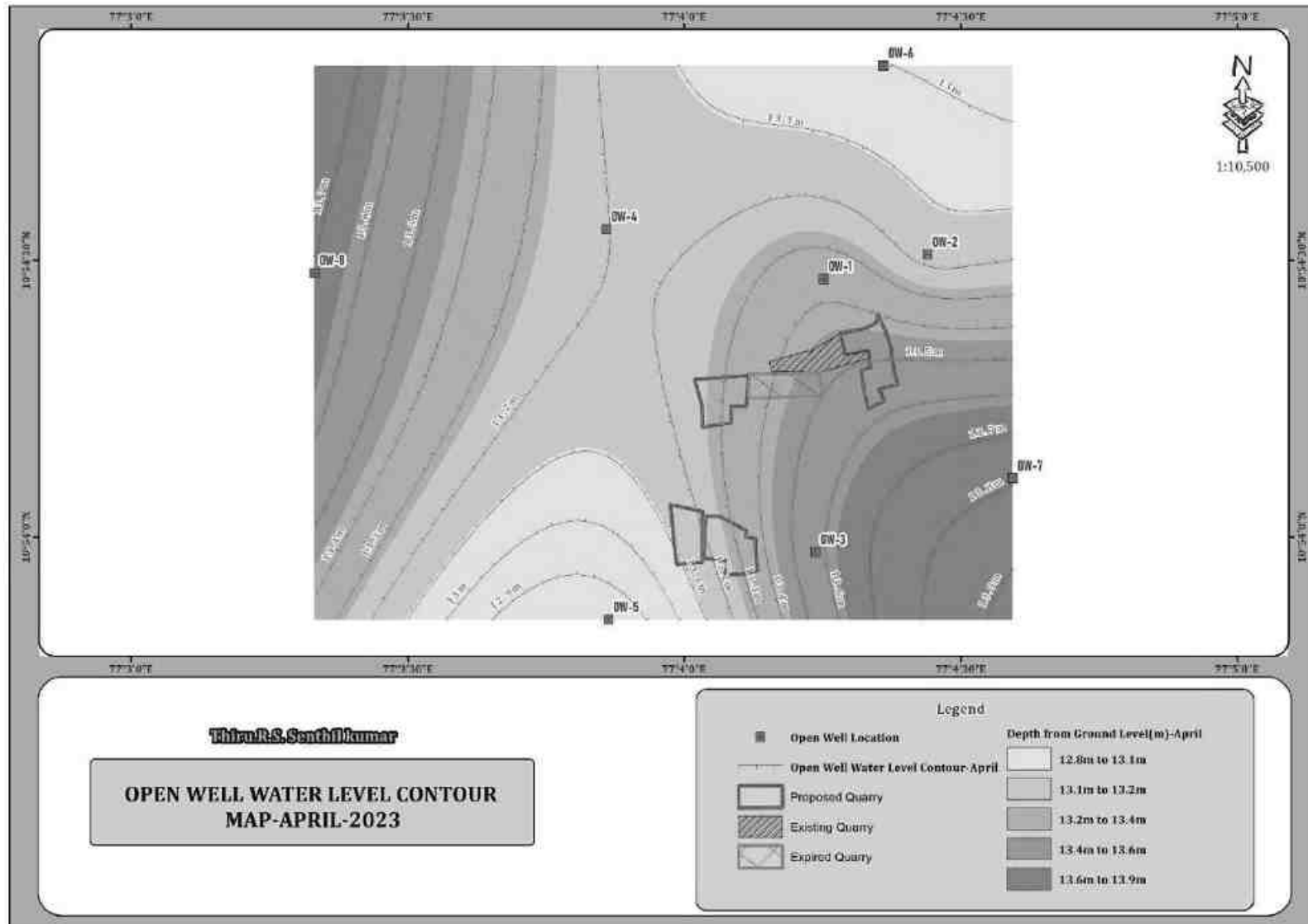


FIGURE 3.8: OPEN WELL CONTOUR MAP – MAY 2023

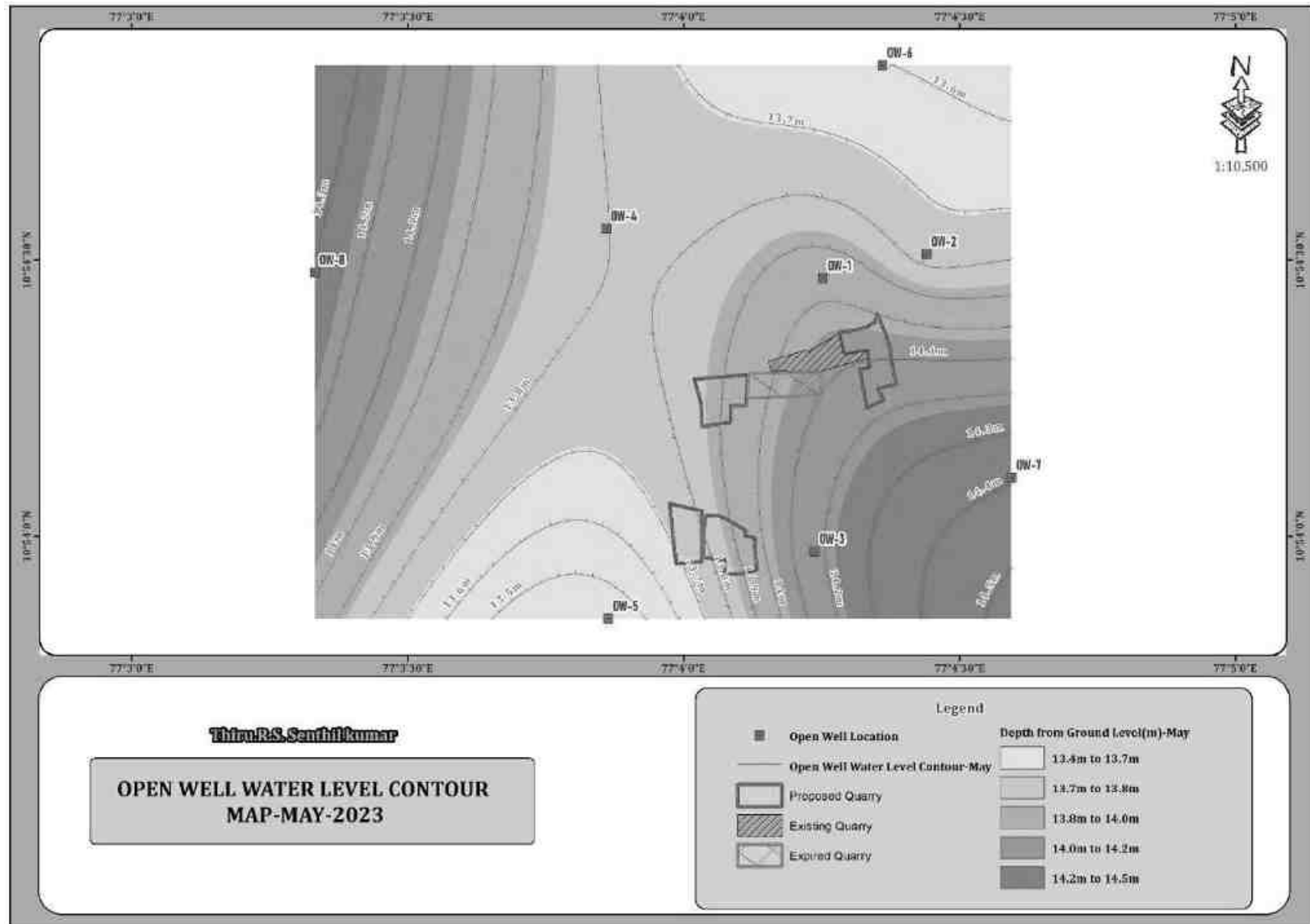


FIGURE 3.9: BOREWELL CONTOUR MAP – MARCH 2023

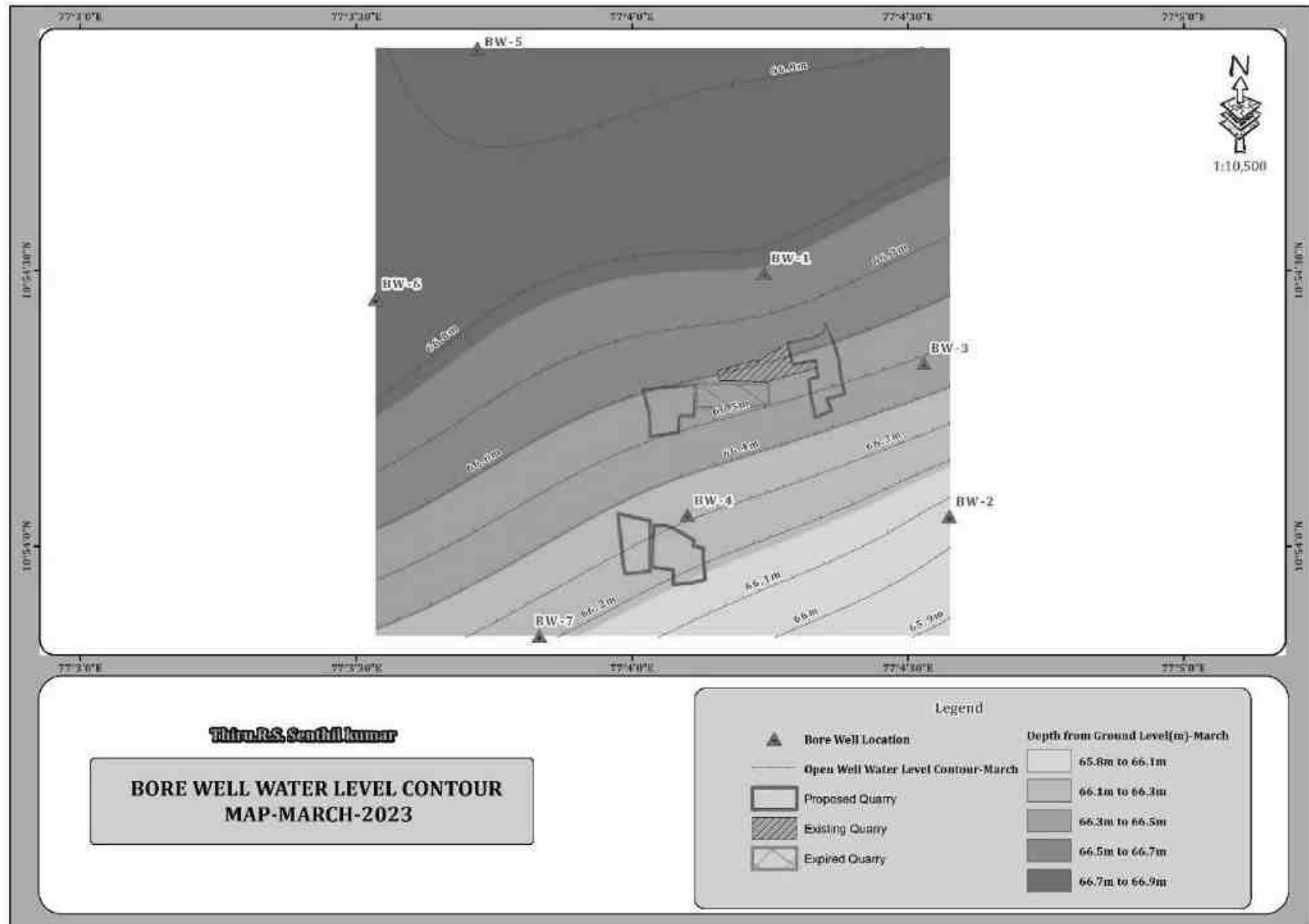


FIGURE 3.10: BOREWELL CONTOUR MAP – APRIL 2023

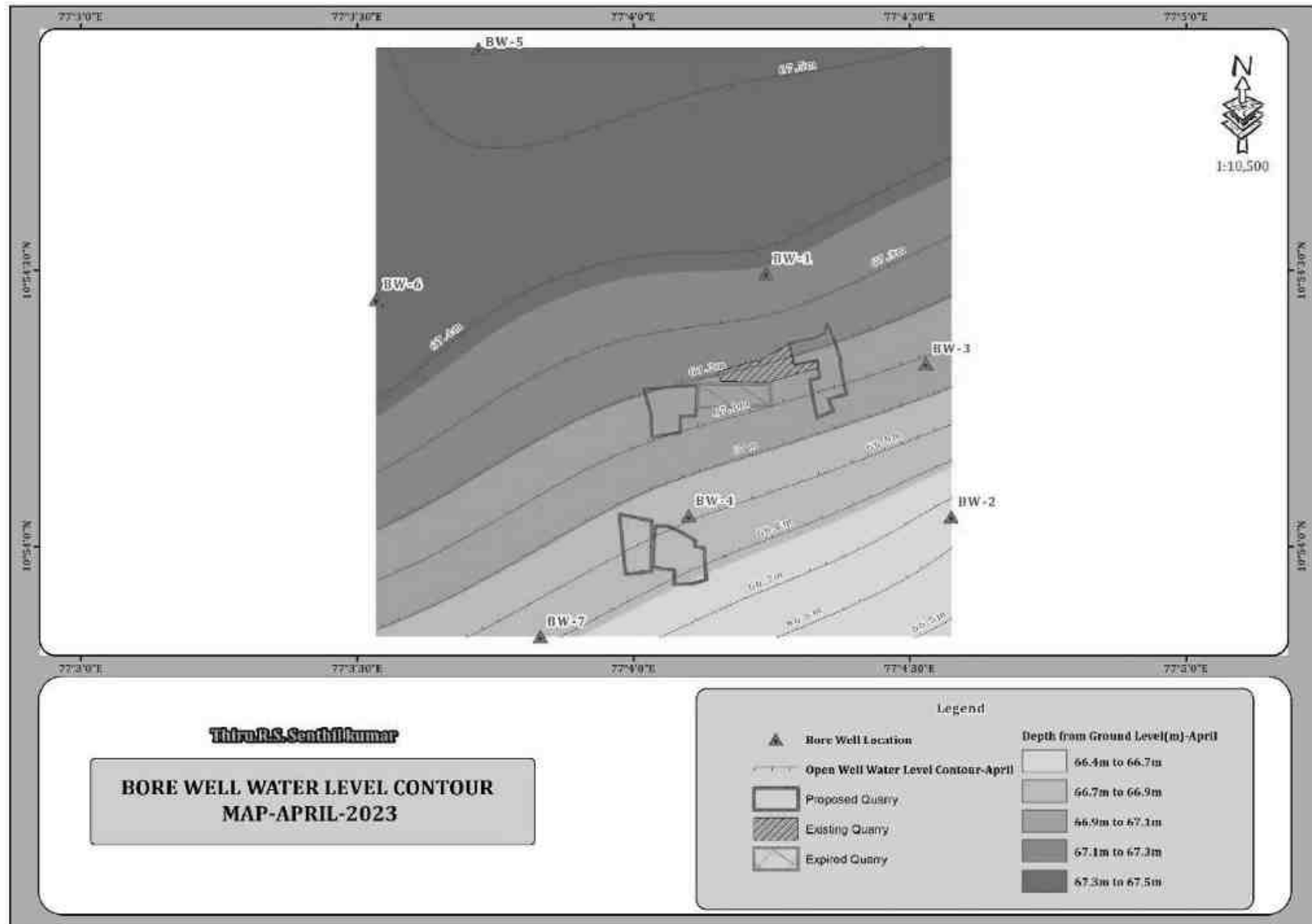


FIGURE 3.11: BOREWELL CONTOUR MAP – MAY 2023

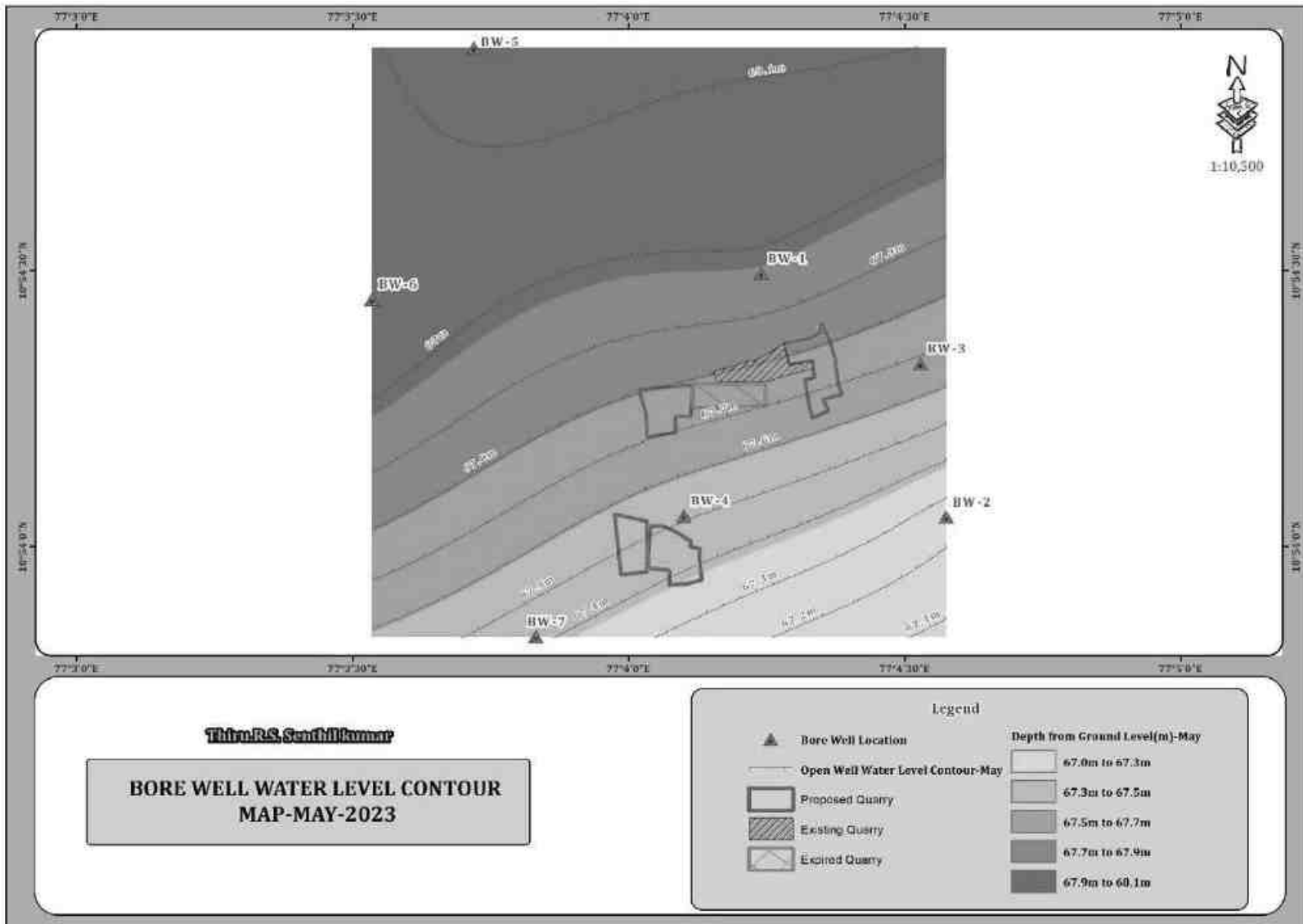


FIGURE 3.12: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE

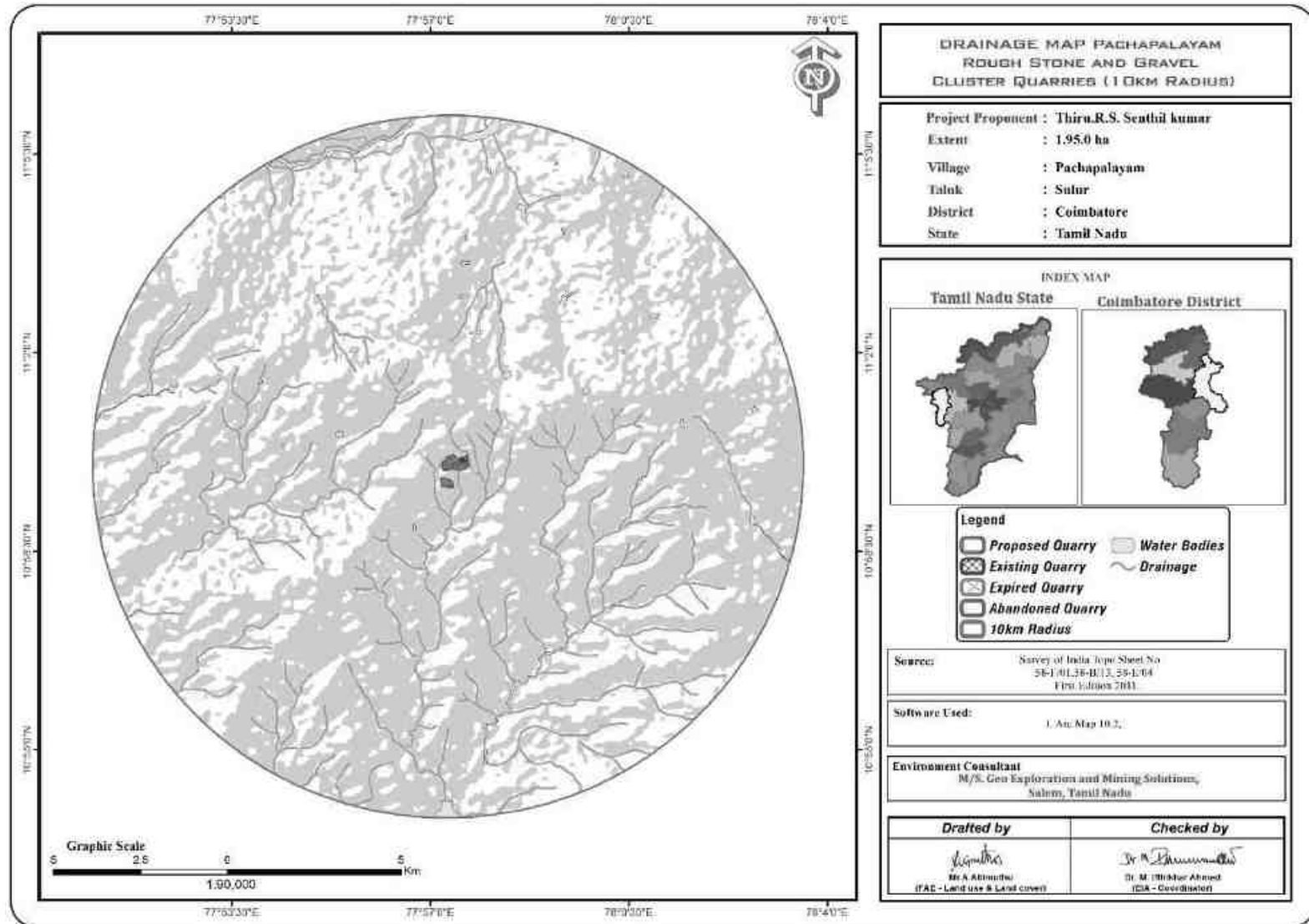
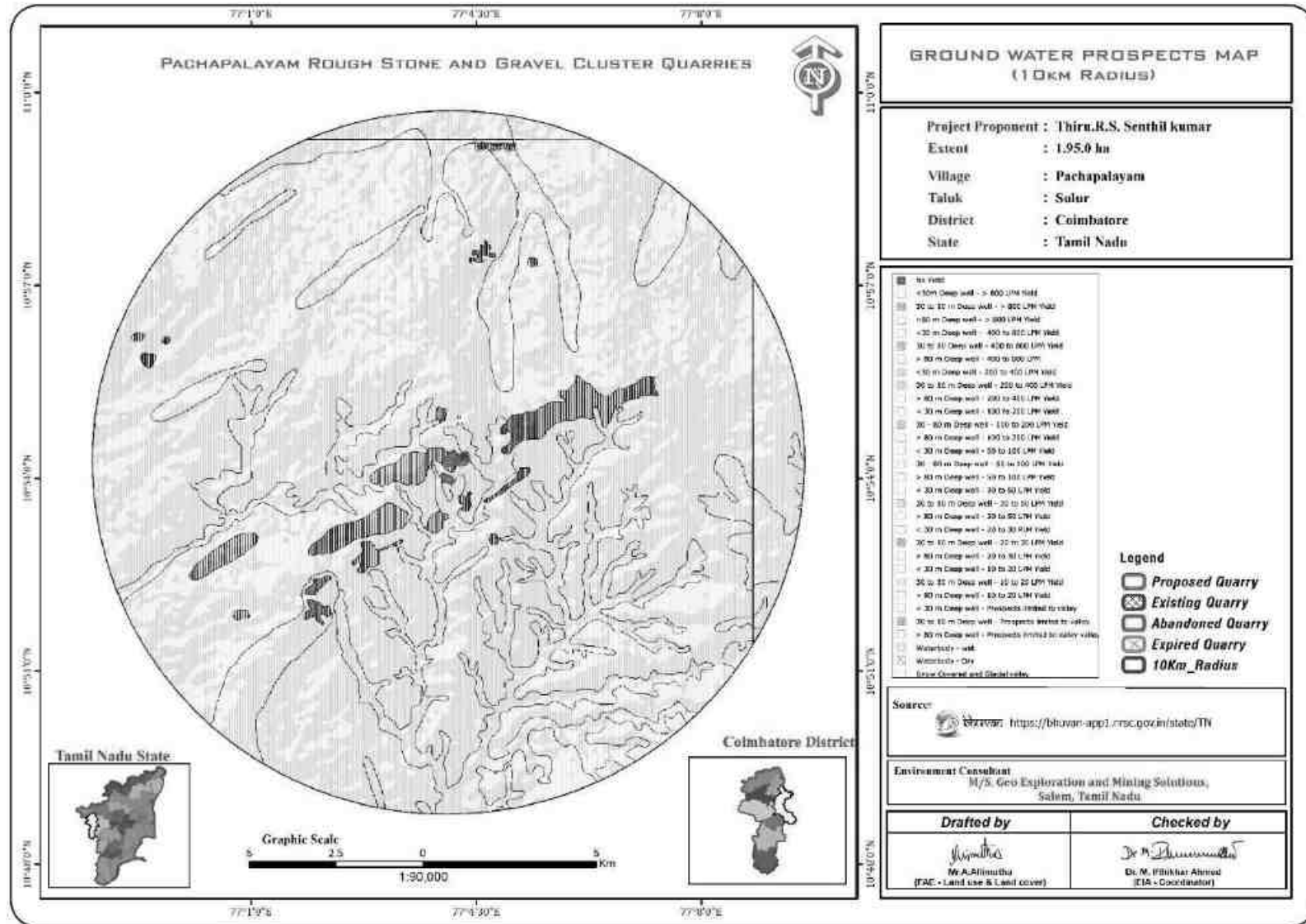


FIGURE 3.13: GROUND WATER PROSPECT MAP



3.2.5.1 Methodology and Data Acquisition

Electric Resistivity Method is well established for delineating lateral as well vertical discontinuities in the resistive structure of the Earth's subsurface. The present study makes use of vertical electric sounding (VES) to delineate the Vertical Resistivity structure at depth. Schlumberger electrode set up was employed for making sounding measurements. Since it is least influenced by lateral inhomogeneities and is capable of providing higher depth of investigation. This is four electrodes collinear set up where in the outer electrodes send current into the ground and the inner electrodes measure the potential difference.

The present study utilizes maximum current electrode separation $AB/2$. The data from this survey are commonly arranged and contoured in the form of Pseudo-section that gives an approximate of the subsurface resistivity. This technique is used for the inversion of Schlumberger VES data to predict the layer parameter namely layer resistivity and Geo electric layer thickness. The main goal of the present study is to search the vertical inhomogeneities that is consistent with the measured data.

For a Schlumberger among the Apparent resistivity can be calculated as follows.

$$\rho_a = \frac{G\Delta V}{I}$$

ΔV = potential difference between receiving electrodes

G = Geometric Factor.

Rocks show wide variation in resistivity ranging from 10-8 more than 10+14 ohmmeter. On a broad classification, one can group the rocks falling in the range of 10-8 to 1 ohmmeter as good conductors. 1 to 106 ohmmeter as intermediate conductors and 106 to 1012 ohmmeter as more as poor conductor. The resistivity of rocks and subsurface lithology, which is mostly dependent on its porosity and the pore fluid resistivity is defined by Archie's Law,

$$\rho_r = F\rho_w = a \emptyset^m \rho_w$$

ρ_r = Resistivity of Rocks

ρ_w = Resistivity of water in pores of rock

F = Formation Factor

\emptyset = Fractional pore volume

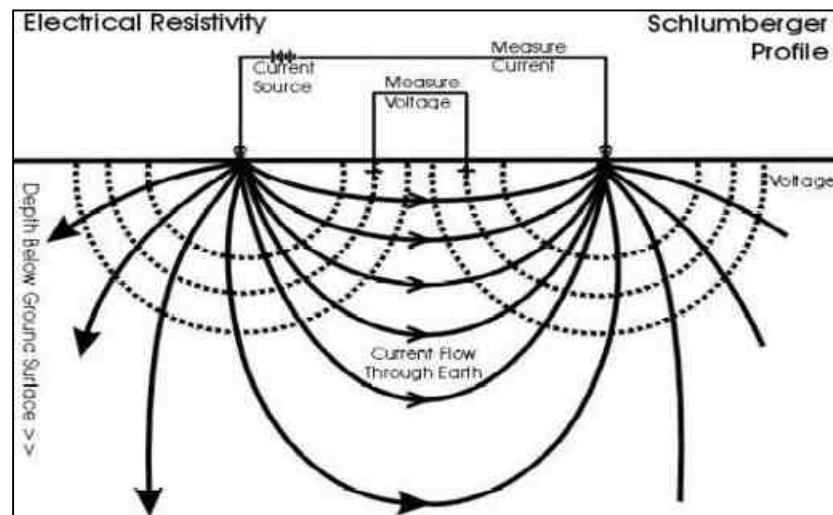
A = Constants with values ranging from 0.5 to 2.5

3.2.5.2 Survey Layout

The layout for a resistivity survey depends on the choice of the current and potential electrode arrangement, which is called electrode array. Here the present study is considered with Schlumberger array. In which the distance may be used for current electrode separation while potential electrode separation is kept on third to one fifth of the same. One interesting aspect in VES is the principle of reciprocity, which permits interchange of the potential and current electrode without any effect on the measured apparent resistivity.

The field equipment deployed for the study is in a deep resistivity meter with a model of SSR – MP – AT. This Signal stacking Resistivity meter is a high-quality data acquisition system incorporating several innovation features for Earth resistivity. In the presence of random earth Noises the signal to noise ratio can be enhanced by \sqrt{N} where N is the number of stacked readings. This SSR meter in which running averages of measurements $[1, (1+2)/2, (1+2+3)/3 \dots (1+2+\dots+16/16)]$ up to the chosen stacks are displayed and the final average is stored automatically, in memory utilizing the principles of stacking to achieve the benefit of high signals to noise ratio. Based on these above significations the signal stacking resistivity meter was used for (VES) Vertical Electric Resistivity Sounding.

RESISTIVITY SURVEY PROFILE



Measurements of ground Resistivity is essentially done by sending a current through two electrodes called current electrodes (C_1 & C_2) and measuring the resulting potential by two other electrodes called potential electrode (P_1 & P_2). The amount of current required to be sent into the ground depends on the contact resistance at the current electrode, the ground resistivity and the depth of interest.

3.2.5.3 Data Presentation

It was inferred that the low resistance encountered at the depth between 56-70m. The maximum depth proposed out of proposed projects 47m BGL. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

3.2.5.4 Geophysical Data Interpretation

The geophysical data was obtained to study the lateral variations, vertical in homogeneities in the sub – surface with respect to the availability of groundwater. From the interpreted data, it has inferred that the area has moderate groundwater potential in the investigated area. This small quarrying operation will not have any significant impact on the natural water bodies.

3.3 AIR ENVIRONMENT

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality.

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the cluster forms the baseline information. The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities. The prime objective of the baseline air quality study was to establish the existing ambient air quality of the study area. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of proposed projects in cluster.

This section describes the identification of sampling locations, methodology adopted during the monitoring period and sampling frequency.

3.3.1 Meteorology & Climate

Meteorology is the key to understand the Air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A temporary meteorological station was installed at project site by covering cluster quarries. The station was installed at a height of 3 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis.

Climate

Coimbatore is 421m above sea level. Coimbatore's climate is classified as tropical. The summers here have a good deal of rainfall, while the winters have very little rain. This location is classified as Aw by Köppen and Geiger. In Coimbatore –

- The climatic conditions in this region are characterized by a tropical climate. During the winter season, there is a significant decrease in precipitation levels within Coimbatore as compared to the summer months. Köppen and Geiger classify this climate as Aw. The average annual temperature in Coimbatore is 25.4 °C | 77.8 °F. Approximately 952 mm | 37.5 inch of rainfall occurs on a yearly basis.
- The region of Coimbatore is characterized by a temperate climate, and the summer season presents some challenges in terms of precise categorization. The most favored period for a visit is during the months of March, April, May.
- During January, the amount of precipitation is at its lowest, with only 13 mm | 0.5 inch recorded. The month of October experiences the highest amount of precipitation, with an average value of 181 mm | 7.1 inch.
- The month of maximum warmth in a year is April. The average temperature during this period reaches up to 28.9 °C | 84.1 °F, making it the hottest time of the year. The month of December is characterized by the lowest temperatures, which have an average reading of 23.2 °C | 73.7 °F.

<https://en.climate-data.org/asia/india/tamil-nadu/coimbatore-2788/>

Rainfall

TABLE 3.13: RAINFALL DATA

| Actual Rainfall in mm | | | | | Normal Rainfall in mm |
|-----------------------|------|--------|--------|--------|-----------------------|
| 2017 | 2018 | 2019 | 2020 | 2021 | |
| 873.4 | 1302 | 1272.4 | 1585.3 | 2119.1 | 1213.2 |

Source: <https://www.twadboard.tn.gov.in/content/coimbatore>

TABLE 3.14: METEOROLOGICAL DATA RECORDED AT SITE

| S.No | Parameters | | March-2023 | Apri-2023 | May 2023 |
|------|-----------------------|------|------------|-----------|----------|
| 1 | Temperature (°C) | Max | 28.75 | 30.17 | 28.41 |
| | | Min | 24.69 | 25.4 | 24.51 |
| | | Avg. | 26.72 | 27.78 | 26.46 |
| 2 | Relative Humidity (%) | Avg. | 54.62 | 57.40 | 79.44 |
| 3 | Wind Speed (m/s) | Max | 4.63 | 3.62 | 4.09 |
| | | Min | 1.13 | 1.27 | 1.5 |
| | | Avg. | 2.88 | 2.44 | 2.79 |
| 4 | Cloud Cover (OKTAS) | | 0-8 | 0-8 | 0-8 |
| 5 | Wind direction | | E,ENE | E,SSE | WSW,W |

Source: On-site monitoring/sampling by EHS 360 LABS PRIVATE LIMITED in association with GEMS

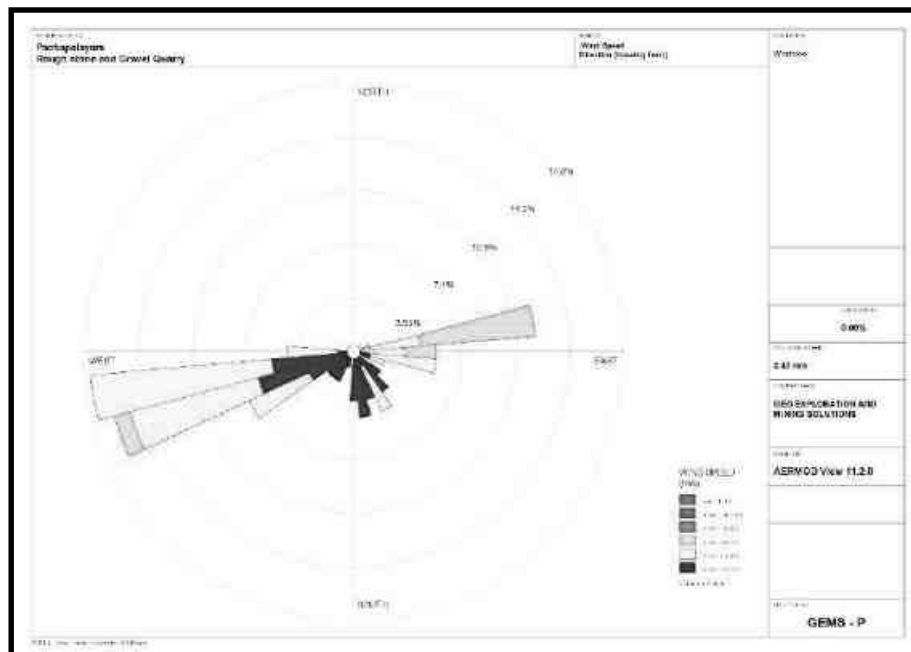
Correlation between Secondary and Primary Data

The meteorological data collected at the site is almost similar to that of secondary data collected from IMD Coimbatore_Agro. A comparison of site data generated during the three months with that of IMD, Coimbatore_Agro reveals the following:

- The average maximum and minimum temperatures of IMD, Coimbatore_Agro showed a higher in respect of on-site data i.e. in Pachapalayam village.
- The relative humidity levels were lesser at site as compared to IMD, Coimbatore_Agro.
- The wind speed and direction at site shows similar trend that of IMD, Coimbatore_Agro.

Wind rose diagram of the study site is depicted in Figure. 3.14. Predominant downwind direction of the area during study season is East-North-East to West South West.

FIGURE 3.14: WINDROSE DIAGRAM



In the abstract of collected data wind rose were drawn on presented in figure No.3.14 during the monitoring period in the study area

1. Predominant winds were from ENE, E, SSE, WSW, W
2. Wind velocity readings were recorded between 0.50 to 3.60m/s
3. Calm conditions prevail of about 0 % of the monitoring period
4. Temperature readings ranging from 24.51 to 30.17 °C
5. Relative humidity ranging from 54.62 to 79.44 %
6. The monitoring was carried out continuously for three months.

3.3.2 Methodology and Objective

The prime objective of the ambient air quality study is to assess the existing air quality of study area and its conformity to NAAQS. The observed sources of air pollution in the study area are industrial, traffic and domestic activities. The baseline status of the ambient air quality has been established through a scientifically designed ambient air quality monitoring network considering the followings:

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

3.3.3 Sampling and Analytical Techniques

TABLE 3.15: METHODOLOGY AND INSTRUMENT USED FOR AAQ ANALYSIS

| Parameter | Method | Instrument |
|-----------------|--|--|
| PM2.5 | Gravimetric Method Beta attenuation Method | Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121 |
| PM10 | Gravimetric Method Beta attenuation Method | Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108 |
| SO ₂ | IS-5182 Part II (Improved West & Gaeke method) | Respirable Dust Sampler with gaseous attachment |
| NO _x | IS-5182 Part II (Jacob & Hochheiser modifiedmethod) | Respirable Dust Sampler with gaseous attachment |
| Free Silica | NIOSH – 7601 | Visible Spectrophotometry |

Source: Sampling Methodology followed by EHS 360 LABS PRIVATE LIMITED & CPCB Notification

TABLE 3.16: NATIONAL AMBIENT AIR QUALITY STANDARDS

| Sl.No. | Pollutant | Time Weighted Average | Concentration in ambient air | |
|--------|--|----------------------------|--|---|
| | | | Industrial, Residential, Rural & other areas | Ecologically Sensitive area (Notified by Central Govt.) |
| 1 | Sulphur Dioxide ($\mu\text{g}/\text{m}^3$) | Annual Avg.* 24 hours** | 50.0 80.0 | 20.0 80.0 |
| 2 | Nitrogen Dioxide ($\mu\text{g}/\text{m}^3$) | Annual Avg. 24 hours | 40.0 80.0 | 30.0 80.0 |
| 3 | Particulate matter (size less than $10\mu\text{m}$) PM10 ($\mu\text{g}/\text{m}^3$) | Annual Avg. 24 hours | 60.0 100.0 | 60.0 100.0 |
| 4 | Particulate matter (size less than $2.5\mu\text{m}$) PM2.5 ($\mu\text{g}/\text{m}^3$) | Annual Avg. 24 hours | 40.0 60.0 | 40.0 60.0 |

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

*Annual Arithmetic mean of minimum 104 measurements in a year taken twice a Week 24 hourly at uniform interval.

** 24 hourly / 8 hourly or 1 hourly monitored value as applicable shall be complied with 98 % of the time in a year. However, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

3.3.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at eight (8) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March 2023-May 2023. The baseline data of ambient air has been generated for PM₁₀, PM_{2.5}, Sulphur Dioxide (SO₂) & Nitrogen Dioxide (NO₂) Monitoring has been carried out as per the CPCB, MoEF guidelines and notifications.

It was ensured that the equipment was placed preferably at a height of at least 3 ± 0.5m above the ground level at each monitoring station, for negating the effects of wind-blown ground dust. The equipment was placed at open space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results.

3.3.5 Ambient Air Quality Monitoring Stations

Eight (8) monitoring stations were set up in the study area as depicted in Figure 3.15 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

TABLE 3.17: AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS

| S. No | Location Code | Monitoring Locations | Distance & Direction | Coordinates |
|-------|---------------|----------------------|----------------------|-----------------------------|
| 1 | AAQ-1 | Core Zone | Project Area | 10°54'25.78"N 77°04'08.34"E |
| 2 | AAQ-2 | Core Zone | Near Project Area | 10°54'6.80"N 77° 3'58.64"E |
| 3 | AAQ-3 | Chettipalayam | 3.0km NW | 10°54'37.41"N 77° 2'20.12"E |
| 4 | AAQ-4 | Edayapalayam | 4.5km NE | 10°55'16.54"N 77° 6'30.52"E |
| 5 | AAQ-5 | Karacherry | 4km South | 10°52'18.87"N 77° 3'39.99"E |
| 6 | AAQ-6 | Panapatti | 4.5km SE | 10°52'35.83"N 77° 5'56.31"E |
| 7 | AAQ-7 | Kallapalayam | 4.8km North | 10°57'3.71"N 77° 4'38.09"E |
| 8 | AAQ-8 | Okkilipalayam | 5.5km SW | 10°53'37.21"N 77° 1'10.69"E |

Source: On-site monitoring/sampling by EHS 360 LABS PRIVATE LIMITED in association with GEMS.

FIGURE 3.15: AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS

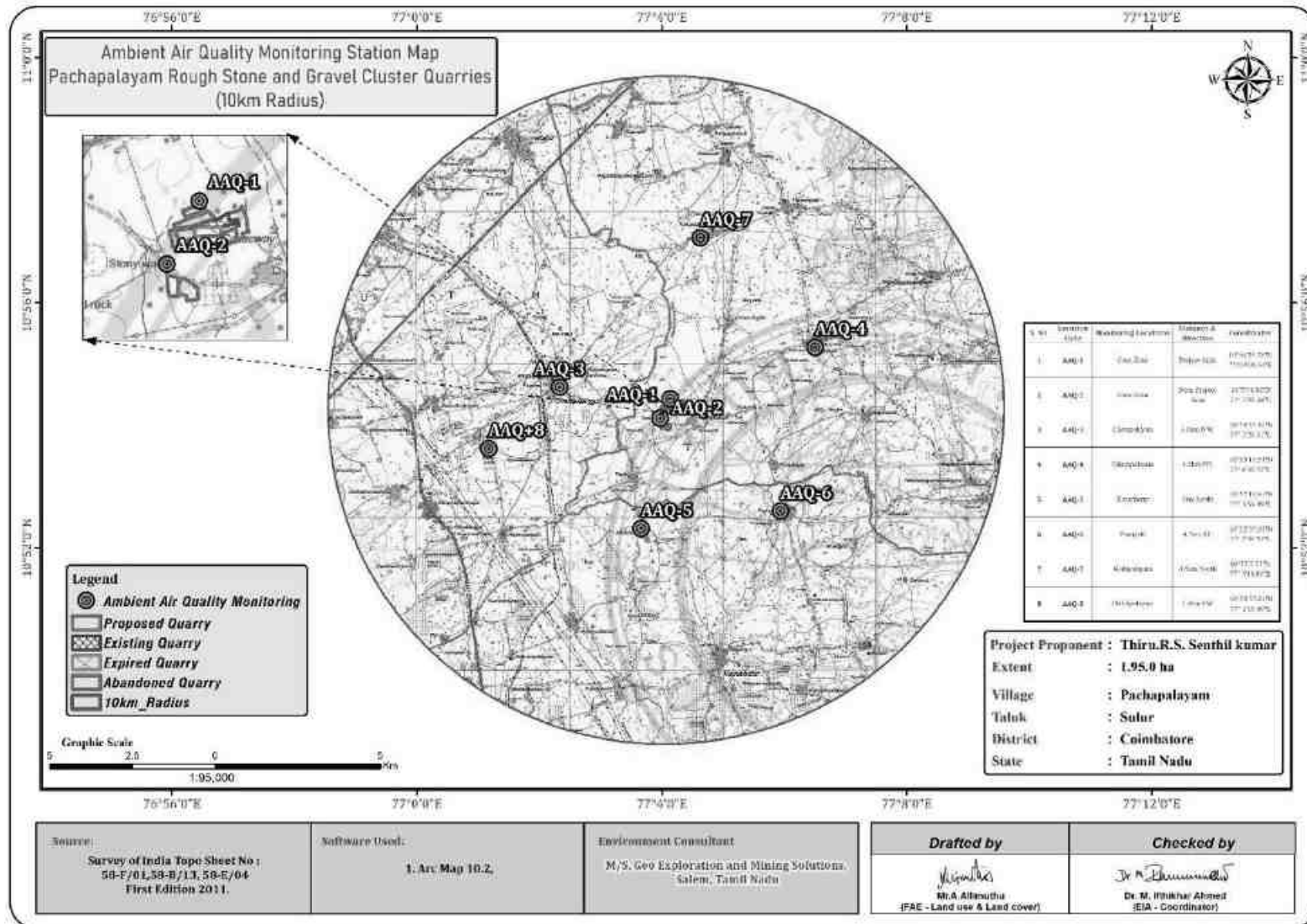


TABLE 3.18 AMBIENT AIR QUALITY DATA LOCATION AAQ1

Period: Mar 2023 – May 2023

Location: AAQ1- Core Zone

Sampling Time: 24-hourly

| Ambient Air Monitoring Details | | Particulate Pollutant | | | Gaseous Pollutant | | | | | Metals Pollutant | | | Organic Pollutant | |
|--------------------------------|------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------|-------------------|
| Parameters | | SPM | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ | NH ₃ | O ₃ | CO | Pb | Ni | As | C ₆ H ₆ | BaP |
| NAAQ Norms | | 200 | 100 | 60 | 80 | 80 | 400 | 180 | 4 | 1 | 20 | 6 | 5 | 1 |
| Unit | | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ | ng/m ³ | ng/m ³ | µg/m ³ | ng/m ³ |
| Date | Period.hrs | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| 01.03.2023 | 7:00-7:00 | 62.8 | 46.4 | 23.3 | 8.3 | 27.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 02.03.2023 | 7:15-7:15 | 64.0 | 46.8 | 22.2 | 7.5 | 24.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 08.03.2023 | 7:00-7:00 | 65.3 | 44.7 | 23.8 | 7.8 | 25.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 09.03.2023 | 7:15-7:15 | 61.8 | 45.8 | 22.5 | 8.0 | 24.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 15.03.2023 | 7:00-7:00 | 63.6 | 45.5 | 23.8 | 8.4 | 24.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 16.03.2023 | 7:15-7:15 | 63.4 | 45.8 | 23.1 | 7.6 | 22.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 22.03.2023 | 7:00-7:00 | 64.4 | 45.3 | 24.8 | 9.0 | 23.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 23.03.2023 | 7:15-7:15 | 64.5 | 46.2 | 23.1 | 9.8 | 24.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 29.03.2023 | 7:00-7:00 | 63.1 | 44.8 | 23.9 | 9.5 | 23.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 30.03.2023 | 7:15-7:15 | 63.7 | 45.2 | 23.6 | 8.6 | 24.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 05.04.2023 | 7:00-7:00 | 63.7 | 46.2 | 24.0 | 9.3 | 26.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 06.04.2023 | 7:15-7:15 | 64.5 | 46.5 | 23.9 | 8.5 | 25.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 12.04.2023 | 7:00-7:00 | 65.6 | 46.2 | 22.9 | 8.1 | 24.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 13.04.2023 | 7:15-7:15 | 65.5 | 45.2 | 22.1 | 7.4 | 23.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 19.04.2023 | 7:00-7:00 | 66.3 | 45.1 | 23.8 | 7.7 | 22.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 20.04.2023 | 7:15-7:15 | 66.2 | 46.4 | 23.9 | 6.1 | 21.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 26.04.2023 | 7:00-7:00 | 66.7 | 45.0 | 24.5 | 6.9 | 23.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 27.04.2023 | 7:15-7:15 | 67.5 | 46.9 | 24.3 | 6.4 | 22.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 03.05.2023 | 7:00-7:00 | 60.2 | 45.8 | 23.4 | 7.7 | 21.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 04.05.2023 | 7:15-7:15 | 62.2 | 45.4 | 23.7 | 8.6 | 23.0 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 10.05.2023 | 7:00-7:00 | 61.7 | 46.2 | 23.8 | 9.1 | 24.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 11.05.2023 | 7:15-7:15 | 63.5 | 45.0 | 24.2 | 8.5 | 22.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 17.05.2023 | 7:00-7:00 | 63.6 | 46.0 | 23.4 | 7.7 | 23.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 18.05.2023 | 7:15-7:15 | 62.4 | 45.3 | 24.1 | 7.5 | 22.0 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 24.05.2023 | 7:00-7:00 | 64.2 | 45.8 | 24.5 | 8.6 | 23.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 25.05.2023 | 7:15-7:15 | 64.8 | 46.2 | 24.8 | 8.4 | 21.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |

Note:BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.19 AMBIENT AIR QUALITY DATA LOCATIO NAAQ2

Period: Mar 2023 – May 2023

Location: AAQ2- Core Zone

Sampling Time: 24-hourly

| Ambient Air Monitoring Details | | Particulate Pollutant | | | Gaseous Pollutant | | | | | Metals Pollutant | | | Organic Pollutant | |
|--------------------------------|------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------|-------------------|
| Parameters | | SPM | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ | NH ₃ | O ₃ | CO | Pb | Ni | As | C ₆ H ₆ | BaP |
| NAAQ Norms | | 200 | 100 | 60 | 80 | 80 | 400 | 180 | 4 | 1 | 20 | 6 | 5 | 1 |
| Unit | | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ | ng/m ³ | ng/m ³ | µg/m ³ | ng/m ³ |
| Date | Period.hrs | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| 01.03.2023 | 7:00-7:00 | 65.0 | 45.1 | 21.9 | 8.7 | 20.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 02.03.2023 | 7:15-7:15 | 64.4 | 42.9 | 21.5 | 8.5 | 19.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 08.03.2023 | 7:00-7:00 | 63.3 | 42.5 | 22.2 | 8.0 | 20.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 09.03.2023 | 7:15-7:15 | 61.4 | 41.8 | 20.4 | 8.6 | 21.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 15.03.2023 | 7:00-7:00 | 60.6 | 43.0 | 21.1 | 8.4 | 21.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 16.03.2023 | 7:15-7:15 | 62.5 | 43.0 | 22.1 | 8.4 | 20.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 22.03.2023 | 7:00-7:00 | 63.3 | 42.5 | 21.4 | 8.5 | 21.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 23.03.2023 | 7:15-7:15 | 64.2 | 41.5 | 21.6 | 8.4 | 19.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 29.03.2023 | 7:00-7:00 | 60.3 | 42.0 | 20.5 | 8.1 | 18.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 30.03.2023 | 7:15-7:15 | 62.2 | 43.6 | 22.3 | 8.3 | 19.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 05.04.2023 | 7:00-7:00 | 68.7 | 45.4 | 21.5 | 9.2 | 18.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 06.04.2023 | 7:15-7:15 | 66.8 | 44.2 | 21.4 | 8.6 | 19.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 12.04.2023 | 7:00-7:00 | 66.2 | 45.1 | 22.7 | 8.9 | 22.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 13.04.2023 | 7:15-7:15 | 65.4 | 43.7 | 22.8 | 8.8 | 20.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 19.04.2023 | 7:00-7:00 | 66.8 | 41.9 | 21.3 | 8.6 | 21.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 20.04.2023 | 7:15-7:15 | 69.4 | 42.8 | 20.4 | 8.5 | 22.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 26.04.2023 | 7:00-7:00 | 66.4 | 42.9 | 21.4 | 8.9 | 23.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 27.04.2023 | 7:15-7:15 | 64.2 | 44.1 | 22.1 | 9.0 | 19.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 03.05.2023 | 7:00-7:00 | 68.7 | 45.2 | 22.4 | 8.6 | 18.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 04.05.2023 | 7:15-7:15 | 60.3 | 44.6 | 22.5 | 8.4 | 18.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 10.05.2023 | 7:00-7:00 | 62.5 | 42.0 | 21.3 | 9.4 | 19.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 11.05.2023 | 7:15-7:15 | 64.6 | 45.3 | 20.5 | 8.7 | 20.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 17.05.2023 | 7:00-7:00 | 65.5 | 44.7 | 20.3 | 8.6 | 21.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 18.05.2023 | 7:15-7:15 | 64.5 | 42.2 | 21.1 | 8.7 | 22.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 24.05.2023 | 7:00-7:00 | 63.3 | 43.3 | 22.5 | 8.2 | 20.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 25.05.2023 | 7:15-7:15 | 62.5 | 41.0 | 21.2 | 8.0 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.20 AMBIENT AIR QUALITY DATA LOCATION AAQ3

Period: Mar 2023 – May 2023

Location : AAQ3- Chettipalayam

Sampling Time: 24-hourly

| Ambient Air Monitoring Details | | Particulate Pollutant | | | Gaseous Pollutant | | | | | Metals Pollutant | | | Organic Pollutant | |
|--------------------------------|------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------|-------------------|
| Parameters | | SPM | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ | NH ₃ | O ₃ | CO | Pb | Ni | As | C ₆ H ₆ | BaP |
| NAAQ Norms | | 200 | 100 | 60 | 80 | 80 | 400 | 180 | 4 | 1 | 20 | 6 | 5 | 1 |
| Unit | | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ | ng/m ³ | ng/m ³ | µg/m ³ | ng/m ³ |
| Date | Period.hrs | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| 01.03.2023 | 7:00-7:00 | 63.4 | 42.9 | 22.3 | 6.7 | 21.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 02.03.2023 | 7:15-7:15 | 62.0 | 44.3 | 22.2 | 6.5 | 22.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 08.03.2023 | 7:00-7:00 | 60.1 | 43.2 | 21.2 | 6.7 | 23.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 09.03.2023 | 7:15-7:15 | 68.4 | 42.5 | 21.2 | 6.4 | 19.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 15.03.2023 | 7:00-7:00 | 65.5 | 40.6 | 21.1 | 6.3 | 18.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 16.03.2023 | 7:15-7:15 | 64.6 | 41.2 | 20.4 | 5.3 | 18.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 22.03.2023 | 7:00-7:00 | 62.6 | 44.5 | 21.3 | 5.2 | 20.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 23.03.2023 | 7:15-7:15 | 60.6 | 45.1 | 22.4 | 6.9 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 29.03.2023 | 7:00-7:00 | 63.4 | 44.1 | 22.0 | 5.2 | 21.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 30.03.2023 | 7:15-7:15 | 66.2 | 43.1 | 22.0 | 6.5 | 23.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 05.04.2023 | 7:00-7:00 | 64.6 | 40.4 | 22.5 | 5.8 | 22.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 06.04.2023 | 7:15-7:15 | 68.4 | 42.5 | 22.5 | 6.7 | 21.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 12.04.2023 | 7:00-7:00 | 60.3 | 44.1 | 23.8 | 6.5 | 24.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 13.04.2023 | 7:15-7:15 | 62.2 | 43.0 | 24.3 | 6.2 | 24.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 19.04.2023 | 7:00-7:00 | 61.2 | 45.1 | 25.4 | 6.5 | 23.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 20.04.2023 | 7:15-7:15 | 60.2 | 44.4 | 26.3 | 7.2 | 22.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 26.04.2023 | 7:00-7:00 | 62.1 | 43.5 | 22.4 | 7.5 | 24.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 27.04.2023 | 7:15-7:15 | 61.1 | 41.3 | 21.4 | 7.7 | 23.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 03.05.2023 | 7:00-7:00 | 62.1 | 40.5 | 22.4 | 6.4 | 22.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 04.05.2023 | 7:15-7:15 | 67.5 | 42.6 | 20.2 | 6.6 | 22.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 10.05.2023 | 7:00-7:00 | 68.2 | 43.6 | 21.5 | 6.7 | 22.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 11.05.2023 | 7:15-7:15 | 66.3 | 44.2 | 22.5 | 6.8 | 23.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 17.05.2023 | 7:00-7:00 | 65.3 | 45.2 | 22.4 | 5.4 | 22.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 18.05.2023 | 7:15-7:15 | 68.8 | 44.1 | 22.7 | 5.4 | 22.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 24.05.2023 | 7:00-7:00 | 60.2 | 43.1 | 20.1 | 6.6 | 22.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 25.05.2023 | 7:15-7:15 | 62.6 | 42.1 | 21.1 | 6.8 | 23.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.21 AMBIENT AIR QUALITY DATA LOCATIO NAAQ4

Period: Mar 2023 – May 2023

Location: AAQ4 – Edayapalayam

Sampling Time: 24-hourly

| Ambient Air Monitoring Details | | Particulate Pollutant | | | Gaseous Pollutant | | | | | Metals Pollutant | | | Organic Pollutant | |
|--------------------------------|------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------|-------------------|
| Parameters | | SPM | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ | NH ₃ | O ₃ | CO | Pb | Ni | As | C ₆ H ₆ | BaP |
| NAAQ Norms | | 200 | 100 | 60 | 80 | 80 | 400 | 180 | 4 | 1 | 20 | 6 | 5 | 1 |
| Unit | | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ | ng/m ³ | ng/m ³ | µg/m ³ | ng/m ³ |
| Date | Period.hrs | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| 01.03.2023 | 7:00-7:00 | 63.4 | 48.0 | 22.3 | 7.4 | 19.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 02.03.2023 | 7:15-7:15 | 62.6 | 47.0 | 22.5 | 7.3 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 08.03.2023 | 7:00-7:00 | 62.2 | 42.4 | 21.6 | 7.9 | 22.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 09.03.2023 | 7:15-7:15 | 61.1 | 45.9 | 20.2 | 7.3 | 22.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 15.03.2023 | 7:00-7:00 | 60.6 | 45.4 | 21.9 | 8.6 | 23.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 16.03.2023 | 7:15-7:15 | 68.8 | 44.0 | 22.7 | 8.5 | 21.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 22.03.2023 | 7:00-7:00 | 67.4 | 47.1 | 21.5 | 7.6 | 20.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 23.03.2023 | 7:15-7:15 | 65.1 | 47.2 | 22.1 | 7.5 | 18.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 29.03.2023 | 7:00-7:00 | 64.2 | 44.5 | 22.1 | 7.6 | 19.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 30.03.2023 | 7:15-7:15 | 63.3 | 44.9 | 22.6 | 7.3 | 21.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 05.04.2023 | 7:00-7:00 | 61.2 | 49.2 | 22.1 | 8.1 | 20.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 06.04.2023 | 7:15-7:15 | 60.3 | 49.0 | 21.5 | 8.8 | 22.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 12.04.2023 | 7:00-7:00 | 62.0 | 48.4 | 22.2 | 7.7 | 21.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 13.04.2023 | 7:15-7:15 | 64.5 | 47.8 | 23.3 | 6.5 | 19.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 19.04.2023 | 7:00-7:00 | 68.2 | 48.2 | 22.1 | 9.1 | 20.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 20.04.2023 | 7:15-7:15 | 60.4 | 44.9 | 22.2 | 8.6 | 19.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 26.04.2023 | 7:00-7:00 | 62.4 | 45.5 | 20.8 | 8.6 | 22.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 27.04.2023 | 7:15-7:15 | 63.6 | 46.2 | 20.4 | 7.5 | 22.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 03.05.2023 | 7:00-7:00 | 60.6 | 45.4 | 22.3 | 8.9 | 23.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 04.05.2023 | 7:15-7:15 | 63.1 | 44.2 | 21.5 | 8.3 | 20.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 10.05.2023 | 7:00-7:00 | 62.1 | 45.0 | 22.2 | 8.4 | 20.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 11.05.2023 | 7:15-7:15 | 60.2 | 46.0 | 21.0 | 8.6 | 22.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 17.05.2023 | 7:00-7:00 | 62.9 | 46.5 | 21.7 | 8.2 | 22.0 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 18.05.2023 | 7:15-7:15 | 61.6 | 46.9 | 21.1 | 7.8 | 20.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 24.05.2023 | 7:00-7:00 | 68.3 | 45.2 | 22.1 | 8.8 | 21.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 25.05.2023 | 7:15-7:15 | 68.9 | 44.1 | 21.5 | 8.2 | 22.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)**Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.22 AMBIENT AIR QUALITY DATA LOCATIO NAAQ5

Period: Mar 2023 – May 2023

Location: AAQ5- Karacherry

Sampling Time: 24-hourly

| Ambient Air Monitoring Details | | Particulate Pollutant | | | Gaseous Pollutant | | | | | Metals Pollutant | | | Organic Pollutant | |
|--------------------------------|------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------|-------------------|
| Parameters | | SPM | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ | NH ₃ | O ₃ | CO | Pb | Ni | As | C ₆ H ₆ | BaP |
| NAAQ Norms | | 200 | 100 | 60 | 80 | 80 | 400 | 180 | 4 | 1 | 20 | 6 | 5 | 1 |
| Unit | | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ | ng/m ³ | ng/m ³ | µg/m ³ | ng/m ³ |
| Date | Period.hrs | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| 01.03.2023 | 7:00-7:00 | 68.1 | 44.2 | 20.5 | 8.6 | 20.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 02.03.2023 | 7:15-7:15 | 69.7 | 41.6 | 22.8 | 8.5 | 22.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 08.03.2023 | 7:00-7:00 | 67.4 | 42.6 | 20.2 | 7.9 | 22.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 09.03.2023 | 7:15-7:15 | 68.9 | 43.3 | 21.4 | 8.5 | 24.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 15.03.2023 | 7:00-7:00 | 68.2 | 42.5 | 22.6 | 8.4 | 25.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 16.03.2023 | 7:15-7:15 | 66.1 | 41.0 | 21.3 | 8.5 | 24.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 22.03.2023 | 7:00-7:00 | 63.2 | 41.5 | 21.1 | 7.6 | 22.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 23.03.2023 | 7:15-7:15 | 62.6 | 42.5 | 21.7 | 7.8 | 20.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 29.03.2023 | 7:00-7:00 | 62.5 | 45.3 | 23.2 | 8.4 | 21.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 30.03.2023 | 7:15-7:15 | 64.2 | 44.3 | 22.7 | 8.5 | 22.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 05.04.2023 | 7:00-7:00 | 62.5 | 43.6 | 22.8 | 7.8 | 20.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 06.04.2023 | 7:15-7:15 | 63.4 | 42.9 | 21.8 | 7.7 | 22.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 12.04.2023 | 7:00-7:00 | 68.8 | 42.1 | 22.2 | 7.9 | 21.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 13.04.2023 | 7:15-7:15 | 69.6 | 41.9 | 22.5 | 8.1 | 20.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 19.04.2023 | 7:00-7:00 | 68.1 | 41.3 | 21.2 | 7.7 | 21.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 20.04.2023 | 7:15-7:15 | 68.9 | 42.1 | 22.2 | 8.0 | 22.0 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 26.04.2023 | 7:00-7:00 | 68.5 | 39.9 | 21.9 | 8.2 | 22.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 27.04.2023 | 7:15-7:15 | 69.1 | 40.6 | 21.8 | 8.5 | 19.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 03.05.2023 | 7:00-7:00 | 69.9 | 40.4 | 20.3 | 7.6 | 18.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 04.05.2023 | 7:15-7:15 | 69.9 | 42.4 | 21.9 | 7.8 | 21.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 10.05.2023 | 7:00-7:00 | 68.2 | 40.1 | 21.6 | 7.7 | 21.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 11.05.2023 | 7:15-7:15 | 68.1 | 40.9 | 20.7 | 9.2 | 20.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 17.05.2023 | 7:00-7:00 | 69.9 | 41.8 | 21.6 | 7.8 | 19.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 18.05.2023 | 7:15-7:15 | 69.2 | 40.1 | 21.7 | 7.9 | 21.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 24.05.2023 | 7:00-7:00 | 68.3 | 41.5 | 21.4 | 7.6 | 21.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 25.05.2023 | 7:15-7:15 | 67.9 | 41.6 | 20.6 | 8.9 | 19.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.23 AMBIENT AIR QUALITY DATA LOCATIO NAAQ6

Period: Mar 2023 – May 2023

Location: AAQ6 – Panapatti

Sampling Time: 24-hourly

| Ambient Air Monitoring Details | | Particulate Pollutant | | | Gaseous Pollutant | | | | | Metals Pollutant | | | Organic Pollutant | |
|--------------------------------|------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------|-------------------|
| Parameters | | SPM | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ | NH ₃ | O ₃ | CO | Pb | Ni | As | C ₆ H ₆ | BaP |
| NAAQ Norms | | 200 | 100 | 60 | 80 | 80 | 400 | 180 | 4 | 1 | 20 | 6 | 5 | 1 |
| Unit | | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ | ng/m ³ | ng/m ³ | µg/m ³ | ng/m ³ |
| Date | Period.hrs | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| 01.03.2023 | 7:00-7:00 | 65.4 | 45.2 | 22.1 | 6.7 | 21.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 02.03.2023 | 7:15-7:15 | 62.8 | 43.9 | 22.0 | 6.5 | 20.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 08.03.2023 | 7:00-7:00 | 63.0 | 44.9 | 22.8 | 6.1 | 21.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 09.03.2023 | 7:15-7:15 | 62.8 | 43.8 | 22.0 | 6.6 | 22.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 15.03.2023 | 7:00-7:00 | 68.4 | 43.5 | 22.3 | 6.3 | 19.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 16.03.2023 | 7:15-7:15 | 68.8 | 43.8 | 22.7 | 5.4 | 19.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 22.03.2023 | 7:00-7:00 | 63.6 | 43.1 | 21.6 | 6.5 | 21.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 23.03.2023 | 7:15-7:15 | 62.7 | 43.0 | 22.1 | 6.7 | 20.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 29.03.2023 | 7:00-7:00 | 61.8 | 44.7 | 22.6 | 7.5 | 20.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 30.03.2023 | 7:15-7:15 | 67.0 | 42.6 | 21.5 | 6.8 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 05.04.2023 | 7:00-7:00 | 63.7 | 42.0 | 22.0 | 5.6 | 20.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 06.04.2023 | 7:15-7:15 | 62.8 | 43.6 | 22.4 | 7.4 | 22.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 12.04.2023 | 7:00-7:00 | 61.9 | 43.0 | 22.2 | 6.9 | 22.0 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 13.04.2023 | 7:15-7:15 | 68.7 | 44.6 | 21.7 | 6.8 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 19.04.2023 | 7:00-7:00 | 66.4 | 42.4 | 21.8 | 7.3 | 20.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 20.04.2023 | 7:15-7:15 | 65.8 | 42.7 | 21.9 | 7.6 | 22.0 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 26.04.2023 | 7:00-7:00 | 64.2 | 43.5 | 22.4 | 7.1 | 21.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 27.04.2023 | 7:15-7:15 | 64.5 | 44.3 | 22.7 | 7.5 | 21.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 03.05.2023 | 7:00-7:00 | 65.4 | 42.6 | 21.2 | 8.2 | 23.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 04.05.2023 | 7:15-7:15 | 63.8 | 42.9 | 21.9 | 7.3 | 22.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 10.05.2023 | 7:00-7:00 | 64.9 | 43.0 | 22.8 | 6.9 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 11.05.2023 | 7:15-7:15 | 67.8 | 44.6 | 21.8 | 6.2 | 22.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 17.05.2023 | 7:00-7:00 | 70.2 | 43.1 | 22.2 | 7.4 | 21.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 18.05.2023 | 7:15-7:15 | 72.4 | 42.1 | 20.7 | 7.0 | 21.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 24.05.2023 | 7:00-7:00 | 73.2 | 42.2 | 21.5 | 7.3 | 21.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 25.05.2023 | 7:15-7:15 | 75.2 | 43.5 | 22.4 | 7.4 | 22.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.24 AMBIENT AIR QUALITY DATA LOCATIO NAAQ7

Period: Mar 2023 – May 2023

Location: AAQ7 – Kallapalayam

Sampling Time: 24-hourly

| Ambient Air Monitoring Details | | Particulate Pollutant | | | Gaseous Pollutant | | | | | Metals Pollutant | | | Organic Pollutant | |
|--------------------------------|------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------|-------------------|
| Parameters | | SPM | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ | NH ₃ | O ₃ | CO | Pb | Ni | As | C ₆ H ₆ | BaP |
| NAAQ Norms | | 200 | 100 | 60 | 80 | 80 | 400 | 180 | 4 | 1 | 20 | 6 | 5 | 1 |
| Unit | | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ | ng/m ³ | ng/m ³ | µg/m ³ | ng/m ³ |
| Date | Period.hrs | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| 01.03.2023 | 7:00-7:00 | 66.9 | 44.8 | 22.6 | 7.3 | 19.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 02.03.2023 | 7:15-7:15 | 68.5 | 45.2 | 24.1 | 7.7 | 20.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 08.03.2023 | 7:00-7:00 | 69.4 | 43.1 | 24.2 | 7.5 | 18.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 09.03.2023 | 7:15-7:15 | 68.9 | 44.8 | 24.7 | 8.5 | 20.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 15.03.2023 | 7:00-7:00 | 67.5 | 47.3 | 23.1 | 9.5 | 21.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 16.03.2023 | 7:15-7:15 | 68.1 | 48.1 | 23.5 | 9.3 | 22.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 22.03.2023 | 7:00-7:00 | 66.8 | 43.1 | 22.7 | 8.5 | 19.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 23.03.2023 | 7:15-7:15 | 67.8 | 43.9 | 24.1 | 6.6 | 18.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 29.03.2023 | 7:00-7:00 | 68.1 | 43.2 | 23.6 | 7.8 | 17.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 30.03.2023 | 7:15-7:15 | 68.5 | 44.4 | 23.5 | 8.6 | 20.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 05.04.2023 | 7:00-7:00 | 69.2 | 45.1 | 23.5 | 7.3 | 21.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 06.04.2023 | 7:15-7:15 | 68.6 | 46.1 | 24.5 | 7.1 | 18.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 12.04.2023 | 7:00-7:00 | 68.5 | 42.5 | 24.2 | 7.3 | 22.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 13.04.2023 | 7:15-7:15 | 65.5 | 45.2 | 24.4 | 6.8 | 22.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 19.04.2023 | 7:00-7:00 | 69.2 | 43.8 | 23.1 | 6.6 | 20.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 20.04.2023 | 7:15-7:15 | 69.7 | 45.6 | 24.0 | 8.1 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 26.04.2023 | 7:00-7:00 | 67.8 | 46.1 | 24.2 | 7.4 | 22.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 27.04.2023 | 7:15-7:15 | 65.7 | 46.3 | 24.8 | 6.2 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 03.05.2023 | 7:00-7:00 | 64.4 | 43.2 | 23.5 | 7.3 | 20.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 04.05.2023 | 7:15-7:15 | 67.5 | 42.9 | 24.3 | 7.9 | 19.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 10.05.2023 | 7:00-7:00 | 65.3 | 43.2 | 24.5 | 8.4 | 22.7 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 11.05.2023 | 7:15-7:15 | 68.3 | 44.2 | 23.4 | 7.6 | 19.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 17.05.2023 | 7:00-7:00 | 72.5 | 45.8 | 24.5 | 7.4 | 19.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 18.05.2023 | 7:15-7:15 | 70.8 | 46.6 | 25.3 | 8.1 | 20.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 24.05.2023 | 7:00-7:00 | 72.8 | 48.6 | 24.0 | 6.5 | 21.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 25.05.2023 | 7:15-7:15 | 70.6 | 45.1 | 23.4 | 6.4 | 22.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.25 AMBIENT AIR QUALITY DATA LOCATIO NAAQ8

Period: Mar 2023 – May 2023

Location: AAQ8 – Okkilipalayam

Sampling Time: 24-hourly

| Ambient Air Monitoring Details | | Particulate Pollutant | | | Gaseous Pollutant | | | | | Metals Pollutant | | | Organic Pollutant | |
|--------------------------------|------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------|-------------------|
| Parameters | | SPM | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ | NH ₃ | O ₃ | CO | Pb | Ni | As | C ₆ H ₆ | BaP |
| NAAQ Norms | | 200 | 100 | 60 | 80 | 80 | 400 | 180 | 4 | 1 | 20 | 6 | 5 | 1 |
| Unit | | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ | ng/m ³ | ng/m ³ | µg/m ³ | ng/m ³ |
| Date | Period.hrs | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| 01.03.2023 | 7:00-7:00 | 65.2 | 45.2 | 22.1 | 6.3 | 22.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 02.03.2023 | 7:15-7:15 | 62.8 | 41.7 | 23.5 | 7.8 | 23.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 08.03.2023 | 7:00-7:00 | 68.6 | 45.2 | 21.4 | 6.6 | 22.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 09.03.2023 | 7:15-7:15 | 67.8 | 43.2 | 22.1 | 5.4 | 22.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 15.03.2023 | 7:00-7:00 | 67.2 | 43.6 | 22.5 | 5.9 | 24.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 16.03.2023 | 7:15-7:15 | 67.8 | 42.3 | 21.9 | 6.4 | 23.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 22.03.2023 | 7:00-7:00 | 68.5 | 41.6 | 23.7 | 6.8 | 21.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 23.03.2023 | 7:15-7:15 | 68.7 | 42.0 | 21.3 | 5.3 | 23.9 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 29.03.2023 | 7:00-7:00 | 67.5 | 42.9 | 22.5 | 5.4 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 30.03.2023 | 7:15-7:15 | 66.8 | 43.6 | 23.0 | 5.8 | 21.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 05.04.2023 | 7:00-7:00 | 68.6 | 42.1 | 21.8 | 5.4 | 23.8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 06.04.2023 | 7:15-7:15 | 67.8 | 43.6 | 24.2 | 6.9 | 24.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 12.04.2023 | 7:00-7:00 | 66.6 | 41.5 | 22.5 | 5.2 | 22.0 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 13.04.2023 | 7:15-7:15 | 69.2 | 41.5 | 21.6 | 5.7 | 21.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 19.04.2023 | 7:00-7:00 | 65.1 | 42.4 | 22.4 | 5.3 | 23.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 20.04.2023 | 7:15-7:15 | 67.4 | 43.9 | 23.9 | 7.6 | 23.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 26.04.2023 | 7:00-7:00 | 68.5 | 41.4 | 21.4 | 8.5 | 22.0 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 27.04.2023 | 7:15-7:15 | 69.3 | 42.5 | 21.7 | 8.8 | 21.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 03.05.2023 | 7:00-7:00 | 67.7 | 43.5 | 22.1 | 7.2 | 22.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 04.05.2023 | 7:15-7:15 | 66.5 | 42.8 | 24.1 | 7.6 | 23.3 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 10.05.2023 | 7:00-7:00 | 69.5 | 41.6 | 21.4 | 8.6 | 20.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 11.05.2023 | 7:15-7:15 | 68.2 | 44.5 | 23.9 | 8.7 | 24.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 17.05.2023 | 7:00-7:00 | 67.1 | 43.8 | 21.4 | 7.5 | 24.6 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 18.05.2023 | 7:15-7:15 | 66.6 | 42.8 | 22.1 | 7.2 | 23.5 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 24.05.2023 | 7:00-7:00 | 69.5 | 43.7 | 23.4 | 8.5 | 25.2 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| 25.05.2023 | 7:15-7:15 | 67.7 | 42.8 | 21.1 | 8.7 | 24.1 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.27: SUMMARY OF AAQ 1 to AAQ 8

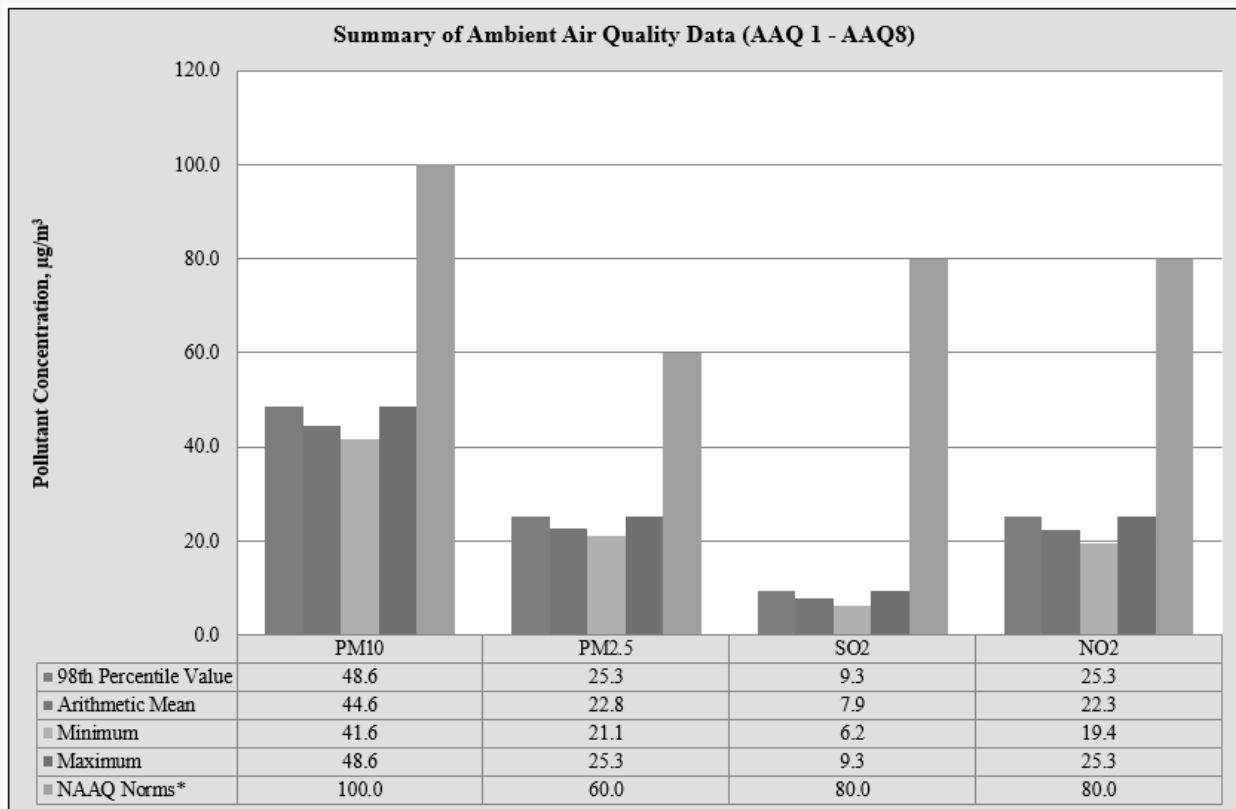
| PM10 | AAQ1 | AAQ2 | AAQ3 | AAQ4 | AAQ5 | AAQ6 | AAQ7 | AAQ8 |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Arithmetic Mean | 45.8 | 43.3 | 43.1 | 46.1 | 42.0 | 42.0 | 44.9 | 42.9 |
| Minimum | 44.7 | 41.0 | 40.4 | 42.4 | 39.9 | 42.0 | 42.5 | 41.4 |
| Maximum | 46.9 | 45.4 | 45.2 | 49.2 | 45.3 | 45.2 | 48.6 | 45.2 |
| NAAQ Norms | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| PM2.5 | AAQ1 | AAQ2 | AAQ3 | AAQ4 | AAQ5 | AAQ6 | AAQ7 | AAQ8 |
| Arithmetic Mean | 23.7 | 21.6 | 22.2 | 21.8 | 42.0 | 43.4 | 23.9 | 22.4 |
| Minimum | 22.1 | 20.3 | 20.1 | 20.2 | 20.2 | 20.7 | 22.6 | 21.1 |
| Maximum | 24.8 | 22.8 | 26.3 | 23.3 | 23.2 | 22.8 | 25.3 | 24.2 |
| NAAQ Norms | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| SO2 | AAQ1 | AAQ2 | AAQ3 | AAQ4 | AAQ5 | AAQ6 | AAQ7 | AAQ8 |
| Arithmetic Mean | 8.1 | 8.6 | 6.4 | 8.0 | 8.1 | 6.9 | 7.6 | 6.9 |
| Minimum | 6.1 | 8.0 | 5.2 | 6.5 | 7.6 | 5.4 | 6.2 | 5.2 |
| Maximum | 9.8 | 9.4 | 7.7 | 9.1 | 9.2 | 8.2 | 9.5 | 8.8 |
| NAAQ Norms | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |
| NO2 | AAQ1 | AAQ2 | AAQ3 | AAQ4 | AAQ5 | AAQ6 | AAQ7 | AAQ8 |
| Arithmetic Mean | 23.8 | 20.5 | 22.2 | 21.3 | 21.7 | 21.5 | 20.6 | 22.9 |
| Minimum | 21.5 | 18.1 | 18.5 | 18.9 | 18.9 | 19.1 | 17.8 | 20.5 |
| Maximum | 27.6 | 23.6 | 24.6 | 23.9 | 25.3 | 23.4 | 22.7 | 25.2 |
| NAAQ Norms | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |

TABLE 3.28: ABSTRACT OF AMBIENT AIR QUALITY DATA

| 1 | Parameter | PM10 | PM2.5 | SO₂ | NO₂ |
|----|-----------------------------------|-------------|--------------|-----------------------|-----------------------|
| 2 | No. of Observations | 260 | 260 | 260 | 260 |
| 3 | 10 th Percentile Value | 41.6 | 21.1 | 6.2 | 19.4 |
| 4 | 20 th Percentile Value | 42.3 | 21.4 | 6.6 | 20.3 |
| 5 | 30 th Percentile Value | 42.8 | 21.7 | 7.0 | 20.9 |
| 6 | 40 th Percentile Value | 43.2 | 22.1 | 7.4 | 21.5 |
| 7 | 50 th Percentile Value | 43.8 | 22.2 | 7.7 | 21.8 |
| 8 | 60 th Percentile Value | 44.3 | 22.5 | 7.9 | 22.2 |
| 9 | 70 th Percentile Value | 45.0 | 22.8 | 8.4 | 22.5 |
| 10 | 80 th Percentile Value | 45.3 | 23.5 | 8.5 | 23.2 |
| 11 | 90 th Percentile Value | 46.3 | 24.2 | 8.7 | 23.9 |

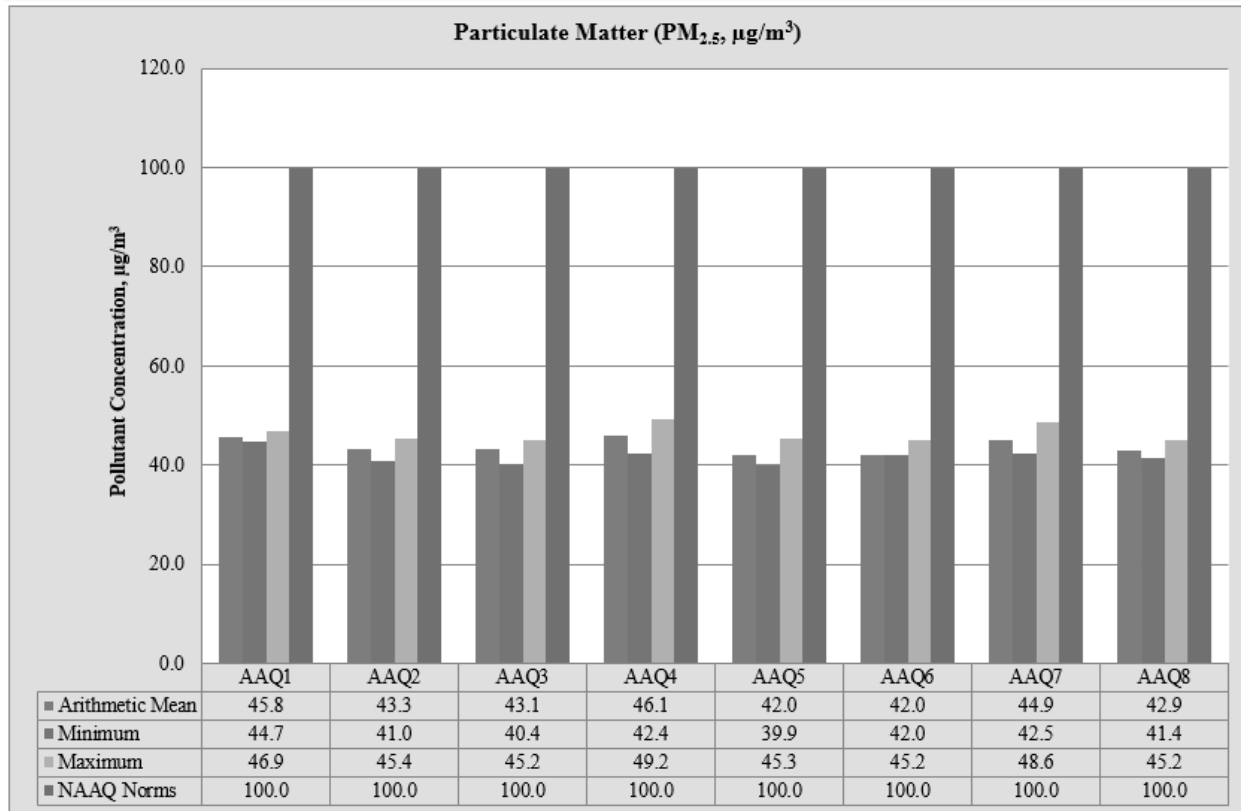
| | | | | | |
|----|-----------------------------------|--------------|-------------|-------------|-------------|
| 12 | 95 th Percentile Value | 47.3 | 24.5 | 9.0 | 24.6 |
| 13 | 98 th Percentile Value | 48.6 | 25.3 | 9.3 | 25.3 |
| 14 | Arithmetic Mean | 44.6 | 22.8 | 7.9 | 22.3 |
| 15 | Geometric Mean | 44.5 | 22.8 | 7.8 | 22.3 |
| 16 | Standard Deviation | 2.2 | 1.4 | 1.0 | 1.8 |
| 17 | Minimum | 41.6 | 21.1 | 6.2 | 19.4 |
| 18 | Maximum | 48.6 | 25.3 | 9.3 | 25.3 |
| 19 | NAAQ Norms* | 100.0 | 60.0 | 80.0 | 80.0 |
| | % Values exceeding Norms* | 0.0 | 0.0 | 0.0 | 0.0 |

FIGURE 3.16: BAR DIAGRAM OF SUMMARY OF AAQ 1 – AAQ8



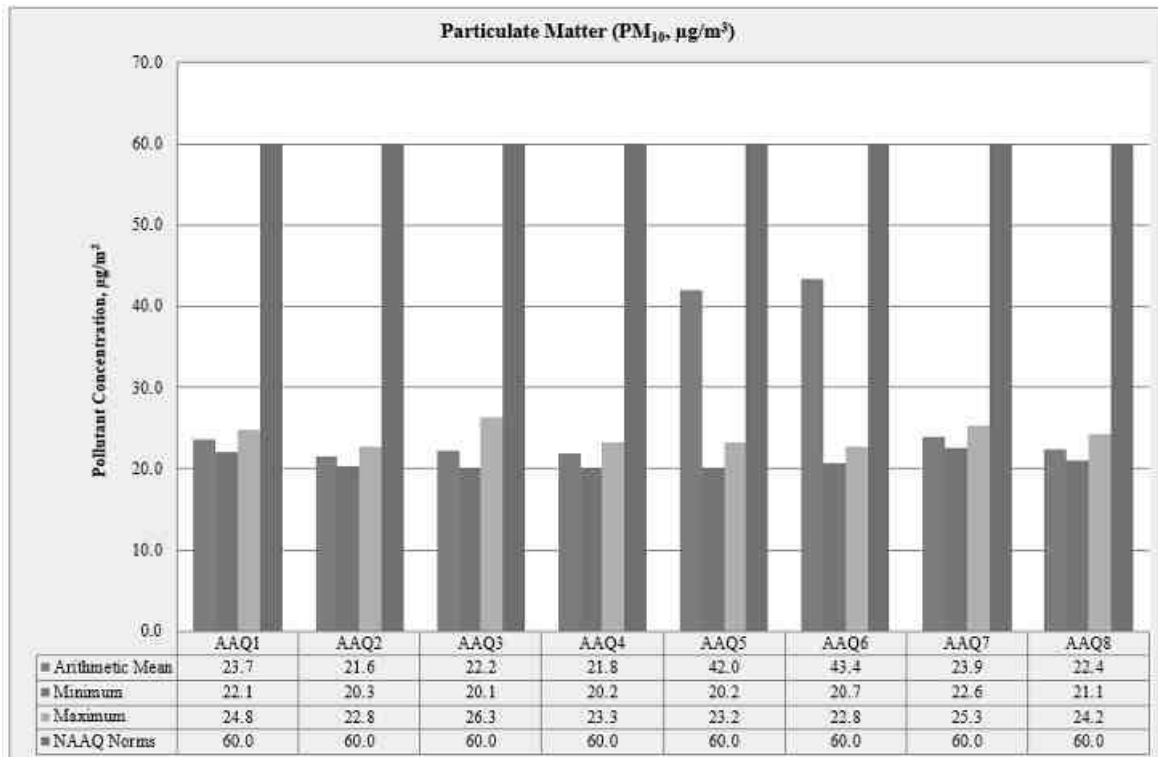
Source: Table 3.17 to 3.27

FIGURE 3.17: BAR DIAGRAM OF PARTICULATE MATTER PM_{2.5}



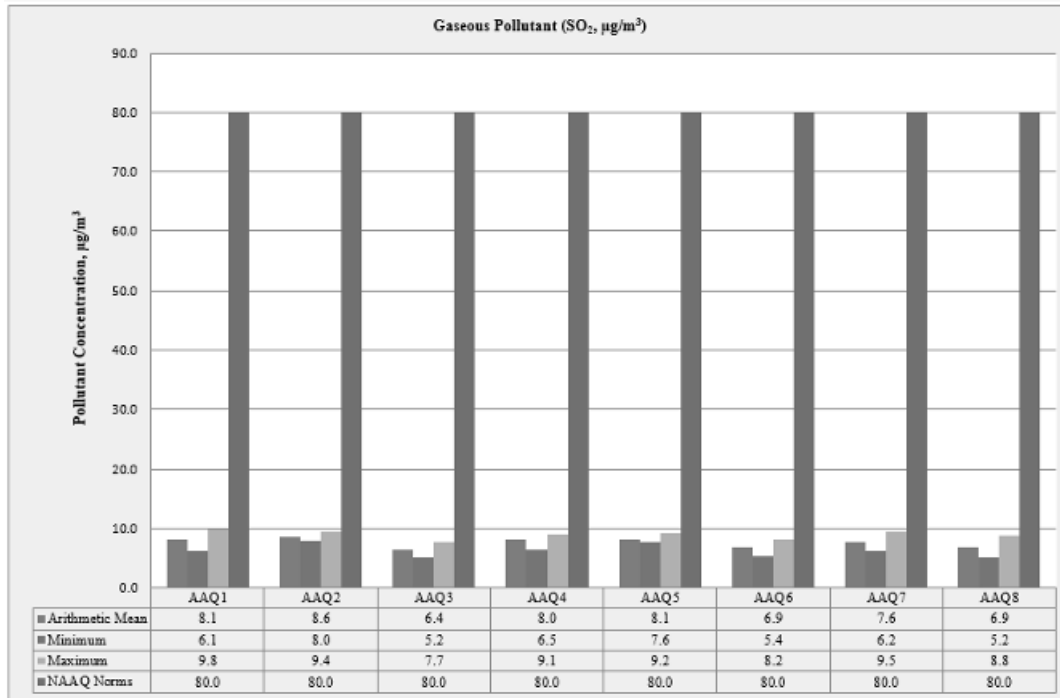
Source: Table 3.17 to 3.27

FIGURE 3.18: BAR DIAGRAM OF PARTICULATE MATTER PM₁₀



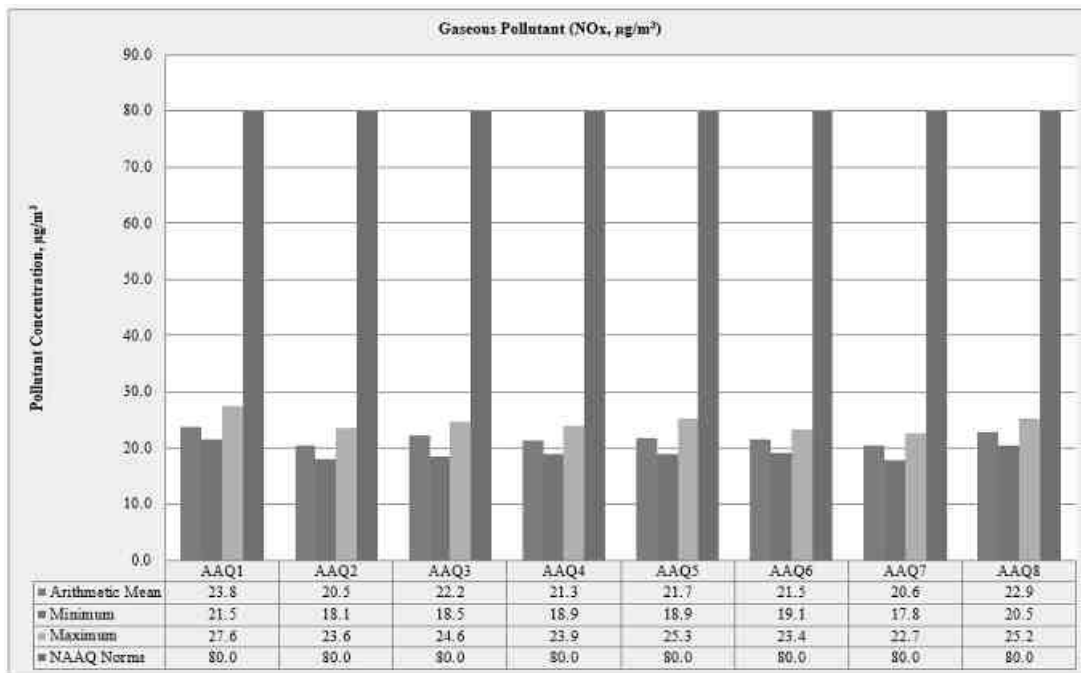
Source: Table 3.17 to 3.27

FIGURE 3.19: BAR DIAGRAM OF GASEOUS POLLUTANT SO₂



Source: Table 3.17 to 3.27

FIGURE 3.20: BAR DIAGRAM OF GASEOUS POLLUTANT NO_x



Source: Table 3.17 to 3.27

3.3.6 Interpretations & Conclusion

As per monitoring data, PM₁₀ ranges from 39.9 µg/m³ to 49.2 µg/m³, PM_{2.5} data ranges from 20.1 µg/m³ to 26.3 µg/m³, SO₂ ranges from 5.2µg/m³ to 9.8 µg/m³ and NO₂ data ranges from 17.8 µg/m³ to 27.6 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

3.3.7 FUGITIVE DUST EMISSION –

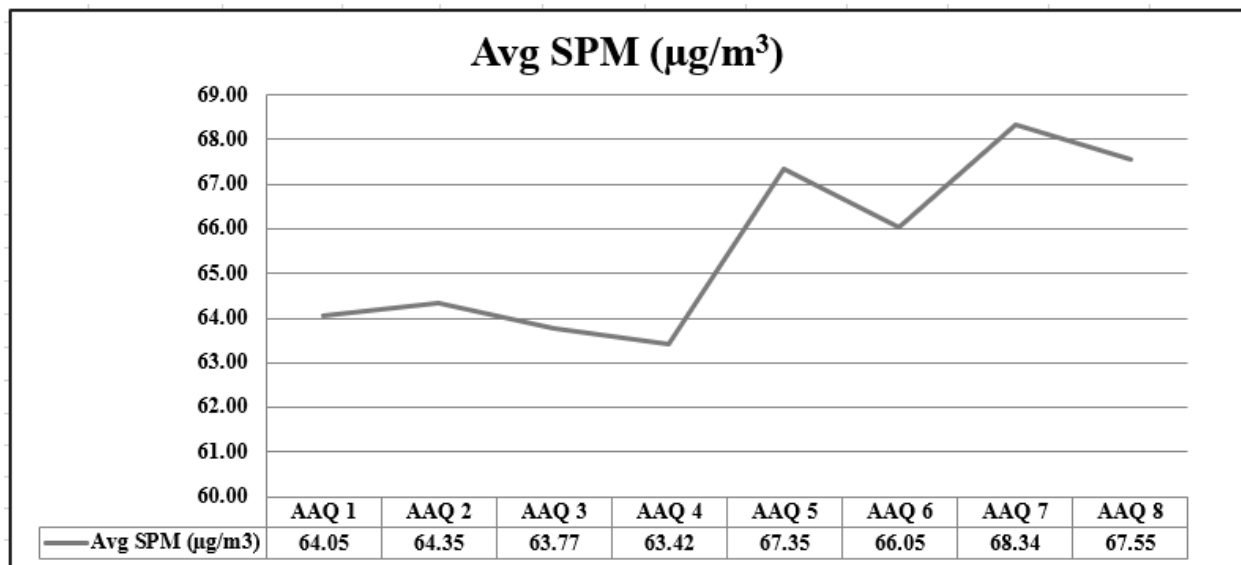
Fugitive dust was recorded at 8AAQ monitoring stations for 30 days average during the study period.

TABLE 3.29: AVERAGE FUGITIVE DUST SAMPLE VALUES

| AAQ Locations | Avg SPM (µg/m ³) |
|---------------|------------------------------|
| AAQ 1 | 64.05 |
| AAQ 2 | 64.35 |
| AAQ 3 | 63.77 |
| AAQ 4 | 63.42 |
| AAQ 5 | 67.35 |
| AAQ 6 | 66.05 |
| AAQ7 | 68.34 |
| AAQ 8 | 67.55 |

Source: Onsite monitoring/ sampling by EHS 360 LABS PRIVATE LIMITED

FIGURE 3.21: LINE DIAGRAM OF AVERAGE SPM VALUES

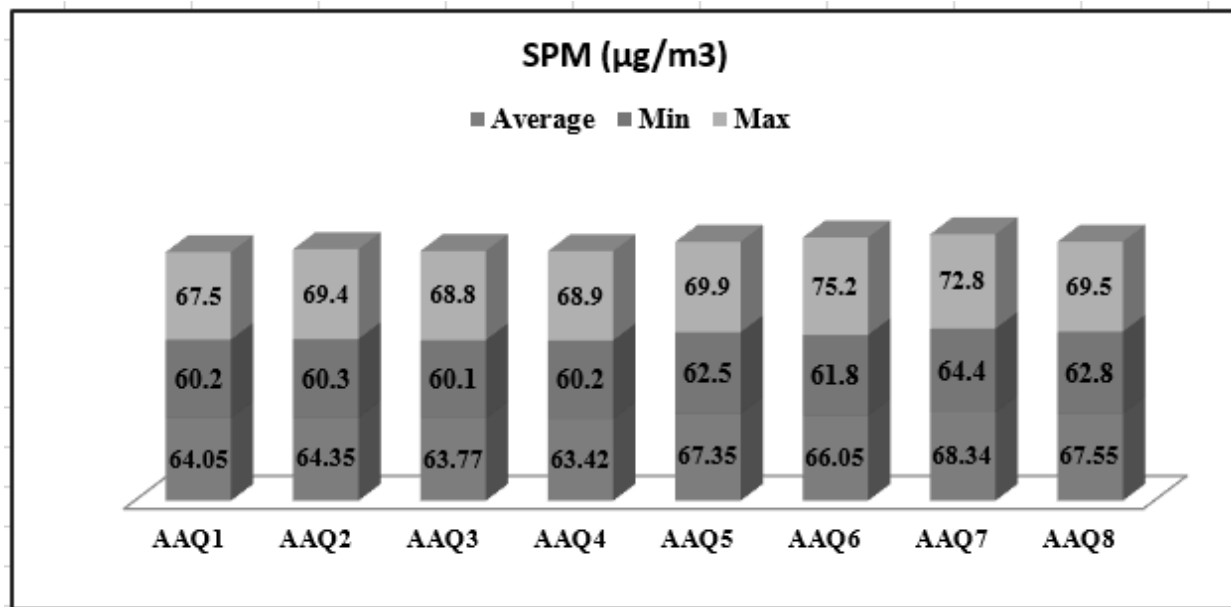


Source: Table 3.28

TABLE 3.30: FUGITIVE DUST SAMPLE VALUES IN µg/m³

| SPM (µg/m ³) | AAQ1 | AAQ2 | AAQ3 | AAQ4 | AAQ5 | AAQ6 | AAQ7 | AAQ8 |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Average | 64.05 | 64.35 | 63.77 | 63.42 | 67.35 | 66.05 | 68.34 | 67.55 |
| Min | 60.2 | 60.3 | 60.1 | 60.2 | 62.5 | 61.8 | 64.4 | 62.8 |
| Max | 67.5 | 69.4 | 68.8 | 68.9 | 69.9 | 75.2 | 72.8 | 69.5 |

Source: Calculations from Lab Analysis Reports

FIGURE 3.22: BAR DIAGRAM OF SPM VALUES

Source: Table 3.29

3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in study area, the environmental assessment of noise from the mining activity and vehicular traffic can be undertaken by taking into consideration various factors like potential damage to hearing, physiological responses, and annoyance and general community responses.

The main objective of noise monitoring in the study area is to establish the baseline noise level and assess the impact of the total noise expected to be generated during the project operations around the project site.

3.4.1 Identification of Sampling Locations

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at Eight (8) locations. The noise level monitoring locations were carried out by covering commercial, residential, rural areas within the radius of 10km. A noise monitoring methodology was chosen such that it best suited the purpose and objectives of the study.

TABLE 3.31: DETAILS OF SURFACE NOISE MONITORING LOCATIONS

| S. No | Location Code | Monitoring Locations | Distance & Direction | Coordinates |
|-------|---------------|----------------------|----------------------|-----------------------------|
| 1 | N1 | Core Zone | Project Area | 10°54'24.74"N 77° 4'5.33"E |
| 2 | N2 | Core Zone | Near Project Area | 10°54'6.48"N 77° 3'58.02"E |
| 3 | N3 | Chettipalayam | 3.0km NW | 10°54'37.18"N 77° 2'20.24"E |
| 4 | N4 | Edayapalayam | 4.5km NE | 10°55'16.54"N 77° 6'30.33"E |
| 5 | N5 | Karacherry | 4km South | 10°52'18.61"N 77° 3'37.66"E |
| 6 | N6 | Panapatti | 4.5km SE | 10°52'36.01"N 77° 5'55.92"E |
| 7 | N7 | Kallapalayam | 4.8km North | 10°57'3.85"N 77° 4'37.89"E |
| 8 | N8 | Okkilpalayam | 5.5km SW | 10°53'36.71"N 77° 1'10.94"E |

Source: On-site monitoring/sampling by EHS 360 LABS PRIVATE LIMITED in association with GEMS.

3.4.2 Method of Monitoring

Digital Sound Level Meter was used for the study. All reading was taken on the 'A-Weighting' frequency network, at a height of 1.5 meters from ground level. The sound level meter does not give a steady and consistent reading and it is quite difficult to assess the actual sound level over the entire monitoring period. To mitigate this shortcoming, the Continuous Equivalent Sound level, indicated by L_{eq} , is used. Equivalent sound level, ' L_{eq} ', can be obtained from variable sound pressure level, ' L ', over a time period by using following equation. The equivalent noise level is defined mathematically as,

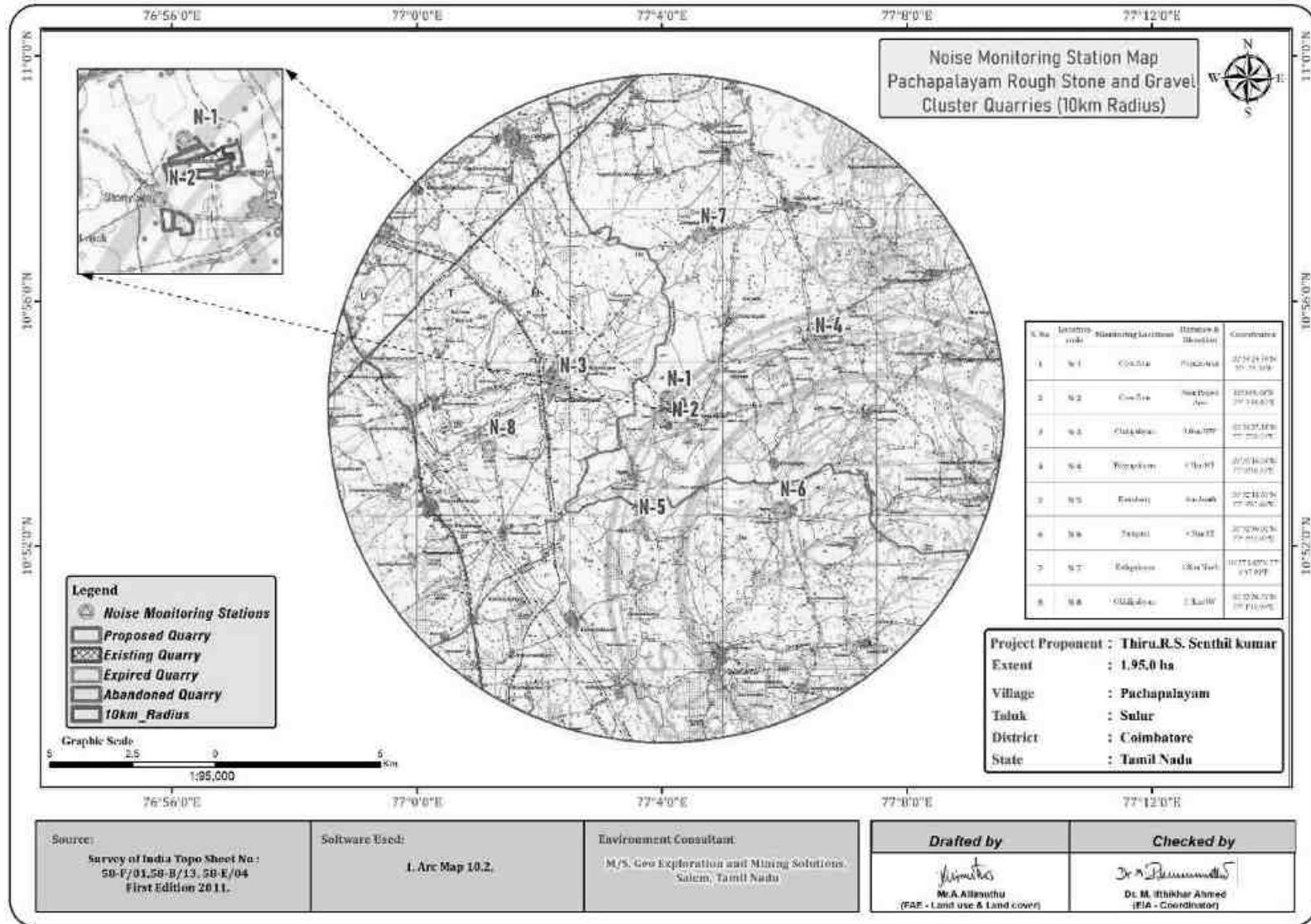
$$L_{eq} = 10 \text{ Log } L / T \sum (10L_n/10)$$

Where L = Sound pressure level at function of time dB (A)

T = Time interval of observation

Measured noise levels, displayed as a function of time, is useful for describing the acoustical climate of the community. Noise levels recorded at each station with a time interval of about 60minutes are computed for equivalent noise levels. Equivalent noise level is a single number descriptor for describing time varying noise levels.

FIGURE 3.23: NOISE MONITORING STATIONS AROUND 10 KM RADIUS



3.4.3 Analysis of Ambient Noise Level in the Study Area

The Digital Sound pressure level has been measured by a sound level meter (Model: HTC SL-1352)

An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.32.

Day time: 6:00 hours to 22.00 hours.

Night time: 22:00 hours to 6.00 hours.

TABLE 3.32: AMBIENT NOISE QUALITY RESULT

| S. No | Locations | Noise level (dB (A) Leq) | | Ambient Noise Standards |
|-------|---------------|--------------------------|------------|--|
| | | Day Time | Night Time | |
| 1 | Core Zone | 42.1 | 35.1 | Industrial Day Time- 75 dB (A) Night Time- 70 dB (A) |
| 2 | Core Zone | 41.4 | 38.9 | |
| 3 | Chettipalayam | 40.9 | 36.9 | |
| 4 | Edayapalayam | 40.3 | 36.2 | |
| 5 | Karacherry | 39.9 | 37.1 | Residential Day Time- 55 dB (A) Night Time- 45 dB (A) |
| 6 | Panapatti | 38.5 | 35.2 | |
| 7 | Kallapalayam | 39.5 | 37.2 | |
| 8 | Okkilipalayam | 39.0 | 37.8 | |

Source: On-site monitoring/sampling by EHS 360 LABS PRIVATE LIMITED in association with GEMS

FIGURE 3.24: DAY TIME NOISE LEVELS IN CORE AND BUFFER ZONE

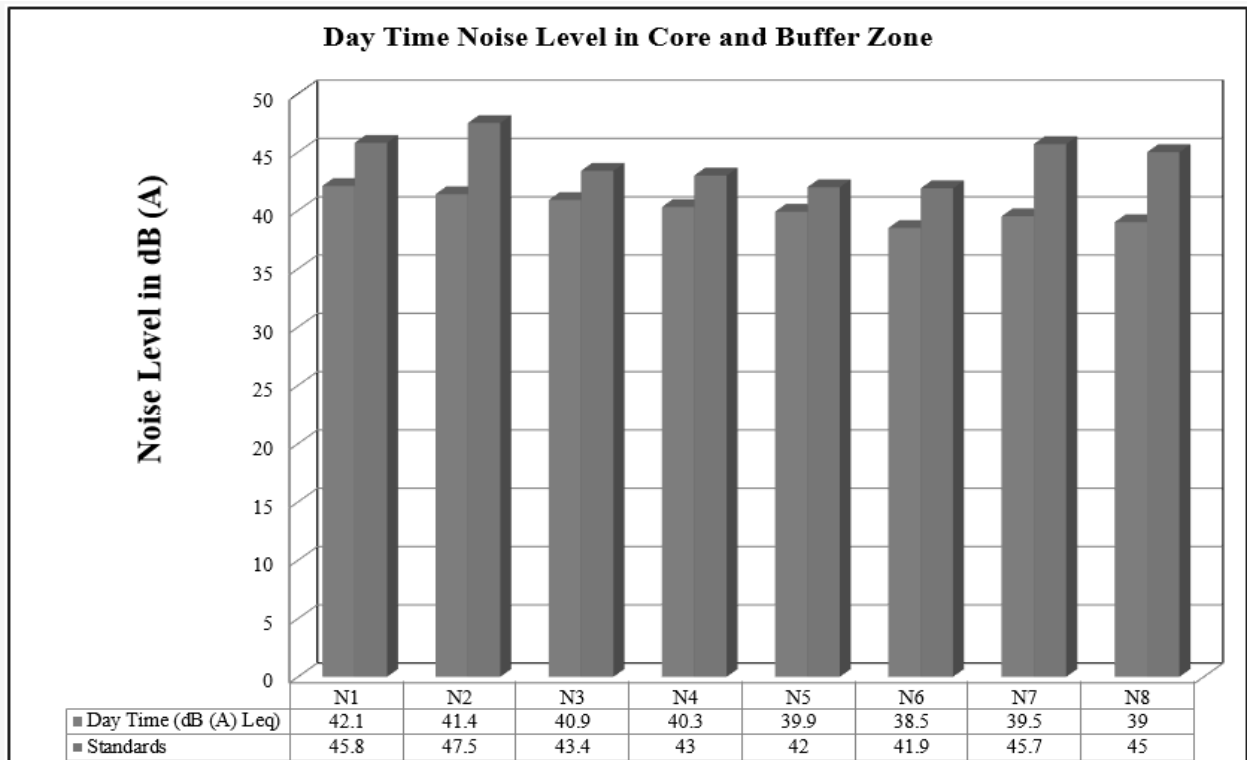
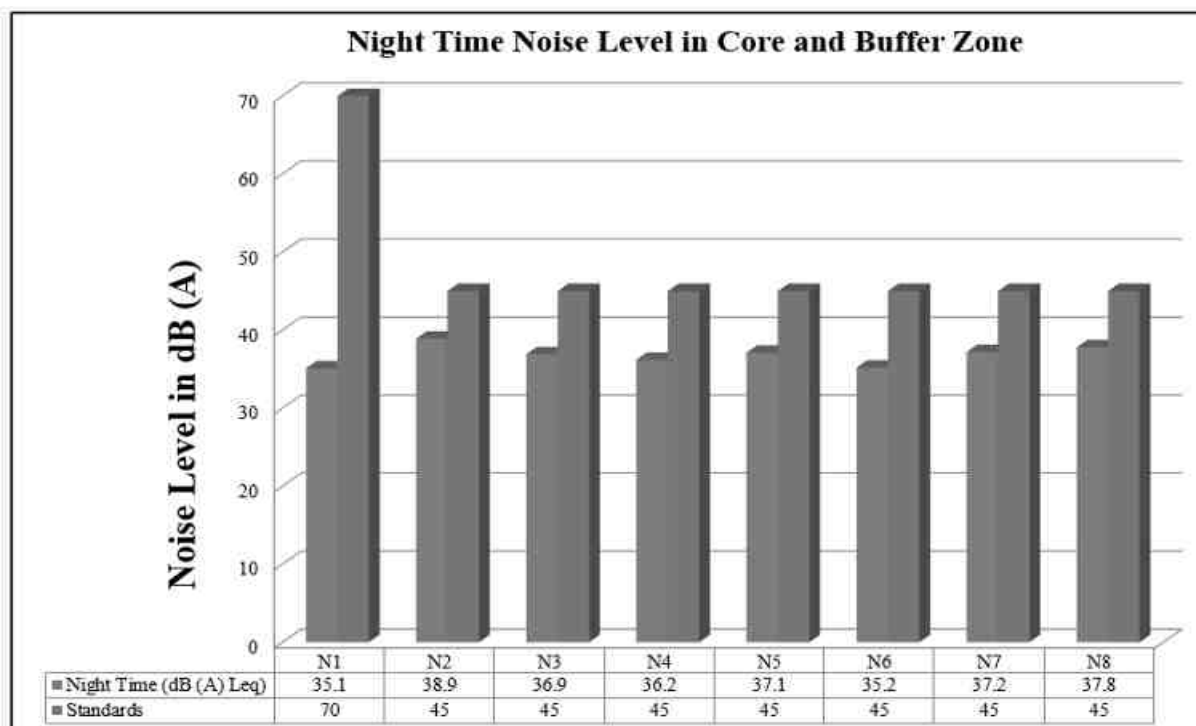


FIGURE 3.25: NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE

3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 8 (Eight) locations around the proposed project area. Noise levels recorded in core zone during day time were from 42.1 dB (A) Leq and during night time were from 35.1 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 38.5 to 39.7 dB (A) Leq and during night time were from 36.2 to 38.9 dB (A) Leq.

Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

3.5 ECOLOGICAL ENVIRONMENT

3.5.1. Study area Ecology

The Custer area extent of 13.64.44Ha of Rough stone and Gravel quarries has an impact on the diversity of flora and fauna of the surrounding area. But present work was carried out on the detailed study of the impacts of the Rough stone and Gravel quarry on the ecology and biodiversity of the core lease area with the proper mitigation and sustainable management plan. The proposed area applied area exhibits plain topography. The following methods were applied during the baseline study of flora, fauna, and diversity assessment.

3.5.2. Objectives of Biological Studies

- To study the likely impact of the proposed mining project on the local biodiversity and to suggest mitigation measures, if required, for vulnerable biota.
- Undertake intensive field survey to assess the status of floral & faunal component in different habitats in the core and buffer areas of the project site.
- Identification and listing of flora and fauna which are important as per the Wildlife (Protection) Act 1972.
- Suggest Wildlife conservation (species specific/habitat specific) and management plan for the threatened (critically endangered & endangered species - schedule I) faunal species if any reported within the study area.
- To identify the impacts of mining on agricultural lands and how it affects.
- Proper collection of information about wildlife Sanctuaries/ national parks/ biosphere reserves of the project area.
- Devise management & conservation measures for biodiversity.

3.5.3. Methodology of Sampling

Identification of vegetation in relation to the natural flora and crops was conducted through reconnaissance field surveys and onsite observations in core and buffer zone. The plant species identification was done based on the reference materials and also by examining the morphological characteristics and reproductive materials i.e. flowers, fruits and seeds. Land use pattern in relation to agriculture crop varieties were identified through physical verification of land and interaction with local villagers.

The faunal elements (animal species) of core and buffer zone were identified by direct sightings or indirect evidences viz. pug marks, skeletal remains, scats and droppings etc. (Jayson and Easa 2004). Standard binocular was used for the observations. The authenticity of faunal elements occurrence was confirmed by interaction with the local people. Avifauna identification was done with pictorial descriptions of published literature. Information pertaining to existence of any migratory corridors and paths were obtained from local inhabitants. The status of each faunal element was determined and the Wildlife schedule category was ascertained as per the IUCN-Red Data Book and Indian wildlife (Protection) Act, 1972.

Plot method is used in the floral documentation in the core and buffer zone. For trees (10x10-m), shrubs (5x5-m) and herbs (1x1-m) plots were taken. Birds and butterflies were mainly focused during faunal assessment, transect method was employed for birds and butterflies. Transect is a path along which one counts and records the occurrence of an individual for study. A straight-line walk covering desired distance, within a time span of one hour to 30 minutes was carried out in the proposed region. Bird species were recorded during the hours of peak activity. 0700 to 1100 Hrs and 1430 to 1730 Hrs (Bibby et al. 2000).

Direct observations and bird calls were used for bird documentation. Same transects were used for counting butterflies. Opportunistic observations were made for Amphibians, reptiles and ordinates. Presence of mammals was recorded by direct and indirect signs. All possible transects were taken for birds and butterflies. Birds and butterflies were classified into species level. Recorded bird species were identified to species level using standard books (Ali & Ripley 1987, Grimmett et al., 2016).

3.5.3.1. Sampling

A stratified simple random sampling procedure was employed to obtain a sample from study area. The study area was further stratified in different land use/ecosystems.

3.5.3.2 Sampling Size

Keeping in mind both random sampling technique and covering all land use patterns for the study following sampling locations were chosen depending up on the area of the proposed site.

3.5.3.3. Timing of Study

The study was carried out during morning and evening hours, to cover the different activity phases for important species such as time resting, feeding, hunting, and daily movements.

3.5.3.4. Observations from Sampling

The various observations relating to flora and fauna species are discussed in detail below, in separate sections.

3.5.3.5. Equipment/ References

- Canon Mark III Camera with 50-500mm lens– Snap shots taken
- Leica Binoculars (8x 20) to spot/identify species
- IUCN Red Data Book – <https://www.iucnredlist.org/species>

Ornithological/Entomological/Herpetological/Mammalian catalogues and pictorial descriptions from various authors and websites are followed for species identification.

3.5.4. Part I Field Sampling Techniques

3.5.4.1. Transect walk – Birds

Six no transect lines with varying length (100m-300m) and fixed width (2m) were laid which cuts through the core and buffer areas of proposed site. The transect surveys were conducted from 0700 to 1100Hrs and 1430 to 1730Hrs (Bibby et al. 2000). All avifauna found along these transects were recorded for analysing the data. Counts were conducted while there is no heavy rain, mist or strong wind.

3.5.4.2. Modified Pollard Walk – for Butterflies

The Modified Pollard Walk (Pollard 1977, 1993, Walpole 1999) using fixed width transect walk method was employed to investigate butterfly spatial distribution, diversity and abundance at the different survey sites.

3.5.4.3. Visual Encounter Survey (VES) - reptiles and amphibians

VES is a time-constrained sampling technique (Campbell and Christman, 1982; Corn and Bury, 1990). It needs a systematic search through an area or habitat for a prescribed time period (Campbell and Christman, 1982). The result of VES is measured against the time spent for the search. VES technique is one of the simplest methods and an appropriate technique for both inventory and monitoring Herpetofauna (Heyer et al. 1994).

3.5.4.4. Observational methods- Mammals

For the purpose of recording mammals, we used two different observational techniques: (1) direct observations, and (2) recording of occurrences like holes, markings, scats, hairs, and spines (Menon 2003). For identification confirmations, photographs with a scale reference were used, and locations were recorded using a portable GPS device. Indigenous knowledge particularly that of the locals, was occasionally employed to compile a preliminary list of species and/or aid in the recognition of indicators.

3.5.4.5. Multiple Stage Quadrat – Vegetation

A variety of habitat or vegetation structure variables were measured using the Multiple Stage Quadrat sampling protocol (Sykes and Horrill 1977). All of those areas were sampled, and the major corners were temporarily delineated with colored ribbons. Each site was identified in the field using a compass and clinometer, and the plot's latitude, longitude, and elevation were recorded using a handheld Global Positioning System (Garmin 12XL).

3.5.5. Flora

The quadrat sampling technique was used for sampling vegetation. Sampling quadrats of the regular shape of dimensions 10 × 10 m, 5 × 5 m, and 1 × 1 m, were nested within each other and were defined as the units for sampling the area and measuring the diversity of trees, Shrubs, and herbs respectively.

Table No: 3.33. Flora in the Core zone of Rough Stone and gravel quarries

| SI.No | English Name | Vernacular Name | Scientific Name | Family Name |
|---------------|----------------------|-----------------|-----------------------------|---------------|
| Trees | | | | |
| 1. | Velvet mesquite | Mullu Maram | <i>Prosopis juliflora</i> | Fabaceae |
| 2. | Wild Tamarind | Savundal | <i>Leucaena latisiliqua</i> | Mimosaceae |
| 3. | Neem or Indian lilac | Vembu maram | <i>Azadirachta indica</i> | Meliaceae |
| 4. | Millettia Pinnata | Pongam oiltree | <i>Pongamia pinnata</i> | Fabaceae |
| 5. | Malayan Cherry | Ten Pazham | <i>Muntingia calabura</i> | Muntingiaceae |
| 6. | Coconut | Thennai maram | <i>Cocos nucifera</i> | Arecaceae |
| Shrubs | | | | |
| 1. | Avaram | Avarai | <i>Senna auriculata</i> | Fabaceae |
| 2. | Devil's trumpet | Umathai | <i>Datura metel</i> | Solanaceae |
| 3. | Triangular spruce | Chaturakalli | <i>Euphorbia antiquorum</i> | Euphorbiaceae |
| 4. | Milk Weed | Erukku | <i>Calotropis gigantea</i> | Apocynaceae |

| | | | | |
|----------------|---------------------|-----------------|------------------------------|---------------|
| 5. | West Indian Lantana | Unni chedi | <i>Lantana camara</i> | Verbenaceae |
| Herbs | | | | |
| 1. | Common leucas | Thumbai | <i>Leucas aspera</i> | Lamiaceae |
| 2. | Fish poison | Kolinchi | <i>Tephrosia purpurea</i> | Fabaceae |
| 3. | Coat buttons | Thatha poo | <i>Tridax procumbens</i> | Asteraceae |
| 4. | Devil's thorn | Nerunji | <i>Tribulus terrestris</i> | Zygophyllales |
| 5. | Asthma-plant | Amman pacharisi | <i>Euphorbia hirta</i> | Euphorbiaceae |
| 6. | Indian doab | Arugampul | <i>Cynodon dactylon</i> | Poaceae |
| 7. | Malabar catmint | Pie Viratti | <i>Anisomeles malabarica</i> | Lamiaceae |
| Grasses | | | | |
| 1. | Eragrostis | Pullu | <i>Eragrostis ferruginea</i> | Poaceae |
| 2. | Great brome | Thodappam | <i>Bromus diandrus</i> | Poaceae |
| Cactus | | | | |
| 1. | Indian fig opuntia | Sapathikalli | <i>Opuntia ficus-indica</i> | Cactaceae |

Sources: Species observation in the field study

3.5.6. Flora Composition in the Core Zone

Taxonomically a total of 21 species belonging to 16 families have been recorded from the core mining lease area. The proposed area applied area exhibits flat terrain. This land is fit for vegetation and cultivation. Based on the habitat classification of the enumerated plants the majority of species were Herbs 7 followed by Trees 6, Shrubs 5, Grasses 2, and Cactus 1. Details of flora with scientific name were mentioned in Table No. 3.33. The result of the core zone of flora studies shows that Fabaceae and Poaceae, Lamiaceae are the main dominating species in the study area mentioned in Table No.3.33 No species were found as threatened category.



a. *Azadirachta indica*



b. *Muntingia calabura*



c. Calotropis gigantea



d. Opuntia ficus-indica



e. Calotropis gigantea

Fig No: 3.26 Flora species observation in the core zone area

Table No: 3.34. Flora in Buffer Zone of Rough Stone and gravel quarries.

| Sl.No | English Name | Vernacular Name | Scientific Name | Family Name |
|--------------|----------------------|-----------------|--------------------------------|-----------------|
| Trees | | | | |
| 1. | Velvet mesquite | Mullu maram | <i>Prosopis juliflora</i> | Fabaceae |
| 2. | Neem or Indian lilac | Vembu | <i>Azadirachta indica</i> | Meliaceae |
| 3. | Asian Palmyra palm | Panai maram | <i>Borassus flabellifer</i> | Arecaceae |
| 4. | Mango | Manga | <i>Mangifera indica</i> | Anacardiaceae |
| 5. | Wild Tamarind | Savundal | <i>Leucaena latisiliqua</i> | Mimosaceae |
| 6. | Tree of heaven | Perumaram | <i>Ailanthus excelsa</i> | Simaroubaceae |
| 7. | Coconut | Thennai maram | <i>Cocos nucifera</i> | Arecaceae |
| 8. | Madras thorn | Kudukapuli | <i>Pithecellobium dulce</i> | Fabaceae |
| 9. | River tamarind | Soundal maram | <i>Leucaena leucocephala</i> | Fabaceae |
| 10. | Monkey pod tree | Thungumoonchi | <i>Samanea saman</i> | Fabaceae |
| 11. | Cutch tree | Karangali | <i>Acacia chundra</i> | Mimosaceae |
| 12. | Portia tree | Poovarasam | <i>Thespesia Populnea</i> | Malvaceae |
| 13. | Jack fruit | Bala maram | <i>Artocarpus integrifolia</i> | Moraceae |
| 14. | Indian siris | Vagai | <i>Albizia lebeck</i> | Mimosaceae |
| 15. | Bitter Albizia | Unja, Usilai | <i>Albizia amara</i> | Mimosaceae |
| 16. | Tree of heaven | Perumaram | <i>Ailanthus excelsa</i> | Simaroubaceae |
| 17. | Velvet mesquite | Mullu maram | <i>Prosopis juliflora</i> | Fabaceae |
| 18. | Peepal | Asoka maram | <i>Ficus religiosa</i> | legume |
| 19. | Lemon | Ezhumuchaipalam | <i>Citrus lemon</i> | Rutaceae |
| 20. | Jamun Fruit Plant | Naval maram | <i>Syzygium cumini</i> | Myrtaceae |
| 21. | Gum arabic tree | Karuvelam | <i>Vachellia nilotica</i> | Fabaceae |
| 22. | Rain Tree | Mazlhimaram | <i>Samanea saman</i> | Mimosaceae |
| 23. | Chinese chaste tree | Nochi | <i>Vitex negundo</i> | Verbenaceae |
| 24. | Yellow Flame | Vagai | <i>Peltophorum pterocarpum</i> | Caesalpiniaceae |
| 25. | Teak | Thekku | <i>Tectona grandis</i> | Verbenaceae |
| 26. | Indian mulberry | Nuna maram | <i>Morinda tinctoria</i> | Rubiaceae |
| 27. | Drumstick tree | Murunga maram | <i>Moringa oleifera</i> | Moringaceae |
| 28. | Guava | Koyya | <i>Psidium guajava</i> | Myrtaceae |
| 29. | Eucalyptus | Thailam maram | <i>Eucalyptus tereticornis</i> | Myrtaceae |
| 30. | Pongamia pinnata | Pongam | <i>Millettia pinnata</i> | Fabaceae |
| 31. | Horsetail She-oak | Savukku maram | <i>Casuarina equisetifolia</i> | Casuarinaceae |
| 32. | Henna | Marudaani | <i>Lawsonia inermis</i> | Lythraceae |
| 33. | Indian gooseberry | Nelli | <i>Phyllanthus emblica</i> | Phyllanthaceae |

| | | | | |
|---------------|-----------------------|------------------|---------------------------------|-----------------|
| 34. | Indian siris | Eayal vaagai | <i>Albizia lebbbeck</i> | Mimosaceae |
| 35. | Tamarind | Puliyamaram | <i>Tamarindus indica</i> | Legumes |
| 36. | Malayan Cherry | Ten Pazham | <i>Muntingia calabura</i> | Muntingiaceae |
| 37. | Sacred fig | Arasa maram | <i>Ficus religiosa</i> | Moraceae |
| 38. | Jujube Trees | Elantha Pazham | <i>Ziziphus Mauritiana</i> | Rhamnaceae |
| 39. | Papaya | Pappali maram | <i>Carica papaya</i> | Caricaceae |
| 40. | Mountain date | Malai eecham, | <i>Phoenix loureirii</i> | Arecaceae |
| 41. | Ceylon satinwood | Purush, Porasu | <i>Chloroxylon swietenia</i> | Rutaceae |
| 42. | Banana tree | Vazhaimaram | <i>Musa acuminata</i> | Musaceae |
| 43. | Custard apple | Seethapazham | <i>Annona reticulata</i> | Annonaceae |
| 44. | Manilkara zapota | Sapota | <i>Manilkara zapota</i> | Sapotaceae |
| 45. | Indian-almond | Badam | <i>Terminalia catappa</i> | Combretaceae |
| 46. | Banyan tree | Alamaram | <i>Ficus benghalensis</i> | Moraceae |
| 47. | Jack fruit | Palamaram | <i>Artocarpus heterophyllus</i> | Moraceae |
| Shrubs | | | | |
| 1. | Giant reed | Mudaampul | <i>Arundo donax</i> | Poaceae |
| 2. | Devil's trumpet | Umathai | <i>Datura metel</i> | Solanaceae |
| 3. | Senna Coffee | Payaveri | <i>Cassia occidentalis</i> | Caesalpiniaceae |
| 4. | Avaram | Avarai | <i>Senna auriculata</i> | Fabaceae |
| 5. | Triangular spruge | Chaturakalli | <i>Euphorbia antiquorum</i> | Euphorbiaceae |
| 6. | Water-hyacinth | Agayathamarai | <i>Eichhornia crassipes</i> | Pontederiaceae |
| 7. | Kangkong | Sarkaraivalli | <i>Ipomeae aquatica</i> | Convolvulaceae |
| 8. | Castor bean | Amanakku | <i>Ricinus communis</i> | Euphorbiaceae |
| 9. | Green amaranth | Kuppaikeerai | <i>Amaranthus vividis</i> | Amaranthaceae |
| 10. | Jungle geranium | Idly Poo | <i>Ixora coccinea</i> | Rubiaceae |
| 11. | Birch-Leaved Cat Tail | Aathaathazhai | <i>Acalypha fruticosa</i> | Euphorbiaceae |
| 12. | Horn of Plenty | Karu Umathai | <i>Datura metel</i> | Solanaceae |
| 13. | Devil's claw | Thael kodukkukai | <i>Martynia annua</i> | Pedaliaceae |
| 14. | Shoe flower | Chemparuthi | <i>Hibiscu rosa-sinensis</i> | Malvaceae |
| 15. | Asian Bushbeech | Sirukumalaan | <i>Gmelina asiatica</i> | Verbenaceae |
| 16. | Wild jasmine | Kattumalli | <i>Jasminum trichotomum</i> | Oleaceae |
| 17. | Milk Weed | Erukku | <i>Calotropis gigantea</i> | Apocynaceae |
| 18. | Rough cocklebur | Marlumuttu | <i>Xanthium indicum</i> | Asteraceae |
| 19. | Mexican prickly poppy | Bramathndu | <i>Argemone mexicana</i> | Papaveraceae |
| 20. | Orange Jasmine | Mock Orange | <i>Murraya paniculata</i> | Rutaceae |
| 21. | Puriging nut | Kattamanakku | <i>Jatropha curcas</i> | Euphorbiaceae |
| 22. | Cypress vine | Mayil maanikam | <i>Ipomoea quamoclit</i> | Convolvulaceae |

| | | | | |
|--------------|-------------------------|-----------------|---------------------------------|----------------|
| 23. | Indian Balm of Gilead | Mulkilluvai | <i>Commiphora berryi</i> | Burseraceae |
| 24. | Malabar catmint | Pei veratti | <i>Anisomeles malabarica</i> | Lamiaceae |
| 25. | Dwarf Heliotrope | Theelkoduku | <i>Heliotropium supinum</i> | Boraginaceae |
| 26. | Clustered Morning Glory | Onan kodi | <i>Ipomoea staphylina</i> | Convolvulaceae |
| 27. | Touch-me-not | Thottalchinungi | <i>Mimosa pudica</i> | Mimosaceae |
| 28. | Indian mallow | Thuthi | <i>Abutilon indicum</i> | Meliaceae |
| 29. | Night shade plan | Sundaika | <i>Solanum torvum</i> | Solanaceae |
| 30. | Rosary pea | Kundumani | <i>Abrus precatorius</i> | Fabaceae |
| 31. | Indian Oleander | Arali | <i>Nerium indicum</i> | Apocynaceae |
| 32. | West Indian Lantana | Unni chedi | <i>Lantana camara</i> | Verbenaceae |
| 33. | Rough cocklebur | Marlumutt | <i>Xanthium indicum</i> | Asteraceae |
| Herbs | | | | |
| 1. | Carrot grass | Partiniyam | <i>Parthenium hysterophorus</i> | Asteraceae |
| 2. | Sessile Joyweed | Ponnankanni | <i>Alternanthera sessilis</i> | Amaranthaceae |
| 3. | Billygoat weed | Pumpillu | <i>Ageratum conyzoides</i> | Asteraceae |
| 4. | Aloe barbadensis | Katrazhai | <i>Aloe vera</i> | Asphodelaceae |
| 5. | Madagascar Periwinkle | Nithyakalyani | <i>Catharanthus roseus</i> | Apocynaceae |
| 6. | Indian Mercury | Kuppamani | <i>Acalypha indica</i> | Euphorbiaceae |
| 7. | Indian nettle | Nayuruvi | <i>Achyranthes aspera</i> | Amaranthaceae |
| 8. | Chloris barbata | Kodai pul | <i>Chloris barbata</i> | Poaceae |
| 9. | Spreading hogweed | Mookkaratti | <i>Boerhavia diffusa</i> | Nyctaginaceae |
| 10. | Bui | Ciru-pulai | <i>Aervalanata</i> | Amaranthaceae |
| 11. | Indian doab | Arugampul | <i>Cynodon dactylon</i> | Poaceae |
| 12. | Spiny amaranth | Mullu keerai | <i>Amaranthus spinosus</i> | Amaranthaceae |
| 13. | Prickly chaff flower | Uthrani | <i>Achyranthes aspera</i> | Amaranthaceae |
| 14. | Tropical milkweed | Blood Flower | <i>Asclepias curassavica</i> | Asclepiadaceae |
| 15. | Mexican prickly poppy | Mullu umathai | <i>Argemone mexicana</i> | Papaveraceae |
| 16. | Dwarf morning-glory | Vishnu kiranthi | <i>Evolvulus alsinoides</i> | Convolvulaceae |
| 17. | Datura metel | Oomathai | <i>Datura metel</i> | Solanaceae |
| 18. | Carry me seed | Kizhar nelli | <i>Phyllanthus amarus</i> | Phyllanthaceae |
| 19. | Malabar catmint | Peymarutti | <i>Anisomeles malabarica</i> | Lamiaceae |
| 20. | Yellow elder | Manjarali | <i>Tecoma stans</i> | Apocynaceae |
| 21. | Green amaranth | Kuppai keerai | <i>Amaranthus viridis</i> | Amaranthaceae |
| 22. | Cleome viscosa | Nai kadugu | <i>Celome viscosa</i> | Capparidaceae |
| 23. | Common leucas | Thumbai | <i>Leucas aspera</i> | Lamiaceae |
| 24. | Century plant | Agave | <i>Agave americana</i> | Agavaceae |
| 25. | Fish poison | Kollukaivelai | <i>Tephrosia purpureae</i> | Papilionaceae |

| | | | | |
|-------------------------|---------------------------|-----------------|------------------------------|----------------|
| 26. | Asthma-plant | Amman pacharisi | <i>Euphorbia hirta</i> | Euphorbiaceae |
| 27. | Holy basil | Thulasi | <i>Ocimum tenuiflorum</i> | Lamiaceae |
| 28. | Red Hogweed | Mukurattai | <i>Boerhavia diffusa</i> | Nyctaginaceae |
| 29. | Tridax daisy | Thatha poo | <i>Tridax procumbens</i> | Asteraceae |
| 30. | Gale of the wind | Keelaneeli | <i>Phyllanthus niruri</i> | Phyllanthaceae |
| 31. | Eggplant | Kathirikai | <i>Solanum melongena</i> | Solanaceae |
| 32. | European black nightshade | Manathakkali | <i>Solanum nigrum</i> | Solanaceae |
| Climber/ Creeper | | | | |
| 1. | Ivy gourd | Kovai | <i>Coccinia grandis</i> | Cucurbitaceae |
| 2. | Cucumis maderaspatanus | Musumusukkai | <i>Mukia maderaspatana</i> | Cucurbitaceae |
| 3. | Butterfly pea | Sangu poo | <i>Clitoria ternatea</i> | Fabaceae |
| 4. | Wild water lemon | Siruponaikaali | <i>Passiflora foetida</i> | Passifloraceae |
| 5. | Stemmed vine | Perandai | <i>Cissus quadrangularis</i> | Vitaceae |
| 6. | Bottle Guard | Sorakkai | <i>Lagenaria siceraria</i> | Cucurbitaceae |
| 7. | Rosary Pea | Gundumani | <i>Abrus precatorius</i> | Fabaceae |
| 8. | Pointed gourd | Kovakkai | <i>Trichosanthes dioica</i> | Cucurbitaceae |
| 9. | Wild bitter | Pavarkai | <i>Momordica charantia</i> | Cucurbitaceae |
| Grass | | | | |
| 1. | Eragrostis | Pullu | <i>Eragrostis ferruginea</i> | Poaceae |
| 2. | Giant reed | Elephant grass | <i>Arundo donax</i> | Poaceae |
| 3. | Windmill grass | Chevvarakupul | <i>Chloris barbata</i> | Amaranthaceae |
| 4. | Nut grass | Korai | <i>Cyperus rotandus</i> | Poaceae |
| 5. | Great brome | Thodappam | <i>Bromus diandrus</i> | Poaceae |
| Cactus | | | | |
| 1. | Prickly pear | Nagathali | <i>Opuntia dillenii</i> | Cactaceae |

Sources: Species observation in the field study and secondary data

3.5.7. Flora Composition in the Buffer Zone

Similar habitats may be found in the buffer area as well, although there is a wider variety of plants there than in the core zone area. The buffer zone study area contains a total of 127 species that have been recorded from the buffer zone. The floral (127) varieties of Trees 47, herbs 33, shrubs 32, Climbers 9, Grasses 5, and Cactus 1 were identified. The result of the buffer zone of flora studies shows that Fabaceae and Poaceae, Mimosaceae are the main dominating species in the study area mentioned in Table No.3.34. There are no impacts due to this mining activity. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. Apart from the proposed project area, there is agricultural land. Horticulture and agricultural land are untouched. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. A list of floral species has been prepared based on a primary survey (site observations) and discussion with local people (Secondary data). The total number of different plant life forms under trees, shrubs, herbs, and climbers is shown in Table 3.35 and their % distribution is shown in Figure 3.20.

Table 3.35: Number of floral life forms in the Study Area

| S. No | Plant Life Form | Number of Species |
|-----------------------------|-----------------|-------------------|
| 1 | Trees | 47 |
| 2 | Shrubs | 33 |
| 3 | Herbs | 32 |
| 4 | Climber | 9 |
| 6 | Grass | 5 |
| 7 | Cactus | 1 |
| Total No. of Species | | 127 |

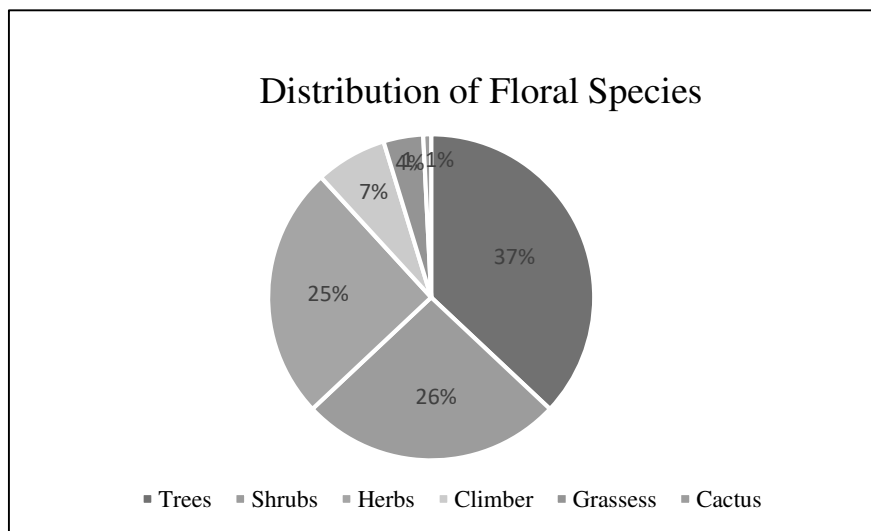


Fig No. 3.27: Graph showing % distribution of floral life forms



a. *Ziziphus Mauritiana*



b. *Azadirachta indica*



c. *Euphorbia hirta*



d. *Leucas aspera*



e. *Ocimum tenuiflorum*



f. *Cissus quadrangularis*



Senna auriculata



h. *Euphorbia antiquorum*



i. *Solanum torvum*

g.



J. *Cocos nucifera*



k. *Musa acuminata*



l. *Prosopis juliflora*

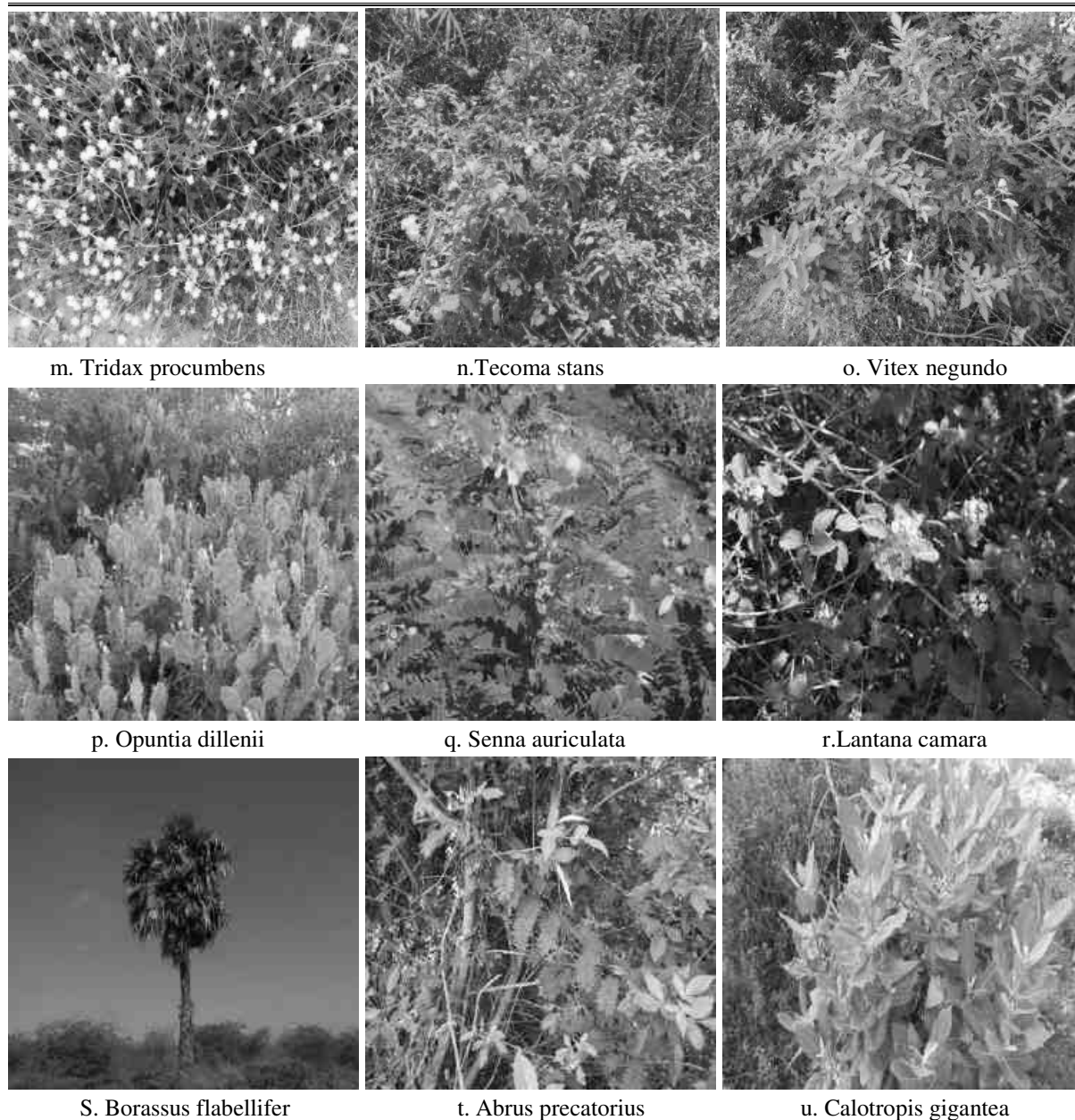


Fig No: 3.28. Flora species observation in the Buffer zone area

3.5.9. The vegetation in the RF / PF areas, ecologically sensitive areas

There are neither reserved (RF) nor protected (PF) forests either in the mine lease area or in the buffer zone. Thus, no forest land is involved in any manner. Hence, no certificate from the Forest department is required. There are no protected or ecologically sensitive areas such as National parks or Important Bird Areas (IBAs), or Wetlands or migratory routes of fauna or water bodies or human settlements within the proposed mine lease area. There are no Biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), or migratory routes of fauna. Thus, the area under study (Mine lease area and the 10 Km buffer zone) is not ecologically sensitive. It is away from the proposed project site.

Thus, no forest land is involved in any manner. Hence, no certificate from the Forest department is required. There are no impacts due to this mining activity. There are neither forests nor forest dwellers nor forest-dependent communities in the mine lease area. There shall be no forest-impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project.

3.5.10. Fauna

The faunal survey has been carried out as per the methodology cited and listed out Mammals, birds, Reptiles, Amphibians, and Butterflies. All the listed species were compared with the Red Data Book and the Indian Wildlife Protection Act, 1972. There are no rare, endangered, threatened (RET), and endemic species present in the core area.

3.5.10.1. Fauna Composition in the Core Zone

Core Zone: During the study, it was found that the faunal diversity in the core site was limited to Butterflies, insects, and some species of mammals & and reptiles among them numbers Insects 8, Reptiles 3, Mammals 3, and Avian 8. The core site has avifauna species like crow, Black drongo, Koel, etc. None of these species are threatened or endemic in the study area and surroundings. There is no Schedule I species and 11 species are under Schedule IV according to the Indian Wildlife Act 1972. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

Table No: 3.36. Fauna in the Core zone of Rough Stone and gravel quarries

| SI. No | Common Name | Scientific Name | Schedule list WLPC 1972 |
|-----------------|------------------------|----------------------------------|-------------------------|
| Insects | | | |
| 1. | Common Tiger | <i>Danaus genutia</i> | NL |
| 2. | Red-veined darter | <i>Sympetrum fonscolombii</i> | NL |
| 3. | Tawny coster | <i>Danaus chrysippus</i> | Schedule IV |
| 4. | House fly | <i>Musca domestica</i> | - |
| 5. | Dragonfly | <i>Agriansp</i> | - |
| 6. | Striped tiger | <i>Danaus plexippus</i> | Schedule IV |
| 7. | Grey pansy | <i>Junonia atlites</i> | LC |
| 8. | Common Tiger | <i>Danaus genutia</i> | LC |
| Reptiles | | | |
| 1. | Oriental garden lizard | <i>Calotes versicolor</i> | NL |
| 2. | Indian forest skink | <i>Sphenomorphus indicus</i> | NL |
| 3. | House lizards | <i>Hemidactylus flaviviridis</i> | Schedule IV |
| Mammals | | | |
| 1. | Indian Field Mouse | <i>Mus booduga</i> | Schedule IV |
| 2. | Asian Small Mongoose | <i>Herpestes javanicus</i> | Schedule (Part II) |
| 3. | Squirrel | <i>Funambulus palmarum</i> | Schedule IV |
| Aves | | | |
| 1. | Rose-ringed parkeet | <i>Psittacula krameri</i> | Schedule IV |
| 2. | Common myna | <i>Acridotheres tristis</i> | NL |
| 3. | Blue-rock pigeon | <i>Colombalivia</i> | Schedule IV |
| 4. | Pond heron | <i>Ardeolagrayii</i> | Schedule IV |
| 5. | Asian koel | <i>Eudynamysscolopacea</i> | Schedule IV |
| 6. | Koel | <i>Eudynamys</i> | Schedule IV |
| 7. | Black drongo | <i>Dicrurus macrocercus</i> | Schedule IV |
| 8. | House crow | <i>Corvussplendens</i> | NL |

*NL- Not listed, LC- Least Concern

(Sources: [Species observation in the field study](#))

3.5.11. Fauna Composition in the Buffer Zone

As animals, especially vertebrates move from place to place in search of food, shelter, mate or other biological needs, separate lists for core and buffer areas are not feasible however, a separate list of fauna pertaining to core and buffer zone are listed separately. Though there is no reserved forests in the buffer zone. As such there are no chances of occurrence of any rare or endangered or endemic or threatened (REET) species within the core or buffer area.

There are no Sanctuaries, National Parks, Tiger Reserve or Biosphere reserves or Elephant Corridor or other protected areas within 10 km radius of from the core area. It is evident from the available records, reports, and circumstantial evidence that the entire study area including the core and buffer areas were free from any endangered

animals. There were no resident birds other than common bird species such as Cattle egret, Asian Koel, House crow, Black drangos, Crows, Rose-ringed Parakeet etc.

The list of bird species recorded during the field survey and literature from the study area are given in Table 3.38. The list of reptilian species recorded during the field survey and literature from the study area is given in Table 3.39. The list of insect species recorded during the field survey and literature from the study area are given in Table 3.41. The list of Butterflies species recorded during the field survey and literature from the study area are given in Table 3.40. It is apparent from the list that none of the species either spotted or reported is included in Schedule I of the Wildlife Protection Act. Similarly, none of them comes under the REET category.

Taxonomically a total of 79 species recorded were from the buffer zone area. Based on habitat classification the majority of species were Insects 5, followed by birds 43, Reptiles 10, Mammals 5, Amphibians 3, and Butterflies 13. There are five Schedule II species, and 54 species are under Schedule IV according to the Indian Wildlife Act 1972. A total of 43 species of bird were sighted in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed. There are no impacts on nearby fauna species.

Dominant species are mostly birds, butterflies, and insects, and three amphibian was observed during the extensive field visit *Sphaerotheca breviceps*, *Euphlyctis hexadactylus*, *Bufo melanostictus*, etc. There is no Schedule I Species in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

**Table 3.37. List of Fauna & Their Conservation Status,
Mammals: (*directly sighted animals & Secondary data)**

| SI. No | Common Name | Scientific Name | Schedule list WLPA 1972 |
|--------|----------------------|----------------------------|-------------------------|
| 1. | Brown rat | <i>Rattus norvegicus</i> | Schedule IV |
| 2. | Indian palm squirrel | <i>Funambulus palmarum</i> | Schedule IV |
| 3. | Asian Small Mongoose | <i>Herpestes javanicus</i> | Schedule (Part II) |
| 4. | Indian hare | <i>Lepus nigricollis</i> | Schedule (Part II) |
| 5. | Indian Field Mouse | <i>Mus booduga</i> | Schedule IV |

Status assigned by the IUCN, where – CR – Critically Endangered; EN – Endangered; LC – Least Concern; NT – Near Threatened; VU – Vulnerable, DA – Data Deficient, NE – Not Evaluated

Table 3.38. Listed birds

| SI. No | Common Name | Scientific Name | Schedule list WLP 1972 |
|--------|-----------------------|----------------------------------|------------------------|
| 1. | Rose-ringed Parakeet | <i>Psittaculakrameria</i> | Schedule IV |
| 2. | Little grebe | <i>Tachybaptusruficollis</i> | Schedule IV |
| 3. | Red-vented Bulbul | <i>Pycnonotus cafer</i> | Schedule IV |
| 4. | Small blue Kingfisher | <i>Alcedo atthis</i> | Schedule IV |
| 5. | Purple Sunbird | <i>Leptocoma zeylonica</i> | Schedule IV |
| 6. | Purple-rumped Sunbird | <i>Leptocoma zeylonica</i> | Schedule IV |
| 7. | Two-tailed Sparrow | <i>Dicrurus macrocercus</i> | Schedule IV |
| 8. | Grey heron | <i>Ardeacineria</i> | Schedule IV |
| 9. | Cattle egret | <i>Bubulcus ibis</i> | Schedule IV |
| 10. | Common myna | <i>Acridotheres tristis</i> | Schedule IV |
| 11. | Indian roller | <i>Coracias benghalensis</i> | Schedule IV |
| 12. | Night heron | <i>Ncticoraxncticorax</i> | Schedule IV |
| 13. | Greater Coucal | <i>Centropus sinensis</i> | Schedule IV |
| 14. | Paddyfield Pipit | <i>Anthus rufulus</i> | Schedule IV |
| 15. | Red-whiskered Bulbul | <i>Pycnonotus jocosus</i> | Schedule IV |
| 16. | Little Egret | <i>Egretta garzetta</i> | Schedule IV |
| 17. | Green Bee-eater | <i>Merops orientalis</i> | Schedule IV |
| 18. | Grey Francolin | <i>Francolinus pondicerianus</i> | Schedule IV |
| 19. | Green Sandpiper | <i>Tringa ochropus</i> | Schedule IV |
| 20. | Grey Wagtail | <i>Motacilla cinerea</i> | Schedule IV |

| | | | |
|-----|---------------------------|-------------------------------------|-------------|
| 21. | Common Iora | <i>Aegithina tiphia</i> | Schedule IV |
| 22. | Yellow wagtail | <i>Motacilla flava</i> | Schedule IV |
| 23. | Spotted owl | <i>Athene brama</i> | Schedule IV |
| 24. | House Sparrow | <i>Passer domesticus</i> | Schedule IV |
| 25. | White-eyed Buzzard | <i>Butastur teesa</i> | Schedule IV |
| 26. | Black Drongo | <i>Dicrurus macrocercus</i> | Schedule IV |
| 27. | Brown Shrike | <i>Lanius cristatus</i> | Schedule IV |
| 28. | Plain Prinia | <i>Prinia inornata</i> | Schedule IV |
| 29. | Purple Heron | <i>Ardea purpurea</i> | Schedule IV |
| 30. | Spotted dove | <i>Streptopeliachinensis</i> | Schedule IV |
| 31. | Shikra | <i>Accipiter badius</i> | Schedule IV |
| 32. | Bay-backed Shrike | <i>Lanius vittatus</i> | Schedule IV |
| 33. | Asian koel | <i>Eudynamysscolopacea</i> | Schedule IV |
| 34. | Small-blue kingfisher | <i>Alcedoatthis</i> | Schedule IV |
| 35. | White-breasted kingfisher | <i>Halcyon smyrnensis</i> | Schedule IV |
| 36. | Ashy Drongo | <i>Dicrurus leucophaeus</i> | Schedule IV |
| 37. | Rock Pigeon | <i>Columba livia (Feral Pigeon)</i> | Schedule IV |
| 38. | Black-rumped flameback | <i>Dinopium benghalense</i> | Schedule IV |
| 39. | House crow | <i>Corvus splendens</i> | Schedule IV |
| 40. | Jungle crow | <i>Corvus macrorhynchos</i> | Schedule IV |
| 41. | Robin | <i>Copsychus saularis</i> | Schedule IV |
| 42. | Pond heron | <i>Ardeolagrayii</i> | Schedule IV |
| 43. | Common quail | <i>Coturnix coturnix</i> | Schedule IV |

Reference: Coimbatore City Bird Atlas, February–March, 2020

Reference: Birds of Coimbatore Wetlands, By Dr. P.Pramod

Ali, S. (2002). The Book of Indian Birds (13th revised edition). Oxford University Press, New Delhi. 326pp

Table 3.39. List of Reptiles either spotted or reported from the study area

Reference: https://www.inaturalist.org/check_lists/35244-Coimbatore-Check-List

Species observation in the field study and secondary data

| Sl. No | Common Name | Scientific Name | Schedule list WLPA 1972 |
|--------|-----------------------------|----------------------------------|-------------------------|
| 1 | Oriental garden lizard | <i>Calotes versicolor</i> | NL |
| 2 | Common krait | <i>Bungarus caeruleus</i> | Schedule IV |
| 3 | House lizards | <i>Hemidactylus flaviviridis</i> | Schedule IV |
| 4 | Indian cobra | <i>Naja naja</i> | Sch II (Part II) |
| 5 | Green vine snake | <i>Ahaetulla nasuta</i> | Schedule IV |
| 6 | Russell's viper | <i>Vipera russelli</i> | Sch II (Part II) |
| 7 | Rat snake | <i>Ptyas mucosa</i> | Sch IV (Part II) |
| 8 | Common skink | <i>Mabuya carinatus</i> | NL |
| 9 | Bornze Grass Skink | <i>Eutropis macularia</i> | Schedule IV |
| 10 | Keeled / Common Grass Skink | <i>Eutropis carinata</i> | Schedule IV |

Table.3.40. List of Butterflies reported from the study area

| Sl. No | Common Name/English Name | Scientific Name | Schedule |
|--------|--------------------------|------------------------|----------|
| 1 | Indian palm bob | <i>Suastusgremius</i> | - |
| 2 | Common Mormon | <i>Papilio polytes</i> | - |

| | | | |
|----|---------------------------|---------------------------------|---|
| 3 | Common rose | <i>Pachlioptaaristolochiaee</i> | - |
| 4 | Spotless grass yellow | <i>Eurema laeta</i> | - |
| 5 | Common Tiger | <i>Danaus genutia</i> | - |
| 6 | Common emigrant | <i>Catopsiliapomona</i> | - |
| 7 | Crimson tip | <i>Colotisdanae</i> | - |
| 8 | Common Indian crow | <i>Euploea core</i> | - |
| 9 | Dark Blue Tiger | <i>D. hamata (McLeay)</i> | - |
| 10 | Lime Butterfly | <i>Papilio demoleus</i> | - |
| 11 | Yellow Pansy | <i>Junonia hierta</i> | - |
| 12 | Chocolate Pansy | <i>Junonia iphita</i> | - |
| 13 | Double-branded Black Crow | <i>Euploea sylvester</i> | - |

Reference: Butterflies of Coimbatore- <https://www.researchgate.net/publication/301730778>

Table 3.41. List of insects either spotted or reported from the study area

Sources: Species observation in the field study

3.5.12 Aquatic Ecology

The study area has few seasonal odai and canal away from the proposed project site. But no major drainage

| SI. No | Common Name | Scientific Name | Schedule list WLPA 1972 |
|--------|------------------|-----------------------------|-------------------------|
| 1 | Indian honey bee | <i>Apis cerana</i> | - |
| 2 | Termite | <i>Hamitermes silvestri</i> | NE |
| 3 | Grasshopper | <i>Hieroglyphus sp</i> | NL |
| 4 | Ant | <i>Camponotus Vicinus</i> | NL |
| 5 | Dragonfly | <i>Ceratogomphus pictus</i> | - |

system can be found within the study area. No Aquatic diversity is noticed in the core zone area. Aquatic weeds are found to be growing everywhere in 10 km radius area, in every water bog, pond, etc. *Typha angustata* can be found growing all along the drains of villages, small water-logged depressions, and agricultural fields lacking water but containing enough moisture to support its growth. And where water is present, *Eichhornia crassipes* has taken its roots and covers the entire water surface by its sprawl and invasion.

3.5.13. Objectives of Aquatic Studies

- ✓ Generating data through actual field collection in these locations over the study period
- ✓ Consulted with locals to obtain knowledge about aquatic flora and animals.

3.5.14. Macrophytes

The macrophytes observed within the study area are tabulated in Table 3.42.

Table No.3.42 Description of Macrophytes

| S.No | Scientific Name | Common Name | Type |
|------|------------------------------|-----------------------|-------------------------------|
| 1. | <i>Eichhornia crassipes</i> | Common water hyacinth | Free floating hydrophytes |
| 2. | <i>Typha angustifolia</i> | Lesser Bulrush | Emergent hydrophytes |
| 3. | <i>Hydrilla verticillata</i> | Hydrilla | Submerged hydrophytes |
| 4. | <i>Pistia stratiotes</i> | Water lettuce | Free floating hydrophytes |
| 5. | <i>Cyperus articulates</i> | Jointed flatsedge | Emergent Hydrophytes |
| 6. | <i>Ipomea aquatica</i> | Water Morning Glory | Marshy amphibious hydrophytes |

Sources: Species observation in the field study

3.5.15. Aquatic Faunal Diversity

Amphibian species like the common Pond frog, Indian bull Frog, and Indian Burrowing frog etc., were sighted near the water bodies located in the study area.

Table : 3.43. Amphibians Observed/Recorded from the Study Area

| SI. No | Common Name | Scientific Name | Schedule list WLPC 1972 |
|--------|-----------------------|--------------------------------|----------------------------|
| 1. | Indian Burrowing frog | <i>Sphaerotheca breviceps</i> | Schedule IV |
| 2. | Green pond frog | <i>Euphlyctis hexadactylus</i> | Schedule IV |
| 3. | Indian bull Frog | <i>Hoplobatrachus tigerinu</i> | Schedule IV |

Reference: https://www.inaturalist.org/check_lists/35244-Coimbatore-Check-List

3.5.17. Findings/Results

The assessment was carried out during the summer season. The inspection day was quite alright with respectable weather. The details of the flora and fauna observed are given below.

Records of threatened species in the area

No threatened species were observed

Endangered Species as per Wildlife (Protection) Act

No Endangered fauna was recorded in the project area.

Endemic Species of the Project areas

No endemic species were observed in the project area.

Migratory species of the Project areas

No migratory fauna observed in project area.

Migratory corridors and Flight paths

No migratory corridors and Flight paths were observed in project area.

Breeding and spawning grounds

No breeding and spawning grounds were earmarked for the wildlife fauna in project area.

There are no critically endangered, endangered, vulnerable and endemic species were observed. As the rainfall in the area is scanty and as no toxic wastes are produced or discharged on account of mining, the proposed mining activity is not going to have any additional and adverse impacts on these RET species. There are no ecologically sensitive areas or protected areas within the 10 Km radius. Hence no specific conservation for conservation of any RET species or Wildlife is envisaged.

There are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar sites, Tiger/Elephant Reserves (existing as well as proposed) within 10 km of the mine lease area. There are no protected forests within the project area. Hence submission of clearance from the National Board of Wildlife does not arise.

There is no endangered, endemic and RET Species. There is no Schedule I species in study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] The proposed project is not going to have any direct or indirect adverse impact on the species mentioned above.

3.5.18. Conclusion

The observations and assessment of the overall ecological scenario involve details such as classification of Biogeographic zone, eco-region, habitat types and land cover, distances from natural habitats, vegetation/forest types, and sensitive ecological habitats such as Wetlands sites, Important Bird areas, migration corridors of important wildlife etc. Such baseline information provides better understanding of the situation and overall ecological importance of the area. This baseline information viewed against proposed project activities help in predicting their impacts on the wildlife and their habitats in the region. Data collected and information gathered from secondary literature on flora, fauna, protected area, natural habitats, and wildlife species etc., and consulted and discussed with local people, from the villages, herders and farmers who inhabit close to the proposed project area.

3.6 SOCIO ECONOMIC ENVIRONMENT

Socio-economic study is an essential part of environmental study. It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

It is expected that the Socio-Economic Status of the area will substantially improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area and, thus, improve their standard of living.

3.6.1 Objectives of the Study

The objectives of the socio-economic study are as follows:

- To study the socio-economic status of the people living in the study area of the proposed mining project.
- To assess the impact of the project on Quality of life of the people in the study area.
- To recommend Community Development measures needs to be taken up in the study Area.

3.6.2 Scope of Work

- To study the Socio-economic Environment of the area from the secondary sources;
- Data Collection & Analysis
- Prediction of project impact
- Mitigation Measures

3.6.3 District Profile

Coimbatore district is divided into 12 taluks. The taluks are further divided into 18 blocks, which further divided into 860 villages. In 2011, Coimbatore had population of 2,464,875 of which male and female were 1,235,889 and 1,228,986 respectively. In 2001 census, Coimbatore had a population of 2,186,125 of which males were 1,095,859 and remaining 1,090,266 were females. Coimbatore District population constituted 3.42 percent of total Maharashtra population. In 2001 census, this figure for Coimbatore District was at 3.50 percent of Maharashtra population.

There was change of 12.75 percent in the population compared to population as per 2001. In the previous census of India 2001, Coimbatore District recorded increase of 7.01 percent to its population compared to 1991.

3.6.4 Study area:

PACHAPALAYAM VILLAGE

Pachapalayam village is situated in Teshil Sulur, District Coimbatore and in State of Tamil Nadu India. Village has population of 2933 as per census data of 2011, in which male population is 1488 and female population is 1445. Total geographical area of Pachapalayam village is 1559 Hectares. Population density of Pachapalayam is 2 persons per Hectares. Total number of house hold in village is 842. As per the Census Data 2011 there are 1,445 Female and 1,488 males out of 2,933 total population of village. There are 922 females per 1000 males under 6 years of age in the village.

In Pachapalayam village population of children with age 0-6 is 271 which makes up 9.24 % of total population of village. Average Sex Ratio of Pachapalayam village is 971 which is lower than Tamil Nadu state average of 996. Child Sex Ratio for the Pachapalayam as per census is 922, lower than Tamil Nadu average of 943.

TABLE 3.44: PACHAPALAYAM VILLAGE POPULATION FACTS

| | |
|-------------------------|--------|
| Number of Households | 842 |
| Population | 2,933 |
| Male Population | 1,488 |
| Female Population | 1,445 |
| Children Population | 271 |
| Sex-ratio | 971 |
| Literacy | 65.89% |
| Male Literacy | 74.46% |
| Female Literacy | 57.11% |
| Scheduled Tribes (ST) % | 0 |
| Scheduled Caste (SC) % | 556 |

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

Gram Panchayat name of the Pachapalayam village is Pachapalayam. CD Block name is Sulthanpet and Teshil/Taluk or sub-district is Sulur. Data Reference year is 2009 of Census 2011. Sub District HQ Name is SULUR and Sub District HQ Distance is 16 Km from the village. District Head Quarter name is Coimbatore and its distance from the village is 19KM. Nearest Town of the Pachapalayam village is Chettipalayam and nearest town distance is 4 km. Pincode of Pachapalayam village is 641201. As per census 2011 village code of village Pachapalayam is 644389.

TABLE 3.45: DEMOGRAPHICS POPULATION OF PACHAPALAYAM VILLAGE

| Total Population | Male Population | Female Population |
|------------------|-----------------|-------------------|
| 2933 | 1488 | 1445 |

Source: <https://etrace.in/census/village/pachapalayam-sulur-district-coimbatore-tamil-nadu-644389>

Sex Ratio of Pachapalayam Village -Census 2011

As per the Census Data 2011 there are 971 Female per 1000 males out of 2933 total population of village. There are 922 girls per 1000 boys under 6 years of age in the village.

Literacy of pachapalayam Village

Out of total population total 1754 people in Pachapalayam Village are literate, among them 1003 are male and 751 are female in the village. Total literacy rate of of Pachapalayam is 65.89%, for male literacy is 74.46% and for female literacy rate is 57.11%.

Workers profile of pachapalayam Village

Total working population of Pachapalayam is 1627 which are either main or marginal workers. Total workers in the village are 1627 out of which 981 are male and 646 are female. Total main workers are 1466 out of which female main workers are 921 and male main workers are 545. Total marginal workers of village are 161.

TABLE 3.46: PACHAPALAYAM VILLAGE CENSUS 2011 DATA

| Description | Census 2011 Data |
|---------------------------------|------------------|
| Village Name | Pachapalayaam |
| Teshil Name | Sulur |
| District Name | Coimbatore |
| State Name | Tamil Nadu |
| Total Population | 2933 |
| Total Area | 1559 (Hectares) |
| Total No of House Holds | 842 |
| Total Male Population | 1488 |
| Total Female Population | 1445 |
| 0-6 Age group Total Population | 271 |
| 0-6 Age group Male Population | 141 |
| 0-6 Age group Female Population | 130 |
| Total Person Literates | 1754 |
| Total Male Literates | 1003 |
| Total Female Literates | 751 |
| Total Person Illiterates | 1179 |
| Total Male Illiterates | 485 |
| Total Female Illiterates | 694 |
| Scheduled Cast Persons | 556 |
| Scheduled Cast Males | 278 |
| Scheduled Cast Females | 278 |
| Scheduled Tribe Persons | 0 |
| Scheduled Tribe Males | 0 |
| Scheduled Tribe Females | 0 |

Source: <https://etrace.in/census/village/pachapalayam-sulur-district-coimbatore-tamil-nadu-644389>

TABLE 3.47: PACHAPALAYAM WORKING POPULATION ---CENSUS 2011

| | Total | Male | Female |
|--------------------------|-------|------|--------|
| Total Workers | 1627 | 981 | 646 |
| Main Workers | 1466 | 921 | 545 |
| Main Workers Cultivators | 491 | 285 | 206 |
| Agriculture Labourer | 177 | 97 | 80 |
| Household Industries | 19 | 9 | 10 |
| Other Workers | 779 | 530 | 249 |
| Marginal Workers | 161 | 60 | 101 |
| Non Working Persons | 1306 | 507 | 799 |

Source: <https://etrace.in/census/village/pachapalayam-sulur-district-coimbatore-tamil-nadu-644389>

TABLE 3.48: POPULATION DATA OF STUDY AREA

| Sl.No. | Village Name | No of House Holds | Total Population | Male | Female | Total Literate Population | Male Literate | Female Literate | Total Illiterate Population | Male Illiterate | Female Illiterate |
|--------|------------------|-------------------|------------------|------|--------|---------------------------|---------------|-----------------|-----------------------------|-----------------|-------------------|
| 1 | Appanaickenpatti | 1121 | 3992 | 1998 | 1994 | 2665 | 1413 | 1252 | 1327 | 585 | 742 |
| 2 | Arasampalayam | 1090 | 3818 | 1894 | 1924 | 2473 | 1384 | 1089 | 1345 | 510 | 835 |
| 3 | Arisippalayam | 700 | 2400 | 1212 | 1188 | 1670 | 883 | 787 | 730 | 329 | 401 |
| 4 | Bogampatti | 686 | 2415 | 1254 | 1161 | 1515 | 905 | 610 | 900 | 349 | 551 |
| 5 | Edayapalayam | 667 | 2251 | 1130 | 1121 | 1659 | 930 | 729 | 592 | 200 | 392 |
| 6 | Kalangal | 1639 | 5590 | 2853 | 2737 | 3889 | 2158 | 1731 | 1701 | 695 | 1006 |
| 7 | Kallapalayam | 860 | 3066 | 1581 | 1485 | 2350 | 1293 | 1057 | 716 | 288 | 428 |
| 8 | Kondampatty | 738 | 2467 | 1218 | 1249 | 1625 | 889 | 736 | 842 | 329 | 513 |
| 9 | Mettubavi | 719 | 2485 | 1281 | 1204 | 1671 | 971 | 700 | 814 | 310 | 504 |
| 10 | Myleripalayam | 1393 | 4990 | 2451 | 2539 | 3169 | 1746 | 1423 | 1821 | 705 | 1116 |
| 11 | Odderpalayam | 2051 | 7403 | 3626 | 3777 | 5054 | 2684 | 2370 | 2349 | 942 | 1407 |
| 12 | Pachapalayam | 842 | 2933 | 1488 | 1445 | 1754 | 1003 | 751 | 1179 | 485 | 694 |
| 13 | Panappatti | 763 | 2635 | 1383 | 1252 | 1740 | 1026 | 714 | 895 | 357 | 538 |
| 14 | Pappampatti | 1172 | 4143 | 2052 | 2091 | 2865 | 1524 | 1341 | 1278 | 528 | 750 |
| 15 | Peedampalli | 1134 | 3896 | 1955 | 1941 | 2982 | 1601 | 1381 | 914 | 354 | 560 |
| 16 | Seerappalayam | 1646 | 5881 | 3053 | 2828 | 4457 | 2470 | 1987 | 1424 | 583 | 841 |
| 17 | Sellakkarichal | 1863 | 6209 | 3109 | 3100 | 4368 | 2447 | 1921 | 1841 | 662 | 1179 |
| 18 | Solavampalayam | 1837 | 6387 | 3195 | 3192 | 4074 | 2234 | 1840 | 2313 | 961 | 1352 |
| 19 | Vadasithur | 1532 | 5080 | 2483 | 2597 | 3452 | 1878 | 1574 | 1628 | 605 | 1023 |
| 20 | Vadavalli | 955 | 3171 | 1567 | 1604 | 2010 | 1093 | 917 | 1161 | 474 | 687 |

Source: www.censusindia.gov.in - Tamilnadu Census of India – 2011

TABLE 3.49: WORKERS PROFILE OF STUDY AREA

| Sl.No. | Village Name | Total Workers Population | Male Workers | Female Workers | Total Main Workers | Main Workers Male | Main Workers Female | Main Cultivation Workers | Main Agriculture Workers | Main Other Workers | Non-Worker Population |
|--------|------------------|--------------------------|--------------|----------------|--------------------|-------------------|---------------------|--------------------------|--------------------------|--------------------|-----------------------|
| 1 | Appanaickenpatti | 2199 | 1285 | 914 | 2006 | 1197 | 809 | 115 | 430 | 1416 | 1793 |
| 2 | Arasampalayam | 2041 | 1269 | 772 | 1863 | 1166 | 697 | 360 | 746 | 734 | 1777 |
| 3 | Arisippalayam | 1126 | 771 | 355 | 974 | 702 | 272 | 117 | 281 | 561 | 1274 |
| 4 | Bogampatti | 1165 | 813 | 352 | 985 | 731 | 254 | 470 | 278 | 223 | 1250 |
| 5 | Edayapalayam | 1150 | 748 | 402 | 977 | 676 | 301 | 200 | 178 | 556 | 1101 |
| 6 | Kalangal | 3112 | 1893 | 1219 | 2784 | 1806 | 978 | 243 | 639 | 1863 | 2478 |
| 7 | Kallapalayam | 1547 | 979 | 568 | 1522 | 961 | 561 | 362 | 454 | 662 | 1519 |
| 8 | Kondampatty | 1310 | 818 | 492 | 986 | 635 | 351 | 140 | 414 | 423 | 1157 |
| 9 | Mettubavi | 1372 | 891 | 481 | 1325 | 879 | 446 | 477 | 457 | 383 | 1113 |
| 10 | Myleripalayam | 2912 | 1666 | 1246 | 2581 | 1539 | 1042 | 568 | 584 | 1343 | 2078 |
| 11 | Odderpalayam | 3295 | 2281 | 1014 | 3045 | 2178 | 867 | 464 | 496 | 1957 | 4108 |
| 12 | Pachapalayam | 1627 | 981 | 646 | 1466 | 921 | 545 | 491 | 177 | 779 | 1306 |
| 13 | Panappatti | 1579 | 974 | 605 | 1566 | 969 | 597 | 631 | 604 | 320 | 1056 |
| 14 | Pappampatti | 1977 | 1341 | 636 | 1761 | 1262 | 499 | 143 | 383 | 1160 | 2166 |
| 15 | Peedampalli | 1869 | 1241 | 628 | 1465 | 1023 | 442 | 178 | 183 | 974 | 2027 |
| 16 | Seerappalayam | 2623 | 1845 | 778 | 2451 | 1760 | 691 | 149 | 450 | 1786 | 3258 |
| 17 | Sellakkarichal | 3200 | 2034 | 1166 | 2662 | 1768 | 894 | 403 | 1024 | 1097 | 3009 |
| 18 | Solavampalayam | 3367 | 2134 | 1233 | 3037 | 2014 | 1023 | 240 | 926 | 1827 | 3020 |
| 19 | Vadasithur | 2512 | 1671 | 841 | 2419 | 1631 | 788 | 548 | 717 | 1126 | 2568 |
| 20 | Vadavalli | 1894 | 1111 | 783 | 1858 | 1095 | 763 | 289 | 1113 | 301 | 1277 |

Source: www.censusindia.gov.in - Tamilnadu Census of India – 2011

TABLE 3.50: COMMUNICATION & TRANSPORT FACILITIES IN THE STUDY AREA

| SI | Village Name | PO | SPO | PTO | T | PCO | MP | IC / CSC | PCF | BS | PBS | RS | NH | SH | MDR | BTR | GR | NWR | FP |
|----|------------------|----|-----|-----|---|-----|----|----------|-----|----|-----|----|----|----|-----|-----|----|-----|----|
| 1 | Appanaickenpatti | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 |
| 2 | Arasampalayam | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 |
| 3 | Arisippalayam | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 1 |
| 4 | Bogampatti | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 |
| 5 | Edayapalayam | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 |
| 6 | Kalanganal | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 |
| 7 | Kallapalayam | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 |
| 8 | Kondampatty | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 |
| 9 | Mettubavi | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 |
| 10 | Myleripalayam | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| 11 | Odderpalayam | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 |
| 12 | Pachapalayam | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 |
| 13 | Panappatti | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 |
| 14 | Pappampatti | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| 15 | Peedampalli | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 |
| 16 | Seerappalayam | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| 17 | Sellakkarichal | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| 18 | Solavampalayam | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| 19 | Vadasithur | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 |
| 20 | Vadavalli | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 |

Abbreviations: PO - Post Office; MP - Mobile Phone Coverage; RS - Railway Station; GR - Gravel Roads; SPO - Sub Post Office; IC / CSC - Internet Cafe/Common Service Centre; NH - National Highways; NWR - Navigate waterways River; PTO - Post & Telegraph office; PCF - Private Courier Facility; SH - State Highways; FP - Foot path; T- Telephone (Landline); BS - Public Bus Service; MDR - Major District Road; PCO - Public call office / Mobile; PBS - Private Bus Service; BTR - Black Topped (Pucca Roads). Note: 1 - Available within the village 2 - Not available.

TABLE 3.51: WATER & DRAINAGE FACILITIES IN THE STUDY AREA

| SI | Village Name | TP | CW | UCW | HP | TW/BH | S | R/C | T/P/L | CD | OD | CT |
|----|------------------|----|----|-----|----|-------|---|-----|-------|----|----|----|
| 1 | Appanaickenpatti | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 |
| 2 | Arasampalayam | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 |
| 3 | Arisippalayam | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 |
| 4 | Bogampatti | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 |
| 5 | Edayapalayam | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 |
| 6 | Kalagal | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 |
| 7 | Kallapalayam | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 |
| 8 | Kondampatty | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 2 |
| 9 | Mettubavi | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 |
| 10 | Myleripalayam | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 |
| 11 | Odderpalayam | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 |
| 12 | Pachapalayam | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 |
| 13 | Panappatti | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 |
| 14 | Pappampatti | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 |
| 15 | Peedampalli | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 |
| 16 | Seerappalayam | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 |
| 17 | Sellakkarichal | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 |
| 18 | Solavampalayam | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 |
| 19 | Vadasithur | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 |
| 20 | Vadavalli | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 |

Abbreviations: T - Tap Water; R / C - River / Canal; CW - Covered Well; T/P/L - Tank / Pond / Lake; UCW - Uncovered Well; CD - Covered Drainage; HP - Hand Pump; OD - Open Drainage; TW/BH - Tube / Bore Well; CT - Community Toilet Complex for General public; S - Spring

Note – 1 - Available within the village; 2 - Not available

TABLE 3.52: OTHER FACILITIES IN THE STUDY AREA

| SI | Village Name | ATM | CB | COB | ACS | SHG | PDS | RM | AMS | NC | NC-AC | CC | SF | PL | NPS | APS | BDRO | PS |
|----|------------------|-----|----|-----|-----|-----|-----|----|-----|----|-------|----|----|----|-----|-----|------|----|
| 1 | Appanaickenpatti | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| 2 | Arasampalayam | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | | 1 | 1 | 1 |
| 3 | Arisippalayam | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | | 1 | 1 | 1 |
| 4 | Bogampatti | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | | 1 | 1 | 1 |
| 5 | Edayapalayam | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| 6 | Kalangal | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | | 1 | 1 | 1 |
| 7 | Kallapalayam | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| 8 | Kondampatty | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | | 1 | 1 | 1 |
| 9 | Mettubavi | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| 10 | Myleripalayam | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | | 1 | 1 | 1 |
| 11 | Odderpalayam | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | | 1 | 1 | 1 |
| 12 | Pachapalayam | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| 13 | Panappatti | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | | 1 | 1 | 1 |
| 14 | Pappampatti | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| 15 | Peedampalli | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | | 1 | 1 | 1 |
| 16 | Seerappalayam | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | | 1 | 1 | 1 |
| 17 | Sellakkarichal | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | | 1 | 1 | 1 |
| 18 | Solavampalayam | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | | 1 | 1 | 1 |
| 19 | Vadasithur | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| 20 | Vadavalli | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | | 1 | 1 | 1 |

Abbreviations: ATM - Automatic Teller Machine; PDS - Public Distribution System (Shop); CB - Commerical Bank; RM - Regular Market; COB - Co-operative Bank; AMS - Agricultural Market Society; ACS - Agricultural Credit Societies; NC - Nutritional Centres; SHG - Self Help Group; NC-AC - Nutritional Centres - Anganwadi Centre; DBRO - Birth & Death Registration Office; PS - Power Supply
 Note – 1 - Available within the village; 2 - Not available

TABLE 3.53: EDUCATIONAL FACILITIES IN THE STUDY AREA

| SI | Village Name | PPS | | PS | | MS | | SS | | SSS | | DC | | EC | | MC | | MI | | PT | | VTS | | SSD | |
|----|------------------|-----|---|----|---|----|---|----|---|-----|---|----|---|----|---|----|---|----|---|----|---|-----|---|-----|---|
| | | G | P | G | P | G | P | G | P | G | P | G | P | G | P | G | P | G | P | G | P | G | P | G | P |
| 1 | Appanaickenpatti | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 2 | Arasampalayam | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |
| 3 | Arisippalayam | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 |
| 4 | Bogampatti | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 5 | Edayapalayam | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 6 | Kalangal | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 7 | Kallapalayam | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 8 | Kondampatty | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 9 | Mettubavi | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 10 | Myleripalayam | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| 11 | Odderpalayam | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 12 | Pachapalayam | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 13 | Panappatti | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 14 | Pappampatti | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 15 | Peedampalli | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 16 | Seerappalayam | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| 17 | Sellakkarichal | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 18 | Solavampalayam | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 19 | Vadasithur | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 20 | Vadavalli | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

Abbreviations: PPS-Pre Primary School; SSS-Senior Secondary School; DC-Degree School; PT-Polytechnic; PS-Primary School; G-Government; EC-Engineering College; VTS-Vocational School /ITI; MS-Middle School; P-Private; MC-Medical College; SSD-Special School For Disabled; SS-Secondary School; MI-Management College/Institute;

Note – 1 - Available within the village; 2 - Not available

TABLE 3.54: MEDICAL FACILITIES IN THE STUDY AREA

| SI. No. | Village Name | CHC | PHC | PHSC | MCW | TBC | HA | HAM | D | VH | MHC | FWC | NGM-I/O |
|---------|------------------|-----|-----|------|-----|-----|----|-----|---|----|-----|-----|---------|
| 1 | Appanaickenpatti | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | b |
| 2 | Arasampalayam | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | b |
| 3 | Arisippalayam | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 4 | Bogampatti | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | c |
| 5 | Edayapalayam | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | c |
| 6 | Kalangal | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | c |
| 7 | Kallapalayam | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | c |
| 8 | Kondampatty | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | a |
| 9 | Mettubavi | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | b |
| 10 | Myleripalayam | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 11 | Odderpalayam | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | a |
| 12 | Pachapalayam | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | c |
| 13 | Panappatti | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | c |
| 14 | Pappampatti | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | c |
| 15 | Peedampalli | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | b |
| 16 | Seerappalayam | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | a |
| 17 | Sellakkarichal | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | b |
| 18 | Solavampalayam | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | b |
| 19 | Vadasithur | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | b |
| 20 | Vadavalli | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | b |

Abbreviations: CHC-Community Health Centre; TBC-TB Clinic; VH- Vetrinary Hospital; PHC-Primary Health Centre; HA-Aallopathic Hospital; FWC-Family Welfare Centre; PHSC-Primary Health Sub Centre; HAM-Alternative Medicine Hospital; MH-Mobile Health Clinic; MCW-Maternity and Child Welfare Centre; D-Dispensary; NGM-I/O-Non Government Medical Facilities In & Out Patient

Note – 1 - Available within the village; 2 - Not available a-facility available at <5kms b-facility available at >10kms

Source: www.censusindia.gov.in - Tamilnadu Census of India – 2011

3.6.6 Recommendation and Suggestion

- Awareness program to be conducted to make the population aware to get education and a better livelihood.
- Vocational training programme can be organized to make the people self - employed, particularly for women and unemployed youth.
- On the basis of qualification and skills local community may be preferred. Long term and short-term employments can be generated.
- Health care centre and ambulance facility can be provided to the population to get easy access to medical facilities. Maternity facility should be made available at the place to avoid going to distant places for treatment which involves risks. Apart from that as these areas are prone to various diseases a hospital with modern facilities should be opened on a priority basis in a central place to provide better health facilities to the villagers around the project.
- While developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.

3.6.7 Summary & Conclusion

The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

3.6.8 Structure Map upto 300m Radius

Fig No:3.29 Structure Map 300m

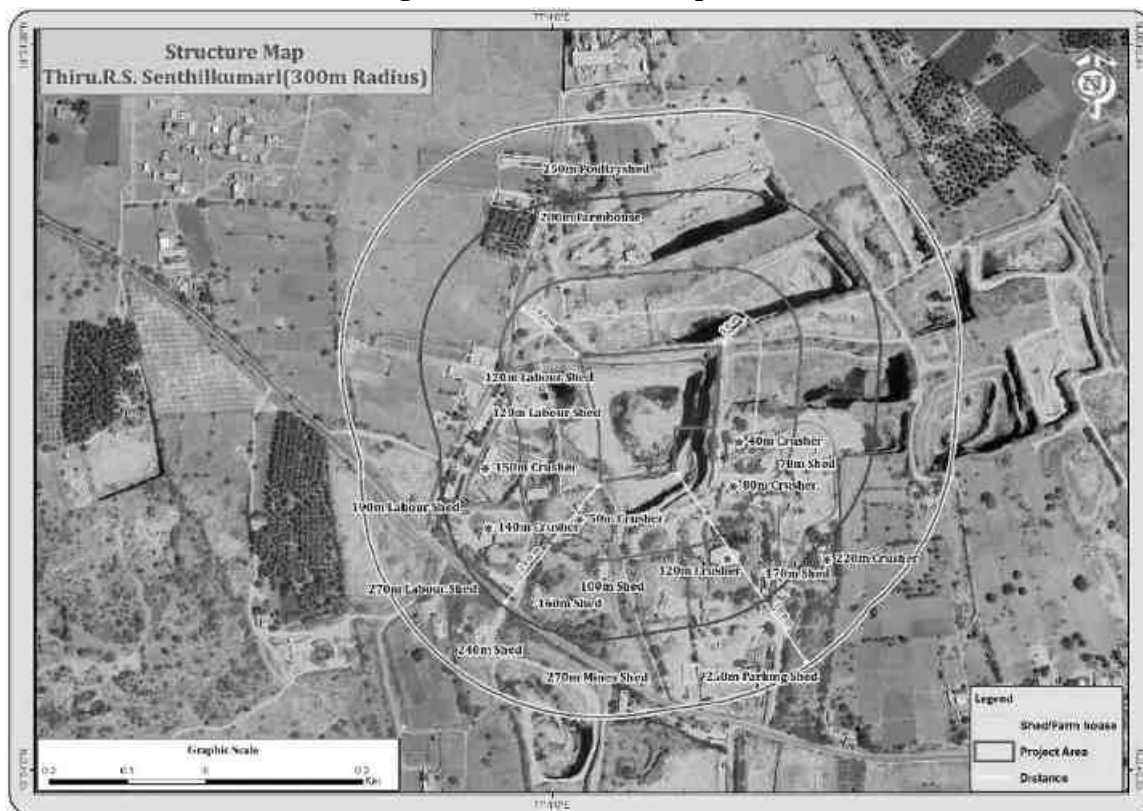


Table No 3.53 Structures details in the study area around 300m Radius

| Enumeration of Structure from 0 – 300m Radius | | | | | | |
|---|--|-------------------------------------|---|------------------|-------------------------------------|--|
| Structure Numbers | Distance & Direction from the project site | Structure Details and Usage Purpose | Type of Structure Structures (Kutch/ Brick/ Cement/ RCC/ Framed Structures) | No. of Occupants | Structure belongs to owner (Yes/No) | Remarks |
| 1 | 40m – East | Crusher | Framed Structure | Nil | No | Production of M-Sand, P-Sand and Jally |
| 2 | 50m - South West | Crusher | Framed Structure | Nil | No | Production of M-Sand, P-Sand and Jally |
| 3 | 70m – East | Shed | Sheet Structure | Nil | Yes | Storage purpose |
| 4 | 80m - South East | Crusher | Framed Structure | Nil | No | Production of M-Sand, P-Sand and Jally |
| 5 | 120m - South East | Crusher | Framed Structure | Nil | No | Production of M-Sand, P-Sand and Jally |
| 6 | 170m - South East | Shed | Sheet Structure | Nil | No | Storage purpose |
| 7 | 100m – South | Shed | Sheet Structure | Nil | No | Storage purpose |
| 8 | 160m – South West | Shed | Sheet Structure | Nil | No | Storage purpose |
| 9 | 140m – South West | Crusher | Framed Structure | Nil | No | Production of M-Sand, P-Sand and Jally |
| 10 | 190m - West | Labour Shed | Sheet Structure | Nil | No | Used as rest shelter for the labours |
| 11 | 150m –West | Crusher | Framed Structure | Nil | No | Production of M-Sand, P-Sand and Jally |
| 12 | 120m – West | Labour Shed | Sheet Structure | Nil | No | Used as rest shelter for the labours |
| 13 | 120m – West | Labour Shed | Sheet Structure | Nil | No | Used as rest shelter for the labours |
| 14 | 220m – South East | Crusher | Framed Structure | Nil | No | Production of M-Sand, P-Sand and Jally |

| | | | | | | |
|----|-------------------|--------------|-----------------|------|----|---|
| 15 | 250m – South | Parking Shed | Sheet Structure | Nil | No | Used for stop vehicles |
| 16 | 270m – South | Mines Shed | Sheet Structure | Nil | No | Used to store Mine Materials |
| 17 | 240m – South West | Shed | Sheet Structure | Nil | No | Storage purpose |
| 18 | 270m – South West | Labour Shed | Sheet Structure | Nil | No | Used as rest shelter for the labours |
| 19 | 200m - North West | Farmhouse | Sheet Structure | 2Nos | No | Used for agriculture purpose and shelter for domestic animals |
| 20 | 250m - North West | Poultryshed | Tile Structure | Nil | No | Production of Eggs and Meats |

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

Environmental impacts both direct and indirect on various environmental attributes due to proposed mining activity will be created in the surrounding environment, during the operational and post-operational phases. The occurrence of mineral deposits, being site specific, their exploitation, often, does not allow for any choice except adoption of eco-friendly operation. The methods are required to be selected in such a manner, so as to maintain environmental equilibrium ensuring sustainable development.

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction.

Several scientific techniques and methodologies are available to predict impacts of physical environment. Mathematical models are the best tools to quantitatively describe the cause-and-effect relationships between sources of pollution and different components of environment. In cases where it is not possible to identify and validate a model for a particular situation, predictions have been arrived at based on logical reasoning / consultation / extrapolation.

The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail

- Land environment
- Soil environment
- Water Environment
- Air Environment
- Noise Environment
- Socio economic environment
- Biological Environment

Based on the baseline environmental status at the project site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed.

4.1 LAND ENVIRONMENT:

4.1.2 Anticipated Impact from all Proposed Projects

- Permanent or temporary change on land use and land cover.
- Change in Topography: Topography of the ML area will change at the end of the life of the mine.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.

If no due care is taken wash off from the exposed working area may choke the water course & can also cause the siltation of water course

4.1.2 Common Mitigation Measures for Respective Individual Proposed Projects

- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.
- Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area.
- Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt.
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir
- In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m safety barrier and other safety provided) so as to help minimise dust emissions.
- Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle.

4.1.3 Soil Environment

The proposed projects area is covered by thin layer of gravel formation and the average thickness is about 1m - 2m, the excavated gravel will be directly sold to needy customers in open market.

4.1.4 Impact on Soil Environment from all Proposed Projects

Erosion and Sedimentation (Removal of protective vegetation cover; Exposure of underlying soil horizons that may be less pervious, or more erodible than the surface layers; Reduced capacity of soils to absorb rainfall; Increased energy in storm-water runoff due to concentration and velocity; and Exposure of subsurface materials which are unsuitable for vegetation establishment).

4.1.5 Common Mitigation Measures for Respective Individual Proposed Projects

- Run-off diversion – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion.
- Sedimentation ponds - Run-off from working areas will be routed towards sedimentation ponds. These trap sediments and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- Retain vegetation – Retain existing or re-plant the vegetation at the site wherever possible.
- Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

4.1.6 Waste Dump Management

There is no waste anticipated in this Rough Stone and gravel quarrying operation. The entire quarried out materials will be utilized (100%).

4.2 WATER ENVIRONMENT

4.2.1 Anticipated Impact from all Proposed Projects

- The major sources of water pollution normally associated due to mining and allied operations are:
 - Generation of waste water from vehicle washing.
 - Washouts from surface exposure or working areas
 - Domestic sewage
 - Disturbance to drainage course in the project area
-

- Mine Pit water discharge
 - Increase in sediment load during monsoon in downstream of lease area
 - This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of Oil & grease, suspended solids.
 - The sewage from soak pit may percolate to the ground water table and contaminate it.
 - Surface drainage may be affected due to Mining
 - Abstraction of water may lead to depletion of water table

Detail of water requirements in KLD as given below:

TABLE 4.1: WATER REQUIREMENT

| Purpose | Quantity | Source |
|-----------------------------|----------------|--|
| Dust Suppression | 0.7 KLD | From Existing bore wells from nearby area |
| Green Belt | 0.5 KLD | From Existing bore wells from nearby area |
| Domestic & Drinking purpose | 0.3 KLD | From existing, bore wells and drinking water will be sourced from Approved water vendors |
| Total | 1.5 KLD | |

* Water for drinking purpose will be brought from approved water vendors

Source: Approved Mining Plan Pre-Feasibility Report

4.2.2 Common Mitigation Measures for Respective Individual Proposed Projects

- Garland drain, settling tank will be constructed along the proposed mining lease area. The Garland drain will be connected to settling tank and sediments will be trapped in the settling traps and only clear water will be discharged out to the natural drainage
- Rainwater will be collected in sump in the mining pits and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judiciously utilize the rainwater as part of rainwater harvesting system.
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water.
- Reuse the water collected during storm for dust suppression and greenbelt development within the mines
- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Using flocculating or coagulating agents to assist in the settling of suspended solids during monsoon seasons;
- Periodic (every 6 months once) analysis of quarry 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.
- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
- De-silting will be carried out before and immediately after the monsoon season.
- Regular monitoring (every 6 months once) and analysing the quality of water in open well, bore wells and surface water

4.3 AIR ENVIRONMENT

4.3.1. Anticipated Impact from all Proposed Projects

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.

- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

4.3.1.1. Modelling of Incremental Concentration from all Proposed Projects

Wind erosion of the exposed areas and the air borne particulate matter generated by quarrying operation, and transportation are mainly PM₁₀ & PM_{2.5} and emissions of Sulphur dioxide (SO₂) & 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.

Similarly, loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles causes of pollution. This leads to an impact on the ambient air environment around the project area.

Anticipated incremental concentration due to this quarrying activity and net increase in emissions due to quarrying activities within 500 meters around the project area is predicted by Open Pit Source modelling using **AERMOD Software.**

The impact on Air Environment is due to the mining and allied activities during Land Development phase, Mining process and Transportation. The emissions of Sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are marginal. Loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the mining activities releasing Particulate Matter (PM₁₀) affecting Ambient Air of the area. Prediction of impacts on air environment has been carried out taking into consideration cumulative production three proposed quarries. Air environment and net increase in emissions by Open pit source modelling in AERMOD Software.

4.3.2.1 Emission Estimation

An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

Where:

E = emissions;

A = activity rate;

EF = emission factor, and

ER =overall emission reduction efficiency, %

The proposed mining activity includes various activities like ground preparation, excavation, handling and transport of Rough Stone. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 4-2.

4.3.2 Frame work of Computation & Model details

By using the above-mentioned inputs, ground level concentrations due to the quarrying activities have been estimated to know the incremental concentration in ambient air quality and impact in the study area. The effect of air pollutants upon receptors are influenced by concentration of pollutants and their dispersion in the atmosphere. Air quality modelling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards and to apply mitigation measures to reduce impact caused by quarrying activities. Suspended Particulate Matter (SPM) is the major pollutant occurred during quarrying activities. The prediction included the impact of Excavation, Drilling, Blasting (Occasionally), loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

Impact was predicted over the distance of 10 km around the source to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of PM₁₀

was observed close to the source due to low to moderate wind speeds. Incremental value of PM10 was superimposed on the base line data monitored at the proposed site to predict total GLC of PM10 due to combined impacts

TABLE 4.2: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS

| | Activity | Source type | Value | Unit |
|--|-----------------|--------------|-------------|-------|
| Estimated Emission Rate for PM ₁₀ | Drilling | Point Source | 0.060567625 | g/s |
| | Blasting | Point Source | 0.000197159 | g/s |
| | Mineral Loading | Point Source | 0.037145982 | g/s |
| | Haul Road | Line Source | 0.002484775 | g/s/m |
| | Overall Mine | Area Source | 0.050208407 | g/s |
| Estimated Emission Rate for SO ₂ | Overall Mine | Area Source | 0.00018518 | g/s |
| Estimated Emission Rate for NOx | Overall Mine | Area Source | 0.000008091 | g/s |

FIGURE 4.1: AERMOD TERRAIN MAP

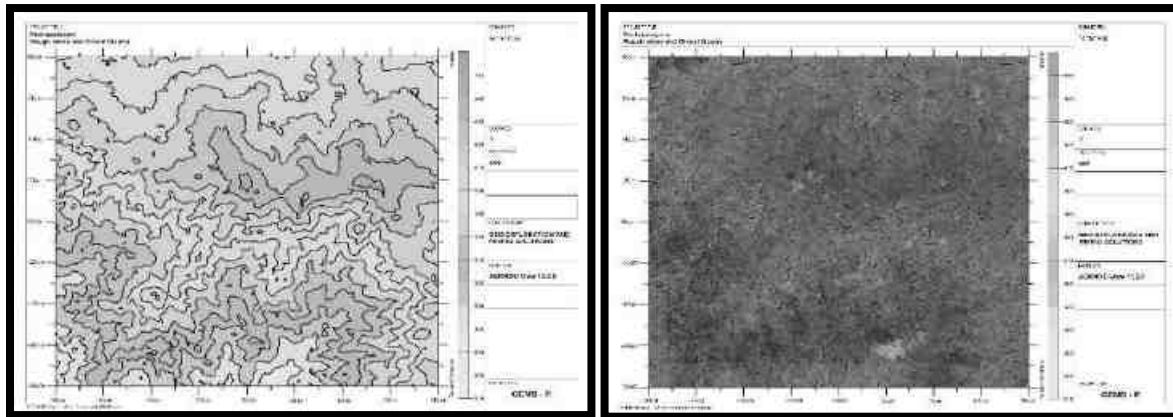


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM₁₀

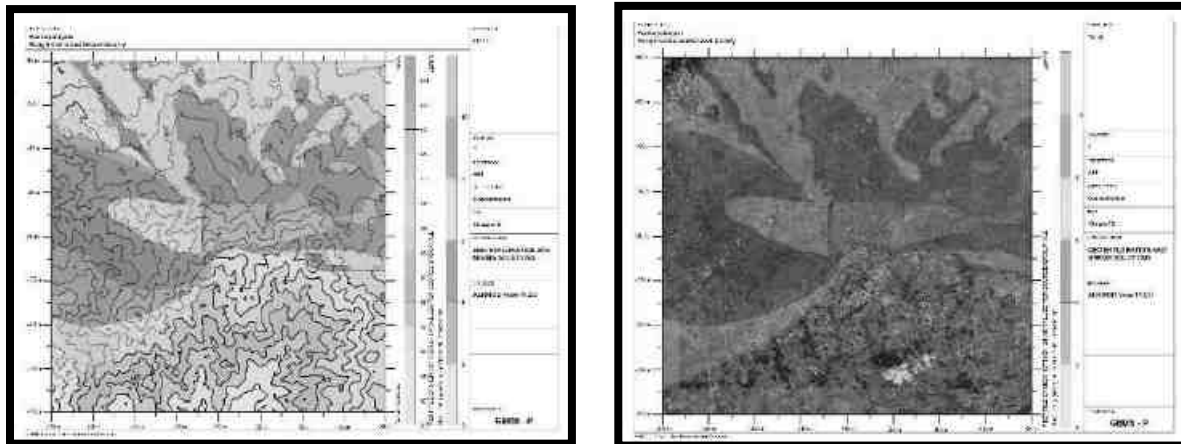


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF PM₂₅

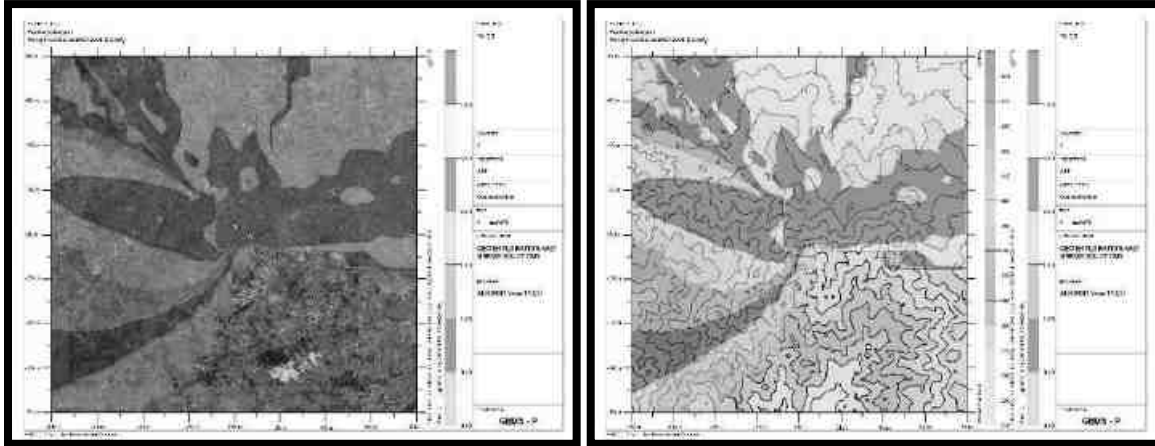


FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF NO_x

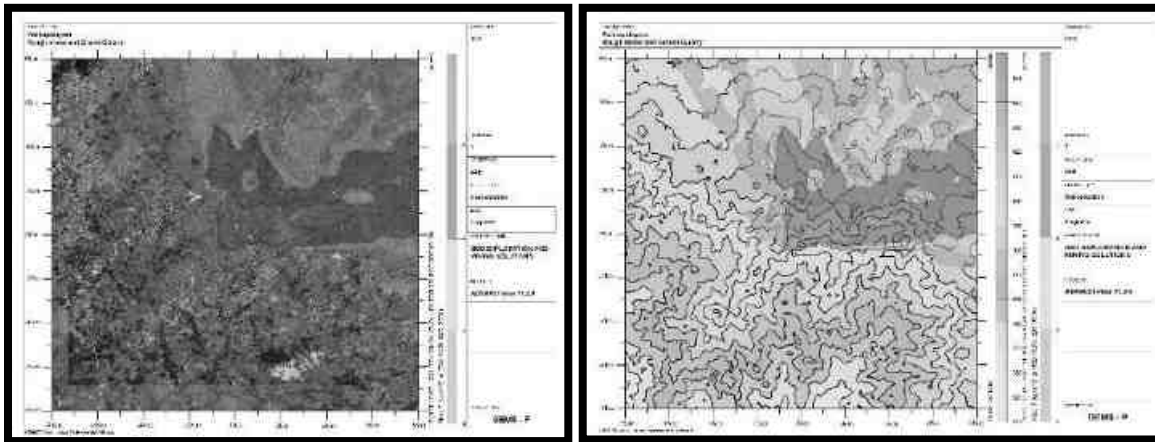


FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF SO₂

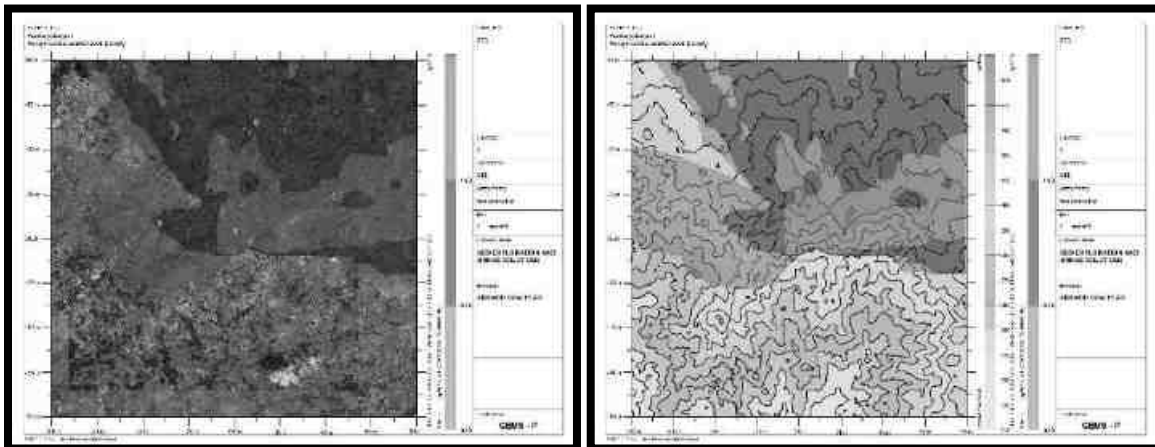
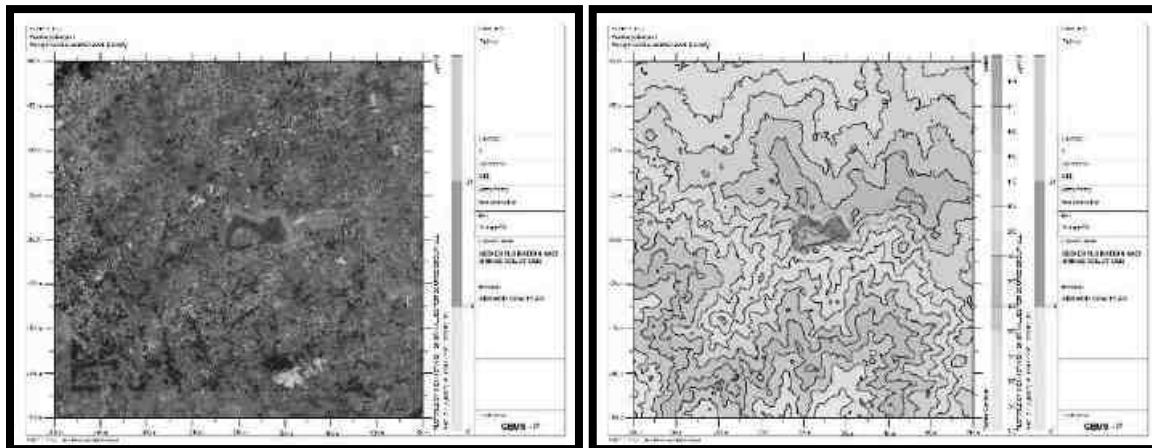


FIGURE 4.6: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST**4.3.2.1 Model Results**

The post project Resultant Concentrations of PM₁₀, PM_{2.5}, SO₂& NO_x (GLC) is given in Table below:

TABLE 4.3: INCREMENTAL & RESULTANT GLC OF PM₁₀

| Station Code | Location | X Coordinate (m) | Y Coordinate (m) | Average Baseline PM ₁₀ (µg/m ³) | Incremental value of PM ₁₀ due to mining (µg/m ³) | Total PM ₁₀ (µg/m ³) |
|--------------|-----------------------------|------------------|------------------|--|--|---|
| AAQ1 | 10°54'25.78"N 77° 4'8.34"E | 51 | 1 | 45.8 | 10.79 | 56.5 |
| AAQ2 | 10°54'11.51"N 77° 4'29.65"E | 703 | -442 | 43.3 | 3.00 | 46.3 |
| AAQ3 | 10°54'37.41"N 77° 2'20.12"E | -3257 | 358 | 43.1 | 6.81 | 49.9 |
| AAQ4 | 10°55'16.54"N 77° 6'30.52"E | 4398 | 1572 | 46.1 | 9.79 | 55.9 |
| AAQ5 | 10°52'18.84"N 77° 3'39.38"E | -835 | -3924 | 42.0 | 0 | 42.0 |
| AAQ6 | 10°52'35.83"N 77° 5'56.31"E | 3352 | -3396 | 42.0 | 0 | 42.0 |
| AAQ7 | 10°57'3.71"N 77° 4'38.09"E | 963 | 4885 | 44.9 | 8.49 | 53.4 |
| AAQ8 | 10°53'37.21"N 77° 1'10.69"E | -5380 | -1502 | 42.9 | 4.53 | 47.4 |

TABLE 4.4: INCREMENTAL & RESULTANT GLC OF PM_{2.5}

| Station Code | Location | X Coordinate (m) | Y Coordinate (m) | Average Baseline PM _{2.5} (µg/m ³) | Incremental value of PM _{2.5} due to mining (µg/m ³) | Total PM _{2.5} (µg/m ³) |
|--------------|-----------------------------|------------------|------------------|---|---|--|
| AAQ1 | 10°54'25.78"N 77° 4'8.34"E | 51 | 1 | 23.7 | 4.79 | 28.5 |
| AAQ2 | 10°54'11.51"N 77° 4'29.65"E | 703 | -442 | 21.6 | 1.28 | 22.8 |
| AAQ3 | 10°54'37.41"N 77° 2'20.12"E | -3257 | 358 | 22.2 | 2.63 | 24.8 |
| AAQ4 | 10°55'16.54"N 77° 6'30.52"E | 4398 | 1572 | 21.8 | 4.07 | 25.9 |
| AAQ5 | 10°52'18.84"N 77° 3'39.38"E | -835 | -3924 | 42.0 | 0.14 | 42.1 |
| AAQ6 | 10°52'35.83"N 77° 5'56.31"E | 3352 | -3396 | 43.4 | 0 | 43.4 |
| AAQ7 | 10°57'3.71"N 77° 4'38.09"E | 963 | 4885 | 23.9 | 3.85 | 27.8 |
| AAQ8 | 10°53'37.21"N 77° 1'10.69"E | -5380 | -1502 | 22.4 | 1.72 | 24.1 |

TABLE 4.5: INCREMENTAL & RESULTANT GLC OF SO₂

| Station Code | Location | X Coordinate (m) | Y Coordinate (m) | Average Baseline SO ₂ (µg/m ³) | Incremental value due to mining (µg/m ³) | Total SO ₂ (µg/m ³) |
|--------------|-----------------------------|------------------|------------------|---|--|--|
| AAQ1 | 10°54'25.78"N 77° 4'8.34"E | 51 | 1 | 8.1 | 1.49 | 9.6 |
| AAQ2 | 10°54'11.51"N 77° 4'29.65"E | 703 | -442 | 8.6 | 0.11 | 8.7 |
| AAQ3 | 10°54'37.41"N 77° 2'20.12"E | -3257 | 358 | 6.4 | 0.57 | 7.0 |
| AAQ4 | 10°55'16.54"N 77° 6'30.52"E | 4398 | 1572 | 8.0 | 1.06 | 9.1 |
| AAQ5 | 10°52'18.84"N 77° 3'39.38"E | -835 | -3924 | 8.1 | 0 | 8.1 |
| AAQ6 | 10°52'35.83"N 77° 5'56.31"E | 3352 | -3396 | 6.9 | 0 | 6.9 |
| AAQ7 | 10°57'3.71"N 77° 4'38.09"E | 963 | 4885 | 7.6 | 0.81 | 8.4 |
| AAQ8 | 10°53'37.21"N 77° 1'10.69"E | -5380 | -1502 | 6.9 | 0.2 | 7.1 |

TABLE 4.6: INCREMENTAL & RESULTANT GLC OF NO_x

| Station Code | Location | X Coordinate (m) | Y Coordinate (m) | Average Baseline NO _x (µg/m ³) | Incremental value due to mining (µg/m ³) | Total NO _x (µg/m ³) |
|--------------|-----------------------------|------------------|------------------|---|--|--|
| AAQ1 | 10°54'25.78"N 77° 4'8.34"E | 51 | 1 | 24 | 7.51 | 31.5 |
| AAQ2 | 10°54'11.51"N 77° 4'29.65"E | 703 | -442 | 24.6 | 0 | 24.6 |
| AAQ3 | 10°54'37.41"N 77° 2'20.12"E | -3257 | 358 | 22 | 0 | 22.0 |
| AAQ4 | 10°55'16.54"N 77° 6'30.52"E | 4398 | 1572 | 23 | 6 | 29.0 |
| AAQ5 | 10°52'18.84"N 77° 3'39.38"E | -835 | -3924 | 23.6 | 0 | 23.6 |
| AAQ6 | 10°52'35.83"N 77° 5'56.31"E | 3352 | -3396 | 23.5 | 0 | 23.5 |
| AAQ7 | 10°57'3.71"N 77° 4'38.09"E | 963 | 4885 | 21.4 | 3.7 | 25.1 |
| AAQ8 | 10°53'37.21"N 77° 1'10.69"E | -5380 | -1502 | 23.7 | 0 | 23.7 |

TABLE 4.7: INCREMENTAL & RESULTANT GLC OF FUGITIVE DUST

| Station Code | Location | X Coordinate (m) | Y Coordinate (m) | Average Baseline Fugitive (µg/m ³) | Incremental value due to mining (µg/m ³) | Total Fugitive Dust (µg/m ³) |
|--------------|-----------------------------|------------------|------------------|--|--|--|
| AAQ1 | 10°54'25.78"N 77° 4'8.34"E | 51 | 1 | 64.05 | 21 | 85.0 |
| AAQ2 | 10°54'11.51"N 77° 4'29.65"E | 703 | -442 | 64.35 | 0 | 64.3 |
| AAQ3 | 10°54'37.41"N 77° 2'20.12"E | -3257 | 358 | 63.77 | 0 | 63.8 |
| AAQ4 | 10°55'16.54"N 77° 6'30.52"E | 4398 | 1572 | 63.42 | 0 | 63.4 |
| AAQ5 | 10°52'18.84"N 77° 3'39.38"E | -835 | -3924 | 67.35 | 0 | 67.4 |
| AAQ6 | 10°52'35.83"N 77° 5'56.31"E | 3352 | -3396 | 66.05 | 0 | 66.0 |
| AAQ7 | 10°57'3.71"N 77° 4'38.09"E | 963 | 4885 | 68.34 | 0 | 68.3 |
| AAQ8 | 10°53'37.21"N 77° 1'10.69"E | -5380 | -1502 | 67.55 | 0 | 67.5 |

From the resultant of cumulative concentration i.e., Background + Incremental Concentration of pollutant in all the receptor locations without effective mitigation measures are still within the prescribed NAAQ limits of 100, 80 & 80 µg/m³ for PM₁₀, SO₂ & NO_x respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

4.3.4. Common Mitigation Measures for Respective Individual Proposed Projects

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

Advantages of Wet Drilling: -

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

Blasting –

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e. at the time lunch hours, controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

Haul Road & Transportation –

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

Green Belt –

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas

Occupational Health –

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

4.4 NOISE ENVIRONMENT

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. These activities will not cause any problem to the inhabitants of this area because there is no human settlement in close proximity to the project area. Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities.

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources. Noise modelling has been carried out to assess the impact on surrounding ambient noise levels.

Basic phenomenon of the model is the geometric attenuation of sound. Noise at a point generates spherical waves, which are propagated outwards from the source through the air at a speed of 1,100 ft/sec, with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A).

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

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

Where:

Lp_1 & Lp_2 are sound levels at points located at distances r_1 & r_2 from the source.

$Ae_{1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

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

4.4.1 Anticipated Impact from all Proposed Projects

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are:

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4-8.

TABLE 4.8: ACTIVITY AND NOISE LEVEL PRODUCED BY MACHINERY

| Sl.No. | Machinery / Activity | Impact on Environment? | Noise Produced in dB(A) at 50 ft from source* |
|----------------------|----------------------|------------------------|---|
| 1 | Blasting | Yes | 94 |
| 2 | Jack Hammer | Yes | 88 |
| 3 | Compressor | No | 81 |
| 4 | Excavator | No | 85 |
| 5 | Tipper | No | 84 |
| Total Noise Produced | | | 95.8 |

*50 feet from source = 15.24 meters

Source: U.S. Department of Transportation (Federal Highway Administration) – Construction Noise Handbook

The total noise to be produced by mining activity is calculated to be 95.8 dB (A). Generally, most mining operations produce noise between 100-109 dB (A). We have considered equipment and operation noise levels (max) to be approx. 109 dB (A) for noise prediction modelling.

TABLE 4.9: PREDICTED NOISE INCREMENTAL VALUES

| Location ID | N1 | N2 | N3 | N4 | N5 | N6 | N7 | N8 |
|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Maximum Monitored Value (Day) dB(A) | 48.2 | 48.2 | 48.9 | 49.3 | 45.4 | 43.2 | 43.99 | 43.99 |
| Incremental Value dB(A) | 47.30 | 42.60 | 30.56 | 27.04 | 28.06 | 27.04 | 26.48 | 25.29 |
| Total Predicted Noise level dB(A) | 46.30 | 49.26 | 48.96 | 49.33 | 45.48 | 43.30 | 44.07 | 44.05 |

The incremental noise level is found within the range of 42.60-47.3dB (A) in Core Zone and 25.29 – 30.56 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations are within permissible limits of Industrial area (core zone) & Residential area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O.

1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

4.4.2 Common Mitigation Measures for Respective Individual Proposed Projects

The following noise mitigation measures are proposed for control of Noise

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

4.4.3 Ground Vibrations

Ground vibrations due to the proposed mining activities are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc., However, the major source of ground vibration from the quarry is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to the structures. Nearest habitation from the proposed project areas is listed in below table. The ground vibrations due to the blasting in the quarry are calculated using the empirical equation.

The empirical equation for assessment of peak particle velocity (PPV) is:

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

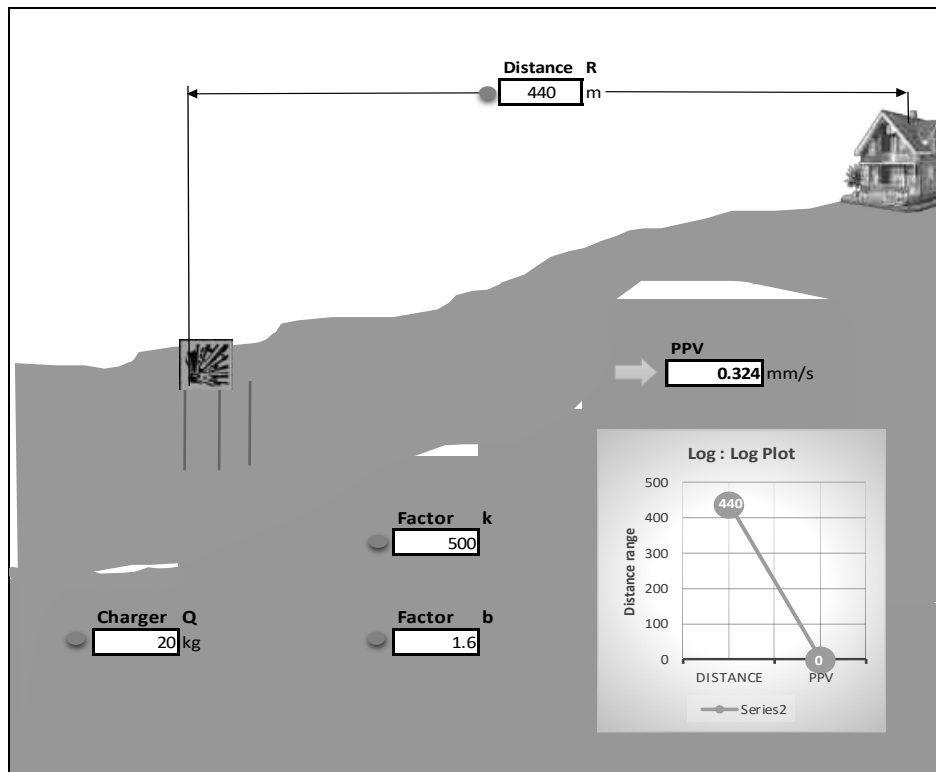
Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 4.10: PREDICTED PPV VALUES DUE TO BLASTING

| Maximum Charge in kgs | Nearest Habitation in m | PPV in m/ms |
|-----------------------|-------------------------|-------------|
| 20 | 440-NW | 0.324 |

FIGURE 4.6: GROUND VIBRATION PREDICTION

From the above graph, the charge per blast of 20kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. But the all the project proponents ensure that the charge per blast shall be less than 20 kg and carry out blasting twice or thrice a day based on the onsite conditions under the supervision of competent person employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

4.4.3.1 Common Mitigation Measures for Respective Individual Proposed Projects

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

- The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
- Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 mm/s.
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices

4.5 ECOLOGY AND BIODIVERSITY

Mining activities generally result in deforestation, land degradation, and water, air, and noise pollution which directly or indirectly affect the faunal and floral status of the mine area. However, the occurrence and magnitude of these impacts are entirely dependent upon the project location, mode of operation, and technology involved. Existing roads will be used; new roads will not be constructed to reduce the impact on flora. Wildlife is not commonly found in the lease area and its immediate environments because of the lack of vegetal cover and surface water.

4.5.1. Anticipated Impact on Flora

- None of the plants will be cut during the operational phase of the mine.
- There shall be negligible air emissions or effluents from the project site. During the loading of the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly.
- Most of the land in the buffer area is undulating terrain with croplands, grass patches, and small shrubs. Hence, there will be no effect on the flora of the region.

4.5.1.1. Mitigation Measures

The project site should have land to develop a greenbelt in and around the limits of the mine, along roads, and another vacant area. The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. Although the project will not lead to any tree cutting, it is proposed to improve the greenery of the locality through plantation services. To avoid dust emissions, the mined materials will be covered with tarpaulin during transportation.

- Plants that grow fast will be preferred.
- Preference for high canopy covers plants with local varieties.
- Perennial and evergreen plants will be preferred.
- The development of the Green Belt is an important aspect for any plant because:
 - a. It improves the ambient air quality by controlling Suspended Particulate Matter (SPM) in the air.
 - b. It helps in noise abatement for the surrounding area.
 - c. It helps in the settlement of new birds and insects within itself.
 - d. It maintains the ecological balance.
 - e. It increases the aesthetic value of the site.

Table No 4.11. List of plant species proposed for Greenbelt development

| S. No | Scientific name | Tamil Name |
|-------|-----------------------------|----------------|
| 1 | <i>Aegle marmelos</i> | Vilva Maram |
| 2 | <i>Albizia lebbbeck</i> | Vaagai Maram |
| 3 | <i>Cassia fistula</i> | Konrai tree |
| 4 | <i>Lannea coromandelica</i> | Othiyam |
| 5 | <i>Limonia acidissima</i> | Vila maram |
| 6 | <i>Syzygium cumini</i> | Naval maram |
| 7 | <i>Toona ciliata</i> | Santhana Vembu |

| | | |
|---|-----------------------------|--------------|
| 8 | <i>Ficus hispida</i> | Aththi maram |
| 9 | <i>Borassus flabellifer</i> | Panai-maram |
| Species suitable for abatement of noise and dust pollution | | |
| 1 | <i>Azadirachta indica</i> | Vembhu maram |
| 2 | <i>Ficus religiosa</i> | Arasan maram |
| 3 | <i>Ficus hispida</i> | Aththi maram |
| 4 | <i>Bombax ceiba</i> | Mul Elavu |
| 5 | <i>Syzygium cumini</i> | Naval maram |
| 6 | <i>Tamarindus indica</i> | Puliyamaram |
| 7 | <i>Mangifera indica</i> | Manga maram |
| 8 | <i>Harwickia binata</i> | Anjan maram |

(*Source: Guidance for Developing Green Belts Manual, CPCB 2000)

4.5.2. Anticipated Impact on Fauna

- No rare, endemic & or endangered species are reported in the buffer zone. However, during the course of mining, the management will practice the scientific method of mining with a proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife.
- Fencing around the mine lease area to restrict the entry of stray animals.
- Green belt development will be carried out which will help in minimizing adverse impact on the flora found in the area.

4.5.2.1. Mitigation Measures

- A suitable plan for the conservation of Schedule-I Species have been prepared and the necessary fund for implementation for the same will be made.
- All the preventive measures will be taken for the growth & development of fauna.
- Creating and developing awareness for nature and wildlife in the adjoining villages.
- The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 p.m.
- Topsoil has a large number of seeds of native plant species in the mining area.
- Checks and controls the movement of vehicles in and out of the mine.
- Undertaking mitigative measures for a conducive environment for the flora and fauna in consultation with the Forest Department.
- A dust suppression system will be installed within the mine and periphery of the mine.

4.5.3. Impact on Aquatic Biodiversity

Mining activities will not disturb the aquatic ecology as there is no effluent discharge proposed from the Rough Stone and Gravel quarry. There is no natural perennial surface water body within the mine lease area, like wetlands, rivers streams, lakes, and farmer sites. There are few water bodies located in the study area. There are a few Odai and Canals located in the study area. There is no impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. Kindly refer the clause no 3.5.12. Aquatic biodiversity is observed in the study area.

4.5.4. Impacts on Bird Fauna

The project does not involve any tree felling or removal of vegetation. Therefore, there may not be loss of nesting and roosting habitat of avian fauna.

4.5.5. Impacts on wildlife

There is no National Park, Wildlife Sanctuary, Biosphere Reserve, Wildlife corridors, and Tiger/Elephant Reserve found within 10 km radius of the project site.

4.5.5. Impact Assessment on Biological Environment

A detail of impact and assessments was mentioned in Table No 4.14

Table 4.12: Overall Ecological impact assessments of Pachapalayam Village, Rough Stone and Gravel quarry, Coimbatore District, Tamil Nadu.

| S.No | Attributes | Assessment |
|------|---|--|
| 1 | Impact of mining activity on agricultural land nearby the proposed project site. | Agricultural land is located away from the proposed project site. There are no impacts on the agricultural land & Horticulture. Kindly refer to the conclusion. |
| | Activities of the project affect the breeding/nesting sites of birds and animals | No breeding and nesting site was identified in the mining lease site. The fauna sighted mostly migrated from the buffer area. |
| 2 | Located near an area populated by rare or endangered species | No Endangered, Critically Endangered, or vulnerable species were sighted in the core mining lease area. |
| 3 | Proximity to national park/wildlife sanctuary/reserve forest /mangroves/ coastline/estuary/sea | There is no National Park/ Wildlife Sanctuary/ Reserve Forest/ Mangroves and Eco-Sensitive zone/ Critically polluted area/ HACA/CRZ located within 10 km radius of the area. |
| 4 | The proposed project restricts access to waterholes for wildlife | 'No ' |
| 5 | Proposed mining project impact surface water quality that also provides water to wildlife | 'No 'scheduled or threatened wildlife animals are sighted regularly core in the core area. |
| 6 | Proposed mining project increase siltation that would affect nearby biodiversity areas. | Surface runoff management such as drains is constructed properly so there will be no siltation effect in the nearby mining area. |
| 7 | Risk of fall/slip or cause death to wild animals due to project activities. | 'No' |
| 8 | The project release effluents into a water body that also supplies water to a wildlife. | No water body near to core zone so the chances of water becoming polluted is low. |
| 9 | Mining projects affect the forest-based livelihood/ any specific forest product on which local livelihood depended. | 'No' |
| 10 | The project likely to affect migration routes. | 'No 'migration route was observed during the monitoring period. |
| 11 | The project is likely to affect the flora of an area, which have medicinal value | 'No' |
| 12 | Forestland is to be diverted, has carbon high sequestration. | 'No 'There was no forest land diverted. |

| | | |
|----|--|--|
| 13 | The project is likely to affect wetlands, Fish breeding grounds, and marine ecology. | 'No'. Wetland was not present in the near core Mining lease area. No breeding and nesting ground is present in the core mining area. |
|----|--|--|

(*Source: EIA Guidance Manual-Mining and Minerals, 2010)

TABLE 4.13: RECOMMENDED SPECIES FOR GREENBELT DEVELOPMENT PLAN

| Sl.No | Name of the plant (Botanical) | Family Name | Common Name | Habit |
|-------|-------------------------------|-------------|-----------------------|-------|
| 1 | <i>Azadirachta indica</i> | Meliaceae | Neem, Vembu | Tree |
| 2 | <i>Albiziafalcataria</i> | Fabaceae | Tamarind, Puliyamaram | Tree |
| 3 | <i>Polyalthialongifolia</i> | Annonaceae | Kattumaram | Tree |
| 4 | <i>Borassus Flabellifer</i> | Arecaceae | Palmyra Palm | Tree |

The 7.5m Safety distance along the boundary has been identified to be utilized for subsequent Afforestation. However, the afforestation should always be carried out in a systematic and scientific manner. Regional trees like Neem, Pongamia, Pinnata, and Casuarina will be planted along the Lease boundary and avenue plantation will be carried out in respective proposed projects. The rate of survival expected to be 80% in this area. Afforestation Plan is given in Table No.4.16 and budget of green belt development plan are given in Table No.4.17

TABLE 4.14: GREENBELT DEVELOPMENT PLAN

| No. of trees proposed to be planted | Area to be covered in m2 | Name of the species |
|-------------------------------------|--|-------------------------------------|
| 1000 | The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development. | Neem, Vilvam , Ashokha, Panai etc., |

TABLE 4.15: BUDGET FOR GREENBELT DEVELOPMENT PLAN

| ACTIVITY | YEAR | | | | | RATE | COST (Rs.) |
|----------------------------------|------|----------|----|-----|----|------|----------------------|
| | | I | II | III | IV | | |
| Plantation in approach road | Nos. | 1000 | - | - | - | - | @200 Rs |
| | Cost | 2,00,000 | - | - | - | - | Per sapling |
| Wire Fencing (In Mtrs) 610 Mtrs | | 1,83,000 | - | - | - | - | @300 Rs Per Meter |
| Garland drain (In Mtrs) 605 Mtrs | | 1,82,000 | - | - | - | - | @300 Rs Per Meter |
| TOTAL | | | | | | | 5,65,000/- |

4.6 SOCIO ECONOMIC

4.6.1 Anticipated Impact from all Proposed Projects

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

4.6.2 Common Mitigation Measures for Respective Individual Proposed Projects

- Good maintenance practices will be adopted for all machinery and equipment, which will help to avert potential noise problems.

- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- Air pollution control measure will be taken to minimize the environmental impact within the core zone.
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules.
- Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc., from this project directly and indirectly.
- From above details, the quarry operations will have highly beneficial positive impact in the area

4.7 OCCUPATIONAL HEALTH AND SAFETY

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

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

4.7.1 Respiratory Hazards

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

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

4.7.2 Noise

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

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

4.7.3 Physical Hazards

The following measures are proposed for control of physical hazards

- Specific personnel training on work-site safety management will be taken up;
- Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide, especially after blasting activities;
- Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up

4.7.4 Occupational Health Survey

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests

- General physical tests
- Audiometric tests
- Full chest, X-ray, Lung function tests, Spirometric tests
- Periodic medical examination – yearly
- Lung function test – yearly, those who are exposed to dust
- Eye test

Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment.

First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

4.8 MINE WASTE MANAGEMENT

No waste is anticipated from any of the proposed quarries.

4.9 MINE CLOSURE

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

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

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

4.9.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.9.1.1 Physical Stability

All anthropogenic structures, which include mine workings, buildings, rest shelters etc., remaining after mine decommissioning should be physically stable. They should present no hazard to public health and safety as a result of failure or physical deterioration and they should continue to perform the functions for which they were designed. The design periods and factors of safety proposed should take full account of extreme events such as floods, hurricane, winds or earthquakes, etc. and other natural perpetual forces like erosion, etc.,

4.9.1.2 Chemical Stability

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

4.9.1.3 Biological Stability

The stability of the surrounding environment is primarily dependent upon the physical and chemical characteristics of the site, whereas the biological stability of the mine site itself is closely related to rehabilitation and final land use. Nevertheless, biological stability can significantly influence physical or chemical stability by stabilizing soil cover, prevention of erosion/wash off, leaching, etc.,

A vegetation cover over the disturbed site is usually one of the main objectives of the rehabilitation programme, as vegetation cover is the best long-term method of stabilizing the site. When the major earthwork components of the rehabilitation programme have been completed, the process of establishing a stable vegetation community begins. For re-vegetation, management of soil nutrient levels is an important consideration. Additions of nutrients are useful under three situations.

- Where the nutrient level of spread topsoil is lower than material in-situ e.g. for development of social forestry
- Where it is intended to grow plants with a higher nutrient requirement than those occurring naturally e.g. planning for agriculture
- Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor e.g. development of green barriers

The Mine closure plan should be as per the approved mine plan. The mine closure is a part of approved mine plan and activities of closure shall be carried out as per the process described in mine closure plan.

5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 INTRODUCTION

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

5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

Pachapalayam Rough Stone and Gravel Quarries Project at Pachapalayam Village is a mining project for excavation of Rough Stone, which is site specific. All the proposed mining lease areas have following advantages: -

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

5.2 ANALYSIS OF ALTERNATIVE SITE

No alternatives are suggested as all the mine sites are mineral specific

5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

Mechanized open cast mining operation with drilling and blasting method will be used to extract Rough Stone in the area. All the applied mining lease areas have following advantages –

- As the mineral deposition is homogeneous and batholith formation, therefore opencast method of working is preferred over underground method
- The material will be loaded with the help of excavators into dumpers / trippers and transported to the needy customers.
- Blasting and availability of drills along with controlled blasting technology gives desired fragmentation so that the mineral is handled safely and used without secondary blasting.
- Semi-skilled labours fit for quarrying operations are easily available around the nearby villages.

5.4 ANALYSIS OF ALTERNATIVE TECHNOLOGY

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

6. ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

The monitoring and evaluation of environmental parameters indicates potential changes occurring in the environment, which paves way for implementation of rectifying measures wherever required to maintain the status of the natural environment. Evaluation is also a very effective tool to judge the effectiveness or deficiency of the measures adopted and provides insight for future corrections.

The main objective of environmental monitoring is to ensure that the obtained results in respect of environmental attributes and prevailing conditions during operation stage are in conformity with the prediction during the planning stage. In case of substantial deviation from the earlier prediction of results, this forms as base data to identify the cause and suggest remedial measures. Environmental monitoring is mandatory to meet compliance of statutory provisions under the Environment (Protection) Act, 1986, relevant conditions regarding monitoring covered under EC orders issued by the SEIAA as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTO.

6.1 METHODOLOGY OF MONITORING MECHANISM

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

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

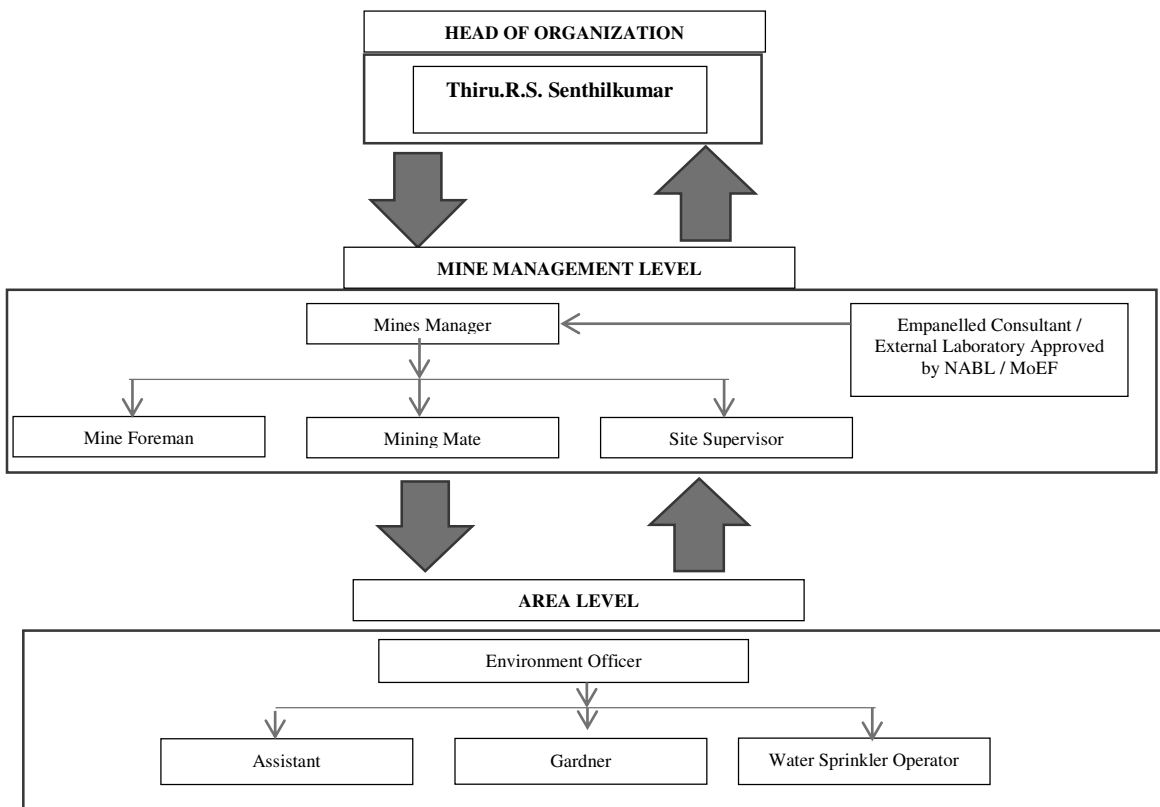
The responsibilities of this cell will be:

- Implementation of pollution control measures
- Monitoring programme implementation
- Post-plantation care
- To check the efficiency of pollution control measures taken
- Any other activity as may be related to environment
- Seeking expert's advice when needed.

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

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

The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB)/Ministry of Environment, Forest and Climate Change (MoEF & CC).

FIGURE 6.1: PROPOSED ENVIRONMENTAL MONITORING CELL

* The Environmental Monitoring Cell will be formed for the proposed project

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

The mitigation measures proposed in Chapter-4 will be implemented so as to reduce the impact on the environment due to the operations of the proposed project. Implementation schedule of mitigation measures is given in Table 6.1.

TABLE 6.1 IMPLEMENTATION SCHEDULE FOR ALL PROPOSED PROJECT

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

6.3 MONITORING SCHEDULE AND FREQUENCY

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges, emissions and wastes,

for measurement against statutory standards. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

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

- Air quality;
- Water and wastewater quality;
- Noise levels;
- Soil Quality; and
- Greenbelt Development

The details of monitoring are detailed in Table 6.2

TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC

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

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

6.4 BUDGETARY PROVISION FOR EMP

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF.

The proposed capital cost for Environmental Monitoring Programme is Rs 76,000/- and the recurring cost is Rs 3,80,000/- per annum for Proposed Project.

TABLE 6.3 ENVIRONMENT MONITORING BUDGET

| Sl.No. | Parameter | Capital Cost | Recurring Cost per annum |
|--------------|-----------------|---------------------|--------------------------|
| 1 | Air Quality | Rs. 76,000/- | Rs. 3,80,000/- |
| 2 | Meteorology | | |
| 3 | Water Quality | | |
| 4 | Hydrology | | |
| 5 | Soil Quality | | |
| 6 | Noise Quality | | |
| 7 | Vibration Study | | |
| Total | | Rs. 76,000/- | Rs. 3,80,000/- |

Source: Approved Mining Plan

6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to: -

- MoEF & CC – Half yearly status report
- TNPCB - Half yearly status report
- Department of Geology and Mining: quarterly, half yearly annual reports

Besides the Mines Manager/Agent of respective project will submit the periodical reports to –

- Director of mines safety,
- Labour enforcement officer,
- Controller of explosives as per the norms stipulated by the department.

7. ADDITIONAL STUDIES

7.0 GENERAL

The following Additional Studies were done as per items identified by project proponent and items identified by regulatory authority. And items identified by public and other stakeholders will be incorporated after Public Hearing.

- Public Consultation
- Risk Assessment
- Disaster Management Plan
- Cumulative Impact Study
- Plastic Waste Management

7.1. PUBLIC CONSULTATION

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district is submitted along with this Draft EIA / EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

7.2 RISK ASSESSMENT

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for all proposed projects. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

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

TABLE 7.1 RISK ASSESSMENT& CONTROL MEASURES

| S. No | Risk factors | Causes of risk | Control measures |
|-------|--|---|--|
| 1 | Accidents due to explosives and heavy mining machineries | Improper handling and unsafe working practice | All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations; Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited; Fire-fighting and first-aid provisions in the mine office complex and mining area; Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use Working of quarry, as per approved plans and regularly updating the mine plans; Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut; Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager; Maintenance and testing of all mining equipment as per manufacturer 's guidelines. |
| 2 | Drilling | Improper and unsafe practices | Safe operating procedure established for drilling (SOP) will be strictly followed. |

| | | | |
|---|---------------------------------------|---|--|
| | | <p>Due to high pressure of compressed air, hoses may burst</p> <p>Drill Rod may break</p> | <p>Only trained operators will be deployed.</p> <p>No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places,</p> <p>Drilling shall not be carried on simultaneously on the benches at places directly one above the other.</p> <p>Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual.</p> <p>All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition.</p> <p>Operator shall regularly use all the personal protective equipment.</p> |
| 4 | Blasting | <p>Fly rock, ground vibration, Noise and dust.</p> <p>Improper charging, stemming & Blasting/fining of blast holes</p> <p>Vibration due to movement of vehicles</p> | <p>Restrict maximum charge per delay as per regulations and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blasting can be conducted safely.</p> <p>SOP for Charging, Stemming & Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation</p> <p>Shots are fired during daytime only.</p> <p>All holes charged on any one day shall be fired on the same day.</p> <p>The danger zone will be distinctly demarcated (by means of red flags)</p> |
| 5 | Transportation | <p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material</p> <p>While reversal & overtaking of vehicle</p> <p>Operator of truck leaving his cabin when it is loaded.</p> | <p>Before commencing work, drivers personally check the dumper/truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition.</p> <p>Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle.</p> <p>Concave mirrors should be kept at all corners</p> <p>All vehicles should be fitted with reverse horn with one spotter at every tipping point</p> <p>Loading according to the vehicle capacity</p> <p>Periodical maintenance of vehicles as per operator manual</p> |
| 6 | Natural calamities | Unexpected happenings | <p>Escape Routes will be provided to prevent inundation of storm water</p> <p>Fire Extinguishers & Sand Buckets</p> |
| 7 | Failure of Mine Benches and Pit Slope | Slope geometry, Geological structure | Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height. |

Source: Analysed and Proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone II. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated

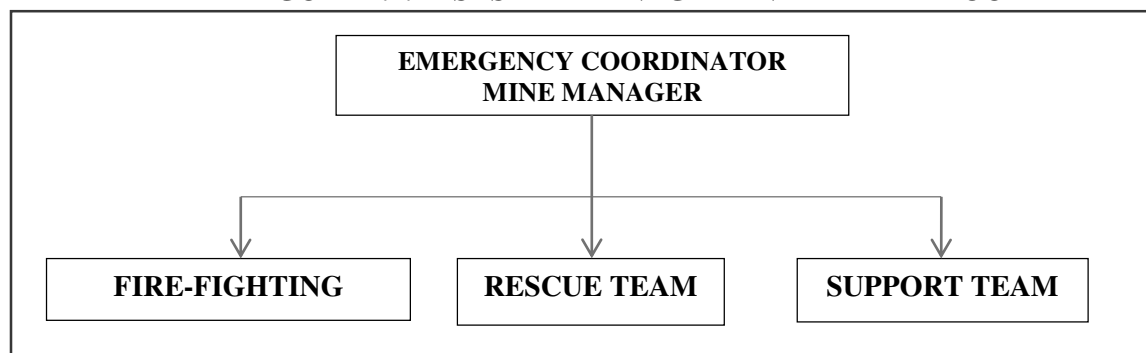
The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

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

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations and the coordination among key personnel and their team has been shown in Fig 7.1.

FIGURE 7.1: DISASTER MANAGEMENT TEAM LAYOUT



The emergency organization shall be headed by emergency coordinator who will be qualified competent mine manager. In his absence senior most people available at the mine shall be emergency coordinator till arrival of mine manager. There would be three teams for taking care of emergency situations – Fire-Fighting Team, Rescue Team and Support Team. The proposed composition of the teams is given in Table 7.2.

TABLE 7.2: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION

| DESIGNATION | QUALIFICATION |
|---|---------------------|
| FIRE-FIGHTING TEAM | |
| Team Leader/ Emergency Coordinator (EC) | Mines Manager |
| Team Member | Mines Foreman |
| Team Member | Mining Mate |
| RESCUE TEAM | |
| Team Leader/ Emergency Coordinator (EC) | Mines Manager |
| Team Member/ Incident Controller (IC) | Environment Officer |
| Team Member | Mining Foreman |
| SUPPORT TEAM | |
| Team Leader/ Emergency Coordinator (EC) | Mines Manager |
| Assistant Team Leader | Environment Officer |
| Team Member | Mining Mate |
| Security Team Leader/ Emergency Security Controller | Mines Foreman |

Once the mine becomes operational, the above table along with names of personnel will be prepared and made easily available to workers for respective proposed quarries. A mobile communication network and wireless shall connect Mine Emergency Control Room (MECR) to control various departments of the mine, fire station and neighbouring industrial units/mines.

Roles and responsibilities of emergency team –

(a) Emergency coordinator (EC)

The emergency coordinator shall assume absolute control of site and shall be located at MECR.

(b) Incident controller (IC)

Incident controller shall be a person who shall go to the scene of emergency and supervise the action plan to overcome or contain the emergency. Shift supervisor or Environmental Officer shall assume the charge of IC.

(c) Communication and advisory team

The advisory and communication team shall consist of heads of Mining Departments i.e., Mines Manager

(d) Roll call coordinator

The Mine Foreman shall be Roll Call Coordinator. The roll call coordinator will conduct the roll call and will evacuate the mine personnel to assembly point. His prime function shall be to account for all personnel on duty.

(e) Search and rescue team

There shall be a group of people trained and equipped to carryout rescue operation of trapped personnel. The people trained in first aid and fire-fighting shall be included in search and rescue team.

(f) Emergency security controller

Emergency Security Controller shall be senior most security person located at main gate office and directing the outside agencies e.g. fire brigade, police, doctor and media men etc.,

Emergency control procedure –

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

- On site fire crew led by a fireman will arrive at the site of incident with fire foam tenders and necessary equipment.
- Emergency security controller will commence his role from main gate office
- Incident controller shall rush to the site of emergency and with the help of rescue team and will start handling the emergency.
- Site main controller will arrive at MECR with members of his advisory and communication team and will assume absolute control of the site.
- He will receive information continuously from incident controller and give decisions and directions to:
 - Incident controller
 - Mine control rooms
 - Emergency security controller

Proposed fire extinguishers at different locations –

The following type of fire extinguishers has been proposed at strategic locations within the mine.

TABLE 7.3: PROPOSED FIRE EXTINGUISHERS AT DIFFERENT LOCATIONS

| LOCATION | TYPE OF FIRE EXTINGUISHERS |
|------------------------|--|
| Electrical Equipment's | CO ₂ type, foam type, dry chemical powder type |
| Fuel Storage Area | CO ₂ type, foam type, dry chemical powder type, Sand bucket |
| Office Area | Dry chemical type, foam type |

Alarm system to be followed during disaster –

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public

address system. On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes.

The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster. In order to prevent or take care of hazard / disasters if any the following control measures have been adopted.

- All safety precautions and provisions of Metalliferous Mines Regulations (MMR), 1961 is strictly followed during all mining operations.
- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Entry of unauthorized persons into mine & allied areas is completely prohibited.
- Fire-fighting and first-aid provisions in the mines office complex and mining area are provided.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- Training and refresher courses for all the employees working in hazardous premises.
- Working of mine, as per approved plans and regularly updating the mine plans.
- Cleaning of mine faces is regularly done.
- Handling of explosives, charging and blasting are carried out only by qualified persons following SOP.
- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN is used at the time of blasting for audio signal.
- Before blasting and after blasting, red and green flags are displayed as visual signals.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS are displayed at prominent places.
- Regular maintenance and testing of all mining equipment were carried out as per manufacturer's guidelines.

7.4 CUMULATIVE IMPACT STUDY

For easy representation of Proposed and Existing Quarries in the Cluster are given unique codes and identifies and studied in this EIA EMP Report.

TABLE 7.4: LIST OF QUARRIES WITHIN 500 METER RADIUS

| PROPOSED QUARRIES | | | | | |
|---------------------|------------------------------|--------------|--|---------------|----------------------------|
| CODE | Name of the Owner | Village | S.F. Nos | Extent in Ha | Status |
| P1 | R.S.SenthilKumar | Pachapalayam | 285/3(P) &286/2(P) | 1.95.0 | Applied area (Rough Stone) |
| P2 | Tvl.Gomuki Blue Metals L.L.P | | 238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) | 2.47.9 | Pending with SEIAA |
| P3 | V.Shanmugam | | 238/1 | 1.98.0 | Precise area communicated |
| P4 | T.Ragupathi | | 273/1B,273/2,273/ 3E,274/1A &274/2A | 2.62.0 | Application is in Process |
| TOTAL EXTENT | | | | 9.02.9 | |
| EXISTING QUARRIES | | | | | |

| CODE | Name of the Owner | Village | S.F. Nos | Extent in Ha | Status |
|-----------------------------|------------------------|--------------|-----------------------------------|----------------|--------------------------|
| E-1 | S.G.Aakash Arumugam | Pachapalayam | 273/2A & 281/2 | 2.03.0 | 27.06.2024 to 26.06.2029 |
| TOTAL EXTENT | | | | 2.03.0 | |
| EXPIRED QUARRIES | | | | | |
| Ex-1 | Thiru.K.Chinnasamy | Pachapalayam | 282/1A & 282/1B(P) | 1.73.0 | 06.12.2017 to 05.12.2022 |
| TOTAL EXTENT | | | | 1.73.0 | |
| ABANDONED QUARRIES | | | | | |
| A-1 | Thiru.M.Muralikrishnan | Pachapalayam | 281/1 & 286/1B4 | 2.30.0 | 02.06.2014 to 01.06.2018 |
| A-2 | Thiru.A.Velusamy | | 285/1B1 | 1.72.5 | 09.02.2005 to 08.02.2010 |
| A-3 | V.Gopalakrishnan | | 282/2A2 | 1.28.5 | 02.06.2014 to 01.06.2018 |
| A-4 | B.Sakthivel | | 280/1(P),280/2(P) | 1.34.5 | 06.06.2016 to 05.06.2021 |
| A-5 | S.A.Ramachandran | | 273/3B, 273/3C & 271/1 | 1.83.0 | 09.01.2004 to 08.01.2009 |
| TOTAL EXTENT | | | | 8.48.50 | |
| TOTAL CLUSTER EXTENT | | | | 11.05.9 | |

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

TABLE 7.5: SALIENT FEATURES OF PROPOSAL "P1"

| | | | | | |
|--------------------------------------|---|---|--|---------------------------------------|--------------------------------|
| Name of the Project | Thiru. R.S. Senthikumar Rough Stone & Gravel Quarry | | | | |
| Land type | It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation | | | | |
| Land owner details | It is a Patta land, Registered in the name of the applicant Thiru.R.S.Senthikumar vide Patta no.178 | | | | |
| Previous lease details | It is a fresh application. But the applied area has been considered quarrying operation earlier | | | | |
| | S.No | Name of Lessee | District collector's Proceeding Number and date | Extent and S.F.Nos | Lease Period |
| | 1 | Thiru.R.S.Senthilkumar | Rc.No.509/2011/MM2 Dated: 15.05.2013 | 3.84.0ha and 285/1B2,285/3 & 286/2 | 15.05.2013 to 14.05.2017 |
| 2 | Thiru.R.S.Senthilkumar | Rc.No.101/Mines/2017 Dated: 11.01.2017 | 3.15.0Ha and 285/3 & 286/2 | 11.11.2017 to 10.11.2022 | |
| Toposheet No | 58 - F/01 | | | | |
| Latitude between | 10°54'11.91"N to 10°54'17.17"N | | | | |
| Longitude between | 77°04'01.21"E to 77°04'06.86"E | | | | |
| Highest Elevation | 435m AMSL | | | | |
| Mining Plan period | 5 years | | | | |
| Existing Pit Depth | 38m Bgl | | | | |
| Proposed Depth of Mining | 52m below ground level. | | | | |
| Restricting Depth as per ToR | 47m below ground level | | | | |
| Geological Resources | Rough Stone in m ³ 2,17,014 | | | | |
| Mineable Reserves | Rough Stone in m ³ 75,830 | | | | |
| Yearwise Production | Rough Stone in m ³ 75,830 | | | | |
| Existing Pit Dimension | 146m (L) x 145m (W) x 38m(D) bgl | | | | |
| Ultimate Pit Dimension | Section | Length(m) (Max) | Width(m) (Max) | Depth(m) (Max) | |
| | XY-AB | 79 | 150 | 52 | |
| | XY-CD | 65 | 95 | 52 | |
| Water Level in the surrounding areas | 65-70m bgl | | | | |
| Method of Mining | Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives | | | | |
| Topography | The lease applied area is exhibits plain terrain. The area has gentle sloping towards Eastern side. The altitude of the area is 435m (Max) above Mean sea level. The area is covered by the Gravel which is about 2m thickness. Massive Charnockite is found after 2m (Gravel) which is clearly inferred from the existing quarry pits. | | | | |
| Machinery proposed | Jack Hammer | | 2 Nos | | |
| | Compressor | | 1 Nos | | |

| | | |
|------------------------------|--|-------------|
| | Excavator with Bucket and Rock Breaker | 1 No |
| | Tipplers | 2 Nos |
| Blasting Method | Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed. | |
| Proposed Manpower Deployment | 19 Nos | |
| Project Cost | Rs. 89,66,000/- | |
| EMP Cost | Rs. 10,22,000/- | |
| Total Project cost | Rs. 99,88,000/- | |
| CER Cost | Rs. 5,00,000,- | |
| Nearby Water Bodies | Seasonal Odai | 90m West |
| | Odai | 290m SW |
| | Seasonal Odai | 450m NE |
| | Odai | 3km SE |
| | Noyyal River | 9.3km North |
| | Pallapalayam Lake | 9.2km NE |
| Greenbelt Development Plan | As per Mining plan it is Proposed to plant 1000 trees in the 7.5 m Safety Zone, approach road and panchayat roads. | |
| Proposed Water Requirement | 1.5 KLD | |
| Nearest Habitation | 440m – North West | |

TABLE 7.5: SALIENT FEATURES OF PROPOSAL “P2”

| | | |
|--------------------------------------|---|-----------------------|
| Name of the Project | Tvl.Gomuki Blue Metals L.L.P, Rough Stone & Gravel Quarry | |
| Land type | It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation | |
| Land owner details | It is a Patta land, registered in the name of the applicant Thiru.S. Moganraj (Tvl.Gomuki Blue Metals L.L.P.), vide Patta No.1438 (S.F.No.238/2) and Thiru.S. Shanmuganand, vide Patta No.1439 (S.F. No's.239/1B (P), 239/2B (P), 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P)). The applicant has been obtain consent from the Pattadhar. | |
| Previous lease details | It is a fresh application. The lease area has been quarried in earlier. | |
| Toposheet No | 58 - F/01 | |
| Latitude between | 10°53'55.84"N to 10°54'02.25"N | |
| Longitude between | 77°04'02.13"E to 77°04'07.94"E | |
| Highest Elevation | 411m AMSL | |
| Mining Plan period | 5 years | |
| Existing Pit Depth | 15m Bgl | |
| Proposed Depth of Mining | 37m below ground level. | |
| Geological Resources | Rough Stone in m ³ | Gravel m ³ |
| | 8,60,510 | 49,172 |
| Mineable Reserves | Rough Stone in m ³ | Gravel m ³ |
| | 3,11,184 | 5,576 |
| Yearwise Production | Rough Stone in m ³ | Gravel m ³ |
| | 3,11,184 | 5,576 |
| Existing Pit Dimension | Pit-I 104m (L) x 101.5m (W) x 2m(D) bgl | |
| | Pit-II 81m (L) x 68m (W) x 15m(D) bgl | |
| Ultimate Pit Dimension | 136m (L) x 154m (W) x 37m(D) bgl | |
| Water Level in the surrounding areas | 55– 50m bgl | |

| | | |
|------------------------------|--|-------------|
| Method of Mining | Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives | |
| Topography | The lease applied area is exhibits plain terrain. The area has gentle sloping towards Southwestern side. The altitude of the area is 411m (Max) above Mean sea level. The area is covered by the Gravel which is about 2m thickness. Massive Charnockite is found after 2m (Gravel) which is clearly inferred from the existing quarry pits. | |
| Machinery proposed | Jack Hammer | 8 Nos |
| | Compressor | 2 Nos |
| | Excavator with Bucket and Rock Breaker | 2 No |
| | Tippers | 4 Nos |
| Blasting Method | Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed. | |
| Proposed Manpower Deployment | 33 Nos | |
| Project Cost | Rs. 57,75,792/- | |
| EMP Cost | Rs. 3,80,000/- | |
| Total Project cost | Rs. 61,55,792 | |
| CER Cost | Rs. 5,00,000,-/ | |
| Nearby Water Bodies | Seasonal Odai | 260m West |
| | Seasonal Odai | 700m NE |
| | Odai | 2.8km SE |
| | Noyyal River | 9.8km North |
| | Pallapalayam Lake | 9.5km NE |
| Greenbelt Development Plan | As per Mining plan it is Proposed to plant 300 trees in the 7.5 m Safety Zone, approach road and panchayat roads. | |
| Proposed Water Requirement | 3.0 KLD | |
| Nearest Habitation | 320m – North East | |

Source: Approved Mining Plan

| SALIENT FEATURES OF PROPOSAL "E1" | | | | |
|-----------------------------------|--|-----------------------|--------------------|--------------------|
| Name of the Quarry | Thiru. S.G. Aakash Arumugan, Legal Heir of S/o.Thiru. S.A. Ganesan (Late) Rough stone and Gravel quarry | | | |
| Toposheet No | 58-F/01 | | | |
| Latitude between | 10°54'17.95" N- 10°54'22.27" N | | | |
| Longitude between | 77°04'09.23" E- 77°04'20.36" E | | | |
| Proposed Depth of Mining | 33m below ground level (3m Gravel+30m Rough Stone) | | | |
| Geological Resources | Rough Stone m ³ | Gravel m ³ | | |
| | 8,12,000 | 60,900 | | |
| Mineable Reserves | Rough Stone m ³ | Gravel m ³ | | |
| | 1,22,815 | 6,576 | | |
| Yearwise production | Rough Stone m ³ | Gravel m ³ | | |
| | 1,22,815 | 6,576 | | |
| Existing pit Dimension | Pit I - 84m (L) x 69m (W) x 27m (D) Pit II - 122m (L) x 36m(avg) (W) x 4m (D) | | | |
| Environmental Clearance | Lr. No. SEIAA-TN/F.No.7833/1(a)/EC:6290/2024, Dated: 15.02.2024 | | | |
| Ultimate Pit Dimension | Pit ID | Length (m) (Max) | Width (m) (Max) | Depth (m) (Max) |
| | I | 108 | 70 | 43m BGL |
| | II | 122 | 46(avg) | 28m BGL |
| | III | 80 | 16 | 13m BGL |
| Method of Mining | Opencast Mechanized Mining Method involving drilling and blasting | | | |
| Machinery proposed | Jack Hammer | 3 Nos | | |
| | Compressor | 1 No | | |
| | Excavator with Bucket and Rock Breaker | 1 No | | |
| | Tippers | 2 Nos | | |
| Blasting Method | Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed. | | | |
| Proposed Manpower Deployment | 21 Nos | | | |
| Proposed Water Requirement | 4.2 KLD | | | |
| Project Cost | Rs. 38,09,300 /- | | | |
| CER Cost | Rs. 5,00,000/- | | | |

Source: Approved Mining Plan

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the quarries (proposed and existing) within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting.

Air Environment –

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.16 & 7.17.

TABLE 7.12: CUMULATIVE PRODUCTION LOAD OF ROUGH STONE

| Quarry | Production for five-year plan period | Per Year Production in m ³ | Per Day Production in m ³ | Number of Lorry Load Per Day |
|--------|--------------------------------------|---------------------------------------|--------------------------------------|------------------------------|
| P1 | 75830 | 15166 | 51 | 4 |
| P2 | 3,11,184 | 62236 | 207 | 17 |
| P3 | - | - | - | - |

| | | | | |
|--------------|----------------|----------------|------------|-----------|
| P4 | - | - | - | - |
| E1 | 1,22,815 | 24563 | 82 | 7 |
| Total | 509,829 | 101,965 | 340 | 28 |

TABLE 7.13: CUMULATIVE PRODUCTION LOAD OF GRAVEL

| Quarry | Production for five-year plan period | Per Year Production in m ³ | Per Day Production in m ³ | Number of Lorry Load Per Day |
|--------------|--------------------------------------|---------------------------------------|--------------------------------------|------------------------------|
| P1 | - | - | - | - |
| P2 | 5576 | 1859 | 6 | 1 |
| P3 | - | - | - | - |
| P4 | - | - | - | - |
| E1 | 6576 | 2192 | 7 | 1 |
| Total | 12152 | 4,051 | 13 | 2 |

On a cumulative basis considering the proposed quarries, it can be seen that the overall production of Rough Stone is 340m³ per day and overall production of Gravel is 13 m³ per day with a capacity of 28 trips of Rough Stone per day and 2 Trips per day of Gravel from the cluster.

Note: Per day production of Rough Stone is calculated for 5 Years Lease Period and for Gravel production with 3 years, Weathered rock 3 years of production period. And the load of existing quarries is covered under existing environment of the cluster.

Based on the above production quantities the emissions due to various activities in all the 2 mines includes various activities like ground preparation, excavation, handling and transport of ore. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 7.18.

TABLE 7.15: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS

| EMISSION ESTIMATION FOR QUARRY "P1" | | | | |
|--|-----------------|--------------|-------------|-------|
| | Activity | Source type | Value | Unit |
| Estimated Emission Rate for PM ₁₀ | Drilling | Point Source | 0.090785820 | g/s |
| | Blasting | Point Source | 0.001491779 | g/s |
| | Mineral Loading | Point Source | 0.042862801 | g/s |
| | Haul Road | Line Source | 0.002493107 | g/s/m |
| | Overall Mine | Area Source | 0.057064891 | g/s |
| Estimated Emission Rate for SO ₂ | Overall Mine | Area Source | 0.0007651 | g/s |
| Estimated Emission Rate for NO _x | Overall Mine | Area Source | 0.000042366 | g/s |
| EMISSION ESTIMATION FOR QUARRY "P2" | | | | |
| | Activity | Source type | Value | Unit |
| Estimated Emission Rate for PM ₁₀ | Drilling | Point Source | 0.051567641 | g/s |
| | Blasting | Point Source | 0.000088207 | g/s |
| | Mineral Loading | Point Source | 0.037046279 | g/s |
| | Haul Road | Line Source | 0.002484706 | g/s/m |
| | Overall Mine | Area Source | 0.046626392 | g/s |
| Estimated Emission Rate for SO ₂ | Overall Mine | Area Source | 0.000162998 | g/s |
| Estimated Emission Rate for NO _x | Overall Mine | Area Source | 0.000006040 | g/s |
| EMISSION ESTIMATION FOR QUARRY "E1" | | | | |
| | Activity | Source type | Value | Unit |
| Estimated Emission Rate for PM ₁₀ | Drilling | Point Source | 0.061836363 | g/s |
| | Blasting | Point Source | 0.000218693 | g/s |
| | Mineral Loading | Point Source | 0.037895098 | g/s |
| | Haul Road | Line Source | 0.002485353 | g/s/m |
| | Overall Mine | Area Source | 0.047956272 | g/s |
| Estimated Emission Rate for SO ₂ | Overall Mine | Area Source | 0.000217662 | g/s |
| Estimated Emission Rate for NO _x | Overall Mine | Area Source | 0.000008550 | g/s |

TABLE 7.19: INCREMENTAL & RESULTANT GLC WITHIN CLUSTER

| PM₁₀ in µg/m³ | |
|---|-----------------------------|
| Background | 45.8 |
| Incremental | 10.79 |
| Resultant | 56.5 |
| NAAQ Norms | 100 µg/m³ |
| PM_{2.5} in µg/m³ | |
| Background | 23.7 |
| Incremental | 4.79 |
| Resultant | 28.5 |
| NAAQ Norms | 60 µg/ m³ |
| So₂ in µg/m³ | |
| Background | 8.1 |
| Incremental | 1.49 |
| Resultant | 9.6 |
| NAAQ Norms | 80 µg/ m³ |
| No₂ in µg/m³ | |
| Background | 24.0 |
| Incremental | 7.51 |
| Resultant | 31.5 |
| NAAQ Norms | 80 µg/ m³ |

Noise Environment –

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

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

$$L_{p2} = L_{p1} - 20 \log (r_2/r_1) - A_{e1,2}$$

Where:

L_{p1} & L_{p2} are sound levels at points located at distances r_1 & r_2 from the source.

$A_{e1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$L_{p\text{total}} = 10 \log \{10^{(L_{p1}/10)} + 10^{(L_{p2}/10)} + 10^{(L_{p3}/10)} + \dots\}$$

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are:

Source data has been computed taking into account of all the machinery and activities used in the mining process.

TABLE 7.20: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER

| Location ID | Background Value (Day) dB(A) | Incremental Value dB(A) | Total Predicted dB(A) | Residential Area Standards dB(A) |
|--------------------|-------------------------------------|--------------------------------|------------------------------|---|
| Habitation Near P1 | 48.2 | 47.3 | 46.3 | 55 |
| Habitation Near P2 | 34.6 | 46.5 | 46.7 | |
| Habitation Near P3 | 46.5 | 53.2 | 54.0 | |
| Habitation Near P4 | 35.4 | 47.4 | 47.7 | |
| Habitation Near E1 | 36.7 | 50.0 | 50.2 | |

Source: Lab Monitoring Data

The incremental noise level is found within the range of 45.3 – 53.2 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible

limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000(The Principal Rules were published in the Gazette of India, vide S.O.123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E),dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment(Protection) Act, 1986).

Ground Vibrations

Ground vibrations due to mining activities in the all the 7 Mines within cluster are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc. However, the major source of ground vibration from the all the 6 mines is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements. nearby the mining areas and may cause injury to persons or damage to the structures. Nearest Habitations from 6 mines respectively are as in below Table 7.21.

TABLE 7.21: NEAREST HABITATION FROM EACH MINE

| Location ID | Distance & Direction |
|--------------------|----------------------|
| Habitation Near P1 | 440m- NW |
| Habitation Near P2 | 320m- NE |
| Habitation Near P3 | 330m- NE |
| Habitation Near P4 | 340m- S |
| Habitation Near E1 | 460m-S |

The ground vibrations due to the blasting in all the mines are calculated using the empirical equation for assessment of peak particle velocity (PPV) is:

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 7.22: GROUND VIBRATIONS AT 5 MINES

| Location ID | Maximum Charge in kgs | Nearest Habitation in m | PPV in m/ms |
|-------------|-----------------------|-------------------------|-------------|
| P1 | 20 | 440m- NW | 0.324 |
| P2 | 20 | 320m- NE | 0.539 |
| P3 | 20 | 330m- NE | 0.513 |
| P4 | 20 | 340m- S | 0.489 |
| E1 | 20 | 460m-S | 0.302 |

Source: Blasting Calculations

From the above table, the charge per blast is considered as maximum in each mine and the resultant PPV is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

Socio Economic Environment –

The 6 mines shall contribute towards CER and the community shall develop.

TABLE 7.23: SOCIO ECONOMIC BENEFITS FROM 5 MINES

| Location ID | Project Cost | CER |
|-------------|------------------|-------------|
| P1 | Rs. 99,88,000/- | Rs.5,00,000 |
| P2 | Rs. 61,55,792 | Rs.5,00,000 |
| P3 | - | - |
| P4 | - | - |
| E1 | Rs. 38,09,300 /- | Rs.5,00,000 |

| | | |
|--------------|------------------------|-----------------------|
| Total | Rs.19,953,092/- | Rs.15,00,000/- |
|--------------|------------------------|-----------------------|

As per para 6 (II) of the office memorandum, all the mines being a green field project & Capital Investment is \leq 100 crores, they shall contribute 2% of Capital Investment towards CER as per directions of EAC/SEAC.

- Proposed Projects shall fund towards CER – **Rs 10,00,000/-**
- Existing Projects shall fund towards CER – **Rs.5,00,000/-**
- Projects in Cluster shall fund towards CER – **Rs 15,00,000/-**

TABLE 7.24: EMPLOYMENT BENEFITS FROM 5 MINES

| Description | Employment |
|--------------------|------------|
| P1 | 19 |
| P2 | 33 |
| P3 | - |
| P4 | - |
| E1 | 21 |
| Grand Total | |

A total of 52 people will get employment due to 2 proposed mines in cluster and 21 people are already employed at existing mines.

TABLE 7.25: GREENBELT DEVELOPMENT BENEFITS FROM 5 MINES

| CODE | No of Trees proposed to be planted | Area to be covered in m ² | Name of the Species |
|--------------|------------------------------------|---|-------------------------------------|
| P1 | 1000 | Plantation along 7.5m safety distance, along approach road. | Neem, Vilvam, Ashokha , Panai etc., |
| P2 | 1250 | | |
| P3 | - | | |
| P4 | - | | |
| E1 | 1020 | | |
| Total | 3270 | | |

Source: approved Mining Plan

Based on the Proposed Mining Plans it's anticipated that there shall growth of native species of Neem, Casuarina, etc in the Cluster at a rate of 3,270 Trees Planted over a period of 5 Years with Survival Rate of 80%

7.5 PLASTIC WASTE MANAGEMENT PLAN

All the Project Proponent shall comply with Tamil Nadu Government Order (Ms) No. 84 Environment and Forest (EC.2) Department Dated: 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986.

Objective –

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

TABLE 7.26: ACTION PLAN TO MANAGE PLASTIC WASTE

| Sl.No. | Activity | Responsibility |
|--------|---|----------------|
| 1 | Framing of Layout Design by incorporating provision of the Rules, user fee to be charged from waste generators for plastic waste management, penalties/fines for littering, burning plastic waste or committing any other acts of public nuisance | Mines Manager |
| 2 | Enforcing waste generators to practice segregation of bio-degradable, recyclable and domestic hazardous waste | Mines Manager |
| 3 | Collection of plastic waste | Mines Foreman |
| 4 | Setting up of Material Recovery Facilities | Mines Manager |
| 5 | Segregation of Recyclable and Non-Recyclable plastic waste at Material Recovery Facilities | Mines Foreman |

| | | |
|---|---|---------------|
| 6 | Channelization of Recyclable Plastic Waste to registered recyclers | Mines Foreman |
| 7 | Channelization of Non-Recyclable Plastic Waste for use either in Cement kilns, in Road Construction | Mines Foreman |
| 8 | Creating awareness among all the stakeholders about their responsibility | Mines Manager |
| 9 | Surprise checking's of littering, open burning of plastic waste or committing any other acts of public nuisance | Mine Owner |

Source: Proposed by FAE's and EC

7.6 Cluster Management Committee

The cluster management committee is proposed to form including of 4 Proposed quarries and 1 existing quarries total extent of the cluster is 11.05.9 Ha

In the cluster management committee, the following Environmental Management plan will be followed the activities such as

- Transportation of Minerals and blasting activities with the coordination between the individual quarry owners.
- Sprinkling of water regularly thrice a day in the mutual understanding with the quarry owners
- Carrying out blasting operation as specified times by the Mines Managers and as per the EIA report
- Usage of Haul roads in a time specified by the Cluster Management Committee
- Following Safe operating procedure prescribed by the Mines Manager during natural calamities
- Planting Trees in the Government Land, School and within the project site
- Celebrating Safety month, Environmental Month along with the Mines Managers in every six months once
- Regularly follow the health of the workers and take medical examination as per the DGMS norms under the guidance of Mines Manager
- Meet at Association Hall monthly once to review the Environmental Management and Safety activities prescribed by the Cluster Management Committee
- We have read and understood all the above steps and we ensure to follow these specific steps Quarry owners in the Cluster management committee

Quarries in the Cluster Management Committee

| PROPOSED QUARRIES | | | | | |
|---------------------|------------------------------|--------------|--|---------------|----------------------------|
| CODE | Name of the Owner | Village | S.F. Nos | Extent in Ha | Status |
| P1 | R.S.SenthilKumar | Pachapalayam | 285/3(P) &286/2(P) | 1.95.0 | Applied area (Rough Stone) |
| P2 | Tvl.Gomuki Blue Metals L.L.P | | 238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) | 2.47.9 | Pending with SEIAA |
| P3 | V.Shanmugam | | 238/1 | 1.98.0 | Precise area communicated |
| P4 | T.Ragupathi | | 273/1B,273/2,273/ 3E,274/1A &274/2A | 2.62.0 | Application is in Process |
| TOTAL EXTENT | | | | 9.02.9 | |
| EXISTING QUARRIES | | | | | |

| CODE | Name of the Owner | Village | S.F. Nos | Extent in Ha | Status |
|-----------------------------|------------------------|--------------|-----------------------------------|----------------|--------------------------|
| E-1 | S.G.Aakash Arumugam | Pachapalayam | 273/2A & 281/2 | 2.03.0 | 27.06.2024 to 26.06.2029 |
| TOTAL EXTENT | | | | 2.03.0 | |
| EXPIRED QUARRIES | | | | | |
| Ex-1 | Thiru.K.Chinnasamy | Pachapalayam | 282/1A & 282/1B(P) | 1.73.0 | 06.12.2017 to 05.12.2022 |
| TOTAL EXTENT | | | | 1.73.0 | |
| ABANDONED QUARRIES | | | | | |
| A-1 | Thiru.M.Muralikrishnan | Pachapalayam | 281/1 & 286/1B4 | 2.30.0 | 02.06.2014 to 01.06.2018 |
| A-2 | Thiru.A.Velusamy | | 285/1B1 | 1.72.5 | 09.02.2005 to 08.02.2010 |
| A-3 | V.Gopalakrishnan | | 282/2A2 | 1.28.5 | 02.06.2014 to 01.06.2018 |
| A-4 | B.Sakthivel | | 280/1(P),280/2(P) | 1.34.5 | 06.06.2016 to 05.06.2021 |
| A-5 | S.A.Ramachandran | | 273/3B, 273/3C & 271/1 | 1.83.0 | 09.01.2004 to 08.01.2009 |
| TOTAL EXTENT | | | | 8.48.50 | |
| TOTAL CLUSTER EXTENT | | | | 11.05.9 | |

STANDARD OPERATING PROCEDURE FOR PACHAPALAYAM CLUSTER MANAGEMENT COMMITTEE

1. Maintenance of Haul Roads and Village Roads:

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

2. Maintenance of Drilling Activities

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.

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

3. Maintenance of Blasting Activities

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e., at the time lunch hours (1.00 PM to 2.00 PM), controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored
- The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators, which reduces the ground vibrations;
- Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting;
- Adequate safe distance from blasting will be maintained as per DGMS guidelines;
- Blasting shelter will be provided as per DGMS guidelines;
- Blasting operations will be carried out only during day time;
- The charge per delay will be minimized and preferably a greater number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity will be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed.
- A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.
- Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire.

- The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
- Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 Hz.
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices

4. Maintenance of Greenbelt Activities

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas
- Suitable plan for conservation of Schedule-I Species have prepared and necessary fund for implement for the same will be made.
- All the preventive measures will be taken for growth & development of fauna.
- Creating and development awareness for nature and wildlife in the adjoin villages.
- The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 pm

5. Maintenance of Occupational Health

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed
- Specific personnel training on work-site safety management will be taken up;
- Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide, especially after blasting activities;
- Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up

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

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

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests

- General physical tests
- Audiometric tests
- Full chest, X-ray, Lung function tests, Spirometric tests
- Periodic medical examination – yearly
- Lung function test – yearly, those who are exposed to dust
- Eye test

Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment.

First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

6. Cluster Management Committee Policy

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- Implement a program to train employees in general environmental issues and individual workplace environmental responsibilities
- Allocate necessary resources to ensure the implementation of the environmental policy
- Ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts
- Implement monitoring programme to provide early warning of any deficiency or unanticipated performance in environmental safeguards
- Conduct periodic reviews to verify environmental performance and to continuously strive towards improvement
- Monitoring of the water/ waste water quality, air quality and solid waste generated
- Analysis of the water and air samples collected through external laboratory
- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- Co-ordination of the environment related activities within the project as well as with outside agencies
- Collection of health statistics of the workers and population of the surrounding villages
- Green belt development
- Monitoring the progress of implementation of the environmental monitoring programme

Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

8.PROJECT BENEFITS

8.0 GENERAL

The Proposed Project for Quarrying Rough Stone at Pachapalayam Village aims to produce 75,830m³ Rough Stone over a period of 5 Years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

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

8.1 EMPLOYMENT POTENTIAL

It is proposed to provide employment to about 19 persons for carrying out mining operations and give preference to the local people in providing employment in the three proposed quarries in the cluster. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The proposed quarry is located in Pachapalayam Village, Suler Taluk and Coimbatore District of Tamil Nadu and the area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to proposed mine.

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

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

8.5 OTHER TANGIBLE BENEFITS

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

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

CORPORATE SOCIAL RESPONSIBILITY

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

Under this programme, the project proponents will take-up following programmes for social and economic development of villages within 10 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- Health Services
- Social Development
- Infrastructure Development
- Education & Sports
- Self-Employment

CSR Cost Estimation

- CSR activities will be taken up in the Pachapalayam village mainly contributing to education, health, training of women self-help groups and contribution to infrastructure etc., CSR budget is allocated as 2.5% of the profit.

CORPORATE ENVIRONMENT RESPONSIBILITY

For the existing quarries Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

As per para 6 (II) of the office memorandum, all the mines being a green field project & Capital Investment is ≤ 100 crores, they shall contribute 2% of Capital Investment towards CER.

For the proposed project it is recommended to spent Rs 5,00,000/- towards CER Activities for the nearby Government School (Panchayat Union Middle School, Periyakuyilai Village, Sulur Taluk, Coimbatore District) for Renovation or reconstruction of Existing Toilet, Providing Note books to the school library, Plantation in the school ground & any other recommendations by the School Head masters.

TABLE 8.1 CER – ACTION PLAN

| |
|---------------|
| CER |
| Rs 5,00,000/- |

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

9. ENVIRONMENTAL COST BENEFIT ANALYSIS

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

10. ENVIRONMENTAL MANAGEMENT PLAN

10.0. GENERAL

Environment Management Plan (EMP) aims at the preservation of ecological system by considering in-built pollution abatement facilities at the proposed site. Good practices of Environmental Management plan will ensure to keep all the environmental parameters of the project in respect of Ambient Air quality, Water quality, Socio – economic improvement standards.

Mitigation measures at the source level and an overall environment management plan at the study area are elicited so as to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

10.1. ENVIRONMENTAL POLICY

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

The Proponent Thiru.R.S. Senthilkumar will –

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

Description of the Administration and Technical Setup –

The Environment Monitoring Cell discussed under Chapter 6 will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level of each Proposed Quarry.

The said team will be responsible for:

- Monitoring of the water/ waste water quality, air quality and solid waste generated
 - Analysis of the water and air samples collected through external laboratory
 - Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
 - Co-ordination of the environment related activities within the project as well as with outside agencies
 - Collection of health statistics of the workers and population of the surrounding villages
 - Green belt development
 - Monitoring the progress of implementation of the environmental monitoring 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.
-
-

10.2. LAND ENVIRONMENT MANAGEMENT –

Landscape of the area will be changed due to the quarrying operation, restoration of the land by converting the quarry pit into temporary reservoir and the remaining part of the area (unutilized areas, infrastructure, haul Roads) will be utilized for greenbelt development. Aesthetic of the Environment will not be affected. There is no major vegetation in the project area during the course of quarrying operation and after completion of the quarrying operation thick plantation will be developed under greenbelt development programme.

TABLE 10.1.B: PROPOSED CONTROLS FOR LAND ENVIRONMENT

| CONTROL | RESPONSIBILITY |
|---|----------------------------|
| Design vehicle wash-down areas so that all runoff water is captured and passed through oil water separators and sediment catchment devices. | Mines Manager |
| Refueling to be undertaken in a safe location, away from vehicle movement pathways & 100 m away of any watercourse Refueling activity to be under visual observation at all times. Drainage of refueling areas to sumps with oil/water separation | Mine Foreman & Mining Mate |
| Soil and groundwater testing as required following up a particular incident of contamination. | Mines Manager |
| At conceptual stage, the mining pits will be converted into Rain Water Harvesting. Remaining area will be converted into greenbelt area | Mines Manager |
| No external dumping i.e., outside the project area | Mine Foreman |
| Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands. | Mines Manager |
| The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier. | Mines Manager |

Source: Proposed by FAE's & EIA Coordinator

10.3. SOIL MANAGEMENT

There is no overburden or waste anticipated from proposed project.

TABLE 10.2.B: PROPOSED CONTROLS FOR SOIL MANAGEMENT

| CONTROL | RESPONSIBILITY |
|---|----------------------------|
| Surface run-off from the project boundary via garland drains will be diverted to the mine pits | Mine Foreman & Mining Mate |
| Design haul roads and other access roads with drainage systems to minimize concentration of flow and erosion risk | Mines Manager |
| Empty sediment from sediment traps Maintain, repair or upgrade garland drain system | Mines Manager |
| Test soils for pH, EC, chloride, size & water holding capacity | Manager Mines |

Source: Proposed by FAE's & EIA Coordinator

10.4. WATER MANAGEMENT

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash is anticipated and domestic sewage from mine office. The quarrying operation is proposed upto a depth of 42 m BGL, the water table in the area is 70m – 65m below ground level, hence the proposed projects will not intersect the Ground water table during entire quarry period.

TABLE 10.3.B: PROPOSED CONTROLS FOR WATER ENVIRONMENT

| CONTROL | RESPONSIBILITY |
|---|----------------|
| To maximize the reuse of pit water for water supply | Mines Foreman |
| Temporary and permanent garland drain will be constructed to contain the catchments of the mining area and to divert runoff from undisturbed areas through the mining areas | Mines Manager |
| Natural drains/nallahs/brooklets outside the project area should not be disturbed at any point of mining operations | Mines Manager |

| | |
|---|---------------|
| Ensure there is no process effluent generation or discharge from the project area into water bodies | Mines Foreman |
| Domestic sewage generated from the project area will be disposed in septic tank and soak pit system | Mines Foreman |
| Monthly or after rainfall, inspection for performance of water management structures and systems | Mines Manager |
| Conduct ground water and surface water monitoring for parameters specified by CPCB | Manager Mines |

Source: Proposed by FAE's & EIA Coordinator

10.5. AIR QUALITY MANAGEMENT

The proposed quarrying activity would result in the increase of particulate matter concentrations due to fugitive dust. Daily water sprinkling on the haul roads, approach roads in the vicinity would be undertaken and will be continued as there is possibility for dust generation due to truck mobility. It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements

TABLE 10.4.B: PROPOSED CONTROLS FOR AIR ENVIRONMENT

| CONTROL | RESPONSIBILITY |
|---|----------------|
| Generation of dust during excavation is minimized by daily (twice) water sprinkling on working face and daily (twice) water sprinkling on haul road | Mines Manager |
| Wet drilling procedure /drills with dust extractor system to control dust generation during drilling at source itself is implemented | Mines Manager |
| Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution | Mines Manager |
| 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 | Mines Manager |
| Provision of Dust Mask to all workers | Mines Manager |
| Greenbelt development all along the periphery of the project area | Mines Manager |

Source: Proposed by FAE's & EIA Coordinator

10.6. NOISE POLLUTION CONTROL

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and cutting activities. No mining activities are planned during night time.

TABLE 10.5.: PROPOSED CONTROLS FOR NOISE ENVIRONMENT

| CONTROL | RESPONSIBILITY |
|--|----------------|
| Development of thick greenbelt all along the Buffer Zone (7.5 Meters) of the project area to attenuate the noise and the same will be maintained | Mines Manager |
| Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation | Mines Foreman |
| Deployment of mining equipment with an inbuilt mechanism to reduce noise | Mines Manager |
| Provision of earmuff / ear plugs to workers working in noise prone zones in the mines | Mining Mate |
| Provision of effective silencers for mining machinery and transport vehicles | Mines Manager |
| Provision of sound proof AC operator cabins to HEMM | Mines Manager |
| Sharp drill bits are used to minimize noise from drilling | Mines Foreman |
| Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting | Mines Manager |
| 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 | Mines Manager |
| Reduce maximum instantaneous charge using delays while blasting | Mining Mate |

| | |
|--|---------------|
| Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination | Mines Manager |
| Undertake noise or vibration monitoring | Mines Manager |

Source: Proposed by FAE's & EIA Coordinator

10.7. GROUND VIBRATION AND FLY ROCK CONTROL

The Rough stone quarry operation creates vibration due to the blasting and movement of Heavy Earth moving machineries, fly rocks due to the blasting.

TABLE 10.6.: PROPOSED CONTROLS FOR GROUND VIBRATIONS & FLY ROCK

| CONTROL | RESPONSIBILITY |
|---|----------------|
| Controlled blasting using delay detonators will be carried out to maintain the PPV value (below 8Hz) well within the prescribed standards of DGMS | Mines Manager |
| Drilling and blasting will be carried under the supervision of qualified persons | Mines Manager |
| Proper stemming of holes should be carried out with statutory competent qualified blaster under the supervision of statutory mines manager to avoid any anomalies during blasting | Mines Manager |
| Suitable spacing and burden will be maintained to avoid misfire / fly rocks | Manager Mines |
| Number of blast holes will be restricted to control ground vibrations | Manager Mines |
| Blasting will be carried out only during noon time | Mining Mate |
| Undertake noise or vibration monitoring | Mines Manager |
| ensure blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material | Mines Foreman |

Source: Proposed by FAE's & EIA Coordinator

10.8. BIOLOGICAL ENVIRONMENT MANAGEMENT

The proponent will take all necessary steps to avoid the impact on the ecology of the area by adopting suitable management measures in the planning and implementation stage. During mining, thick plantation will be carried out around the project periphery, on safety barrier zone, on top benches of quarried out area etc.,

Following control measures are proposed for its management and will be the responsibility of the Mines Manager.

- Greenbelt development all along the safety barrier of the project area
- It is also proposed to implement the greenbelt development programme and post plantation status will be regularly checked for every season.
- 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.
- Year wise greenbelt development will be recorded and monitored
 - Based on the area of plantation.
 - Period of plantation
 - Type of plantation
 - Spacing between the plants
 - Type of manuring and fertilizers and its periods
 - Lopping period, interval of watering
 - Survival rate
 - Density of plantation
- The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

10.8.1. Green Belt Development Plan

About 810nos. of saplings is proposed to be planted for the Mining plan period in safety barrier of applied mine lease area with survival rate 80%. The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 10.7: PROPOSED GREENBELT ACTIVITIES FOR 5 YEAR PLAN PERIOD

| No. of tress proposed to be planted | Area to be covered in m ² | Name of the species |
|-------------------------------------|---|------------------------------------|
| 1000 | Plantation along 7.5m safety distance, along approach road. | Neem, Vilvam, Ashokha, Panai etc., |

Source: Approved Mining plan

The objectives of the greenbelt development plan are –

- Provide a green belt around the periphery of the quarry area to combat the dispersal of dust in the adjoining areas,
- Protect the erosion of the soil, Conserve moisture for increasing ground water recharging,
- Restore the ecology of the area, restore aesthetic beauty of the locality and meet the requirement of fodder, fuel and timber of the local community.

A well-planned Green Belt with multi rows (three tiers) preferably with long canopy leaves shall be developed with dense plantations around the boundary and haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

10.8.2. Species Recommended for Plantation

Following points have been considered while recommending the species for plantation:

- Creating of bio-diversity.
- Fast growing, thick canopy cover, perennial and evergreen large leaf area,
- Efficient in absorbing pollutants without major effects on natural growth

TABLE 10.8.B: RECOMMENDED SPECIES TO PLANT IN THE GREENBELT

| S.No | Botanical Name | Local Name | Importance |
|------|-----------------------|--------------|--|
| 1 | Azadirachta indica | Neem, Vembu | Neem oil & neem products |
| 2 | Tamarindus indica | Tamarind | Edible & Medicinal and other Uses |
| 3 | Polyalthia longifolia | Nettilinkam | Tall and evergreen tree |
| 4 | Borassus Flabellifer | Palmyra Palm | Tall Wind breaker tree and its fruits are edible |

Source: Proposed by FAE's & EIA Coordinator

10.9. OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

Occupational safety and health are very closely related to productivity and good employer-employee relationship. The main factors of occupational health impact in quarries are fugitive dust and noise. Safety of employees during quarrying operation and maintenance of mining equipment will be taken care as per Mines Act 1952 and Rule 29 of Mines Rules 1955. To avoid any adverse effect on the health of workers due to dust, noise and vibration sufficient measures have been provided.

10.9.1. Medical Surveillance and Examinations –

- Identifying workers with conditions that may be aggravated by exposure to dust & noise and establishing baseline measures for determining changes in health.
- Evaluating the effect of noise on workers
- Enabling corrective actions to be taken when necessary
- Providing health education

The health status of workers in the mine shall be regularly monitored under an occupational surveillance program. Under this program, all the employees are subjected to a detailed medical examination at the time of employment. The medical examination covers the following tests under mines act 1952.

- General Physical Examination and Blood Pressure

- X-ray Chest and ECG
- Sputum test
- Detailed Routine Blood and Urine examination

The medical histories of all employees will be maintained in a standard format annually. Thereafter, the employees will be subject to medical examination annually. The below tests keep upgrading the database of medical history of the employees.

TABLE 10.9.B: MEDICAL EXAMINATION SCHEDULE

| Sl.No | Activities | 1 st Year | 2 nd Year | 3 rd Year | 4 th Year | 5 th Year |
|-------|--|----------------------|----------------------|----------------------|----------------------|----------------------|
| 1 | Initial Medical Examination (Mine Workers) | | | | | |
| A | Physical Check-up | | | | | |
| B | Psychological Test | | | | | |
| C | Audiometric Test | | | | | |
| D | Respiratory Test | | | | | |
| 2 | Periodical Medical Examination (Mine Workers) | | | | | |
| A | Physical Check - up | | | | | |
| B | Audiometric Test | | | | | |
| C | Eye Check - up | | | | | |
| D | Respiratory Test | | | | | |
| 3 | Medical Camp (Mine Workers & Nearby Villagers) | | | | | |
| 4 | Training (Mine Workers) | | | | | |

| Medical Follow ups: - Work force will be divided into three targeted groups age wise as follows: - | | |
|--|-----------------------------|------------------------|
| Age Group | PME as per Mines Rules 1955 | Special Examination |
| Less than 25 years | Once in a Three Years | In case of emergencies |
| Between 25 to 40 Years | Once in a Three Years | In case of emergencies |
| Above 40 Years | Once in a Three Years | In case of emergencies |

Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.

10.9.2 Proposed Occupational Health and Safety Measures –

- The mine site will have adequate drinking water supply so that workers do not get dehydrated.
- Lightweight and loose-fitting clothes having light colours will be preferred to wear.
- Noise exposure measurements will be taken to determine the need for noise control strategies.
- The personal protective equipment will be provided for mine workers.
- Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment.
- At noisy working activity, exposure time will be minimized.
- Dust generating sources will be identified and proper control measure will be adopted.
- Periodic medical examinations will be provided for all workers.
- Strict observance of the provisions of DGMS Acts, Rules and Regulations in respect of safety both by management and the workers.
- The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centres. All personal protective equipment's will be provided to them.
- A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.

FIGURE 10.1.: PERSONAL PROTECTIVE EQUIPMENT TO THE MINE WORKERS



10.9.3: Health and Safety Training Programme

The Proponent will provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the Group Vocational Training Centres in the State and engage Environmental Consultants to provide periodical training to all the employees to carry out the mining operation in and eco-friendly manner.

TABLE 10.10.B: LIST OF PERIODICAL TRAININGS PROPOSED FOR EMPLOYEES

| Course | Personnel | Frequency | Duration | Instruction |
|-----------------------|---|-----------|----------|--|
| New-Employee Training | All new employees exposed to mine hazards | Once | One week | Employee rights Supervisor responsibilities Self-rescue Respiratory devices Transportation controls Communication systems Escape and emergency evacuation Ground control hazards Occupational health hazards Electrical hazards First aid Explosives |

| | | | | |
|--|---|---------------------------|----------|--|
| Task Training Like Drilling, Blasting, Stemming, safety, Slope stability, Dewatering, Haul road maintenance, | Employees assigned to new work tasks | Before new Assignments | Variable | Task-specific health & safety procedures and SOP for various mining activity. Supervised practice in assigned work tasks. |
| Refresher Training | All employees who received new-hire training | Yearly | One week | Required health and safety standards Transportation controls Communication systems Escape ways, emergency evacuations Fire warning Ground control hazards First aid Electrical hazards Accident prevention Explosives Respirator devices |
| Hazard Training | All employees exposed to mine hazards | Once | Variable | Hazard recognition and avoidance Emergency evacuation procedures Health standards Safety rules Respiratory devices |

Source: Proposed by FAE's & EIA Coordinator as per DGMS Norms

10.9.4.: Budgetary Provision for Environmental Management –

Adequate budgetary provision has been made by the Company for execution of Environmental Management Plan. The Table 10.11 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

TABLE 10.11: EMP BUDGET FOR PROPOSED PROJECT

| Activities | Mitigation Measure | Provision for Implementation | Capital | Recurring |
|------------------------|--|---|---------|-----------|
| Air Environment | Compaction, gradation and drainage on both sides for Haulage Road | Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare | 19500 | 19500 |
| | Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers | Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring | 800000 | 50000 |
| | Muffle blasting – To control fly rocks during blasting | Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts | 0 | 5000 |
| | Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit | Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance - 2 Units | 50000 | 5000 |
| | No overloading of trucks/tippers/tractors | Manual Monitoring through Security guard | 0 | 5000 |
| | Stone carrying trucks will be covered by tarpaulin | Monitoring if trucks will be covered by tarpaulin | 0 | 10000 |
| | Enforcing speed limits of 20 km/hr within ML area | Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 2 Units | 10000 | 500 |
| | Regular monitoring of exhaust fumes as per RTO norms | Monitoring of Exhaust Fumes by Manual Labour | 0 | 5000 |
| | Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area | Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare | 0 | 39000 |

| | | | | |
|--------------------------|--|--|-------|--------|
| | Installing wheel wash system near gate of quarry | Installation + Maintenance + Supervision | 50000 | 20000 |
| Noise Environment | Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals. | Provision made in Operating Cost | 0 | 0 |
| | Oiling & greasing of Transport vehicles and HEMM at regular interval will be done | Provision made in Operating Cost | 0 | 0 |
| | Adequate silencers will be provided in all the diesel engines of vehicles. | Provision made in Operating Cost | 0 | 0 |
| | It will be ensured that all transportation vehicles carry a fitness certificate. | Provision made in Operating Cost | 0 | 0 |
| | Safety tools and implements that are required will be kept adequately near blasting site at the time of charging. | Provision made in OHS part | 0 | 0 |
| | Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting. | Provision made in Operating Cost | 0 | 0 |
| | Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured. | Blowing Whistle by Mining Mate / Blaster / Compentent Person | 0 | 0 |
| | Provision for Portable blaster shed | Installation of Portable blasting shelter | 50000 | 2000 |
| | NONEL Blasting will be practiced to control Ground vibration and fly rocks | Rs. 30/- per 6 Tonnes of Blasted Material | 0 | 197158 |
| Waste Management | Waste management (Spent Oil, Grease etc.,) | Provision for domestic waste collection and disposal through authorized agency | 5000 | 20000 |
| | | Installation of dust bins | 5000 | 2000 |

| | | | | |
|---------------------|--|---|--------|-------|
| | Bio toilets will be made available outside mine lease on the land of owner itself | Provision made in Operating Cost | 0 | 0 |
| Mine Closure | 1. Progressive Closure Activity - Surface Runoff managment | Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum | 19500 | 5000 |
| | 2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned. | Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum | 390000 | 10000 |
| | 3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 1000 Trees - 550 Inside Lease Area & 450 Outside Lease Area) | Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring) | 110000 | 16500 |
| | | Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring) | 135000 | 13500 |
| | 4. Implementation of Final Mine Closure Acty as per Approved Mining Plan on Last Year | Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year | 63750 | 0 |

| | | | | |
|---|--|--|--------|-------|
| | 5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A | The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site | 682470 | 0 |
| Implementation of EC, Mining Plan & DGMS Condition | Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN | Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions | 10000 | 1000 |
| | Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions | Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms | 0 | 50000 |
| | Workers will be provided with Personal Protective Equipment's | Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 19 Employees | 76000 | 19000 |
| | Health check up for workers will be provisioned | IME & PME Health check up @ Rs. 1000/- per employee | 0 | 19000 |
| | First aid facility will be provided | Provision of 2 Kits per Hectare @ Rs. 2000/- | 0 | 3900 |
| | Mine will have safety precaution signages, boards. | Provision for signages and boards made | 10000 | 2000 |
| | No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management | Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost | 97500 | 10000 |
| | Installation of CCTV cameras in the mines and mine entrance | Camera 4 Nos, DVR, Monitor with internet facility | 30000 | 5000 |

| | | | | |
|--------------|--|--|----------------|----------------|
| | Implementation as per Mining Plan and ensure safe quarry working | Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate | 0 | 780000 |
| CER | As per MoEF &CC OM 22-65/2017-IA.III Dated 25.02.2021 | Detailed Description in following slides and Budget allocation is included as per MoeEF & CC OM | 500000 | 0 |
| TOTAL | | | 2367500 | 1315058 |

*Marked cost is already discussed in the mining plan hence that is not included in the total Environmental Management plan cost Total Cost for the five years.

| Year | Total Cost |
|----------------------|-----------------|
| 1 st year | ₹ 36,82,558/- |
| 2 nd year | ₹ 13,80,811/- |
| 3 rd year | ₹ 14,49,851/- |
| 4 th year | ₹ 15,22,344/- |
| 5 th year | ₹ 15,98,461/- |
| Total | 96 Lakhs |

Cost inflation 5% per annum

Note: This Environmental Management plan cost will vary according to the public consultation comments.

10.10.: CONCLUSION –

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

11. SUMMARY AND CONCLUSION

Thiru.R.S. Senthikumar Rough Stone and Gravel Quarry (Extent 1.95.0 ha) consisting of 4 Proposed, 1 Existing Quarries falls under “B” category as per MoEF & CC Notification S.O. 3977 (E).

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B-1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed projects are categorized under category “B1” Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance. “Draft EIA report prepared on the basis of ToR issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu”.

Environmental monitoring and audit mechanism have been recommended before and after commencement of the project, where necessary, to verify the accuracy of the EIA predictions and the effectiveness of recommended mitigation measures.

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the months March 2023– May 2023 for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suitable mitigation measures for likely adverse impacts due to the proposed project is suggested individually for the respective proposed project under Chapter 10.

The project proponent ensures to obtain necessary clearances and quarrying will be carried out as per rules and regulations. The Mining Activity will be carried out in a phased manner as per the approved mining plan after obtaining EC, CTO from TNPCB, execution of lease deed and obtaining DGMS Permission and working will be carried out under the supervision of Competent Persons employed.

Overall, the EIA report has predicted that the project will comply with all environment standards and legislation after commencement of the project and operational stage mitigation measures are implemented.

Mining operations has positive impact on environment and socio economy such as landscape improvement, water as by-product, economy development and better public services, providing and supply of Rough Stone as per market demand.

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 19 people directly in the proposed projects and indirectly around 50 people.

As discussed, it is safe to say that the proposed quarries are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from the Thiru.R.S.Senthikumar Rough Stone and Gravel Quarry (Extent – 1.95.0 ha).

12. DISCLOSURE OF CONSULTANT

The Project Proponent –

Thiru.R.S. Senthikumar

I have engaged M/s Geo Exploration and Mining Solutions, an Accredited Organization under Quality Council of India – National Accreditation Board for Education & Training, New Delhi, for carrying out the EIA Study as per the ToR Issued for the proposed project.

Name and address of the consultancy:

GEO EXPLORATION AND MINING SOLUTIONS

No 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004

Tamil Nadu, India

Email: infogeoexploration@gmail.com

Web: www.gemssalem.com

Phone: 0427 2431989.

The Accredited Experts and associated members who were engaged for this EIA study as given below –

| Sl.No. | Name of the expert | In house/ Empanelled | EIA Coordinator | | FAE | |
|--------|--------------------------|----------------------|-----------------|----------|-----------------|-------------|
| | | | Sector | Category | Sector | Category |
| 1 | Dr. M. Ifthikhar Ahmed | In-house | 1 | A | WP GEO SC | B A A |
| 2 | Dr. P. Thangaraju | In-house | - | - | HG GEO | A A |
| 3 | Mr. A. Jagannathan | In-house | - | - | AP NV SHW | B A B |
| 4 | Mr. N. Senthikumar | Empanelled | 38 28 | B B | AQ WP RH | B B A |
| 5 | Mrs. Jisha parameswaran | In-house | - | - | SW | B |
| 6 | Mr. Govindasamy | In-house | - | - | WP | B |
| 7 | Mrs. K. Anitha | In-house | - | - | SE | A |
| 8 | Mrs. Amirtham | In-house | - | - | EB | B |
| 9 | Mr. Alagappa Moses | Empanelled | - | - | EB | A |
| 10 | Mr. A. Allimuthu | In-house | - | - | LU | B |
| 11 | Mr. S. Pavel | Empanelled | - | - | RH | B |
| 12 | Mr. J. R. Vikram Krishna | Empanelled | - | - | SHW RH | A A |

| Abbreviations | | | |
|---------------|--|-----|--|
| EC | EIA Coordinator | EB | Ecology and bio-diversity |
| AEC | Associate EIA Coordinator | NV | Noise and vibration |
| FAE | Functional Area Expert | SE | Socio-economics |
| FAA | Functional Area Associates | HG | Hydrology, ground water and water conservation |
| TM | Team Member | SC | Soil conservation |
| GEO | Geology | RH | Risk assessment and hazard management |
| WP | Water pollution monitoring, prevention and control | SHW | Solid and hazardous wastes |
| AP | Air pollution monitoring, prevention and control | MSW | Municipal Solid Wastes |
| LU | Land Use | ISW | Industrial Solid Wastes |
| AQ | Meteorology, air quality modeling, and prediction | HW | Hazardous Wastes |

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

Declaration by experts contributing to the Draft EIA/EMP for Thiru.R.S.Senthil Kumar Rough Stone & Gravel Quarry Project over an Extent of 1.95.0 ha in Pachapalayam Village of Sulur Taluk, Coimbatore District of Tamil Nadu. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge.

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

Name: **Dr. M. Ifthikhar Ahmed**

Designation: **EIA Coordinator**

Date & Signature:




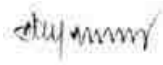

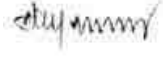






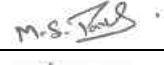
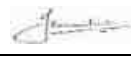
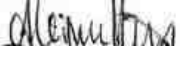





Period of Involvement: **May 2022 to till date**

Associated Team Member with EIA Coordinator:





1. **Mr. S. Nagamani**
2. **Mr.P. Viswanathan**
3. **Mr. M. Santhoshkumar**
4. **Mr. S. Ilavarasan**

FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

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

| | | | | |
|----|-----|--|--------------------------|---|
| | | <ul style="list-style-type: none"> Impact of the project on flora and fauna. Suggesting species for greenbelt development. | Mr. Alagappa Moses |  |
| 7 | RH | <ul style="list-style-type: none"> Identification of hazards and hazardous substances Risks and consequences analysis Vulnerability assessment Preparation of Emergency Preparedness Plan Management plan for safety. | Mr. N. Senthilkumar |  |
| | | | Mr. S. Pavel |  |
| | | | Mr. J. R. Vikram Krishna |  |
| 8 | LU | <ul style="list-style-type: none"> Construction of Land use Map Impact of project on surrounding land use Suggesting post closure sustainable land use and mitigative measures. | Mr. A. Allimuthu |  |
| 9 | NV | <ul style="list-style-type: none"> Identify impacts due to noise and vibrations Suggesting appropriate mitigation measures for EMP. | Mr. A. Jagannathan |  |
| 10 | AQ | <ul style="list-style-type: none"> Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. Recommending mitigations measures for EMP | Mr. N. Senthilkumar |  |
| 11 | SC | <ul style="list-style-type: none"> Assessing the impact on soil environment and proposed mitigation measures for soil conservation | Dr. M. Ifthikhar Ahmed |  |
| 12 | SHW | <ul style="list-style-type: none"> Identify source of generation of non-hazardous solid waste and hazardous waste. Suggesting measures for minimization of generation of waste and how it can be reused or recycled. | Mr. A. Jagannathan |  |
| | | | Mr. J. R. Vikram Krishna |  |

LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

| Sl.No. | Name | Functional Area | Involvement | Signature |
|--------|-------------------|-----------------|---|---|
| 1 | Mr. S. Nagamani | AP; GEO; AQ | <ul style="list-style-type: none"> Site Visit with FAE Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures Provide inputs on Geological Aspects Analyse & provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures |  |
| 2 | Mr. Viswathanan | AP; WP; LU | <ul style="list-style-type: none"> Site Visit with FAE Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures Assisting FAE on sources of water pollution, its impacts and suggest control measures Assisting FAE in preparation of land use maps |  |
| 3 | Mr. Santhoshkumar | GEO; SC | <ul style="list-style-type: none"> Site Visit with FAE Provide inputs on Geological Aspects Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan Provide inputs & Assisting FAE with soil conservation methods and identifying impacts |  |
| 4 | Mr. Umamahesvaran | GEO | <ul style="list-style-type: none"> Site Visit with FAE Provide inputs on Geological Aspects |  |

| | | | | |
|----|--------------------|--------|--|--------------------------|
| | | | <ul style="list-style-type: none"> ▪ Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan | |
| 5 | Mr. A. Allimuthu | SE | <ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of data's ▪ Provide inputs by analysing primary and secondary data | <i>A. Allimuthu</i> |
| 6 | Mr. S. Ilavarasan | LU; SC | <ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assisting FAE in preparation of land use maps ▪ Provide inputs & Assisting FAE with soil conservation methods and identifying impacts | <i>S. Ilavarasan</i> |
| 7 | Mr. E. Vadivel | HG | <ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE & provide inputs on aquifer characteristics, ground water level/table ▪ Assist with methods of ground water recharge and conduct pump test, flow rate | <i>E. Vadivel</i> |
| 8 | Mr. D. Dinesh | NV | <ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures ▪ Assist FAE with prediction modelling | <i>D. Dinesh</i> |
| 9 | Mr. Panneer Selvam | EB | <ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna | <i>P. Panneer Selvam</i> |
| 10 | Mrs. Nathiya | EB | <ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna | <i>T. Annappan</i> |

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, Dr. M. Ifthikhar Ahmed, Managing Partner, Geo Exploration and Mining Solutions, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the Draft EIA/EMP for Thiru.R.S. Senthikumar Rough Stone & Gravel Quarry Project over an Extent of 1.95.0 ha in Pachapalayam Village of Sulur Taluk, Coimbatore District of Tamil Nadu. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge.

Signature& Date:



Name:

Dr. M. Ifthikhar Ahmed

Designation:

Managing Partner

Name of the EIA Consultant Organization:

M/s. Geo Exploration and Mining Solutions

NABET Certificate No & Issue Date:

NABET/EIA/2225/RA 0276 Dated: 20-2-2023

Validity:

Valid till 06.08.2025

ANNEXURE

THIRU R.S. SENTHILKUMAR ROUGH STONE AND GRAVEL QUARRY

Pachapalayam Village,
Sulur Taluk,
Coimbatore District,
Tamil Nadu State.

CLUSTER EXTENT = 11.05.9 ha

Project Proponent

| S. Nos. | Proponent Name | Extent (Ha) | ToR |
|---------|-------------------|-------------|---|
| 1 | R.S. Senthilkumar | 1.95.0ha | TO24B0108TN5943650N Dated:11.01.2025 |

LIST OF ANNEXURES

| CODE | DESCRIPTION | PAGE NO. |
|------|--|-------------|
| P1 | COPY OF TERMS OF REFERENCE | 1A-23A |
| | COPY OF 500M RADIUS QUARRIES DETAILS AND EXISTING PIT LETTER | 24A – 25A |
| | COPY OF MINE PLAN APPROVED LETTER | 26A- 27A |
| | COPY OF APPROVED MINING PLAN and Plates | 28A – 124A |
| | COPY OF HYDROGEOLOGICAL REPORT | 125A - 140A |
| | COPY OF EXPLOSIVE CERTIFICATE | 141A-143A |
| | COPY OF INSPECTION REPORT | 144A-155A |
| P2 | COPY OF TERMS OF REFERENCE | 156A – 176A |
| | COPY OF 500M RADIUS QUARRIES DETAILS | 177A – 179A |
| | COPY OF MINE PLAN APPROVED LETTER | 180A – 182A |
| | COPY OF APPROVED MINING PLAN AND PLATES | 183A – 273A |
| | COPY OF 300 VAO INSPECTION REPORT | 274A |
| | COPY OF HYDROGEOLOGY REPORT | 275A-283A |
| E-1 | COPY OF ENVIRONMENTAL CLEARANCE | 284A – 327A |
| | COPY OF BASE LINE MONITORING DATA | 328A-365A |
| | COPY OF NABET CERTIFICATE | 366A |



सत्यमेव जयते

File No: 11522
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA),
TAMIL NADU)



Dated 11/01/2025



To,

Thiru.r s senthilkumar
No. 31, Sathyamoorthy Road, Ramnagar, Coimbatore District, Coimbatore , COIMBATORE, TAMIL
NADU, 641009
shriharisenthil.2010@gmail.com

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

Sir/Madam,

SEIAA, Tamil Nadu – Proposed Rough Stone and Gravel Quarry lease over an extent 1.95.0 Ha at S.F.Nos. 285/3 (Part) and 286/2 (Part) of Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu by Thiru. R. S. Senthil Kumar- under project category – “B1” and Schedule S.No.1(a) “Mining of Minerals Projects” of EIA Notification, 2006, as amended – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

REF:

1. Online proposal No. SIA/TN/MIN/508364/2024, Dated: 26/11/2024.
2. Your application submitted for Terms of Reference dated: 29.11.2024.
3. Minutes of the 523rd meeting of SEAC held on 27.12.2024.
4. Minutes of the 787th SEIAA meeting held on 08.01.2025.

2. The particulars of the proposal are as below :

| | |
|---|---|
| (i) TOR Identification No. | TO24B0108TN5943650N |
| (ii) File No. | 11522 |
| (iii) Clearance Type | TOR |
| (iv) Category | B1 |
| (v) Project/Activity Included Schedule No. | 1(a) Mining of minerals |
| (vii) Name of Project | R.S. Senthil Kumar Rough Stone and Gravel Quarry |
| (viii) Name of Company/Organization | r s senthilkumar |
| (ix) Location of Project (District, State) | COIMBATORE, TAMIL NADU |
| (x) Issuing Authority | SEIAA |

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

1. In view of the particulars given in the Para 1 above, the project proposal inter alia including Form-1 (Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.

2. The above-mentioned proposal has been considered by SEIAA in the meeting held on 08/01/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.

3. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects recommended the proposal for grant of Terms of Reference with public hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).

4. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to issue the following Terms of Reference with public hearing for instant proposal of **Thiru. R. S. Senthil Kumar** under the provisions of EIA Notification, 2006 and as amended thereof.

5. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.

6. The Terms of Reference with public hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/Regulations or Statutes, as applicable, to the project.

7. This issues with the approval of the Competent Authority.

8. The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

Copy To

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary to Government, Environment, Climate Change and Forests Department, Tamil Nadu.
3. The Additional Chief Secretary to Government, Natural Resources Department, Tamil Nadu.
4. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
5. The Chairperson, TNPC Board, 76, Mount Salai, Guindy, Chennai-32
6. The District Collector, Coimbatore District.
7. The Commissioner of Geology and Mines, Guindy, Chennai-32
8. Assistant Director, Department of Geology & Mining, Coimbatore District.
9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. Integrated Regional office of MoEF&CC, Sasthri Bhawan, Nungambakkam, Chennai.
11. File Copy.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seac Conditions - Site Specific

| S. No | Terms of Reference |
|-------|---|
| 1.1 | 1. As the quarrying was carried out without benches of appropriate geometry in accordance with the provisions of the MMR 1961 and considering the safety aspects, the SEAC have decided to restrict |

| S. No | Terms of Reference |
|-------|--|
| | <p>the depth of mining to 47m. Hence, the PP shall furnish the Modified Mining Plan incorporated with proper bench geometry and slope stability action plan duly approved by the competent authority.</p> <p>2. The PP shall furnish the Compliance Certificate Report for the EC obtained earlier from the DEIAA, duly audited by the RO, MoEF & CC, Chennai with the percentage of non-compliances, reasons for non-compliances, status on half-yearly compliance report submitted during the mine operation, actions taken on the non-compliances, etc during the EIA appraisal without fail.</p> <p>3. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal:</p> <p>(i) Copy of the agreement forming CMC.</p> <p>(ii) The Organisation chart of the Committee with defining the role of the members</p> <p>(iii) The ‘Standard Operating Procedures’ (SoP) executing the planned activities.</p> <p>4. The PP shall erect DGPS reference pillars as per MCDR Rules, 1988 and furnish photographic evidences of the same at the time of EIA appraisal.</p> <p>5. As this is an existing quarry, the PP shall ensure that the CCTV Cameras are installed inside the mine premises and the photographs of the same shall be submitted at the time of EIA appraisal.</p> <p>6. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.</p> <p>7. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.</p> <p>8. The PP shall prepare the EMP for the entire project life of mine, and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.</p> <p>9. The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures.</p> |

2. Seac Standard Conditions

| S. No | Terms of Reference |
|-------|--|
| 2.1 | <p>1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:</p> <p>(i) Original pit dimension</p> <p>(ii) Quantity achieved Vs EC Approved Quantity</p> <p>(iii) Balance Quantity as per Mineable Reserve calculated.</p> <p>(iv) Mined out Depth as on date Vs EC Permitted depth</p> <p>(v) Details of illegal/illicit mining</p> <p>(vi) Violation in the quarry during the past working.</p> <p>(vii) Quantity of material mined out outside the mine lease area</p> <p>(viii) Condition of Safety zone/benches</p> <p>(ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.</p> <p>2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.</p> |

| S. No | Terms of Reference |
|-------|---|
| | <p>3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.</p> <p>4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.</p> <p>5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.</p> <p>6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.</p> <p>7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p> <p>8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.</p> <p>9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, III/ Class mines manager appointed by the proponent.</p> <p>10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.</p> <p>11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.</p> <p>12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <p>13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>14. Quantity of minerals mined out.</p> <ul style="list-style-type: none"> · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted. · Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. <p>15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p> <p>16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p> <p>17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water</p> |

| S. No | Terms of Reference |
|-------|---|
| | <p>bodies nearby provided as per the approved mining plan.</p> <p>18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.</p> <p>19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.</p> <p>20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p> <p>21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.</p> <p>22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p> <p>23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.</p> <p>24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p> <p>25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.</p> <p>26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.</p> <p>27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.</p> <p>28. Impact on local transport infrastructure due to the Project should be indicated.</p> <p>29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.</p> <p>30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.</p> <p>31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.</p> <p>32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide</p> |

| S. No | Terms of Reference |
|-------|--|
| | <p>range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.</p> <p>33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner</p> <p>34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.</p> <p>37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.</p> <p>38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.</p> <p>39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.</p> <p>40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.</p> <p>41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.</p> <p>42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.</p> <p>43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.</p> |

3. Seiaa Standard Conditions:

| S. No | Terms of Reference |
|-------|--|
| 3.1 | <p>Cluster Management Committee</p> <p>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.</p> <p>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.,</p> <p>3. The List of members of the committee formed shall be submitted to AD/Mines before the</p> |

| S. No | Terms of Reference |
|-------|--|
| | <p>execution of mining lease and the same shall be updated every year to the AD/Mines.</p> <p>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.</p> <p>5. The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.</p> <p>6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.</p> <p>7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.</p> <p>8. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.</p> <p>Agriculture & Agro-Biodiversity</p> <p>9. Impact on surrounding agricultural fields around the proposed mining Area.</p> <p>10. Impact on soil flora & vegetation around the project site.</p> <p>11. Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.</p> <p>12. The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.</p> <p>13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</p> <p>14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.</p> <p>Forests</p> <p>15. The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife.</p> <p>16. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.</p> <p>17. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.</p> |

| S. No | Terms of Reference |
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| | <p>18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.</p> <p>Water Environment</p> <p>19. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</p> <p>20. Erosion Control measures.</p> <p>21. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.</p> <p>22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>23. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</p> <p>24. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.</p> <p>25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p>27. The EIA shall include the impact of mining activity on the following:</p> <ul style="list-style-type: none"> a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams. <p>Energy</p> <p>28. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.</p> <p>Climate Change</p> <p>29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.</p> |

| S. No | Terms of Reference |
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| | <p>30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.</p> <p>31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.</p> <p>Mine Closure Plan</p> <p>32. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.</p> <p>EMP</p> <p>33. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.</p> <p>34. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.</p> <p>Risk Assessment</p> <p>35. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.</p> <p>Disaster Management Plan</p> <p>36. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.</p> <p>Others</p> <p>37. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.</p> <p>38. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.</p> <p>39. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.</p> |

Standard Terms of Reference for (Mining of minerals)

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| S. No | Terms of Reference |
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| 1.1 | Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994 |
| 1.2 | A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given |
| 1.3 | All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee |
| 1.4 | All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the areashould be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone) |
| 1.5 | Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics |
| 1.6 | Details about the land proposed for mining activities should be givenwith information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority |
| 1.7 | It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large,may also be detailed in the EIA Report |
| 1.8 | Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided |
| 1.9 | The study rea will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period |
| 1.10 | Land use of the study rea delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given |
| 1.11 | Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land |

| S. No | Terms of Reference |
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| | area, distance from mine lease, its land use, R&R issues, if any, should be given |
| 1.12 | A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the State Expert Appraisal Committees |
| 1.13 | Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished |
| 1.14 | Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated |
| 1.15 | The vegetation in the RF / PF areas in the study area, with necessary details, should be given |
| 1.16 | A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted |
| 1.17 | Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished |
| 1.18 | A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled- I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost |
| 1.19 | Proximity to Areas declared as Critically Polluted or the Project areas likely to come under the Aravali Range, (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered |
| 1.20 | Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority) |

| S. No | Terms of Reference |
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| 1.21 | R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report |
| 1.22 | One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site- specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given |
| 1.23 | Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map |
| 1.24 | The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated |
| 1.25 | Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided |
| 1.26 | Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided |
| 1.27 | Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided |
| 1.28 | Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from State Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished |
| 1.29 | Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out |

| S. No | Terms of Reference |
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| 1.30 | Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same |
| 1.31 | A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution |
| 1.32 | Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines |
| 1.33 | Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report |
| 1.34 | Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report |
| 1.35 | Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed |
| 1.36 | Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations |
| 1.37 | Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation |
| 1.38 | Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project |
| 1.39 | Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project |
| 1.40 | Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given |

| S. No | Terms of Reference |
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| 1.41 | The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out |
| 1.42 | A Disaster management Plan shall be prepared and included in the EIA/EMP Report |
| 1.43 | Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc |
| 1.44 | <p>Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed. g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation. h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable. i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area</p> |

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The

proposed safeguard measures in each case should also be provided.

- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from

the Standing Committee of National Board of Wildlife and copy furnished.

- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The

location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.

- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the

proposed Project.

- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

- i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental

- increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
 15. A specific study on agriculture & livelihood shall be carried out and reported.
 16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
 17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
 18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
 19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
 20. Likely impact of the project on air, water, land, flora-fauna and nearby population
 21. Emergency preparedness plan in case of natural or in plant emergencies
 22. Issues raised during public hearing (if applicable) and response given
 23. CER plan with proposed expenditure.
 24. Occupational Health Measures
 25. Post project monitoring plan
 26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
 27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
 28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
 29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
 30. Reserve funds should be earmarked for proper closure plan.
 31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

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

Signature Not Verified

Digitally Signed by : A B Rahul Nadh IAS
Member Secretary, SEIAA

Date: 11/01/2025

From

To

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

Thiru.R.S.Senthilkumar,
S/o.R.R.Subbaiyan,
31, Sathyamoorthy road,
Ramnagar,
Coimbatore.

Rc.No. 557/Mines/2022 Dated: 12.11.2024.

Sir,

Sub: Mines and Quarries – Minor Minerals – Coimbatore District - Sulur Taluk – Pachapalayam Village - Survey Nos.285/3 (part) (0.35.0 hec) and 286/2 (part) (1.60.0 hec) - over an extent of 1.95.0 hectares of patta land - Rough stone & Gravel quarry lease –Precise area communicated - 500 mts radius letter requested-regarding.

Ref: 1. Application of Thiru.R.S.Senthilkumar dated: 13.05.2022.
2. Precise area communication in Rc.No. 557/Mines/2022 dated: 22.10.2024.
3. Thiru.R.S.Senthilkumar letter dated: 04.11.2024.

With reference to your letter in the reference 3rd cited, the details of existing and lease expired quarries located within 500m radius from the proposed Rough stone & gravel quarry over an extent of 1.95.0 hectares of patta land in Survey Nos.285/3 (part) (0.35.0 hec) and 286/2 (part) (1.60.0 hec) of Pachapalayam Village, Sulur Taluk, Coimbatore District are as follows:

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

| | | | | |
|-------------------------------------|----------------------------------|--|--------|-------------------------------|
| 2. | A.Velusamy | Pachapalayam 285/1B1 | 1.72.5 | 09.02.2005 to 08.02.2010 |
| 3. | V.Gopalakrishnan | Pachapalayam 282/2A2 | 1.28.5 | 02.06.2014 to 01.06.2018 |
| 4. | B.Sakthivel | Pachapalayam 280/1(P),280/2(P) | 1.34.5 | 06.06.2016 to 05.06.2021 |
| 5. | S.A.Ramachandran | Pachapalayam 273/3B, 273/3C& 271/1 | 1.83.0 | 09.01.2004 to 08.01.2009 |
| d. Present proposed Quarries | | | | |
| 1. | R.S.Senthilkumar | Pachapalayam 285/3 (P) & 286/2 (P) | 1.95.0 | applied area (Rough Stone) |
| 2. | Tvl.Gomuki Blue Metals L.L.P. | Pachapalayam238/2(P), 239/1B, 239/2B, 240/2B(P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) | 2.47.9 | Pending with SEIAA |
| 3. | V.Shanmugam | Pachapalayam 238/1 | 1.98.0 | Precise area communicated. |
| 4. | T.Ragupathi | 273/1B, 273/2, 273/3E 274/1A& 274/2A | 2.62.0 | Application is in process. |


 Assistant Director,
 Geology and Mining,
 Coimbatore



From

To

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

Thiru.R.S.Senthilkumar,
S/o.R.R.Subbaiyan,
31, Sathyamoorthy road,
Ramnagar,
Coimbatore.

Rc.No.557/Mines/2022 Dated: 12.11.2024.

Sir,

Sub: Mines and Quarries – Minor Minerals – Coimbatore District – Sulur Taluk – Pachapalayam Village - Survey Nos.285/3 (part) (0.35.0hec) and 286/2 (part) (1.60.0hec) - over an extent of 1.95.0 hectares of patta land - Rough stone & Gravel quarry lease – Precise area communicated – Draft mining plan submitted by Thiru.R.S.Senthilkumar - Approval of mining plan - Regarding.

Ref: 1. Application of Thiru.R.S.Senthilkumar dated: 13.05.2022.
2. Precise area communication in Rc.No. 557/Mines/2022 dated: 22.10.2024.
3. Thiru.R.S.Senthilkumar letter dated: 04.11.2024.


In the reference 1st cited, Thiru.R.S.Senthilkumar has applied for the grant of rough stone & gravel quarry lease over an extent of 1.95.0 hectares of patta land in Survey Nos.285/3 (part) (0.35.0 hec) and 286/2 (part) (1.60.0 hec) of Pachapalayam Village, Sulur Taluk, Coimbatore District under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

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

3) In exercise of powers delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan submitted by Thiru.R.S.Senthilkumar for grant of lease to quarry rough stone & gravel, over an extent of 1.95.0 hectares of patta land in Survey Nos.285/3 (part) (0.35.0 hec) and 286/2 (part) (1.60.0 hec)

of Pachapalayam Village, Suler Taluk, Coimbatore District for a period of Five years and the proposed mineable reserves after leaving safety distance is arrived as **75,830M³** of rough stone upto a depth of 52m. This approval is subject to the following conditions:-

- (i). That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
- (ii). This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act, 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884(Central Act IV of 1884) and the rules made there under the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii). That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv). No hindrance should be caused to the Public and nearby patta lands.
- (v). A safety distance of 7.5 meters should be provided for adjacent patta land from the lease applied area.
- (vi). A safety distance of 50 meters should be provided for EB line passing on the eastern side of applied area.


Assistant Director,
Geology and Mining,
Coimbatore

Encl: 2 copies of Approved Mining Plan.

Copy submitted to :

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

**MINING PLAN AND PROGRESSIVE QUARRY
CLOSURE PLAN FOR PACHAPALAYAM
ROUGH STONE AND GRAVEL**

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED UNDER TAMIL NADU MINOR MINERAL
CONCESSION RULES, 1959)

Patta Land / Lease period = Five years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 1.95.0 Ha
S.F.NO. : 285/3 (PART) AND 286/2 (PART)
VILLAGE : PACHAPALAYAM
TALUK : SULUR
DISTRICT : COIMBATORE
STATE : TAMIL NADU

FOR

APPLICANT

Thiru. R.S. SENTHIL KUMAR,

S/o. R.R. Subbaiyan,
No. 31, Sathyamoorthy Road,
Ramnagar, Coimbatore District,
Tamil Nadu state – 641 009.

PREPARED BY

B. VENGADAGIRI, M.Sc.,

Qualified Person

(As Per Rule 15(I)(a) and (I)(b) of MCR, 2016)

No.105, 5th Cross, Alagapuram,
Salem District – 636 010,
Mobile No.: +91 86953 32233.
E-Mail: vengatb6@gmail.com.





ABBREVIATIONS

- EIA - Environmental Impact Assessment
- SEAC - State Expert Appraisal Committee
- SEIAA - State Level Environment Impact Assessment Authority
- MoEF&CC - Ministry of Environment, Forest and Climate changes
- MSL - Mean Sea Level
- CPCB - Central Pollution Control Board
- TNPCB - Tamil Nadu Pollution Control Board
- S.F.No. - Survey Field Number
- DMS - Director of Mines Safety
- DGMS - Director General of Mines Safety
- MMR - Metalliferous Mines Regulations
- MCR - Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules
- TNMMCR - Tamil Nadu Minor Mineral Concession Rules
- EMP - Environment Management Plan
- NONEL - Non Electric
- PPV - Peak Particle Velocity
- CRZ - Coastal Regulatory Zone
- HACA - Hill Area Conservation Authority
- QP - Qualified Person
- AGL - Above Ground Level
- BGL - Below Ground Level

R.S. Senthil kumar,
S/o. R.R. Subbaiyan,
No. 31, Sathyamoorthy Road,
Ramnagar, Coimbatore District,
Tamil Nadu state – 641 009.



CONSENT LETTER FROM THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Pachapalayam Rough Stone and Gravel Quarry lease applied area over an extent of 1.95.0 Hectares Patta lands in S.F.Nos. 285/3 (Part) and 286/2 (Part) of Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu State has been prepared by

B. Vengadagiri, M.Sc.,

Qualified Person

I have entrusted the works to prepare the Mining Plan based upon the production requirements to me as per the Mines Acts, Rules, Regulations and Amendments as on date. I request to the Assistant Director, Department of Geology and Mining, Coimbatore District, Tamil Nadu State to make further correspondence regarding the modification of the Mining Plan with the said Qualified Person at his following address.

B. Vengadagiri, M.Sc.,

No.105, 5th Cross, Alagapuram,

Salem District – 636 010,

Mobile No.: +91 86953 32233.

I hereby undertake that all the responsibilities of contents in the Mining Plan and if any corrections made in the Mining Plan by the Qualified Person may be deemed to have been made with our knowledge and consent and shall be acceptable to me and binding on me in all respects. If there is any substantial change during operation, we will carry out a Modified Mining plan and seek its approval from concerned Authorities.

Signature of the Applicant

A handwritten signature in black ink, appearing to read "R.S. Senthil kumar".

(R.S. Senthil kumar)

Place: Coimbatore

Date: 23.10.2024

R.S. Senthil kumar,
S/o. R.R. Subbaiyan,
No. 31, Sathyamoorthy Road,
Ramnagar, Coimbatore District,
Tamil Nadu state – 641 009.



DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Pachapalayam Rough Stone and Gravel Quarry lease applied area over an extent of 1.95.0 Hectares Patta lands in S.F.Nos. 285/3 (Part) and 286/2 (Part) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State has been prepared in full consultation with me.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to quarry from time to time as per Tamil Nadu Minor Mineral Concession Rules, 1959.

Signature of the Applicant

Handwritten signature of R.S. Senthil kumar.

(R.S. Senthil kumar)

Place: Coimbatore

Date: 28.10.2024

CERTIFICATE

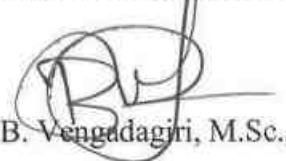


Certified that I am, **B. Vengadagiri, M.Sc.**, residing at No. 105, 5th Cross, Alagapuram Salem District – 636 010, Tamil Nadu, holding a Post Graduate Degree in Geology (M.Sc., Applied Geology) from Annamalai University, Chidambaram and I worked in the field of Mining in a role of Geologist.

Rule 15(I)(a) and (b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016 stipulates the eligibility for preparing Mining plans as “(I)(a) degree in mining engineering or a post-graduate degree in geology granted by a university established” and (I)(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 (I)(a) and (I)(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 and Progressive Quarry Closure Plan in Respect of Pachapalayam Rough Stone and Gravel Quarry over an extent of 1.95.0 Hectares Patta lands in S.F.Nos. 285/3 (Part) and 286/2 (Part) of Pachapalayam Village, Sulur Taluk, Coimbatore District for **Thiru. R.S. Senthil kumar**, S/o. R.R. Subbaiyan, residing at No. 31, Sathyamoorthy Road, Ramnagar, Coimbatore District, Tamil Nadu state – 641 009. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person


B. Vengadagiri, M.Sc.,

Place: Salem

Date: 28.10.2024

B. Vengadagiri, M.Sc.,

No.105, 5th Cross, Alagapuram,

Salem District – 636 010,

Mobile No.: +91 86953 32233.

CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of Prepared under Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959. The preparation of Mining Plan and Progressive Quarry Closure Plan for Pachapalayam Rough Stone and Gravel Quarry lease applied area over an extent of 1.95.0 Hectares Patta lands in S.F.Nos. 285/3 (Part) and 286/2 (Part) of Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu State has been prepared for

R.S. Senthil kumar,

S/o. R.R. Subbaiyan,

No. 31, Sathyamoorthy Road,

Ramnagar, Coimbatore District,

Tamil Nadu state – 641 009.

Whenever specific permissions / exemptions / relaxations and approvals are required, the applicant will approach the concerned authorities of the Assistant Director, Department of Geology and Mining, Coimbatore District, Tamil Nadu State for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the above Mining Plan are true and correct to the best of my knowledge.

Signature of the Qualified Person


B. Vengadagiri, M.Sc.,

Place: Salem

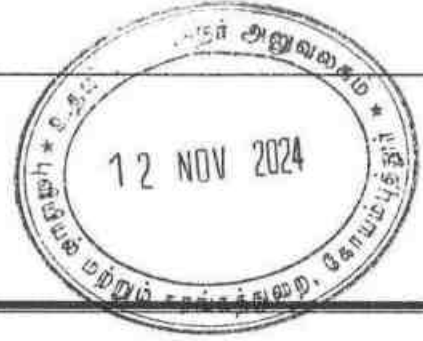
Date: 28.10.2024

B. Vengadagiri, M.Sc.,

No.105, 5th Cross, Alagapuram,

Salem District – 636 010,

Mobile No.: +91 86953 32233.



CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations or Orders made there under have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Pachapalayam Rough Stone and Gravel Quarry lease applied area over an extent of 1.95.0 Hectares Patta lands in S.F.Nos. 285/3 (Part) and 286/2 (Part) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State has been prepared for

R.S. Senthil kumar,

S/o. R.R. Subbaiyan,

No. 31, Sathyamoorthy Road,

Ramnagar, Coimbatore District,

Tamil Nadu state – 641 009.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of Director of Mines Safety (DMS), No.5, II Street, Block-AA, Anna Nagar, Chennai-40, Tamil Nadu State for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the Mining Plan are true and correct to the best of my knowledge.

Signature of the Qualified Person


B. Vengadagiri, M.Sc.,

Place: Salem

Date: 28.10.2024

LIST OF CONTENTS



| S. No. | Description | Page No. |
|--------|--|----------|
| | Introduction and Executive Summary | 1 |
| 1.0 | General Information | 4 |
| 2.0 | Location and Accessibility | 5 |
| 3.0 | <u>PART-A</u> Geology and Mineral Reserves | 6 |
| 4.0 | Mining | 9 |
| 5.0 | Blasting | 13 |
| 6.0 | Mine Drainage | 15 |
| 7.0 | Stacking of Mineral waste and Disposal of waste | 16 |
| 8.0 | Use of the Mineral | 16 |
| 9.0 | Other | 16 |
| 10.0 | Mineral Processing | 19 |
| 11.0 | <u>PART-B</u> Environment Management Plan | 20 |
| 12.0 | Progressive Quarry Closure Plan | 28 |
| 13.0 | Any Other Details Intend to Furnish by the Applicant | 32 |

LIST OF ANNEXURES



| S. No. | Description | Annexure No. |
|--------|---|--------------|
| 1. | Copy of Precise Area Communication | I |
| 2. | Copy of FMB | II |
| 3. | Copy of Village Map | III |
| 4. | Copy of Patta | IV |
| 5. | Copy of Adangal | V |
| 6. | Copy of A-Register | VI |
| 7. | Copy of Previous Proceeding letter | VII |
| 8. | Copy of Lease Deed | VIII |
| 9. | Copy of Previous Environmental Clearance | IX |
| 10. | Copy of ID Proof | X |
| 11. | Copy of Educational Certificate of Qualified Person | XI |
| 12. | Copy of Experience Certificate of Qualified Person | XII |

LIST OF PLATES

| S. No. | Description | Plate No. |
|--------|--|-----------|
| 1. | Location Plan | I |
| 2. | Toposketch of Quarry Lease Applied Area for 10km Radius | IA |
| 3. | Environmental and Land use Plan | IB |
| 4. | Route Map | IC |
| 5. | Quarry Lease Plan & Surface Plan | II |
| 6. | Topography, Geological, Year wise Development and Production Plan and Sections | III |
| 7. | Progressive Quarry Closure Plan & Sections | IV |
| 8. | Conceptual Plan & Sections | V |

**MINING PLAN ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR
PACHAPALAYAM ROUGH STONE AND GRAVEL.**

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDMENT OF TAMIL NADU MINOR MINERAL
CONCESSION RULES, 1959)

INTRODUCTION AND EXECUTIVE SUMMARY:

The Applicant **Thiru. R.S. Senthil kumar**, S/o. R.R. Subbaiyan, residing at No. 31, Sathyamoorthy Road, Ramnagar, Coimbatore District, Tamil Nadu state – 641 009 has entrusted and given consent to preparation of Mining plan and Progressive Mine Closure Plan as per the provisions of Mines Act, Rules, Regulations and as amended till date.

The Applicant has applied quarry lease for quarrying of Rough stone and Gravel over an extent 1.95.0 Hectares of Patta lands in S.F.Nos. 285/3 (Part) and 286/2 (Part) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State for a period of five years under Rules 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.

The application was examined, Scrutinized, Inspected and processed by the Assistant Director, Department of Geology and Mining, Coimbatore and issued a Precise Area Communication letter vide letter **R.C. No. 557/Mines/2022, dated: 22.10.2024** (Refer Annexure No. I) for submission of draft Mining plan as per the Rule 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 within 90 days and getting approval from the Department of Geology and Mining, Coimbatore to obtain Environmental Clearance from the State Level Environment Impact Assessment Authority (SEIAA), Tamil Nadu, with the following conditions to provide (Refer Annexure No. I):

General Conditions:

1. No hindrance shall be caused to the adjacent patta and Public while quarrying operation.
2. A safety distance of 7.5 meters should be provided to the adjacent patta lands while quarry operation.
3. The applicant should fix the boundary pillars of the lease applied area along with DGPS (Differential Global Positioning System) Survey by an Authorized Agency

Special Conditions:

- 1) A safety distance of 50 meters should be provided to the power line located on the eastern side of SF No. 285/3 in the applied area during quarrying operation.

This Mining Plan along with Progressive Mine closure Plan is prepared in full consultation with **Thiru. R.S. Senthil kumar**, S/o. R.R. Subbaiyan, residing at No. 31, Sathyamoorthy Road, Ramnagar, Coimbatore District, Tamil Nadu state – 641 009 in respect of Rough stone and Gravel quarry over an extent 1.95.0 Hectares of Patta lands in S.F.Nos. 285/3 (Part) and 286/2 (Part) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State under Rules 19 of Tamil Nadu Minor Mineral Concession Rules, 1959 with obtained full consent as per the application and Production schedule in preparation of Mining plan as per the provisions of Mines Act, Rules, Regulations as on date.

The Mining plan has been prepared after carrying the field survey, collection of Primary & secondary data, environmental setting, geological features and tentatively estimated the Resources & Reserves, depth of mining as identified in the field with best our knowledge and experience. This mining plan is prepared by considering the Rule 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the EIA Notification 2006 and its subsequent Amendments.

In order to ensure compliance of the order of the Honourable Supreme Court Dated: 27.02.2012 in I.A.No.12-13 of 2011 in Special Leave Petition (SLP) (C) No. 19628-19629/2009, it has been now decided that all mining projects of minor minerals including their renewal is require prior environmental clearance. As per amendment in EIA Notification 2006 vide S.O. 1886(E), Dated:20.04.2022 "All mining lease area in respect of minor mineral mining leases and ≤ 250 ha mining lease area in respect of major mineral mining lease other than coal" would be treated as category B and will be considered by the state notified by Ministry of Environment, Forest and Climate Change as prescribed procedure under EIA notification 2006.

The field survey carried out by the Qualified Person and Team as on 24.10.2024.

Short Notes of Mining plan:

- a. Village Panchayat - Pachapalayam
- b. Panchayat Union - Annur
- c. Total extent of the lease applied area is 1.95.0Ha.
- d. Topography of the area - The area is exhibits plain topography.
- e. The Estimated Geological Resources are **2,17,014m³** of Rough stone and **6m³** of Gravel in the entire area.
- f. Tentative total Mineable Reserves are **75,830m³** of Rough stone in the entire area and the Gravel was already removed in previous quarrying period.
- g. The proposed quantity of reserves/ (level of production) to be mined are **75,830m³** of Rough stone for **five years** in the entire area.
- h. Proposed Depth of mining = 52m below from the existing ground profile.
- i. Mining Plan Period = Five years.
- j. It is a fresh lease application but, the applied area has been considered quarrying operation earlier. The quarry lease was previously granted for quarrying Rough stone and Gravel with two spells and the lease granted details are given table below. (Refer Annexure No. VII & VIII).

TABLE-1

| Spell | Name of the Lessee | District Collector's Proceeding Number and Date | Extent and SF.Nos | Lease Period |
|-------|---------------------------|---|-------------------------------------|-------------------------|
| 1 | Thiru. R.S. Senthil kumar | Rc.No. 509/2011/M.M-2, Dated:15.05.2013 | 3.84.0 and 285/1B2, 285/3 and 286/2 | 15.05.2013 – 14.05.2017 |
| 2 | Thiru. R.S. Senthil kumar | Rc.No. 101/Mines/2017, Dated:11.11.2017 | 3.15.0 and 285/3, and 286/2 | 11.11.2017 – 10.11.2022 |

The lessee (Thiru. R.S. Senthil kumar) was obtained Environmental Clearance from the DEIAA, Coimbatore District vide **Lr. No. DEIAA – CBE-II/F.No.101/2(a)/EC.No:03/2017, Dated:16.09.2017** (Refer Annexure No. IX). At present there is an existing pit situated within the lease applied area, the maximum dimension of existing quarry pit is given table below (Refer Plate No.II).

TABLE-1A

| Length (m) | Width (m) | Depth (m) |
|------------|-----------|------------------------|
| 146 | 145 | 38m below ground level |

- k. Method of mining / level of mechanization.
Opencast mechanized method, the quarry operation involves shallow jack hammer drilling, slurry blasting with NONEL initiation.
- l. Type of machineries proposed in the quarrying operation is given below.
Excavators attached with rock breaker and Bucket, Tippers, Jack hammer, Compressor (Diesel drive) (4 Jack Hammer capacity).
- m. No trees will be uprooted due to this quarry operation.
- n. The approach road from the main road to quarry road will be constructed and maintained in a good condition for the haulage of materials and machineries.
- o. There is No Export of this Rough stone and Gravel.
- p. Topo sketch covering 10km and 1km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archaeological importance and places of worships is marked and enclosed as Plate Nos. IA & IB.
- q. The lease applied area is about 1.95.0Ha bounded by seven corners; the corners are designated as 1-7 clockwise from the South corner and the Co – ordinates for all the corners are clearly marked in the Quarry Lease Plan and Surface Plan enclosed as Plate No. II.
- r. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depth and maximum area of proposed quarrying are enclosed as Plate Nos. III and V.
- s. General conditions will not applicable for the proposed area. The area applied for lease is 10Km away from the,
- Interstate Boundary,
 - Protected area under wild life protection ACT, 1972,
 - Critically polluted areas as identified by CPCB,
 - Notified Eco sensitive areas.
- t. There is no waste anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- u. Around 19 employees are proposed to deploying the quarrying operation.
- v. Total Cost of the project is about **Rs. 1,01,88,000/-**.

1.0 GENERAL INFORMATION

1.1 Name of the Applicant : **Thiru. R.S. Senthil kumar,**
S/o. R.R. Subbaiyan,
Address : No. 31, Sathyamoorthy Road, Ramnagar,
Coimbatore District,
State with Pin Code : Tamil Nadu – 641 009.
Mobile No. : +91 98422 59519.
Aadhaar No. : 9888 9995 2207 (Refer Annexure No. X)
E-mail : malmarugangarud@hotmail.com

1.2 Status of the Applicant (Individual / Company / Firm):

The Applicant is an Individual.

1.3 Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough stone and Gravel only.

1.4 Period of permission / lease to be granted:

Five Years as mentioned in Precise area Communication letter.

1.5 Name and address of the Qualified Person who preparing the Mining Plan:

Name : B. Vengadagiri, M.Sc.,
Qualified Person (As per Rule 15(I)(a) and (I)(b) of MCR, 2016),
Address : No.105, 5th Cross, Alagapuram,
Salem District – 636 010.
Mobile : +91 86953 32233.
Email : vengatb6@gmail.com

1.6 Name and Address of the Prospecting Agency:

State Geology and Mining Department, Government of Tamil Nadu, has carried out the regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed regional exploration studies and geological mapping in Tamil Nadu. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area and the Rough stone is clearly inferred from the existing pit. No detailed Exploration has carried out.

1.7 Reference no. Date of grant/ Precise Area Communication received form the State Government:

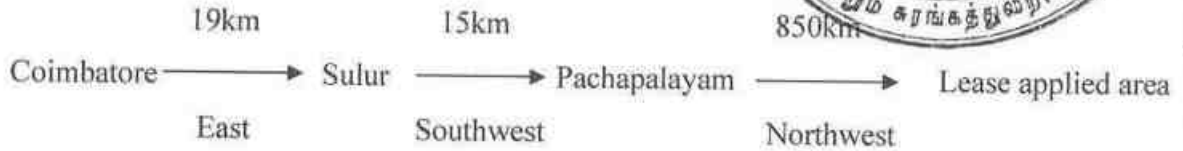
The Precise area communication letter was received from the Assistant Director, Department of Geology and Mining, Coimbatore District vide **R.C. No. 557/Mines/2022, dated: 22.10.2024** to submit approved mining plan and to obtain Environmental Clearance from the Competent Authority, Tamil Nadu State and was given to us for the preparation of mining plan to meet out the applicant's production schedule (Refer Annexure No. I).



2.0 LOCATION AND ACCESSIBILITY:

2.1. Details of the area with location map:

The lease applied area is located about 18km southeast side of Coimbatore town, 15km Southwestern side of Sulur town and 850km Northwest side of Pachapalayam Village.



Location Map of the Lease Applied area

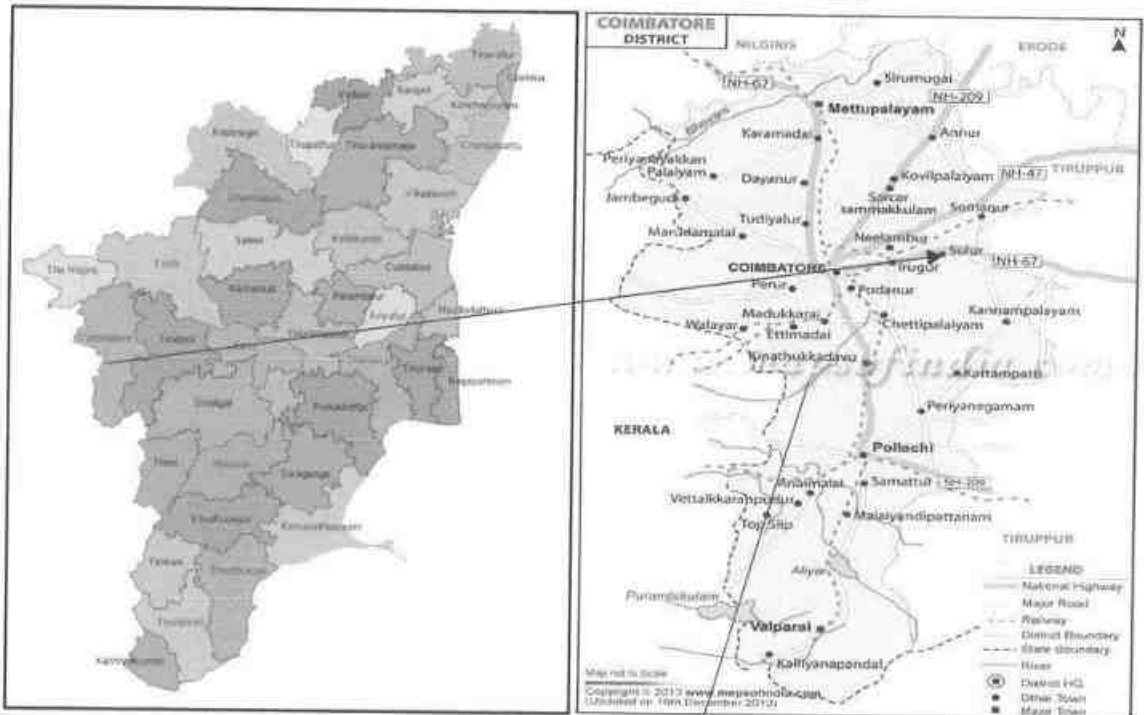


Table - 2

| District | Taluk | Village | S.F. No. | Area in Hectares | Pat No. |
|---------------------|-------|--------------|--------------|------------------|---------|
| Coimbatore | Sulur | Pachapalayam | 285/3 (Part) | 0.35.0 | 178 |
| | | | 286/2 (Part) | 0.60.0 | |
| Total Extent | | | | 1.95.0 | |

Source: As per the FMB and 'A' register record furnished by the applicant.

2.2. Classification of the area (Ryotwari/ Poramboke / others):

It is Patta lands, classified as Punsei (Barren land) (Refer Annexure Nos. IV & VI).

2.3. Ownership / Occupancy of the applied area (surface right):

It is Patta lands, registered in the name of applicant (Thiru. R.S. Senthil kumar), vide Patta No. 178 (Refer Annexure Nos. IV & VI).

2.4. Existence of public road / Railway line, if any nearby and approximate distance:

The approach road is situated on the western side, which is connects to the Panchayat Road is located at 290m on the Southwestern side of the lease applied area.

Road access is available from the quarry to state highways and National Highway, no towns are enrooted hence the traffic density is not much more due to the transportation of Rough stone and Gravel.

The approach road from the quarry is already existence and the same will be utilized for haulage and maintained during the entire lease period.

The Nearest Railway line is Coimbatore - Pollachi which is located about 4km on the Western side of the area as per the GSI Toposheet and Google Map.

2.5. Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No: 58 F/01 Latitude between: 10°54'11.91"N to 10°54'17.17"N and Longitude between: 77°04'01.21"E to 77°04'06.86"E on WGS datum-1984. Please refer the Plate Nos. I to II as per the GSI Toposheet.

PART - A

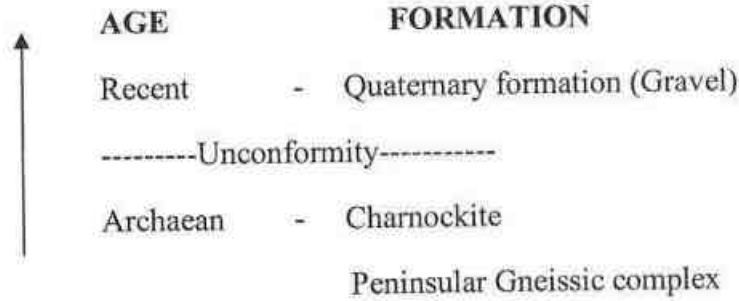
3.0 GEOLOGY AND MINERAL RESERVES:

3.1 Brief description of the Topography and general Geology of the area (with plans):

The lease applied area is exhibits plain topography. The area has gentle sloping towards Eastern side and altitude of the area is 435m above from MSL. The area is covered by 2m thickness of Gravel and followed by Massive Charnockite which is clearly inferred from the existing quarry pit. The Water level in the surrounding area is 65m - 70m below from general ground profile which is observed from the nearby bore wells. Normal rainfall is about 1206mm.

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body is $N30^{\circ}E - S30^{\circ}W$ with dipping towards $SE60^{\circ}$.

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



3.2 Details of exploration already carried out if any:

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Coimbatore District. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Rough stone formation is clearly inferred from the outcrops and nearby existing quarry pit.

3.3 Estimation of Reserves:

a) Geological Resources with geological sections on a scale of 1:1000 / 1:2000

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,

Totally three sections have been drawn, one section is drawn length wise as (X-Y) and other two cross sections are drawn width wise as (A-B and C-D) Length wise to cover the maximum area considered for lease upto 52m depth.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in the scale of 1:1000 (please refer the Geological plan and sections Plate No. III). As the sale of Rough stone are in terms of cubic metres (Volume) only and not in terms of tonnage. No Exploration has been carried out.

Estimation of Geological Resources (Plate No. III):

The Geological Resources of Rough Stone and Gravel are calculated upto a depth of [2m Gravel + 50m Rough stone] below from the existing ground profile. The total Geological Resources are calculated by cross sectional method. The total geological resources are given table below:

Table – 3

| GEOLOGICAL RESOURCES | | | | | | |
|----------------------|-------|------------|-----------|-----------|---|--------------------------|
| Section | Bench | Length (m) | Width (m) | Depth (m) | Geological Resources of Rough stone in (m ³) 100% | Gravel (m ³) |
| XY-AB | I | 1 | 3 | 2 | - | 6 |
| | II | 1 | 3 | 5 | 15 | - |
| | III | 1 | 3 | 5 | 15 | - |
| | IV | 14 | 15 | 2 | 420 | - |
| | V | 14 | 15 | 5 | 1050 | - |
| | VI | 32 | 34 | 5 | 5440 | - |
| | VII | 32 | 34 | 5 | 5440 | - |
| | VIII | 32 | 34 | 5 | 5440 | - |
| | IX | 32 | 34 | 1 | 1088 | - |
| | | 80 | 153 | 4 | 48960 | - |
| | X | 80 | 153 | 5 | 61200 | - |
| XI | 80 | 153 | 5 | 61200 | - | |
| Total | | | | | 129068 | 6 |
| XY-CD | IV | 1 | 17 | 4 | 68 | - |
| | V | 4 | 17 | 5 | 340 | - |
| | VI | 4 | 17 | 5 | 340 | - |
| | VII | 4 | 17 | 5 | 340 | - |
| | VIII | 4 | 17 | 5 | 340 | - |
| | IX | 4 | 17 | 1 | 68 | - |
| | | 65 | 95 | 4 | 24700 | - |
| | X | 65 | 95 | 5 | 30875 | - |
| | XI | 65 | 95 | 5 | 30875 | - |
| Total | | | | | 87946 | - |
| Grand Total | | | | | 217014 | 6 |

The Geological Resources of Gravel : 6m³

The Geological Resources of Rough Stone : 2,17,014m³

Geological Resources has been computed based on the physical investigation and filed survey data.

Estimation of Mineable Reserves:

The tentative mineable reserves are calculated after leaving the safety distance and Bench loss.

TABLE - 4

| MINEABLE RESERVES | | | | | |
|--------------------|--------------|---------------|--------------|--------------|--|
| Section | Bench | Length in (m) | Width in (m) | Depth in (m) | Mineable Reserves of Rough stone in (m ³) 100% |
| XY-AB | IX | 43 | 98 | 4 | 16856 |
| | X | 38 | 88 | 5 | 16720 |
| | XI | 33 | 78 | 5 | 12870 |
| | Total | | | | 46446 |
| XY-CD | IX | 51 | 56 | 4 | 11424 |
| | X | 46 | 46 | 5 | 10580 |
| | XI | 41 | 36 | 5 | 7380 |
| | Total | | | | 29384 |
| Grand Total | | | | | 75830 |

The tentative Mineable Reserves of Rough stone @ 100% : **75,830m³**

The Tentative mineable reserves have been computed as **75,830m³** of Rough stone at the rate of 100% recovery upto a depth of 52m below from the existing ground profile and the Gravel was already removed in previous quarrying period.

4.0 MINING:**4.1 Method of mining (opencast / underground):**

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) is available with Director General of Mines Safety. If the applicant intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission. The relaxation will be applied and obtained after the execution of lease deed / commencement of quarry operation.

4.2 Mode of working (mechanized/ manual):

The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves shallow jack hammer drilling, slurry explosives in blasting, excavation, Loading and transportation of Rough stone to the needy crusher.

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 shallow jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

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 mechanized method of mining.

4.3 Proposed Bench Height and Width:

The bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height. After obtaining relaxation as per 106 2(b) of Metalliferous Mines Regulations, 1961 from the DMS, the realignment of benches will be carried out.

4.4 Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.):

The overburden in the form of gravel, the gravel was already removed in previous quarrying period. The excavated Rough stone will be directly loaded into Tipper to the needy customers. The Composite year wise Development and production plan and sections indicating the pit lay out and green belt development are shown in Plate No. III.

Year wise Development and Production

TABLE - 5

| YEARWISE RESERVES | | | | | | |
|--------------------|------|--------------|------------|--------------|-----------|--|
| Section | Year | Bench | Length (m) | Width (m) | Depth (m) | Recoverable Reserve of Rough stone in (m ³) 100% |
| XY-CD | I | IX | 51 | 56 | 4 | 11424 |
| | | X | 16 | 46 | 5 | 3680 |
| | | Total | | | | 15104 |
| XY-AB | II | IX | 43 | 98 | 4 | 16856 |
| | | Total | | | | 16856 |
| | III | X | 38 | 88 | 5 | 16720 |
| Total | | | | 16720 | | |
| XY-CD | IV | X | 30 | 46 | 5 | 6900 |
| | | XI | 41 | 36 | 5 | 7380 |
| | | Total | | | | 14280 |
| XY-AB | V | XI | 33 | 78 | 5 | 12870 |
| | | Total | | | | 12870 |
| Grand Total | | | | 75830 | | |

The Recoverable reserves have been computed as 75,830m³ of Rough stone at 100% recovery for five years upto a depth of 52m below from the existing ground profile and the Gravel was already removed in previous quarrying period. (Refer Plate No. III).

The peak production capacity in the quarry is 16,856m³ of Rough stone on 2nd year and the proposed production schedule is arrived as per applicant's requirement and the EIA and EMP will be prepared an annual peak production.

The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation. Besides the rough stone locked up in benches will be exploited after obtaining necessary permission from the office of Director of Mine Safety, Chennai region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

| | | |
|--|---|---------------------------------------|
| One lorry load | = | 6m ³ (approx.) |
| Total No of Working days | = | 300 Days per year |
| Total quantity to be removed during the five years plan period | = | 75,830m ³ |
| Peak production capacity during the 2 nd year | = | 16,856m ³ |
| Hence total Lorry loads per day | = | 16,856m ³ /6m ³ |
| | = | 2,809 Lorry loads |
| | = | 2,809/300 days |
| Rough Stone (Maximum) | = | 9 Lorry loads per day. |

Working hours = 9.00 am to 6.00 pm (with 1.00-2.00 P.M. lunch break).

4.5 Machineries to be used:

For Mining:

The following machineries are utilized on rental basis for the development and production work at this quarry.

TABLE - 6

I. DRILLING MACHINE:

| S. No. | Type | Nos | Dia Hole mm | Size Capacity | Motive power |
|--------|-------------|-----|-------------|---------------|----------------|
| 1 | Jack-Hammer | 2 | 32 | 1.2m to 2.0m | Compressed air |
| 2 | Compressor | 1 | - | 400 psi | Diesel Drive |

II. EXCAVATION & LOADING EQUIPMENT:

| S. No. | Type | Nos | Capacity | Motive Power |
|--------|--|-----|----------|--------------|
| 1 | Excavator with Bucket and Rock Breaker | 1 | 300 | Diesel Drive |

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

| S. No. | Type | Nos | Capacity | Motive Power |
|--------|-------------------------|-----|--------------|--------------|
| 1 | Tippers | 2 | 20 tonnes | Diesel Drive |
| 2 | Water Sprinkling Tanker | 1 | 3,000 litres | Diesel Drive |

4.6 Brief note on conceptual mining plan for the entire lease period base on the geological, mining and Environment considerations:

Conceptual mining plan is prepared with an object of long-term systematic development of benches, layouts, selection of permanent structures, depth of quarry and ultimate dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

As the applicant has applied quarry lease for five years, the ultimate pit limit (dimension) at the end of this mining plan period is given below:

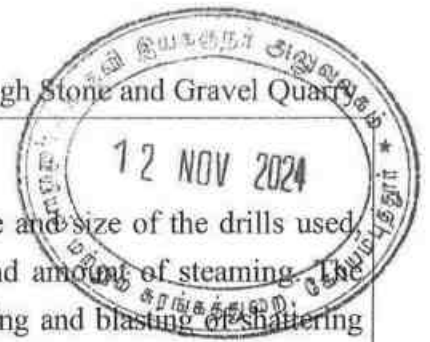
TABLE - 7

| Section | Length (m) (Max.) | Width (m) (max.) | Depth (m) (Max.) |
|---------|-------------------|------------------|------------------|
| XY-AB | 79 | 150 | 52m |
| XY-CD | 65 | 95 | 52m |

All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF & CC Norms. Please refer Plate Nos. III & IV. As per the NGT orders the applicant is directed to plant 500 trees per hectares along the quarry site and in the haul road either at the regular or the phased manner by planting native species.

There is no waste anticipated during the entire life of quarry. Hence, there is no proposal for backfilling. After completion of quarry operations, the quarry pit will be allowed to collect the seepage and rain water, the water storage will be kept as temporary reservoir to charging the nearby wells and will be utilized for greenbelt development. When the quarry reaches its ultimate pit limit or at the end of life of quarry, greenbelt development will be carried out over the quarried out top bench. The Conceptual Mining is based upon the entire ROM proposed for the life of the Mine.

The quarry area will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Refer Plate No. IV and V).



5.0 **BLASTING:**

5.1 **Blasting pattern:**

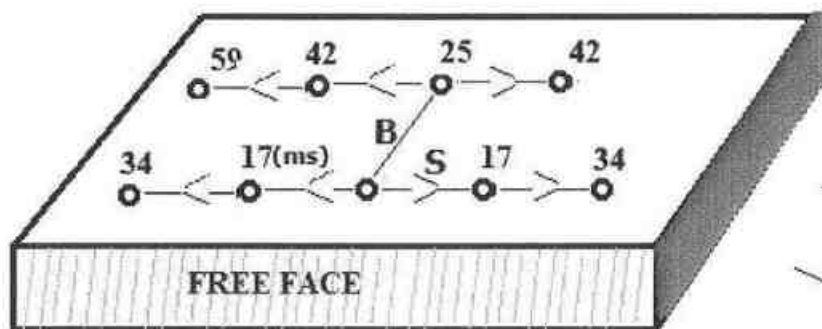
Selection of drilling pattern for blasting varies with the type and size of the drills used, depth of hole, kind of rock, quantity, rapidity of the explosives and amount of stemming. The quarrying operation is proposed to be carried out by Jack hammer drilling and blasting or shattering effect for loosening the Rough Stone with NONEL initiation. Hand Jackhammer drilling will be proposed for drilling and blasting for splitting the boulders from parent rock mass followed by rock breaker attached with excavator for secondary fragmentation of large size boulders to avoid secondary blasting. Nonel initiation provides a reasonably good solution to the fly rock problem. The main objectives of Nonel Blasting are to reduce the ground vibration, noise, flyrocks generated due to blasting operations. The overall cost of blasting in NONEL is very less compared to electrical blasting hence it optimizes the cost of blasting.

Drilling and blasting parameters are as follows:

| | | |
|-------------------------|---|----------------------------|
| Depth of Each hole | : | 1.5m |
| Spacing between holes | : | 1.0m |
| Burden for hole | : | 0.75m |
| Diameter of hole | : | 32mm |
| Pattern of hole | : | Staggered pattern |
| Inclination of holes | : | 80° from horizontal |
| Use of delay detonators | : | NONEL |
| Hole to Hole | : | 17 milli second delay (ms) |
| Row to Row | : | 25 milli second delay (ms) |

Pattern of Blasting Design

NONEL DELAY PATTERN



| | | |
|--|---|----------|
| Spacing (S) | = | 1.0m |
| Burden (B) | = | 0.75m |
| Depth of the hole | = | 1.5m |
| No of holes proposed per day (Peak Production) | = | 48 Holes |

5.2 **Type of explosives to be used:**

25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or secondary blasting is proposed. NONEL blasting and muffle blasting may be adopted after permission from DGMS.

5.3 Measures proposed to minimize ground vibration due to blasting:

The quarry is situated more than 300m away from the nearby villages. Controlled blasting measures by NONEL initiation is being adopted for minimizing ground vibration and fly rock.

Hand jackhammer drilling with blasting is proposed to be carried out with minimum use of explosive mainly to give heaving effect in Rough stone for easy excavation and to control fly rock.

NONEL Delay detonators:

NONEL blasting permits for bottom initiation and lesser charge per delay.

The major advantages of NONEL blasting are:

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

Blasting program for the production per day (As per Peak production capacity):

The Hydraulic excavators are attached with rock breakers for breaking the rock mass to reduce the blasting and explosive usage also to avoid secondary blasting. Anyhow, as per day's production schedule the maximum blasting program proposed as given below.

Peak production (2nd Year) = 16,856m³ x 2.6 (Bulk Density) = 43,826 Tons

No of Holes = 48 Holes

Yield = 144 Tons

Powder factor = 6 Tons/ Kg of explosives

Maximum explosive required = 24 Kg-Slurry explosives

Charge/ hole = 0.5 Kg

Blasting at day time only = 1.00 – 1.30 P.M. (whenever required)

Anticipated theoretical calculation of PPV

The empirical equation for assessment of peak particle velocity (PPV) is:

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

PREDICTED PPV VALUES DUE TO BLASTING

TABLE – 8

| Maximum Charge per day (kg) | Number of Round Blast per day | Maximum Charge per Round (kg) | Number of holes blasted per round | Number of holes blasted per day | Maximum Charge blasted at a time by NONEL (kg) | Nearest Infrastructure (m) | Peak Particle Velocity (mm/s) |
|-----------------------------|-------------------------------|-------------------------------|-----------------------------------|---------------------------------|--|----------------------------|-------------------------------|
| 24 | 1 | 24 | 48 | 48 | 1 (2 Holes) | 440 | 0.375 |

From the above table, the charge per blast of 24kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. Anyhow, the applicant ensures that carry out the **blasting once a day** under the supervision of competent qualified statutory personnel employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

5.4 Storage and safety measures to be taken while blasting:

The applicant will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman / Permit Mines Manager. The explosives agencies should be having the valid Blaster certificate. He will blast holes in the quarry site. After the completion of Blasting the explosives Agencies will take it out back the remaining quantity of Explosives. The Competent Qualified Statutory personnel appointed by the applicant will maintain the records of Explosives as per the Indian Explosives Act.

6.0 MINE DRAINAGE**6.1 Depth of water table (based on nearby wells and water bodies):**

The area is a Plain topography; since the lease applied area consists the most common type of dendritic drainage pattern. The water table in the area is about 65m – 70m which is observed from the existing private boreholes. The lease area is fully covered by Massive Charnockite formation. The quarry operation confined to well above the water table hence, the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt. Anyhow, Garland drain will be constructed all along the boundary to prevent surface run-off water entering into the quarry.

TABLE – 9

| Type | Distance & Direction | Location |
|-----------|------------------------|------------------------------|
| Bore Well | 110m Northwestern side | 10°54'17.66"N 77° 03'57.72"E |

6.2 Arrangements and places where the mine water is finally proposed to be discharged:

The quarry operations are confined to well above the water table during the entire lease period. If water is encountered at quarry due to rain water and seepage, the same will be pumped out by 5HP water pump and discharge to the Green belt development areas. Besides, the water will also be used for dust suppression on haul road during haulage of machineries.

7.0 STACKING OF MINERAL WASTE AND DISPOSAL OF WASTE

There is no mineral waste anticipated during entire life of the quarry hence, disposal of waste does not arise.

8.0 USE OF THE MINERAL:

The excavated rough stone (100%) will be directly loaded into Tippers as raw form to the needy nearby crushing unit to making Road metals and construction materials. The quarried-out gravel will be directly loaded into Tippers for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fee to the Government.

9.0 OTHERS:**9.1 Other Permanent Structure (also shown in the map)**

TABLE – 10

| S.No. | Description | Particulars | Aerial Distance & Direction |
|-------|---|--|-----------------------------|
| 1 | Nearest National Highway | (NH-83) Coimbatore – Dindigul | 7km – SW |
| 2 | State Highways | (SH-163) Palladam– Chettipalayam | 3km – NW |
| 3 | Railway station | Chettipalayam Railway station | 4km – NW |
| 4 | Airport | Coimbatore Airport | 14km – NW |
| 5 | Nearest Habitation | 440m – NW | |
| 6 | Nearest Town | Chettipalayam | 3km – NW |
| 7 | Nearest Government School | Chettipalayam - Govt. School | 4km – NW |
| 8 | Government Hospital | Coimbatore | 14km – NW |
| 9 | Reserved Forest | Solakarai R.F. – 15m – West | |
| 10 | Defense Installation/Historical Monuments/ Archaeological | Nil within 500m radius. | |
| 11 | Nearby Water Bodies | Kuttai – SW side – 220m | |
| 12 | Interstate Boundary | Around 21 km – SW (Kerala State Boundary) | |
| 13 | Critically Polluted areas identified by the CPCB | Around 18km – NW (Coimbatore – SIDCO) | |
| 14 | Protected areas Notified under wildlife (Protection) Act, 1972. | Around 42km – NE (Nanjarayan lake birds Sanctuary) and 43km – South (Indira Gandhi Annamalai wildlife Sanctuary) | |
| 15 | Applicability of CRZ, Notification 2011 as amended. | Not Applicable | |
| 16 | Applicability of Hill Area Conservation Authority (HACA) Clearance. | Not Applicable | |
| 17 | Housing area, EB line (HT & | EB line passing on the eastern side at 50m away from the | |

| | LT Line) | lease area. There is no other EB-HT and LT line or Housing area situated within 50m radius from the lease area. | | | | | | | | | | | | | | | |
|-----------|-----------------------------------|--|-----------|----------------|-----------------|-------|------------|------|------|------------|------|-------|------------|------|------|------------|------|
| 18 | Boundaries of the permitted area. | The boundaries of the permitted areas are as follows (Refer Plate No. II): North - S.F.No. 286/2(P) East - S.F.Nos. 281 and 282 South - S.F.Nos. 285/3(P) and 285/1C West - S.F.No. 285/1B2, 286/1B1A and 286/1B1B | | | | | | | | | | | | | | | |
| 19 | Adjacent Patta lands / Govt. Land | <table border="1"> <thead> <tr> <th>Direction</th> <th>Classification</th> <th>Safety Distance</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>East</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>South</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>West</td> <td>Patta land</td> <td>7.5m</td> </tr> </tbody> </table> | Direction | Classification | Safety Distance | North | Patta land | 7.5m | East | Patta land | 7.5m | South | Patta land | 7.5m | West | Patta land | 7.5m |
| Direction | Classification | Safety Distance | | | | | | | | | | | | | | | |
| North | Patta land | 7.5m | | | | | | | | | | | | | | | |
| East | Patta land | 7.5m | | | | | | | | | | | | | | | |
| South | Patta land | 7.5m | | | | | | | | | | | | | | | |
| West | Patta land | 7.5m | | | | | | | | | | | | | | | |

TABLE - 11

STRUCTURE WITHIN 0 - 100m

Number of Structures - 3 Nos.

| Number of Structure | Type of Structure | Usage Purpose | Commercial / industry/ residential/ farm house/ Govt. building | Occupants of Building/ Structure | Remarks |
|---------------------|-----------------------|--|--|----------------------------------|---------|
| 1 | Crusher plant 2Nos | Rough stone crusher | Industry | No resident | Private |
| 2 | Shed | Labour rest shed, Office for Crusher plant | Commercial | No resident | Private |

STRUCTURE WITHIN 100 - 200m

Number of Structures - 4 No.

| | | | | | |
|---|-----------------------|--|------------|-------------|---------|
| 1 | Crusher plant 3Nos | Rough stone crusher | Industry | No resident | Private |
| 2 | Shed & Office | Labour rest shed, Office for Crusher plant | Commercial | No resident | Private |

STRUCTURE WITHIN 200 - 300m

Number of Structures - 2 Nos.

| | | | | | |
|---|------|------------------|------------|-------------|-------------|
| 1 | Shed | Labour rest shed | Commercial | No resident | Private |
| 1 | Shed | Poultry farm | Commercial | Nil | No resident |

9.2 Employment potential (skilled, semi-skilled, un skilled):

TABLE – 12

| Designation | Present Employment position | Employees Requirement | Total |
|--------------------------------|-----------------------------|-----------------------|-----------|
| a) Supervisory category | | | |
| Mine manager | - | 1 | 1 |
| Geologist | - | 1 | 1 |
| b) Skilled labour | | | |
| Mine Foreman | - | 1 | 1 |
| Blaster/Mate | - | 1 | 1 |
| Excavator – Operator | - | 1 | 1 |
| Tipper Drivers | - | 2 | 2 |
| Water sprinkler Driver | - | 1 | 1 |
| Jack-Hammer Drillers | - | 4 | 4 |
| c) Unskilled | | | |
| Security | - | 1 | 1 |
| Labour & Helper | - | 3 | 3 |
| Co-operator and Cleaner | - | 3 | 3 |
| Total | - | 19 | 19 |

The proposed output per man shift:

TABLE – 13

| | |
|---|----------------------|
| Annual Peak Production at 2 nd year | 16,856m ³ |
| No. of days likely to be worked | 300 days |
| Average production per day | 56m ³ |
| O/S = Average Production per day / Average employment per day | $56m^3/19 = 2.9m^3$ |

The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations. It is been ensured that the labour will not be employed less than 18 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

9.3 Welfare Measures:

a) Drinking Water:

Packaged drinking water is available from the nearby water vendors in Chettipalayam which is located about 4km on the Northwest side of the lease applied area.

b) Sanitary Facilities:

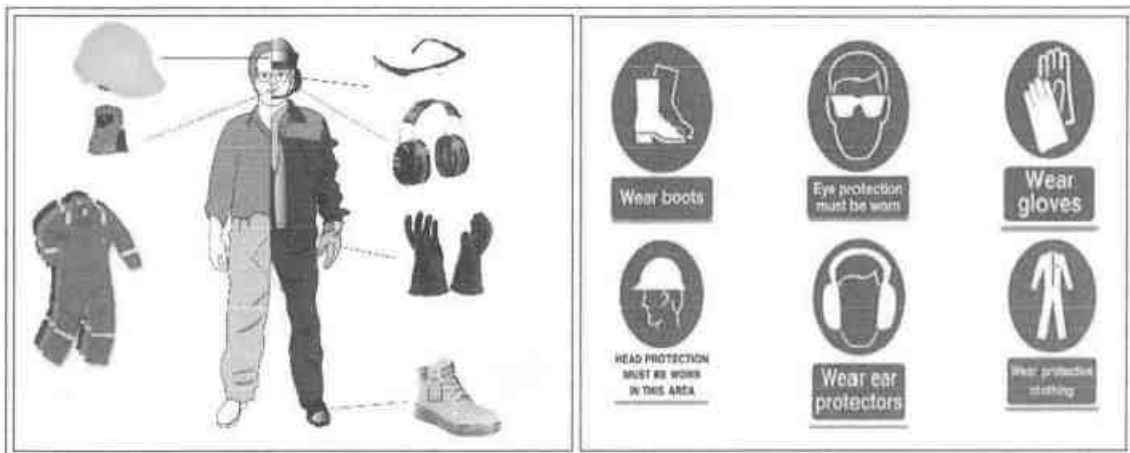
Hygienic modern Sanitary Facilities will be constructed in the safety area as semi-permanent structure and it will be maintained periodically.

c) First aid facility:

First aid kits are kept in Mines office room, in case of such eventuality is the victim will be given first aid immediately at the site by the competent and statutory foreman/permit manager/manager will be in charge of first aid and injured person will be taken to the hospital by the applicant's vehicle. Hospital is available in Coimbatore located at a distance of 14km on the Northwestern side.

d) Labour Health:

Periodically medical check-up related to occupational health safety will be conducted to all the workers in applicant own cost.

e) Precautionary safety measures to the labourers:

- Helmets,
- Reflector Jackets
- Dust mask
- Mine Goggles,
- Ear plugs,
- Ear muffs
- Safety Shoes

All personnel protective equipment as per the DGMS standard will be provided as per the specification approved by Director of mines safety. Periodically medical check-up will be conducted for all workers for any mine health related problems. Proper training and vocational education will be given by qualified and experienced safety officer to all the employees about the safety and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically, to carry out the quarrying operations scientifically and to safe guard the men and machinery and to create awareness about conventional opencast quarrying operations.

10.0 MINERAL PROCESSING:

No mineral processing/beneficiation is involved.

PART - B

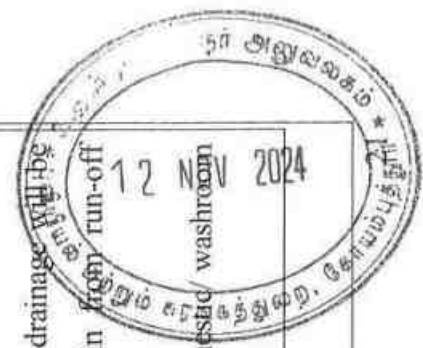
11.0 ENVIRONMENT MANAGEMENT PLAN:

The EMP is prepared based on the Mines act, Rules & amendment from by state & central government. If the SELAA/SEAC instructed the modification and alter the EMP the outcome of their recon would be final and the applicant is instructed to followed the EIA / EMP for its compliance as per the CPCB / TNPCB Norms.

| Environment | Anticipated impact | Mitigation measure |
|-------------------------|---|---|
| Land Environment | i. Topography of the area will change due to mining activity. ii. Soil quality and agriculture land on surrounding land environment will impact due to; a) Dust propagation during quarry operation like drilling, blasting, loading, unloading and movement of men, Vehicle and machineries. b) Vehicular and machineries emissions and spillage of oil and grease. | i. Backfilling is the only source for mitigation measure for topographical changes, but no waste will be anticipated during entire life of the Rough stone quarrying operation hence, backfilling is not proposed. ii. The Mining benches will not exceed beyond the approved height and width. iii. At the end of life of mine, the pit will be allowed to collect the seepage and rain water and the water storage will be kept as temporary reservoir for charging the nearby wells also the water utilized for greenbelt development purpose. i. Regular water sprinkling on dust prone area like haul road and other active area to arrest the dust generation. ii. Green belt will be developed in the safety zone with thick long leave plants to arrest the fugitive dust and vehicular emissions. iii. Wet drilling with dust extractor unit by proper drilling pattern and controlled blasting with NONEL initiation will be carried out to minimize the dust generation. iv. Excavated benches shall be developed by planting with grasses, herbs and shrubs of local species to prevent soil erosion and landslide. |



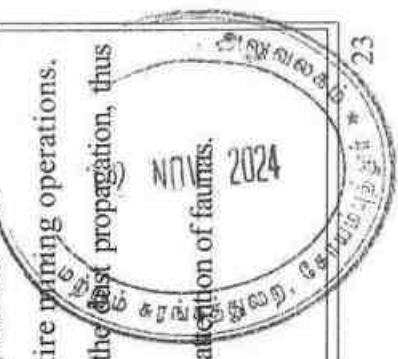
| | | |
|---------------------------------|---|---|
| | <p>c) Propagation of foreign material like polythene bag, jute bag, Plastic water and cool drink containers and undecomposed waste materials dumping.</p> | <p>v. PUC (Pollution under control) certified vehicles will be used for transportation and all vehicles and their exhausts would be well maintained and regularly tested for pollutant concentrations.</p> <p>vi. Oiling and greasing will be managed in respective places at vehicle maintenance shed and oil tray will be use to collect the spillage during maintenance and the same will be disposed in manner.</p> <p>vii. Leftover foreign material like polythene bag, jute bag, undecomposed materials or ill managed dumping will not be allowed.</p> |
| <p>Water Environment</p> | <p>Surface Mining can have direct impact on physico-chemical characteristics of the local drainage and groundwater resources. The detrimental effects, if any, to water resources resulting from surface mining are caused by following:</p> <p>i. Flow direction of Surface run off water will interrupting during rainy season due to modification of topography.</p> <p>ii. Surface water will be contaminated due to dust propagation and vehicle emission.</p> | <p>i. Garland drain with check dam will be constructed all along the boundary barrier to prevent surface run off rain water entering into the pit.</p> <p>ii. The pit water due to rain and seepage will be utilized for water sprinkling on haul Roads and plantations.</p> <p>iii. Greenbelt will be developed in the safety zone with thick long leaves plants and water sprinkling on dust prone area to arrest the fugitive dust and vehicular emissions.</p> <p>iv. Further mining will be completely stopped during the monsoon for free flow of surface run off and allowing natural recharge of groundwater.</p> <p>v. No wastewater will be generated from the quarry activity. Proper drainage will be maintained to eliminate inundation of working pit during rain water.</p> <p>vi. Septic tanks and soak pits will be provided for the disposal of domestic washroom effluents, the same will be disposed in manner.</p> |



| | | |
|---------------------------------|--|--|
| <p>Air Environment</p> | <p>In surface mining operations, the source of air pollution may cause deterioration of air quality due to;</p> <p>a) The fugitive dust emissions from drilling/blasting, scooping, loading-unloading operation of extracted mineral and its transportation. Drilling/blasting and loading of quarry material would be associated with the fugitive dust emission in the active area whereas fugitive emission during transportation would affect the areas/villages situated adjacent to the road side. Another source of air pollution would be emission from the drilling machinery and excavators/tippers vehicles to be used for loading.</p> | <p>i. Regular water sprinkling on haul road and dust prone area to arrest the dust generation.</p> <p>ii. Green belt will be developed in the safety zone with thick long leaves plants to arrest the fugitive dust and vehicular emissions.</p> <p>iii. Wet drilling with dust extractor unit by proper drilling pattern and controlled blasting with NONEL initiation will be carried out to minimize the dust generation.</p> <p>iv. Quarry material will be handled under wet condition during scooping, loading and unloading to minimize the dust propagation, besides loaded materials are covered by Tarpaulin until to reaches its destination.</p> <p>v. Provision of dust filters/ Nose mask to workers working at dust prone areas.</p> <p>vi. Vehicular emission as a result of combustion of diesel generates particulate matter (PM₁₀ & PM_{2.5}), Nitrogen oxides and Sulphur dioxide (NO₂ & SO₂). High quality diesel will be used in the motor vehicles to control these pollutants.</p> <p>vii. PUC (Pollution under control) certified vehicles will be used for transportation and all vehicles and their exhausts would be well maintained and regularly tested the pollutant concentrations.</p> <p>viii. CPCB Prescribed emission standards for the vehicles would be followed.</p> |
| <p>Noise Environment</p> | <p>In the present mining activity for building material, noise will be generated from drilling machinery, blasting and vehicular movement. Noise level in the working environment is compared with the standards prescribed by</p> | <p>i. Selection of new low – noise equipments for the quarry operation.</p> <p>ii. The noise levels shall be maintained within the permissible levels by involving all the noise regulating measures in vehicles and drilling/blasting operations.</p> <p>iii. To ensure minimum vibrations and noise due to blasting, Non-electric detonators in continuous sequence is proposed.</p> |



| | | |
|--------------------------------------|--|--|
| | <p>Central Pollution Control Board as adopted and enforced by the Govt. of India through Noise Pollution (Regulation and Control) Rules, 2000.</p> | <p>iv. Personnel Protective Equipment (PPE) like earmuffs and earplugs shall be provided to the employees whose in critical operation like drilling, blasting and excavation as occupational safety measures.</p> <p>v. Proper maintenance done with regular interval by the Oiling and greasing for the machineries and vehicles to control the Source of noise during operation and transportation.</p> <p>vi. Regular and proper maintenance of machinery and transportation vehicles shall be ensured.</p> <p>vii. Transporting vehicles are enforcing the speed limits of 20km/hour within quarry area and not exceed 40km per hour until reaches its destination to reduce Noise and vibration.</p> <p>viii. There would be restrictions on mining activity and vehicular movement during night hours.</p> |
| <p>Biological Environment</p> | <p>The area having main floras are Neem, Pongamia pinnata, Palm, Arali, Cocos nucifera, Cactus, Bushes and shrubs. No plants of botanical interest or animals of zoological interest recorded within 500m radius. The anticipated impacts on biological environment as follows:</p> <ol style="list-style-type: none"> Cattles may die/injured by entering the pit. Diversity of living insects and soil organism due to vibration. Natural habitats of the existing faunas and its breeding will change due to the noise | <p>i. Barbed wire fencing and safety bund will be constructed around the quarry to prevent inadvertent entry of public and cattle.</p> <p>ii. The natural habitats of the existing flora and fauna will not be disturbed.</p> <p>iii. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many species.</p> <p>iv. Fruit bearing trees will be planted to survive the existing faunas.</p> <p>v. No clearance of vegetation will be done during the entire mining operations.</p> <p>vi. Regular Water sprinkling on haul roads would be reduces the dust propagation, thus avoiding damage to the crops and plants.</p> <p>vii. No night hour mining will be carried out which may catch the attention of faunas.</p> |



| | | |
|--|---|------------------------|
| | <p>and vibration during operation.</p> <p>iv. The mining activities can also disrupt the ecological diversity.</p> <p>v. Deposition of dust on the plant and crop leaves is affecting the photosynthesis, Pollination, growth ratio and reduction of yield in agriculture.</p> | |
| <p>Socio Economic Environment</p> | <p>Any activity during mining will have adverse impact on Environment, careful mitigation measures are proposed to balance the impact on the existing environment and the applicant is always instructed to carry out safe, sustainable, eco-friendly mining operations at all times. The following positive impact on the society due to this mining activity.</p> <p>i. It is proposed to provide employment to about 19 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.</p> <p>ii. The employment opportunities both direct and indirect will contribute to enhanced money incomes to job seekers with minimal skill sets especially among the local communities.</p> <p>iii. Improvement of Physical structure like Road Transport facilities, Communications, Medical, Educational and social benefits will be made available to the nearby civilian population in addition to the workmen employed in the mine.</p> <p>iv. The continuation of opportunity for the employments, the nearby villages, living peoples and their life style would be improved.</p> <p>v. The applicant is advised to invest the CER cost (@ 2% from the total Project Cost) to develop the local Panchayat.</p> | <p>Does not arise.</p> |



11.1 Environmental impact assessment statement describing impact of mining on the next Five years:

In the mining plan proposed for a production of Rough stone does not involve deep hole drilling and blasting. Such limited mining activity is not likely to cause any impact adversely on the environment. As far as pollution of air, water and noise concerned, the environmental impact studies will be conducted as per EIA notification issued by MoEF& CC. It is B-Category mine. The compliance monitoring will be carried out for every six months as prescribed by the MoEF&CC and with state concerned authorities.

11.2 Proposal for waste management:

There is no waste anticipated in this Rough stone and Gravel quarrying operation. The entire quarried out materials will be utilized (100%). The maintenance of machineries & fuelling will be carried out as per the TNPCB Norms and the waste will be disposed in the Norms.

11.3 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.):

In the mining plan only to a maximum depth of 52m below from the existing ground profile has been envisaged as workable depth for safe & economic quarrying operation during entire life of quarry. There is no waste generated hence, backfilling is not possible. After completion of quarry operation the quarried out pit will be allowed to collect the seepage and rainwater and the water storage will be kept as temporary reservoir for charging the nearby wells and the water will be utilized for Green belt development purpose. The quarry area will be fenced with Barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle.

11.4 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):

The safety zone along the boundary barrier has been already excavated, therefore no green belt proposed within the area. The 300 tree saplings is proposed to develop the Green belt in approach road and nearby village road at first year of the plan period.

As per the SEIAA Recommendation the plantation will be carried out based on the output Environmental Clearance and the recommended species will be carried out for green belt development.

11.5 Proposed financial estimate / budget for the project;

Budget Provision for the Mining Plan period:

TABLE - 14

| A. Operational Cost / Project Cost / Investment: | | Cost (Rs.) |
|---|---|-------------------|
| i) Land cost | The Land value as per the Government Guideline land cost is about, 1.95.0Ha x Rs. 32,32,500/Ha. = Rs. 63,03,375/- i.e., Rs. 63,03,000/- (Source: https://tnreginet.gov.in/portal/) | 63,03,000 |
| ii) Machinery cost | The machineries are proposed on rental basis to meet out the productions. The rental cost would be around (Including Fuel, oil, grease, spares, etc.,) | 20,00,000 |
| iii) Refilling/ Fencing | Fencing constructed around the quarry area to prevent the inadvertent entry of public and cattle cost would be around (Total Peripheral length 610m x Rs. 300/meter). | 1,83,000 |
| iv) Labourers shed | Labour shed will be constructed as semi-permanent structure. The cost is around | 2,00,000 |
| v) Sanitary facility | Adequate latrine and urinal accommodation has provided at conveniently accessible places the cost would be around. | 80,000 |
| vi) Drinking water facility for the labourers | Packaged drinking water will be provided for all the Labours. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around. | 1,00,000 |
| vii) Sanitary arrangement | The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around. | 50,000 |
| viii) Safety kit | All the Safety kit such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided to the workers by the applicant own cost which would be around. | 50,000 |
| Total Cost | | 89,66,000 |
| B. EMP Cost: | | Cost (Rs.) |
| 1. | Environmental Monitoring Program (Air Quality, Water Quality Sampling, Noise and Ground vibration test) Rs. 76,000/ year. | 3,80,000 |
| 2. | Water will be sprinkled in the haul roads by own water sprinkler for dust suppression. The cost would be around. | 3,00,000 |

| | | |
|---|--|--------------------------|
| 3. | Construction of Garland drain with check dam to prevent surface run-off rain water entering to the quarry pit, the construction cost is around (Total Peripheral length 605m x Rs. 300/meter). | 82,000 |
| 4. | First aid room & accessories | 50,000 |
| 5. | Dust extractor unit for Jackhammer (2 Nos.) | 50,000 |
| 7. | Greenbelt development for dust suppression & Noise control measures | 60,000 |
| Total EMP Cost | | Rs. 10,22,000/- |
| Description | | Cost (Rs.) |
| A. Operational Cost | | Rs. 89,66,000/- |
| B. EMP Cost | | Rs. 10,22,000/- |
| Total Project Cost (A+ B) | | Rs. 99,88,000/- |
| <p>C. The applicant Indents to involve corporate environment responsibilities (CER) activity like Water Purifier, Plantation, Books to Library, sanitary facility, Smart class Board, class room painting and as per requirement to the Chettipalayam Government School at 2.0% from the total project cost. The Cost would be around Rs. 2,00,000/-.</p> <p>If the concerned authority is directed to modify the CER cost and mode of utilization of the cost, the same will be implement by the applicant.</p> | | Rs. 2,00,000/- |
| Total Cost (A+B+C) | | Rs. 1,01,88,000/- |
| The total cost would be around one crore one lakhs and eighty eight thousand only. | | |

12.0 PROGRESSIVE QUARRY CLOSURE PLAN**12.1 Introduction:**

As per guidelines for preparation of mining plan prescribed under Minor Mineral Conservation and Development Rules, 2010 also the entire area is proposed for a short period of five years only hence, the progressive quarry closure plan may not be applicable to this quarry. Anyhow, during temporary discontinuance of quarry the following measures will be taken.

- Barbed wire fencing will be constructed around the quarry.
- Benches will be smoothening.
- Quarry will be closed & sentries will be posted round the clock.
- Green belt development will be maintained.
- Machineries will be removed from pit and engaged in another site.

12.2 Present and Post Land use pattern:

LAND USE TABLE – 15

| Description | Present area (Ha) | Area at the end of lease period (Ha) |
|--------------------|-------------------|--------------------------------------|
| Area Under Quarry | 1.90.0 | 1.90.0 |
| Site Services | Nil | Nil |
| Roads | 0.02.0 | 0.02.0 |
| Green Belt | Nil | Nil |
| Unutilized Area | 0.03.0 | 0.03.0 |
| Grand Total | 1.95.0 | 1.95.0 |

12.3 Statutory obligations:

The company ensures to comply all the conditions stipulated in the precise area communication letter before grant of quarry lease and during the course of quarry operations as per the DGMS, Department of Geology and Mines, Labour Enforcement officer, controller of Explosives etc., circulars, Norms, Rules, Regulations and Act.

12.4 Progressive quarry closure plan preparation:

Name and address of the Qualified Person who prepared the progressive closure plan and name, address and register number of the executing agency who is involved in the Preparation of progressive quarry closure plan.

Name : B. Vengadagiri, M.Sc.,
Qualified Person (As per Rule 15(I)(a) and (I)(b) of MCR, 2016),
Address : No.105, 5th Cross, Alagapuram,
Salem District – 636 010.
Mobile : +91 86953 32233.
Email : vengatb6@gmail.com

The applicant will himself implement the closure plan; no outside agency will be involved.

(i) Safety & Security:

Safety measures will be implemented to prevent access in the excavation area an unauthorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961, and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- The bench height will be 5.0m.
- Width of working bench will be kept about 5.0 m for ease of operations and provide sufficient room for the movement of equipments.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipments shall be provided for use by the work persons.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.
- Danger signs shall be displayed near the excavations and proper signal by siren alarm will be given to the public before blasting to prevent accident.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.
- Installation of CCTV cameras in the quarry and entrance of the quarry.
- Monitoring of Quarrying operation by external agency as directed by authorities.

(ii) Disaster Management and Risk Assessment:

This should deal with action plan for high risk accidents like landslides, subsidence, flood, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of applicant to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, TNMMCR 1959 and other laws applicable to mine will be strictly complied with.
- During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities.
- Competent persons will be provided FIRST AID kits which they will always carry.
- The Greenbelt Development will be formed in around the quarried out top benches and panchayat road of the lease applied area.

Environmental Monitoring Cell:

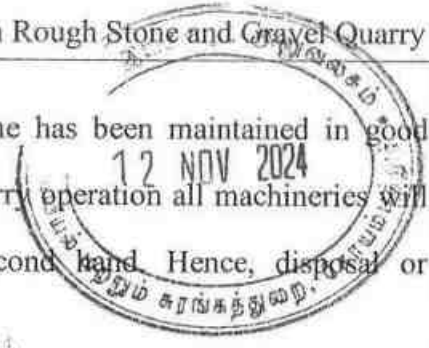
A dedicated team nominated by the mine manager or Agent will monitor and maintain the environmental compliances of the quarry as per the approved Environment Management Plan and report the Compliance to the Mine Manager half yearly.

Disaster Management Cell:

The Competent Qualified Statutory managers appointed by the applicant as per the Director of Mines Safety will be responsible for Disaster Management. It care any eventualities his mobile number will be displayed and he will take all the precautions and safety measures as per Mines and Minerals (Development and Regulations) Act, 1957.

(iii) Disposal of mining machinery

All the Machineries will be purchased fresh; the same has been maintained in good condition during entire life of quarry. After completion of quarry operation all machineries will be utilized at another quarry area or sold out to the second hand. Hence, disposal or decommissioning of mining machinery does not arise.

**(iv) Care and Maintenance during Temporary Discontinuance:**

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:
 - Quarry roads and approach roads,
 - Fencing on approach roads,
 - Checking and maintenance of machines and equipment,
 - Drinking water arrangements,
 - Quarry office, first aid stations etc.
- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

(v) Economic Repercussion of Closure of Quarry and manpower Retrenchments:

The quarry lease is granted for a period of five years only. As per the Production Programme envisaged, there will be no effect on the manpower as the majority of persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

(vi) Abandonment Cost:

As at present mining is not going to be closed so abandonment cost could not be assessed. However, based on the progressive quarry closure activities during the plan period, the cost is assessed as given below at present scenario:

TABLE – 16

| ACTIVITY | | YEAR | | | | | RATE | COST (Rs.) |
|---|----------------|--------|-------|-----|----|---|--------------------|-----------------|
| | | I | II | III | IV | V | | |
| Plantation in approach road | No. of sapling | 150 | 150 | - | - | - | Rs.200 Per sapling | 60,000 |
| | Cost | 30000 | 30000 | - | - | - | | |
| Wire Fencing for 610 Mtrs length | | 183000 | - | - | - | - | Rs. 300 Per Meter | 1,83,000 |
| Garland Drain with settling tanks for 605 Mtrs length | | 182000 | - | - | - | - | Rs. 300 Per Meter | 1,82,000 |
| Total | | | | | | | | 4,25,000 |

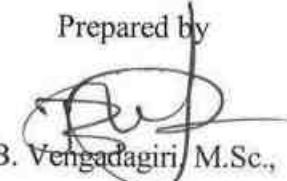
13.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

This Mining plan for Rough stone (Charnockite) and Gravel is under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied within the quarrying operation, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified and modified after scrutiny comments as per the guidelines of the Concerned Department and Authorities.

This Mining Plan and mine design is prepared based on the requirement instructed by the applicant to me. If there is any change in the production schedule, change of technology, change in product mix during the course of operations, the applicant is advice to prepare a modified mining plan and get approval by the concerned authority for subsequent clearance and approval. The same will be monitored by the inspecting authority of Department of Geology and mining and other Concerned Departments under Rule 25 and sub rule (5)(d) in Rule 36 of Tamil Nadu Minor Mineral Concession Rules, 1959.

I hereby ensure that the information provided is correct to best of my knowledge and experience, some of the information contained in this report has been provided by external sources and by the applicant and is presented as the form as submitted by the applicant. The information is not intended to serve as legal advice related to the individual situation. I do not owe and specifically disclaim any liability resulting from the use during the course of quarrying operations after the grant of lease. The document may be scrutinized by the competent authority before approval.

Prepared by



B. Vengadagiri, M.Sc.,

Qualified Person

Place: Salem

Date: 28.10.2024

This Mining Plan is Approved
subject to the conditions / stipulation
& indicated in the Mining Plan Approval
Letter No: 557/mines/2022 dt 12-11-24
office of the A.D, Geology & Mining Coimbatore

This Mining Plan is Approved based on the incorporation of the particulars specified in the letter of the commissioner of Geology and Mining, Chennai ref No: 38631.C/2012 Dated 19.11.2012 and subjected to further fulfillment of the condition laid down under Tamilnadu Minor Mineral Concession Rules 1959



ASSISTANT DIRECTOR

 DEPARTMENT OF GEOLOGY & MINING
COIMBATORE DISTRICT

PHOTOGRAPHS OF THE PACHAPALAYAM ROUGH STONE AND GRAVEL

QUARRY LEASE APPLIED AREA



உதவி இயக்குநர் அலுவலகம்,
புவியியல் மற்றும் சுரங்கத்துறை,
மாவட்ட ஆட்சியர் அலுவலக வளாகம்,
கோயம்புத்தூர் - 18.

ந.க.எண்.557/கனிமம்/2022

நாள்: 10.2024

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - கோயம்புத்தூர் மாவட்டம் - சூலூர் வட்டம் - பச்சாபாளையம் கிராமம் - புல எண்கள்.285/3(பகுதி)-ல் 0.35.0 ஹெக்டேர் மற்றும் 286/2(பகுதி)-ல் 1.60.0 ஹெக்டேர் ஆக மொத்தம் 1.95.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரணக்கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க திரு.R.S.செந்தில்குமார் என்பவர் விண்ணப்பம் செய்தது - வரைவு சுரங்கத்திட்டம் சமர்ப்பிக்க அறிவுறுத்துதல் - தொடர்பாக.

- பார்வை: 1. திரு.R.S.செந்தில்குமார், த/பெ.R.R.சுப்பையன் என்பவரின் விண்ணப்பம் நாள் 13.05.2022
2. இவ்வலுவலக கடிதம் இதே எண். நாள்: 13.05.2022
3. வட்டாட்சியர், மதுக்கரை கடிதம் ந.க.எண்.2425/2022/அ7 நாள்: 08.07.2022
4. வருவாய் கோட்டாட்சியர், கோயம்புத்தூர் தெற்கு அவர்களின் கடிதம் மூ.மு.எண்.3194/2022/அ2 நாள்: 02.08.2022.
5. வட்டார வளர்ச்சி அலுவலர் (கி.ஊ), சுல்தான்பேட்டை கடிதம் ந.க.எண்.1932/2024/அ5 நாள்: 18.10.2024.
6. கோயம்புத்தூர் புவியியல் மற்றும் சுரங்கத்துறை உதவி புவியியலாளர் அவர்களின் தணிக்கை குறிப்பு நாள்: 28.08.2024.

பார்வை 1-ல் கோயம்புத்தூர் மாவட்டம், சத்தியமூர்த்தி ரோடு, 31, ராம்நகர் என்ற முகவரியில் வசிக்கும் திரு.R.R.சுப்பையன் என்பவரின் மகன் திரு.R.S.செந்தில்குமார் என்பவர் கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள்.285/3-ல் 0.98.5 ஹெக்டேர் மற்றும் 286/2-ல் 2.16.5 ஹெக்டேர் ஆக மொத்தம் 3.15.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரணக்கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் கோரி உரிய ஆவணங்களுடன் விண்ணப்பித்துள்ளார்.

பார்வை 3,4, 5 மற்றும் 6-ல் கண்ட கடிதங்களில் கோயம்புத்தூர் மாவட்டம், மதுக்கரை வட்டாட்சியர், கோயம்புத்தூர் தெற்கு வருவாய் கோட்டாட்சியர், சுல்தான்பேட்டை, வட்டார வளர்ச்சி அலுவலர் மற்றும் புவியியல் மற்றும் சுரங்கத்துறை உதவி புவியியலாளர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள்.285/3(பகுதி)-ல் 0.35.0 ஹெக்டேர் மற்றும் 286/2(பகுதி)-ல் 1.60.0 ஹெக்டேர் ஆக மொத்தம் 1.95.0 ஹெக்டேர்


பரப்பளவுள்ள பட்டா பூமியில் திரு.R.S.செந்தில்குமார் என்பவருக்கு தராதிரணங்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

எனவே, கோயம்புத்தூர் மாவட்டம், ஆலூர் வட்டம், பச்சாயிபாளையம், பச்சையண்கள்.285/3(பகுதி)-ல் 0.35.0 ஹெக்டேர் மற்றும் 286/2(பகுதி)-ல் 1.60.0 ஹெக்டேர் ஆக மொத்தம் 1.95.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில், 1959-ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.19-ன் கீழ் 5 வருட காலங்களுக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்க உகந்த புலமாக கருதி அறிவிப்பு செய்யப்படுகிறது.

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

நிபந்தனைகள்

1. அருகிலுள்ள பட்டா நிலங்கள் மற்றும் பொது மக்களுக்கும் எவ்வித இடையூறும் இன்றி குவாரி பணி மேற்கொள்ள வேண்டும்.
2. அருகில் உள்ள பட்டா நிலத்திற்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
3. புல எண்.285/3-ன் கிழக்கு பகுதியில் செல்லும் மின்கம்பி பாதைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி புரிய வேண்டும்.
3. அனுமதி கோரும் புலத்தினை அரசு அங்கீகாரம் பெற்ற நிறுவனத்தினரால் DGPS (Differential Global Positioning System)-ன் படி ஆய்வு செய்யப்பட்டு ஒவ்வொரு எல்லைத் தூண்களும் நடப்படவேண்டும்.


உதவி இயக்குநர்
புவியியல் மற்றும் சுரங்கத்துறை
கோயம்புத்தூர்.

பெறுநர்:

திரு.R.S.செந்தில்குமார்
த/பெ.திரு.R.R.சுப்பையன்
31, ராம்நகர், சத்தியமூர்த்தி ரோடு,
கோயம்புத்தூர் மாவட்டம்.

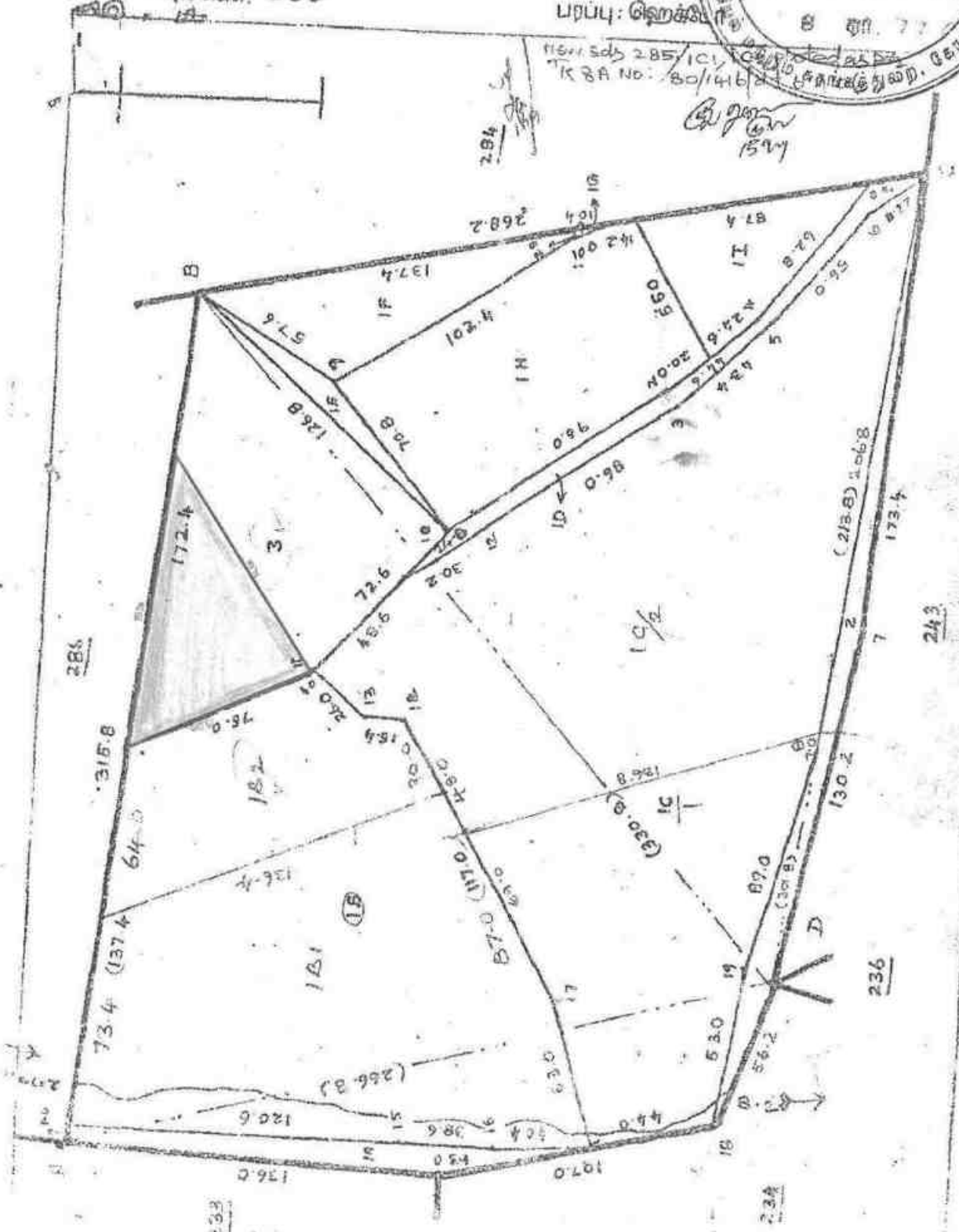


புள்ளி, மீ. கி.மீ. 285

மீட்டர். 285

450 மீட்டர். 285

புள்ளி: கி.மீ. 285



Loss Applied Area

சுட்டி 12 மீட்டர்...
27.11.45
கி.மீ. 285

மாவட்டம்: வேலூர்

எண்: 989

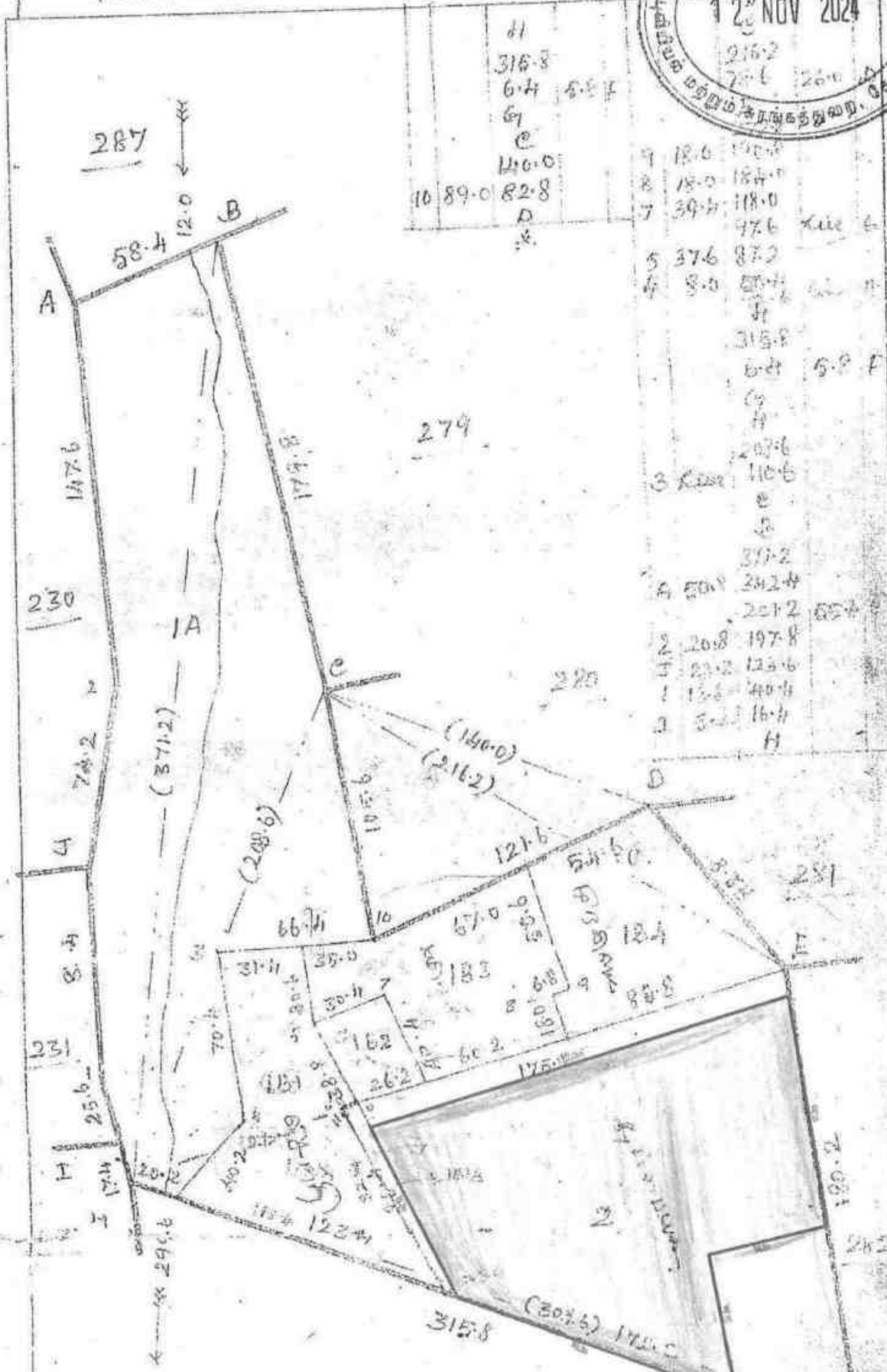
பெயர்: ஜார்ஜ்

கிராமம்



400 எண். 286.

புறப்பு: வெள்ளை



| | |
|-------|-----------|
| 41 | 316.8 |
| 6.4 | 6.8 F |
| 6 | |
| e | |
| 140.0 | |
| 10 | 89.0 82.8 |
| D | |
| 8 | |

| | | |
|---|-------|-------|
| 9 | 18.0 | 19.0 |
| 8 | 15.0 | 18.0 |
| 7 | 39.4 | 118.0 |
| | | 47.6 |
| 5 | 37.6 | 87.2 |
| 4 | 8.0 | 5.0 |
| | | 315.8 |
| | | 6.4 |
| | | 5.8 F |
| | | 6 |
| | | 207.6 |
| 3 | 110.6 | |
| | | e |
| | | 5 |
| | | 39.2 |
| A | 50.4 | 242.4 |
| | | 207.2 |
| 2 | 20.8 | 197.8 |
| F | 22.2 | 125.6 |
| 1 | 12.6 | 40.4 |
| 3 | 5.2 | 16.4 |
| | | H |

Lease Applied Area-

73 A



செய்தல்கள் (செய்தல்கள்) - A table with multiple columns and rows of text, likely a legend or schedule.

செய்தல்கள் (செய்தல்கள்) - A table with multiple columns and rows of text, likely a legend or schedule.



செய்தல்கள் (செய்தல்கள்) - A block of text providing additional details or notes.



தமிழக அரசு

வருவாய்த் துறை

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

P. S. சிவந்தீர் மென்.

98422 59519



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : சூலூர்

வருவாய் கிராமம் : பச்சாபாளையம்

பட்டா எண் : 178

உரிமையாளர்கள் பெயர்

1. (லேட்) கப்பையன்

மகன்

ஆர்.எஸ்.செந்தில்குமார்

| புல எண் | உட்பிரிவு | புன்செய் | | நன்செய் | | மற்றவை | | குறிப்புக்கள் |
|---------|-----------|-------------|---------|-------------|---------|-------------|---------|----------------------------------|
| | | பரப்பு | தீர்வை | பரப்பு | தீர்வை | பரப்பு | தீர்வை | |
| | | ஹெக்ட - ஏர் | ரூ - பை | ஹெக்ட - ஏர் | ரூ - பை | ஹெக்ட - ஏர் | ரூ - பை | |
| 285 | 1B2 | 0 - 69.00 | 1.38 | -- | -- | -- | -- | ---- 27-09-2014 |
| 285 | 1D | 0 - 12.00 | 0.24 | -- | -- | -- | -- | R11/4382A--- -- 02-02-2001 |
| / 285 | 3 | 0 - 98.50 | 2.00 | -- | -- | -- | -- | R11/4382A--- -- 31-01-2002 |
| 286 | 1B1B | 0 - 4.00 | 0.08 | -- | -- | -- | -- | R11/4382A--- -- 25-05-2005 |
| 286 | 2 | 2 - 16.50 | 4.38 | -- | -- | -- | -- | R11/4382A--- -- 25-05-2005 |
| | | 4 - 0.00 | 8.08 | | | | | |

குறிப்பு2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை நாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/10/025/00178 /30586 என்ற குறிப்பு எண்ணை உள்விடு செய்து உறுதி செய்துகொள்ளவும்.
- இத தகவல்கள் 30-06-2022 அன்று 10:42:40 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
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| 155 | 0690 | 178 | சுள்ளாடுவாங்கு | | | | | | | | |
| 156 | 0720 | 178 | சுள்ளாடுவாங்கு | | | | | | | | |
| 157 | 0795 | 178 | சுள்ளாடுவாங்கு | | | | | | | | |
| 158 | 0745 | 178 | சுள்ளாடுவாங்கு | | | | | | | | |
| 159 | 0715 | 178 | சுள்ளாடுவாங்கு | | | | | | | | |
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உள்ளாடுவாங்கு
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மாவட்டம் : கோயம்புத்தூர்

வட்டம் : சூலூர்

கிராமம் : பச்சாபாளையம்



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|---------------------------|------------|-----------------------------|--------------------------|
| 1. புல எண் | 285 | 9. மண் வயளமும் ரகமும் | 8 - 3 |
| 2. உட்பிரிவு எண் | 3 | 10. மண் தரம் | 5 |
| 3. பழைய புல உட்பிரிவு எண் | -3 | 11. தீர்வை (ரூ - ஹெ) | 2.00 |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் - ஏர்) | 0 - 98.50 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 2.00 |
| 6. நிலத்தின் வகை | பஞ்சை | 14. பட்டா எண் | 178 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | WELL 1. |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.ஆர்.எஸ்.செந்தில்குமார் |

குறிப்பு:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/10/025/285/3/40586 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள் - ஊரகம்

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : சூலூர்

கிராமம் : பச்சாபாளையம்



| | | | |
|---------------------------|------------|-----------------------------|--------------------------|
| 1. புல எண் | 286 | 9. மண் வயனமும் ரகமும் | 8 |
| 2. உட்பிரிவு எண் | 2 | 10. மண் தரம் | 5 |
| 3. பழைய புல-உட்பிரிவு எண் | -2 | 11. தீர்வை (ரூ - ஹெ) | 2.00 |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் - ஏர்) | 2 - 16.50 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 4.38 |
| 6. நிலத்தின் வகை | பஞ்சை | 14. பட்டா எண் | 178 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | - |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.ஆர்.எஸ்.செந்தில்குமார் |

குறிப்பு:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/10/025/286/2/40586 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

PROCEEDINGS OF THE DISTRICT COLLECTOR, COIMBATORE

Present: Thiru.T.N.Hariharan, I.A.S.,

R.C.No.101/ Mines / 2017

Dated : 11.11.2017 NOV 2024

Sub Mines and Minerals - Minor Mineral - Roughstone
 - Coimbatore District - Suler Taluk
 Pachapalayam Village - over an extent of 3.15.0
 hectares of patta lands - in S.F.Nos.285/3 and
 286/2 - Quarry lease Application preferred by
 Thiru R.S.Senthil Kumar - Precise Area
 Communicated - Mining Plan Approved by the
 Assistant Director Geology & Mining -
 Environmental Clearance Obtained - Quarry lease
 granted for a period of 5 (five) years - orders
 issued.

- Ref: 1. Quarry Lease Application of Thiru R.S.Senthil Kumar dated 17.02.2017.
2. This office letter even number dated 17.02.2017 addressed to the Revenue Divisional Officer, Coimbatore South.
3. The Revenue Divisional Officer, Coimbatore South letter.No.668/ 2017 / A2 dated 30.03.2017
4. Assistant Director, Geology and Mining, Coimbatore field inspection report dated 13.04.2017.
5. This office letter even number dated 13.04.2017 addressed to the applicant in which precise area was communicated.
6. This office letter even number dated 14.06.2017 addressed to the applicant in which the mining plan was approved.
7. District Level Environment Impact Assessment Authority, Coimbatore Lr.No.DEIAA-CBE-II/F.No. 101/2(a)/EC.No:03/2017 dated 16.09.2017.
8. District Environmental Engineer, Tamil Nadu Pollution Control Board, Coimbatore (South) consent order No.1705110687460, 1705210687460 Dated 14.10.2017 and Proceedings No.F.1802 CBS / RS / DEE / TNPCB / CBS / W&A / 2017 Dated 14.10.2017.

9. Thiru R.S.Senthil Kumar letter dated 25.10.2017 (along with the EC advertisement paper cutting, acknowledgement of Block Development Officer, Sulthanpet Panchayat Union.

^^^^^^



Order :-

Thiru R.S.Senthil Kumar, S/o. R.R.Subbaian, 31, Sathyamoorthy Road, Ramnagar, Coimbatore has applied on 17.02.2017 for the grant of quarry lease for Roughstone and Gravel over an extent of 3.15.0 hectares of patta lands in S.F.Nos.285/3 and 286/2 of Pachapalayam village, Suler Taluk, Coimbatore District for a period of 5 years vide reference 1st cited. The applicant has remitted the required application fee of Rs.1,500/- towards application fee in the prescribed head of account and enclosed the original challan along with all the required documents for the grant of quarry lease.

2) In order to get land availability report for the applied area, the Revenue Divisional Officer, Coimbatore South was requested vide reference 2nd cited to offer land availability report for the area applied for quarry lease.

3) The Revenue Divisional Officer, Coimbatore South in the reference 3rd cited has furnished the land availability report in which it has been stated that the lands in SF.Nos.285/3 and 286/2 stands registered in the name of Thiru.R.S.Senthilkumar vide patta No.178 of Pachapalayam Village. Further Revenue Divisional Officer has reported that no ancient monuments, Worship places and habitations are situated within a radial distance of 300 meters from the applied area. There is no High tension power lines passing on the applied area. Previously a quarry lease has been granted in the subject area to the applicant for a period of 4 years vide District Collector's proceedings R.C.No.509/2011/A2 dated 15.05.2013 from 15.05.2013 to 14.05.2017. Finally the Revenue Divisional Officer, Coimbatore South has recommended for the grant of quarry lease in favour of Thiru.R.S.Senthilkumar under rule 19 (1) of Tamilnadu Minor Mineral Concession Rules, 1959.

4) The Assistant Director, Géology and Mining, Coimbatore vide reference 4th cited has inspected the area and reported that that the lands in SF.Nos. 285/3 and 286/2 stands registered in the name of Thiru.R.S.Senthilkumar vide Patta No. 178 of Pachapalayam village. Therefore the applicant has got surface right over the area applied for quarry lease. Previously a quarry lease was granted to Thiru.R.S.Senthilkumar over an extent of 3.84.0 hectares of patta lands in S.F.Nos.285/1B2, 285/3 and

286/2 of Pachapalayam Village for a period of 5 years wide District Collector Proceedings Rc.No.675/2006 dated 27.06.2006. Subsequently quarry lease was granted for the subject area vide District Collector's Proceedings Rc.No.509/2011/MM2 dated 15.05.2013 for a period of 4 years from 15.05.2013 to 14.05.2017. Now Thiru.R.S.Senthilkumar has applied on 17.02.2017 for the grant of quarry lease for Rough Stone and Gravel over an extent of 3.15.0 hectares of patta lands in SF.Nos.285/3 and 286/2 of Pachapalayam Village, Sulur Taluk.

A quarry pit with a length of 210 meters, width of 90 meters and upto an average depth of 20 to 25 meters is existing in SF.Nos.285/3, 286/2 and 285/1B2. The thickness of the overburden soil is noticed on the North, East and Southern side of the applied area varies from 3 to 5 meters. The subject area consists of Charnockite variety of massive rocks. It contains Feldspathic biotite gneiss. It is black in colour and fine to medium grained. The trend of the deposit is South West to North East direction dipping vertical. Three Crusher units are situated on the Southern side of the applied area. One approach road is passing on the Western side of the applied area. Two Farm houses are situated at a distance of 250 meters and 80 meters respectively on the North West and South western side of the applied area. There is no habitation and approved layouts situated with a radial distance of 300 meters from the applied area. The above said field is not suitable for Agricultural purpose. The rock is suitable for construction activities.

Finally, the Assistant Director, Geology and Mining has recommended for grant of quarry lease for quarrying Roughstone and Gravel over an extent of 3.15.0 hectares of patta lands in SF.Nos. 285/3 and 286/2 of Pachapalayam village, Sulur Taluk, Coimbatore District in favour of Thiru R.S.Senthil Kumar for a period of five years under provisions of rule 19(1) and 20 of Tamil Nadu Minor Mineral Concession Rules 1959.

5) Based on the recommendations of the Revenue Divisional Officer, Coimbatore South and the Assistant Director, Geology and Mining, Coimbatore, precise area was communicated to the applicant vide reference 5th cited with a request to prepare mining plan for the applied area and submit the same before the Assistant Director of Geology and Mining for getting approval within a period of 3 months from the date of receipt of precise area communication.

6) Accordingly, the applicant has submitted the mining plan prepared by authorized RQP for getting approval. Based on the instructions given in the Commissioner, Geology and Mining, Chennai letter No. 3868 / LC / 2012 dated 19.11.2012, the


Mining Plan was approved by the Assistant Director, Geology and Mining, Coimbatore on 14.06.2017 after verifying the mining plan with field conditions.

7) Subsequently the District Level Environmental Impact Assessment Authority vide reference 7th cited has issued Environmental clearance for the area applied for the grant of quarry lease. Further as insisted in the Environmental Clearance issued by District Level Environmental Impact Assessment Authority, the applicant vide reference 8th cited has submitted the consent letter obtained from the District Environmental Engineer, Tamil Nadu Pollution Control Board, Coimbatore (South).

8) In order to comply with the conditions imposed in the Environmental Clearance issued by the District Level Environmental Impact Assessment Authority, the applicant Thiru R.S.Senthil Kumar vide letter dated 25.10.2017 has submitted the Environmental Clearance advertised newspaper cutting, acknowledgement for the receipt of Environmental Clearance letter by the Block Development Officer, Sulthanpet Panchayat union, Base line data covering the Air, Water, Noise and land environment quality for the proposed quarry site and sworn affidavit for the insurance protection to the workers.

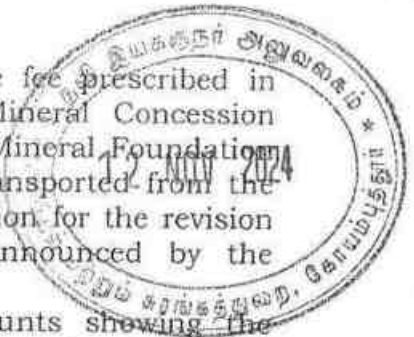
9) The applicant has submitted the lease deed in the prescribed format, as provided in the Tamil Nadu Minor Mineral Concession Rules, 1959, for execution in non-judicial stamp paper to the value of Rs.47,000/- and remitted the security deposit Rs.5,000/- vide challan No.275, dated 24.10.2017 and also remitted the area assessment of Rs.1600/- (for a whole 5 year period of lease) vide challan No.276 dated 24.10.2017 through State Bank of India, Treasury branch, Coimbatore.

In the circumstances stated above, based on the recommendations of the Revenue Divisional Officer, Coimbatore South, the Assistant Director, Geology and Mining, Coimbatore, the Environmental Clearance issued by the District Level Environment Impact Assessment Authority, Coimbatore and the consent letter issued by the District Environmental Engineer, Tamil Nadu Pollution Control Board, Coimbatore(South), a quarry lease is hereby granted to Thiru R.S.Senthil Kumar for quarrying Roughstone over an extent of 3.15.0 hectares of patta lands in SF.Nos. 285/3 (0.98.5 hecets.) and 286/2 (2.16.5 hecets.) of Pachapalayam village, Sulur Taluk, Coimbatore District for a period of 5 (five) years from 11.11.2017 to 10.11.2022 under rule 19 (1) and 20 of Tamil Nadu Minor Mineral Concession Rules, 1959 subject to the following conditions and general conditions as stipulated in the Tamil Nadu Minor Mineral concession Rules 1959.

- 
1. Quarry operation shall be carried out only within the lease granted area.
 2. A safety distance of 10 meters should be provided for the approach road passing on the Western side of the lease granted area and a safety distance of 7.5 meters should be provided all along the boundary of the lease granted area.
 3. No hindrance shall be caused to the adjoining patta fields road and crusher units while carrying out quarrying operations.
 4. The transport permit obtained for this area should not be used in other areas.
 5. To effectually fence off the lease granted area from the adjoining lands and to keep the fences in good condition.
 6. Blasting of rock should be done by the shot fire method with less explosives in between 12.00 Noon to 12.30 P.M. after giving proper signal by siren as per the provisions of Indian Explosive Act 1884.
 7. In order to avoid splinters of stone pieces into the air less affective explosives only to be used for breaking the stone by the well experienced certified blaster (or) short firer.
 8. While carrying out blasting, usage of Ammonium Nitrate mixed with soil and diesel and dried in the air (an explosive substance) should be avoided to curtail the stone pieces flown into the air and create trouble to the nearby villagers (or) habitants.
 9. Mild explosives, with less blasting sound only to be used for breaking the stones.

GENERAL CONDITIONS:-

- a) The lessee shall, at his own expense, erect boundary marks round the area shown in the plan annexed to the lease or agreement and in which he works minerals and, at all times, maintain and keep such boundary marks in good repair.
- b) The lessee shall maintain a notice board, with descriptions like, name of the lessee, name of the village, survey field number, order in which the lease was granted with lease period and other relevant particulars.
- c) The lessee shall maintain the approach road to his quarry at his own expenses.
- d) To effectually fence off the lease granted area from the adjoining landss and to keep the fences in good condition.
- e) The lessee shall quarry rough stones and shall not produce rough blocks or slabs or any other form of stone, either for export purpose in the form of raw blocks, slab etc., or for using them in cutting and polishing industry,

- 
- f) The lessee shall pay the seigniorage fee prescribed in Appendix II of Tamilnadu Minor Mineral Concession Rule, 1959 and also to the District Mineral Foundation Trust Fund for the Rough stone transported from the quarry and shall not raise any objection for the revision of seigniorage fee as and when announced by the Government,
- g) The lessee shall keep correct accounts showing the quantity and other particulars of Roughstone quarried and dispatched from the quarry.
- h) The lessee shall allow any officer authorized by the State Government to examine such accounts and furnish them with such information and returns as may be specified by them,
- i) The lessee shall remove or allow removal and transportation of mineral from the area where quarrying is permitted only after obtaining transport permits in the form prescribed. The lessee shall issue the transport permit to the vehicle used for transportation for the mineral, furnishing the particulars in the transport permits, specifically indicating the vehicle no, the quantity of the mineral allowed to be transported by the vehicle mentioning the date and time of issue of transport permit, to the vehicle owner / driver. If any violation is noticed, the vehicle along with the mineral will be seized and the lessee is punishable for the illicit transportation of the mineral, under the provisions of the TNMMCR 1959.
- j) Quarrying shall be carried out without affecting the interest of the adjoining lands owners,
- k) Blasting of rock should be done by the shot fire method with less explosives in between 12.00 Noon to 12.30 P.M. after giving proper signal by siren as per the provisions of Indian Explosive Act 1884.
- l) The lessee should abide all the conditions imposed by the District level Environment Impact Assessment Authority of Coimbatore.
- m) The lessee shall abide by the conditions laid down in the Payment of Wages Act, 1936 (Central Act IV of 1936), the Mines Act, 1952(Central Act XXXV of 1952) and the Indian Explosives Act, 1984 (Central Act IV of 1884),
- n) In addition to the above conditions, the lessee shall abide by the conditions specified in TNMMC Rules 1959, and also the conditions stipulated in the lease deed. Any violation of the above conditions will lead to penal action and also for cancellation of lease.
- o) The condition imposed by the District Environmental Engineer, Tamil Nadu Pollution Control Board, Coimbatore (South) consent order No. 1705110687460,

1705210687460 Dated 14.10.2017 and Proceedings
No.F.1802 CBS / RS / DEE / TNPCE / CBS / W&A
2017 Dated 14.10.2017 should strictly be followed
without any deviation. Further the lessee has to renew
the consent order from time to time whenever the consent
is expired.



Sd./xxx
District Collector
Coimbatore.


To

Thiru R.S.Senthil Kumar,
S/o. R.R.Subbaian,
31, Sathyamoorthy Road,
Ramnagar,
Coimbatore.

Copy to :

1. Deputy Director, Mines Safety, Chennai Region,
No.46(old)/05 (New), 2nd Street, "AA" Block,
Anna Nagar, Chennai 600 040.
2. Member Secretary, SEIAA, 3rd floor, Panagal Maligai, Saidapet,
Chennai.
3. Commissioner, Geology and Mining, Chennai -32
4. District Environmental Engineer, Tamil Nadu Pollution
Control Board, Coimbatore South.
5. Revenue Divisional Officer, Coimbatore South.
6. Tahsildar, Suler.
7. Village Administrative Officer, Pachapalayam
(through the Thasildar, Suler).

//True Copy/By Order//


For District Collector,
Coimbatore.





தமிழ்நாடு தமிழ்நாடு TAMILNADU

₹ 15000.00
A 986941

க. எண் : 15585 தேதி : 25.10.17 R.S. சந்திரவேலு குமார்
கோவை

E.N. ராஜா
மத்திராத்தான் விற்பனையாளர்
உ.எண் : 8 / 2008 / TUP
கோவை

APPENDIX IV
(See Rules 19 (1) and 22)

- I. Coimbatore, District Collector's Ref. No. 101 / Mines / 2017
- II. The Chairman DEIAA-CBE, Coimbatore-18, Environment Clearance Letter No. DEIAA - CBE / II / F. No.101 / 2 (a) / EC.No: 03/2017 Dated 16.09.2017.
- III. District Environmental Engineer, Tamilnadu Pollution Control Board, Coimbatore (South) Proceedings No.F.1802 CBS/RS/DEE/TNPCB/CBS/W&A/2017 Dated 14.10.2017.
- IV. Stamp Duty Calculation: -

| | |
|---|--------------------------|
| 1. Anticipated S. Fee for Rough Stone 103753 cbm x 45/- | : Rs. 46,68,885/- |
| 2. Security Deposit | : Rs. 5,000/- |
| 3. Area Assessment for 5 years | : Rs. 1,600/- |
| Total | : Rs. 46,75,485/- |

[Signature]
REGISTERED HOLDER / LESSEE



[Signature]
DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



தமிழ்நாடு தமிழ்நாடு TAMILNADU

₹15000.00
A 986942

உ.எண் : 15586 தேதி : 25.10.17 R. S. செந்தில்குமார்

கோவை

E.N. ராஜா

முத்திரைத்தாள் விற்பனையாளர்

உ.எண் : 8 / 2008 / TUP

சுலூர்



-2-

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

This AGREEMENT made this 11th day of November 2017 between Thiru.R.S.Senthilkumar, S/o. R.R.Subbaiyan residing at 31, Sathyamoorthy road, Ram Nagar, Coimbatore District. (hereinafter referred to as "the registered holder / lessee" which term shall include in these presents where the context so admits include also his heirs, executors, administrators, legal representatives and assigns) of the one part and the Governor of Tamil Nadu (hereinafter called "the Government" which term shall where the context so admits, include also his successors in office and assigns) of the other part. (Aadhaar card No: 9888 9995 2207)

R.S.Senthilkumar
REGISTERED HOLDER / LESSEE



[Signature]
DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



தமிழ்நாடு தமிழ்நாடு TAMILNADU

₹15000.00
A 986943

வ. எண் : 15587 தேதி 25.10.17 R.S. சந்திரன் குமார்


E.N. ராஜா

கோவை

முத்திரைத்தாள் விற்பனைபாளர்
உ.எண் : 8 / 2008 / TUP
கூலர்



-3-

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

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

AND WHEREAS, the Collector, acting for and on behalf of the Government, has granted a quarrying lease to the registered holder and allowed him to commence quarrying operations for **Roughstone** in the said lands and to deposit mining waste thereon by the registered holders for a period of 5 (Five) years from 11.11.2017 to 10.11.2022.


REGISTERED HOLDER / LESSEE




DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



தமிழ்நாடு தமிழ்நாடு TAMILNADU

தமிழ்நாடு

வ. எண் : 15588 தேதி 25.10.17

R.S. ரசந்திர குமார்
கோவை

1000/-
AM 040141

E.N. ராஜா

முத்திரைத்தாளி விற்பகையாளர்

உ.எண் : 8 / 2008 / TUP

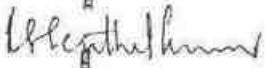
கூலர்

-4-

AND WHEREAS, the registered holder has deposited with the Collector, the sum of Rs.5,000/- (Rupees Five Thousand only) Challan No. 275, dated 24.10.2017, State Bank of India, Treasury Branch, Coimbatore as security against any loss of damage which may be incurred by the Government by reason of any of the said lands being rendered unfit for cultivation by any mining operations therein of the registered holder or by the deposit of mining waste thereon by the registered holder.

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

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


REGISTERED HOLDER / LESSEE




DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



தமிழ்நாடு தமிழ்நாடு TAMILNADU

ஆ. எண் : 15589 தேதி 25.10.17

R.S. ரெசுந்திள் குமார் கோவை

₹1000/- AM 040142

E.N. ராஜா
முத்திரைத்தாளி கீழ்ப்பணியாளர்
உ.எண் : B / 2008 / TUP
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-5-

2. The registered holder cum lessee has paid a sum of Rs. 1600/- (Rupees One Thousand Six Hundred only) towards land assessment / Area assessment @ Rs.100/- per hectare per annum in lump sum for a whole period of lease (5 years) vide chalan No. 276 dated 24.10.2017 at State Bank of India, Treasury Branch, Coimbatore lease shall pay to the collector for and on behalf of the Government in addition to the land assessment for the time being payable in respect of the said lands, seigniorage on the minor minerals at the rate specified in Appendix II to the Tamil Nadu Minor Minerals Concession Rules 1959.

3. The registered holder shall and will keep correct accounts in such form as the Collector shall from time to time require and direct showing the quantities and other particulars of all minerals obtained by the registered holder from the said lands and also the number of persons employed in carrying on the said mining operations therein and shall from time to time when so directed by the Collector prepare and maintain complete and correct plans of all mines and working in the said lands and shall allow any officer

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REGISTERED HOLDER / LESSEE



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(LESSOR)



hereunto authorized by the Director of Geology and Mining, Tamil Nadu from time to time and at any time to examine such accounts and any such plans and shall when so required supply and furnish all such informations and returns regarding all or any of the matter aforesaid as the Government shall, from time to time, require and direct.

4. The registered holder shall and will at all times allow any officer authorized by the Director of Geology and Mining, Tamil Nadu in that behalf to enter upon any part of the said lands where any mining operations may be carried on for the purpose of inspecting the same.
5. The registered holder shall forthwith send to the District Collector a report of any accident which may occur at or in the said lands and also of the discovery of any mineral other than **Roughstone**.
6. It shall be lawful for the registered holder at any time to cease mining operations under these presents provided he shall pay to Collector for and on behalf of the Government land assessment, cess and seigniorage due to the Government and shall restore the said lands or fence or fill in abandoned pits and excavations therein if required by the Collector and upon his so doing these presents shall cease and determine.
7. In case the registered holder shall relinquish the whole or any part of the said lands or in case of the expiry or sooner determination of this agreement then and in any such case, he shall restore the lands so relinquished or so much thereon as the Collector shall require to be restored to a state fit for cultivation or shall securely and permanently fence or fill in all such abandoned pits and excavations therein as the Collector shall require to be so fenced or filled in, and in case the registered holder shall fail or neglect to restore any such land which he shall be required to restore to a state fit for cultivation or to so fence, or fill in any such abandoned pit or excavation which he shall be required to so fence or fill in them and in any such case, it shall be lawful for the Collector to so restore any such lands, or as the case may be, to so fence or fill any such pits of excavation at the expense of the registered holder and to apply the said sum of **Rs.5,000/-** so deposited in or towards the cost of so doing and to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands which shall have been rendered unfit for cultivation. If however, the amount of deposit is not sufficient to cover the cost of such restoration of fencing or filling in or to meet thirty times the assessment on the area rendered uncultivable, it shall be lawful for the Government to recover balance by resort to civil Court.
8. The registered holder shall not be entitled to any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste, unless thirty times the assessment thereon has already been deducted under the preceding clause.
9. The registered holder shall not assign, lease or part with the possession of the said lands or any part thereof for the whole or any part of the said term without previous intimation in writing to the Collector

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REGISTERED HOLDER / LESSEE

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10. If the registered holder does not intend to carry on mining operations himself, but intends to lease out the right to do so to another person, the registered holder and his lessee shall enter into an agreement with Government binding themselves jointly and severally to accept the conditions and stipulations herein contained which agreement shall be in the Form set out in Appendix V to the Tamil Nadu Minor Mineral Concession Rules, 1959.

11. All land assessment, cess and seigniorage payable under these presents shall be recoverable under the provisions of the Tamil Nadu Revenue Recovery Act, 1864, as if they were arrears of land revenue.

12. In the event of any breach by the registered holder by any of the conditions of this agreement, it shall be lawful for the Government to levy enhanced seigniorage or for the Collector to give notice in writing to the registered holder of his intention to cancel these presents whereupon the same shall stand cancelled but without prejudice to any rights which the Government may have against the pattadar in respect of any antecedent claim or breach of covenant or condition.

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

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

15. The registered holder shall abide by the conditions laid down in the Payment of Wages Act, 1936 (Central Act IV of 1936), the Mines Act, 1952 (Central Act XXXV of 1952) and the Indian Explosives Act 1884 (Central Act IV of 1884).

GENERAL CONDITIONS AS STIPULATED IN TNMMCR - 1959:

- a) The lessee shall, at his own expense, erect boundary marks round the area shown in the plan annexed to the lease or agreement and in which he works minerals and, at all times, maintain and keep such boundary marks in good repair.
- b) The lessee shall maintain a notice board, with descriptions like, name of the lessee, name of the village, survey field number, order in which the lease was granted with lease period and other relevant particulars,
- c) The lessee shall maintain the approach road to his quarry at his own expenses,
- d) To effectually fence off the same demised piece of land from the adjoining lands and to keep the fences in good repairs and condition.
- e) Blasting of rock should be done by the shot fire method with less explosives in between 12.00 Noon to 12.30 P.M. after giving proper signal by siren as per the provisions of Indian Explosive Act 1884.

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COIMBATORE
(LESSOR)



- f) The lessee shall quarry rough stones, jelly, size stones and pillar stones and shall not produce rough blocks or slabs or any other form of stone, either for export purpose in the form of raw blocks, slab etc., or for use in cutting and polishing industry,
- g) The lessee shall pay the seigniorage fee prescribed in Appendix II of Tamilnadu Minor Mineral Concession Rule, 1959, for the rough stone transported from the quarry and shall not raise any objection for the revision of seigniorage fee as and when announced by the Government,
- h) The lessee shall keep correct accounts showing the quantity and other particulars of rough stone quarried and dispatched from the quarry. He shall allow any officer authorized by the State Government to examine such accounts and furnish them with such information and returns as may be specified by them,
- i) The lessee shall remove or allow removal and transportation of rough stone from the area where quarrying is permitted only after obtaining transport permits in the form prescribed. The lessee shall issue the transport permit to the vehicle used for transportation for the rough stone, furnishing the particulars in the transport permits, specifically indicating the vehicle no, the quantity of the rough stone allowed to be transported by the vehicle mentioning the date and time of issue of transport permit, to the vehicle owner / driver. If any violation is noticed, the vehicle along with the mineral will be seized and the lessee is punishable for the illicit transportation of the mineral, under the provisions of the TNMMCR 1959.
- j) Quarrying shall be carried out without affecting the interest of the adjoining land owners,
- k) In addition to the above conditions, the lessee shall abide by the conditions specified in TNMMC Rules 1959, and also the conditions stipulated in the lease deed. Any violation of the above conditions will lead to penal action and also for cancellation of lease.

SPECIAL CONDITIONS IMPOSED BY THE DISTRICT COLLECTOR, IN RESPECT OF LEASE GRANTED AREA

1. Quarry operation shall be carried out only within the lease granted area.
2. A safety distance of 10 meters should be provided for the approach road passing on the western side of the applied area and safety distance of 7.5 meters should be provided all along the boundary of the area applied for lease.
3. The transport permit obtained for this area should not be used in other area.
4. To effectually fence off the lease granted area from the adjoining lands and to keep the fences in good conditions.
5. Blasting of rock should be done by the short fire method with less explosives in between 12.00 Noon to 12.30 P.M after giving proper signal by siren as per the provisions of Indian Explosive Act 1884.
6. No hindrance shall be caused to the adjoining patta lands and road while carrying out quarry operations.

U. S. Subramanian
REGISTERED HOLDER / LESSEE



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DISTRICT COLLECTOR
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(LESSOR)

7. In order to avoid splinters of stone pieces into the air less affective explosives only to be used for breaking the stone by the well experienced certified blaster (or) short firer.
8. While carrying out blasting, usage of Ammonium Nitrate mixed with soil and diesel and dried in the air (an explosive substance) should be avoided to curtail the stone pieces flown into the air and create trouble to the nearby villagers (or) habitants.
9. Mild explosives, with less blasting sound only to be used for breaking the stones.



Conditions imposed by the District Level Environment Impact Assessment Authority – Coimbatore (DEIAA-CBE)

The Chairman, District level Environment Impact Assessment Authority, Coimbatore in his Letter No. DEIAA-CBE-II/F.No.101 / 2(a)/EC.No:03 / 2017 dated 16.09.2017 has stated that the District level Environment Impact Assessment Authority, Coimbatore accords Environmental clearance for Rough stone quarrying in S.F.No. 285/3 and 286/2 over an extent of 3.15.0 hectares of Pachapalayam Village, Sulur Taluk subject to the strict compliance of the following terms and conditions.

Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - i. The project has been accorded Environmental Clearance.
 - ii. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - iii. Environmental Clearance may also be seen on the website of the DEIAA.
 - iv. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the DEIAA.
2. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.

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13. A minimum distance of 15 mts. From any civil structure shall be kept from the periphery of any excavation area.
14. Depth of quarrying shall be 2m above the ground water table / approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
16. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
21. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
22. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission,
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
23. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
24. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.
25. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
27. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
28. The following measures are to be adopted to control erosion of dumps:-
 - i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.

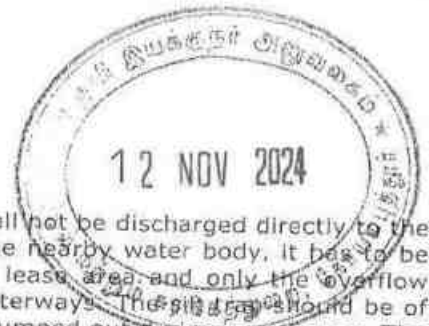
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REGISTERED HOLDER / LESSEE



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DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
33. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
36. Ground water Quality Monitoring should be conducted once in 6 months.
37. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
38. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
39. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI..
40. Bunds to be provided at the boundary of the project site.
41. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
42. At least 10 Neem trees should be planted around the boundary of the quarry site.
43. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
44. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
45. The CSR funds should be channelized for planning programme, nature conservation support, tribal development and activities that support forest and environment.
46. The Project Proponent shall provide solar lighting system to the nearby villages
47. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
48. Rainwater shall be pumped out Via Settling Tank only
49. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
50. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from standing committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
51. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
52. Safety equipments to be provided to all the employees.
53. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai

U. Senthil Kumar
 REGISTERED HOLDER / LESSEE



[Signature]
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- 54. The proponent has to display the name board at the quarry site showing the details of proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
- 55. Heavy earth machinery equipments if utilized, after getting approval from the competent authority
- 56. The proponent shall ensure that project activity including blasting, mining transportation etc should in no way have adverse impact to the forests, such as reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.
- 57. The project proponent is also directed to strictly adhere to the Sustainable Sand Mining Management Guidelines, 2016, wherever applicable.
- 58. The proponent shall provide Green Belt Development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 1 m height.
- 59. The quarrying activity in no way should disturb the Wildlife habitat, free migratory movement of the wildlife nor disturb the wildlife in any way.

General Conditions Mentioned IN THE DEIAA EC Report:

- 1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
- 2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
- 3. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- 4. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
- 5. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
- 6. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
- 7. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
- 8. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
- 9. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.

Registered Holder Signature

REGISTERED HOLDER / LESSEE

District Collector Signature

DISTRICT COLLECTOR
COIMBATORE
(LESSOR)





10. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
11. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
12. The project proponent shall ensure that child labour is not employed in the project per the sworn affidavit furnished.
13. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
14. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
15. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
16. The DEIAA, Coimbatore may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
17. The DEIAA, Coimbatore may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this DEIAA, CBE that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
18. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
19. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
20. Any other conditions stipulated by other Statutory/Government authorities shall be complied
21. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
22. The proponent has to provide / maintain proper bench formation during mining operation.

The condition imposed by the District Environmental Engineer, Tamil Nadu Pollution Control Board, Coimbatore (South) in his consent order No. 1705110687460 and 1705210687460 dated 14.10.2017 and consent Proceedings No.F.1802 CBS/ RS / DEE / TNPCB / CBS / W & A / 2017 dated 14.10.2017 should strictly be followed without any deviation. Further the lessee has to renew the consent order from time to time whenever the consent is expired.

For the purpose of calculating stamp duty the anticipated seigniorage fee for Roughstone and Gravel for Five years is estimated as Rs. 46,75,485/- (Rupees Forty Six Lakhs Seventy Five Thousand Four Hundred and Eighty five Only).

K. S. Senthil Kumar

REGISTERED HOLDER / LESSEE



[Signature]

DISTRICT COLLECTOR
COIMBATORE
(LESSOR)

THE SCHEDULE

- | | | |
|-------------------------------------|---|----------------|
| 1) Name of the District | : | Coimbatore |
| 2) Name of the Taluk | : | Sulur |
| 3) Name of the Village | : | Pachapalayam |
| 4) Name of the Sub Registrar Office | : | Sulur |
| 5) Lease Period | : | 5 (Five) Years |



From 11.11.2017 to 10.11.2022

| Survey Number | Area Assessment per hectares per year Rs. | Total Extent Hects. | BOUNDARIES | | | |
|---------------|--|---------------------|------------------------------|---------------------------|-----------------|-------------------|
| | | | NORTH BY S.F.No. | SOUTH BY S.F No. | EAST BY S.F No. | WEST BY S.F No. |
| 285/3 | Rs.1600/- for 5 years (Rs. 100 / hectare / year) | 0.98.5 hectares | 286/2 | 285/1C, 285/1D and 285/1E | 285/1E | 285/1B and 285/1C |
| 286/2 | | 2.16.5 hectares | 286/1B2, 286/1B3 and 286/1B4 | 285/3 | 282 | 286/1B1 |
| Total | | 3.15.0 | | | | |

IN WITNESS whereof Thiru.R.S.Senthilkumar, S/o. R.R.Subbaiyan residing at 31, Sathyamoorthy road, Ram Nagar, Coimbatore District the Registered holder/ lessee and Thiru.T.N.Hariharan, I.A.S, District Collector, Coimbatore acting for and on behalf of and by the order and direction of the Governor of Tamil Nadu have hereunto set their hands.

[Signature]

REGISTERED HOLDER / LESSEE

[Signature]
DISTRICT COLLECTOR
COIMBATORE
(LESSOR)

Signed by the above named in the presence of:

1. *Mural*
5/82, Jkoyani,
Chetti palayam, che-201

2. *[Signature]*
(V.GOPALAKRISHNAN)
2/20 KANGALAM PALAYAM,
PIN: 641401



Signed by the above named in the presence of:

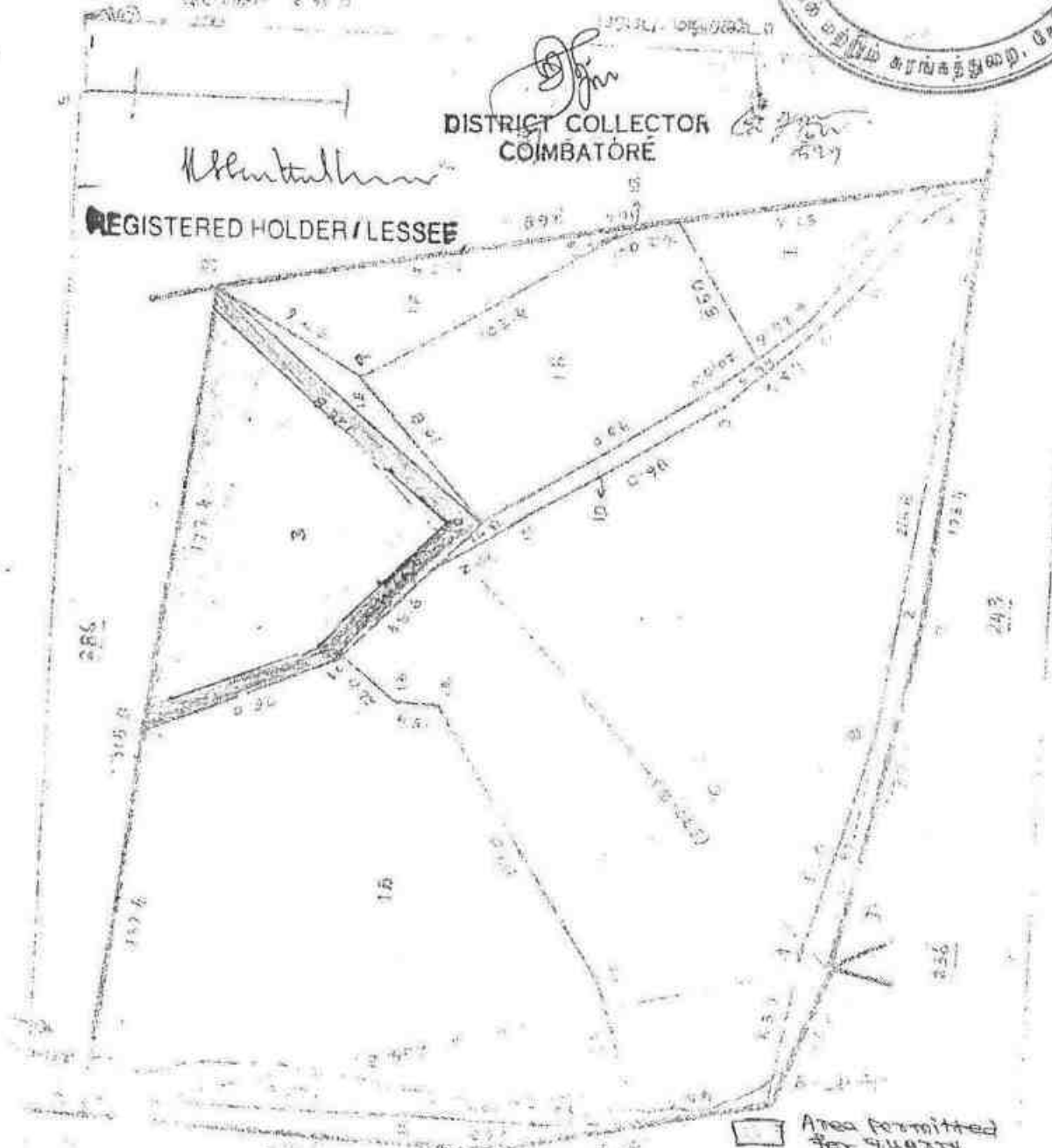
1. *[Signature]*
ASSISTANT DIRECTOR
DEPARTMENT OF GEOLOGY & MINING
COIMBATORE DISTRICT

2. *M. Panngamm*
S.P. G. Eroosythesam
% Asst. Director of
Geology & Mining.
Coimbatore



DISTRICT COLLECTOR
COIMBATORE

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



Area permitted for quarry
Safety area

[Signature]
30/01/2019

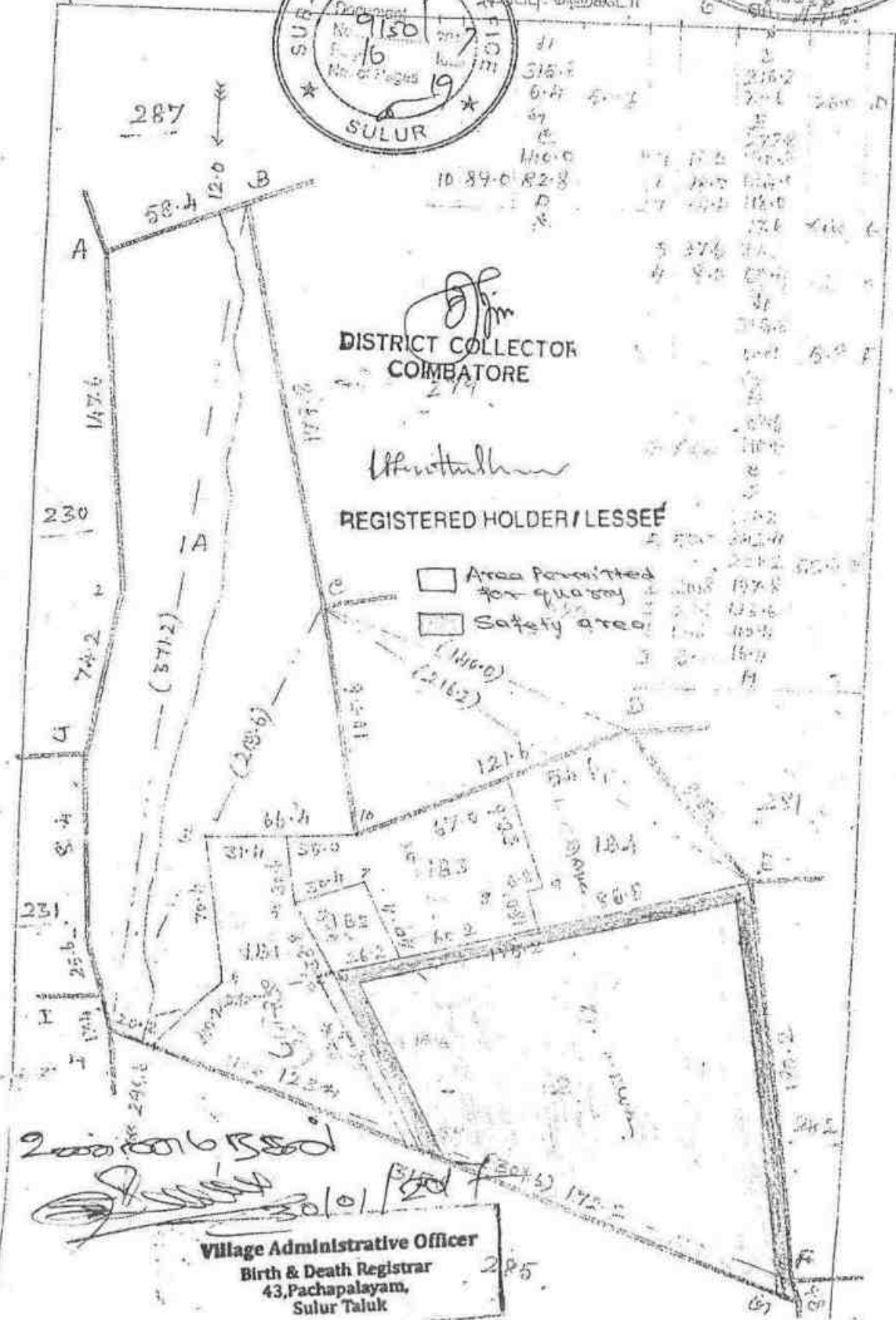
Village Administrative Officer
Birth & Death Registrar
43, Pachapalayam,
Sulur Taluk



மாவட்டம். சேலம்

வட்டம். பச்சப்பாளையம்

400 ஏக்கர். 286



DISTRICT COLLECTOR
COIMBATORE

REGISTERED HOLDER / LESSEE

- Area Permitted for quarry
- Safety area

Handwritten signature and date: 30/01/20

Village Administrative Officer
Birth & Death Registrar
43, Pachapalayam,
Sulur Taluk




भारत सरकार
GOVERNMENT OF INDIA


 செந்தில் குமார் ரீ
 Senthil Kumar R
 பிறப்பு ஆண்டு / Year of Birth 1985
 ஆண்கள் / Male

9888 9995 2207



ஆதார - சாதாரண மனிதனின் அதிகாரம்

Senthil Kumar


UNIQUE IDENTIFICATION AUTHORITY OF INDIA
 முகவரி / Address
 S/O Subbayan R R 31
 சாயமூண் ரோடு சாலை
 Salyamoonhy Road Ram
 நகர், கோயம்புத்தூர் தென்
 Nagar, Coimbatore South,
 ராமநகர் கோயம்புத்தூர்
 Ramnagar Coimbatore,
 கோயம்புத்தூர், தமிழ்நாடு
 Coimbatore, Tamil Nadu,
 641009


 1800 121 2347
 help@uidai.gov.in
 www.uidai.gov.in
 UIDAI App


 TN17 19970010396
PONNUSAMY S
 இராசன்
 பிள்ளை
 பிள்ளை
 PUNNUSAMY S
 RAJAN
 PILLAI
 1984-10-20



Ponnuamy S

India Driving Licence (Tamil Nadu)
 25/10/2013
 TN66 20130009873
VIRRAM C
 குமார்
 NO. 36, THANDAL MOFFIAN STREET
 NALLAMPALAYAM
 COIMBATORE - 641006
 SELVA VIGNAYAGAR DK
 10/01/1986



Virram C







9150/2017/BK1

சூலூர் சார்பதிவாளர் அலுவலகத்தில் 15/11/2017 அன்று 20300 செலுத்தியவர்

1-2

மணிகளுக்கிடையில் தூக்கல் செய்து கொண்டவர் கு

1 இடது பெரு விரல்



[Signature]

மேல் விவரம் ஆவண வாசகப்படி

எழுதிக் கொடுத்ததாக ஒப்புக்கொண்டவர்

இவ்வாலைத்தை எழுதிக் கொடுத்த / வாங்கிய திருவாளர் மாவட்ட ஆட்சியர் அவர்கள் பதிவுசட்டம் பிரிவு 88 (1)-ன்படி நேரில் ஆஜராவதிலிருந்து விலக்களிக்கப்பட்டுள்ளார் என மனநிறைவைடந்து சான்றளிக்கிறேன்.

[Signature]
பதிவு அலுவலர்
Sub Registrar
Sulur

எழுதி வாங்கியதாக ஒப்புக் கொண்டவர்

1 இடது பெரு விரல்



[Signature]

மேல் விவரம் ஆவண வாசகப்படி

இன்னாரென்று குறித்தவர்

[Handwritten mark]

பெயர் : 1 vikraman த/பெ Gopal 36 Thandal mottan Street
Nalampalayam, Coe - 641006.



Endorsement Sheet no. 1 of 2



St. P. J. மெய் : 2 ponngany தலைவரின் கிரிஷ்நர் 516
pachapalayam, sulur இலங்கோ - 641001

2017.ம் ஆண்டு நவம்பர் திங்கள் 15-ம் நாள்

சார்பதிலாளர்
குலார்

† பத்தகம் 2017 ம் ஆண்டு 9150 ம் எண்ணைக் பதிலி
செய்யப்பட்டது

நாள் : 15/11/2017

சார்பதிலாளர்
குலார்

என் இலங்கோ



Endorsement Sheet no. 2 of 2



Thiru.T.N.Hariharan, I.A.S.,
Chairman.

DISTRICT LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-COIMBATORE
Collectorate,
Coimbatore 641 018.
Phone No.0422 - 2301114 - 18
Fax No. 0422 - 2222630



ENVIRONMENTAL CLEARANCE

Lr. No.DEIAA-CBE-II/F.No.101/2 (a)/ EC.No:03/2017 dated: 16.09.2017

To

Shri.R.S.Senthilkumar,
S/o. Shri R.R.Subbalyan,
No. 31, Sathyamoorthy Road,
Ram nagar,
Coimbatore.

Sir,

Sub: DEIAA-CBE – Proposed Rough Stone quarry located at S.F.No. 285/3 and 286/2,
Pachapalayam Village, Sulur Taluk, Coimbatore District- Issue of Environmental Clearance
– Reg.

- Ref. 1. Your Application for Environmental Clearance dt: 03.07.2017.
2. Minutes of the 2nd DEAC meeting held on 01.09.2017.
3. Minutes of the 2nd DEIAA meeting held on 13.09.2017.

Details of Minor Mineral Activity:-

This has reference to your application first cited. The proposal is for obtaining environmental clearance for quarrying of minor minerals based on the particulars furnished in your application as shown below

| | | |
|----|---------------------------------------|--|
| 1. | Name of Project Proponent and address | Shri.R.S.Senthilkumar, S/o. Shri R.R.Subbalyan, No. 31, Sathyamoorthy Road, Ram nagar, Coimbatore. |
| 2. | Location of the Proposed Activity | |
| | Survey Number | S.F.No. 285/3 and 286/2 |
| | Latitude and Longitude | N 10° 54' 09.87" to 10° 54' 17.52" N 77° 04' 01.10" to 77° 04' 06.87" E Topo sheet No. 58 – F/1 |
| | Village | Pachapalayam |
| | Taluk | Sulur |
| | District | Coimbatore |
| 3. | Proposed Activity | |
| | i. Minor mineral | Rough stone quarry |
| | ii. Mining Lease Area | 3.15.0 Ha |

CHAIRMAN - DEIAA

| | | |
|-----|--|--|
| | iii. Approved quantity | 103753 cu.mt Rough stone |
| | iv. Depth of Mining | 38 m from ground level |
| | v. Type of mining | Opencast semi mechanized method |
| | vi. Category(B1/B2) | B2 Cluster |
| | vii. Precise area communication | Rc.No.101/Mines/2017 dt. 13.04.2017 |
| | viii. Mining plan approval | Assistant Director Rc.No.101/Mines/2017 dated 14.06.2017. |
| | ix. Mining lease period | 5 years |
| 4. | Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:- | Not attracted. Affidavit furnished |
| 5. | Man Power requirement per day: | 19 Employees |
| 6. | Utilities | Mineral Water supply & Water tank |
| | i. Source of Water : | |
| | ii. Quantity of Water Requirement in KLD: | |
| | a. Drinking Water & Domestic purpose | 1.0 KLD |
| | b. Industrial | --- |
| | c. Green Belt & Dust Suppression | 2.0 KLD |
| 7. | Cost | |
| | i. Project Cost | Rs. 65,00,000/- |
| | ii. EMP Cost | Rs. 3,50,000/- |
| 8. | Public Consultation:- | Not required as per O.M. dated 24.12.2013 of MoEF, Gov. |
| 9. | Date of Appraisal by 2 nd DEAC:- Agenda No: | 01.09.2017 1-03 |
| 10. | Date of Review/Discussion by DEIAA and the Remarks:- The proposal was placed before the 2 nd DEIAA Meeting held on 13.09.2017 and the Authority after careful consideration, decided to grant environmental clearance to the said Rough stone Quarry project subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended. | |
| 11. | Validity: This Environmental Clearance is granted to Rough stone quarrying for the production quantity of 103753 cubic meter of rough stone from the date of execution of the quarry Lease period. | |

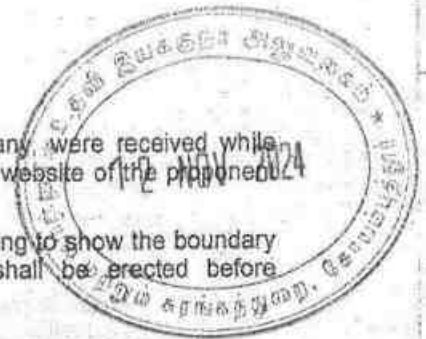
Conditions to be Complied before commencing Quarrying operations:-

- The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - The project has been accorded Environmental Clearance.
 - Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - Environmental Clearance may also be seen on the website of the District Level Environment Impact Assessment Authority.
 - The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the District Level Environment Impact Assessment Authority.
- The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
- NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
- The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
- A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and

CHAIRMAN - DEIAA

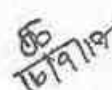
the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.

6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 15 mts. from any civil structure shall be kept from the periphery of any excavation area.
14. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
16. Wet drilling method is to be adopted to control dust emissions Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
21. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
22. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
23. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
24. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt. 11.01.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.




CHAIRMAN - DEIAA


12/11/09


16/11/09

- 12 NOV 2024
25. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
 26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
 27. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
 28. The following measures are to be adopted to control erosion of dumps:
 - i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
 29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
 30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
 31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
 32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
 33. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
 34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
 35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic institution.
 36. Ground water quality monitoring should be conducted once in 6 Months.
 37. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
 38. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
 39. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
 40. Bunds to be provided at the boundary of the project site.
 41. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
 42. At least 10 Neem trees should be planted around the boundary of the quarry site.
 43. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
 44. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity.
 45. The CSR funds should be channelized for planting programme, nature conservation support, tribal development and activities that support forest and environment.


 CHAIRMAN - DEIAA


 16/9/17


 10/9/17



46. The Project Proponent shall provide solar lighting system to the nearby villages.
47. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
48. Rainwater shall be pumped out Via Settling Tank only.
49. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
50. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from standing committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
51. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
52. Safety equipments to be provided to all the employees.
53. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odal.
54. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
55. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
56. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
57. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
58. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
59. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
60. The proponent shall ensure that project activity including blasting, mining transportation etc should in no way have adverse impact to the forests, such as reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc
61. The project proponent is also directed to strictly adhere to the Sustainable Sand Mining Management Guidelines, 2016, wherever applicable
62. The proponent shall provide Green Belt Development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 1 m height
63. The quarrying activity in no way should disturb the Wildlife habitat, free migratory movement of the wildlife nor disturb the wildlife in any way

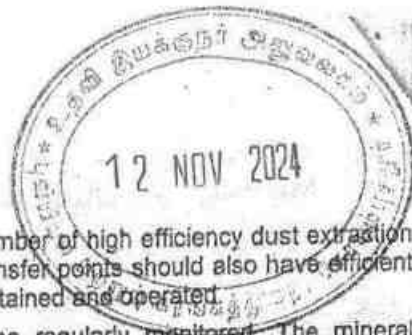
General Conditions

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
3. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
4. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
5. A berm shall be left from the boundary of adjoining field having a width equal to at least half the


CHAIRMAN - DEIAA

16/11/24

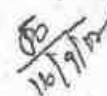
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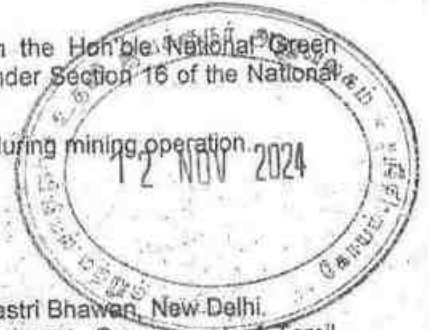
- depth of proposed excavation.
6. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
 7. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
 8. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
 9. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
 10. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
 11. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
 12. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
 13. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
 14. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
 15. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
 16. The DEIAA, Coimbatore may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
 17. The DEIAA, Coimbatore may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this DEIAA, CBE that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
 18. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
 19. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
 20. Any other conditions stipulated by other Statutory/Government authorities shall be complied.


CHAIRMAN - DEIAA


16/9/24


16/9/24

21. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
22. The proponent has to provide / maintain proper bench formation during mining operation.



Copy to:



1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forests Department, Government of Tamil Nadu, Tamil Nadu, Chennai.
3. The Principal Secretary, Industries Department, Government of Tamil Nadu, Tamil Nadu, Chennai.
4. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-32
5. The Commissioner of Geology and Mines, Guindy, Chennai-32
6. The Chairman, SEIAA, 3rd Floor, Panagal Maalgai, No.1, Jeenis Road, Saidapet, Chennai -15.
7. The Conservator of Forest, Coimbatore Region, Coimbatore
8. Spare.


CHAIRMAN DEIAA 21/11/24


16/11/24


16/11/24



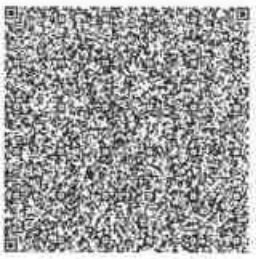



இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

பதிவேட்டு எண் / Enrolment No.: 2017/00788/03949

To
செந்தில் குமார் ர ச
Senthil Kumar R S
S/D Subbaiyan R R,
31 Satyamoorthy Road Ram Nagar,
VTC: Coimbatore South,
PO: Ramnagar Coimbatore,
District: Coimbatore,
State: Tamil Nadu,
PIN Code: 641009,
Mobile: 9842259519



உங்கள் ஆதார் எண் / Your Aadhaar No. :
9888 9995 2207
VID : 9130 7737 4374 9271

எனது ஆதார், எனது அடையாளம்




தகவல் / INFORMATION

- ஆதார் என்பது அடையாளத்திற்கான சான்றாகும். குடியரிமை அல்லது பிறந்த தேதிக்கான சான்றல்ல. பிறந்த தேதி என்பது ஆதார் எண் வைத்திருப்பவரால் சமர்ப்பிக்கப்பட்ட விதிமுறைகளில் குறிப்பிடப்பட்டுள்ள பிறந்த தேதி ஆவணத்தின் ஆதாரம் மூலம் ஆதரிக்கப்படும் தகவலின் அடிப்படையில் அமைந்துள்ளது.
- இந்த ஆதார் கடிதத்தை PDA நியமித்த அங்கீகரிக்கப்பட்ட நிறுவனத்தால் ஆணையன் அங்கீகாரம் அல்லது ஆப ஸ்கேனர்களில் கிடைக்கும் எம் ஆதார் அல்லது ஆதார் QR ஸ்கேனர் செயலியை பயன்படுத்தி QR குறியீடு ஸ்கேனிங் அல்லது www.uidai.gov.in ல் கிடைக்கும் பாதுகாப்பான OR குறியீடு ரீடர் செயலியை பயன்படுத்தி சரிபார்க்க வேண்டும்.
- ஆதார் தனித்துவமானது மற்றும் பாதுகாப்பானது.
- ஆதார் பதிவு செய்யப்பட்ட நாளிலிருந்து ஒவ்வொரு 10 வருடங்களுக்குப் பிறகும் ஆதாரில் அடையாளம் மற்றும் முகவரிக்கான ஆவணங்கள் புதுப்பிக்கப்பட வேண்டும்.
- பல்வேறு அரசு மற்றும் அரசு சாரா பலன்கள் / சேவைகளைப் பெற ஆதார் உங்களுக்கு உதவுகிறது.
- உங்கள் மொழியை எண் மற்றும் மின்னஞ்சல் ஐடியை ஆதாரில் புதுப்பிக்கவும்.
- ஆதார் சேவைகளைப் பெற mAadhaar செயலியை பதிவிறக்கவும்.
- ஆதார்பயோமெட்ரிக்ஸைப் பயன்படுத்தாதபோது பாதுகாப்பை உறுதிசெய்ய ஆதார்பயோமெட்ரிக்ஸ் லாக்-அண்ட்-லாக் அம்சத்தைப் பயன்படுத்தவும்.
- ஆதார் கோரும் நிறுவனங்கள் ஒப்புதலைப் பெற வேண்டிய கட்டாயம் உள்ளது.
- Aadhaar is proof of identity, not of citizenship or date of birth (DOB). DOB is based on information supported by proof of DOB document specified in regulations, submitted by Aadhaar number holder.
- This Aadhaar letter should be verified through either online authentication by UIDAI-appointed authentication agency or QR code scanning using mAadhaar or Aadhaar QR Scanner app available in app stores or using secure QR code reader app available on www.uidai.gov.in.
- Aadhaar is unique and secure.
- Documents to support identity and address should be updated in Aadhaar after every 10 years from date of enrolment for Aadhaar.
- Aadhaar helps you avail of various Government and Non-Government benefits/services.
- Keep your mobile number and email id updated in Aadhaar.
- Download mAadhaar app to avail of Aadhaar services.
- Use the feature of Lock/Unlock Aadhaar/biometrics to ensure security when not using Aadhaar/biometrics.
- Entities seeking Aadhaar are obligated to seek consent.




இந்திய அரசாங்கம்
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இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

முதுவரி:
S/O சப்பையன் ர ர, 31 சத்யமூர்த்தி ரோடு
ராம் நகர், கோயம்புத்தூர் கவுட, ராமநகர்
பொதுப்பதி, கோயம்புத்தூர்,
தமிழ் நாடு - 641009

Address:
S/O Subbaiyan R R, 31 Satyamoorthy Road
Ram Nagar, Coimbatore South, PO:
Ramnagar Coimbatore, DIST: Coimbatore,
Tamil Nadu - 641009



9888 9995 2207
VID : 9130 7737 4374 9271

எனது ஆதார், எனது அடையாளம்

1047 | help@uidai.gov.in | www.uidai.gov.in

आयकर विभाग
INCOME TAX DEPARTMENT



भारत सरकार
GOVT. OF INDIA



R S SENTHILKUMAR

SUBBIYAN RANGANA GOWDER

22/10/1965

Permanent Account Number

AZBPS4968F

R Senthil Kumar
Signature



20012005

அண்ணாமலைப்

ANNAMALAI



பல்கலைக்கழகம்

UNIVERSITY



அறிவியற்புலம்
FACULTY OF SCIENCE



மே, 2011 இல்

பயன்பாட்டு நிலத்தியல்

பிரிவில்

நடத்திய தேர்வுகளில்

வெங்கடகிரி பா

கூடுதல்

மதிப்பீடுகள் 10.00 க்கு சராசரியாக 6.03 பெற்று

இரண்டாம் வகுப்பில்

தேர்ச்சியடைந்து முறையாக அமைக்கப்பெற்ற தேர்வுக்குழுவினர் சான்றளித்தபடி,

அறிவியல் நிறைஞர்

பட்டம்

பெறுவதற்கு

உரியவர்

ஆசின்றார்

என அண்ணாமலைப் பல்கலைக்கழக ஆளவை இதன்வழி அறிவிக்கின்றது.

The Senate of the ANNAMALAI UNIVERSITY hereby makes known that VENGATAGIRI B has been admitted to the Degree of MASTER OF SCIENCE in APPLIED GEOLOGY, he/she having secured OGPA of 6.03 out of 10.00 been certified by duly appointed Examiners at the Examination held in MAY, 2011 to be qualified to receive the same, and that he/she was placed in SECOND CLASS.

பல்கலைக்கழக முத்திரை பெறுகின்றது

Given under the seal of the University



அண்ணாமலைநகர்
Annamalainagar

நாள்:

Dated: 09/11/2011

துணை தேர்வாணையர் (கல்விசார்ந்த)
Dy. Controller of Examinations (Academic)

Dr. M. Rathinasabapathi

பதிவாளர்

Registrar

Dr. M. Ramanathan

வேந்தர்

Vice-Chancellor

114A



GOVERNMENT OF INDIA
 MINISTRY OF LABOUR AND EMPLOYMENT
 DIRECTORATE GENERAL OF MINES SAFETY

Certificate of Practical Experience granted by the Manager to a Candidate for a Manager's/ Surveyor's/ Mining foreman/ Mining Mate/ Blasters certificate of competency examination under Metalliferous Mines Regulation, 1961.

I, M.S.Pavel being the Manager of K.Pitchampatti Multicolour Granite Mine belong to M/s. Anupkumar Lohia do hereby certify that **Thiru. B.Vengadagiri** son of **Thiru. Balasubramanian** (whose signature is appended) worked in the above mine from 10.07.2012 to 15.08.2018 and is still working. During his term of work aforesaid, he has obtained practical experience as detailed overleaf. The duties connected with his work have involved continuous attendance at the mine and have been efficiently performed by him.

I believe him to be of good character and a fit and proper candidate to be examined for certificate of competency.

M.S. Pavel

(Signature with date and official seal)

(Mines Manager's class)
 MANAGER (MINES)
 MULTICOLOUR GRANITE MINE
 K. PITCHAMPATTI,
 KARUR - TALUK & DIST.

(Signature of Candidate)

State the name of the mineral works: Multi Colour Granite

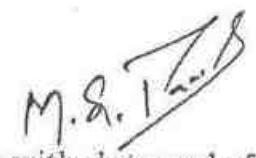


| S. No. | Particulars of Practical experience (a) | Place of Experience (b) Opencast | Period of Practical experience (c) | | Total Experience (e) | | |
|--|---|-------------------------------------|------------------------------------|------------|----------------------|------------|-------------|
| | | | From | To | Yrs. | Months | Days |
| 1. | As a trainee in drilling operation | Open cast | 10.07.2012 | 24.10.2013 | 01 | 03 | 16 |
| 2. | As a trainee in deep hole blasting operation | Open cast | 25.10.2013 | 31.12.2014 | 01 | 02 | 07 |
| 3. | Production incharge quality control and Supervisor of Earth moving Mining Machinery | Open cast | 01.01.2015 | 15.08.2018 | 3 | 7 | 14 |
| GRAND TOTAL | | | | | 06 | 1 | 5 |
| In words : Six years one month ten days | | | | | Six | One | five |

| In below ground working | In open cast working | In all |
|-------------------------|--|-------------------|
| Nil | Average monthly output 250m ³ | 250m ³ |
| Nil | Average daily employment 25Nos | 25Nos |

Note: The average employment is less because this is mechanized mines having deep hole drilling, blasting and Heavy Earth Moving Machineries operation.


(Signature of Candidate)


(Signature with date and official seal)

(Mines Manager 1st class)
MANAGER (MINES)
MULTICOLOUR GRANITE MINE
K. PITCHAMPATTI,
KARUR - TALUK & DIST.



10° 59' 42.54"N

76° 58' 31.99"E



77° 09' 36.06"E

10° 48' 46.53"N

| | |
|---|--|
| Express highway: with toll; with bridge; with distance stone..... | |
| Roads metalled: according to importance..... | |
| Roads, double carriageway; according to importance..... | |
| Unmetalled road. Cart-track. Pack-track with pass. Foot-path..... | |
| Streams: with track in bed; undefined. Canal..... | |
| Dams: masonry or rock-filled; earthwork. Weir..... | |
| River; dry with water channel; with island & rocks. Tidal river..... | |
| Submerged rocks. Shoal. Swamp. Reeds..... | |
| Wells: lined; unlined. Tubewell. Spring. Tanks; perennial; dry..... | |
| Embankments: road or rail; tank. Broken ground..... | |
| Railways, broad gauge: double; single with station; under constrm..... | |
| Railways, other gauges: double; single with distance stone; do..... | |
| Mineral line or tramway. Kin. Cutting with tunnel..... | |
| Contours with sub-features. Rocky slopes. Cliffs..... | |
| Sand features: (1)flat. (2)sand-hills(permanent). (3)dunes(shifting)..... | |
| Towns or Villages: inhabited; deserted. Fort..... | |
| Huts: permanent; temporary. Tower. Antiquities..... | |
| Temple. Chhatra. Church. Mosque. Idgah. Tomb. Graves..... | |
| Lighthouse. Lightship. Buoys: lighted; unlighted. Anchorage..... | |
| Mine. Vine on trellis. Grass. Scrub..... | |
| Palms: palmyra; other. Plantain. Conifer. Bamboo. Other trees..... | |
| Areas: cultivated; Wooded. Surveyed trees..... | |
| Boundary, international..... | |
| Boundary, state: demarcated; undemarcated..... | |
| Boundary, district; subdivision; tahsil or taluk; forest..... | |
| Boundary pillars: surveyed; unlocated..... | |
| Height, triangulated: station: point; approximate..... | |
| Bench-mark: geodetic; tertiary; canal..... | |
| Post office. Telegraph office. Overhead tank..... | |
| Rest house or inspection bungalow. Circuit house. Police station..... | |
| Camping Ground. Forest: reserved; protected..... | |
| Spaces names: administrative; locality or tribal..... | |
| Hospital. Dispensary. Veterinary: Hospital/Dispensary..... | |
| Aerodrome. Helipad. Tourist etc..... | |
| Powerline: with pylons surveyed; with poles unsurveyed..... | |

| | | |
|---------|---------|---------|
| BM 03-3 | BM 03-3 | BM 03-3 |
| KR 02 | KR 02 | KR 02 |
| NIG 4 | NIG 4 | NIG 4 |

APPLICANT :

Thiru.R.S.SENTHIL KUMAR,
S/O.R.R.SUBBIYAN,
NO.31.SATHYAMOORTHY RAOD,
RAMNAGAR,
COIMBATORE-641009.



LOCATION OF Q.L.A AREA:

S.F.NO'S: 285/3(P) & 286/2 (P).
EXTENT : 1.95.0 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT: COIMBATORE,
STATE : TAMIL NADU.

PLATE NO - I-A

DATE OF SURVEY : 24.10.2024

**TOPO SKETCH OF QUARRY LEASE
APPLIED AREA FOR 10Km RADIUS**

SCALE: 1:10,000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

[Signature]
B. Prasad
QUALIFIED PLAS

117 A

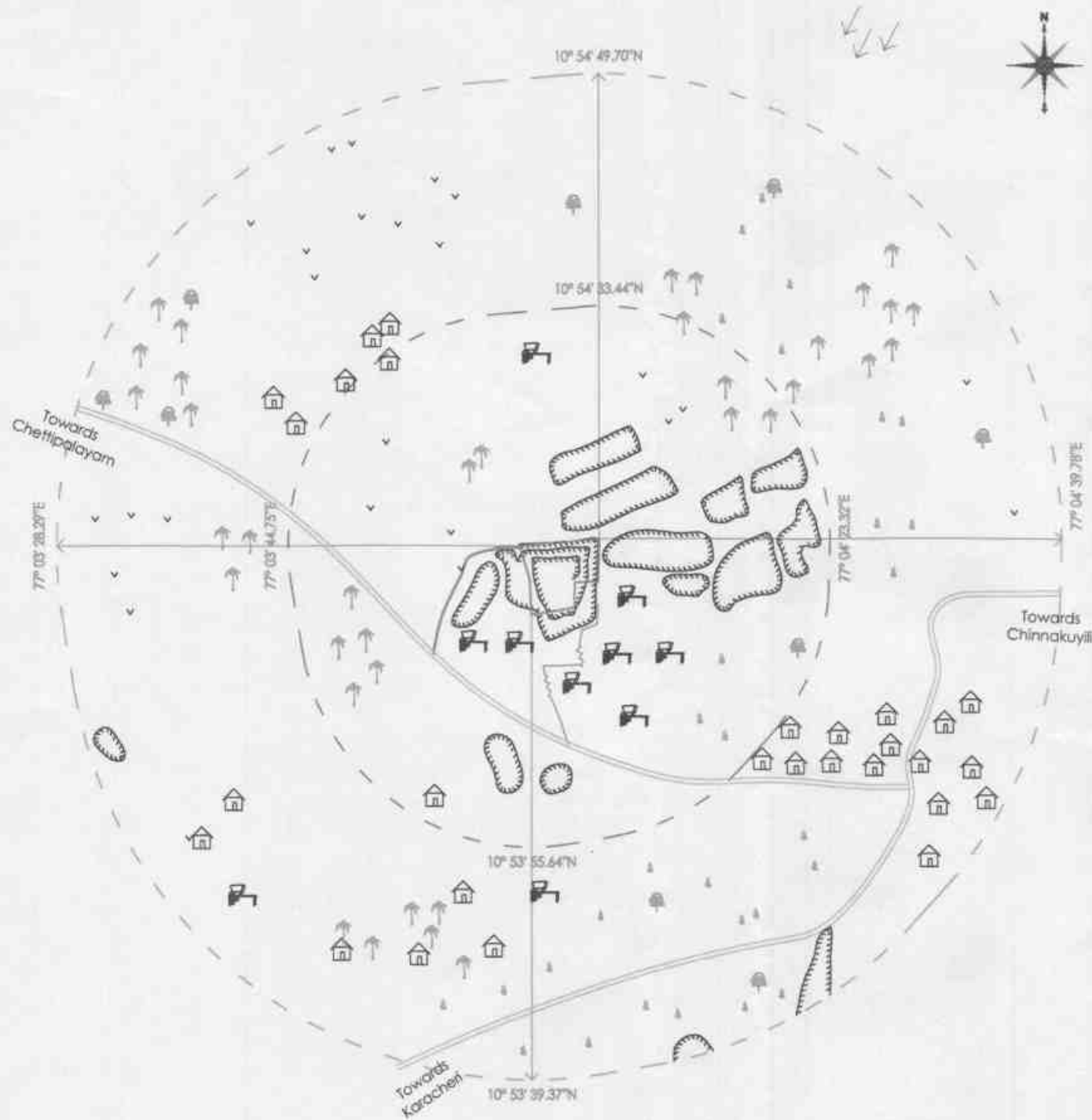
TOPO SHEET NO. : 58 F/01

LATITUDE : 10° 54'11.91"N to 10°54'17.17"N
LONGITUDE : 77°04'01.21"E to 77°04'06.86"E

10km RADIUS :

Q.L. APPLIED AREA :

OCTOBER TO DECEMBER



12 NOV 2024

- APPLIED AREA
- 1 KM RADIUS
- 500m RADIUS
- SEASONAL AGRICULTURE LAND
- TREES
- HABITATION
- QUARRY PIT & CRUSHER PLANT
- WIND DIRECTION
- APPROACH ROAD
- PANCHAYAT ROAD
- BARREN LAND

APPLICANT :
 Thiru.R.S.SENTHIL KUMAR,
 S/O.R.R.SUBBIYAN,
 NO.31,SATHYAMOORTHY RAOD,
 RAMNAGAR,
 COIMBATORE-641009.

LOCATION OF Q.L.A AREA:
 S.F.NO'S: 285/3(P) & 286/2 (P),
 EXTENT : 1.95,0 Ha.
 VILLAGE : PACHAPALAYAM,
 TALUK : SULUR,
 DISTRICT: COIMBATORE,
 STATE : TAMIL NADU.

PLATE NO - I-B
 DATE OF SURVEY : 24.10.2024

ENVIRONMENTAL & LAND USE PLAN
 SCALE. 1:10,000

PREPARED BY :
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT.

S.V. Senthil Kumar,
 QUALIFIED SURVEYOR

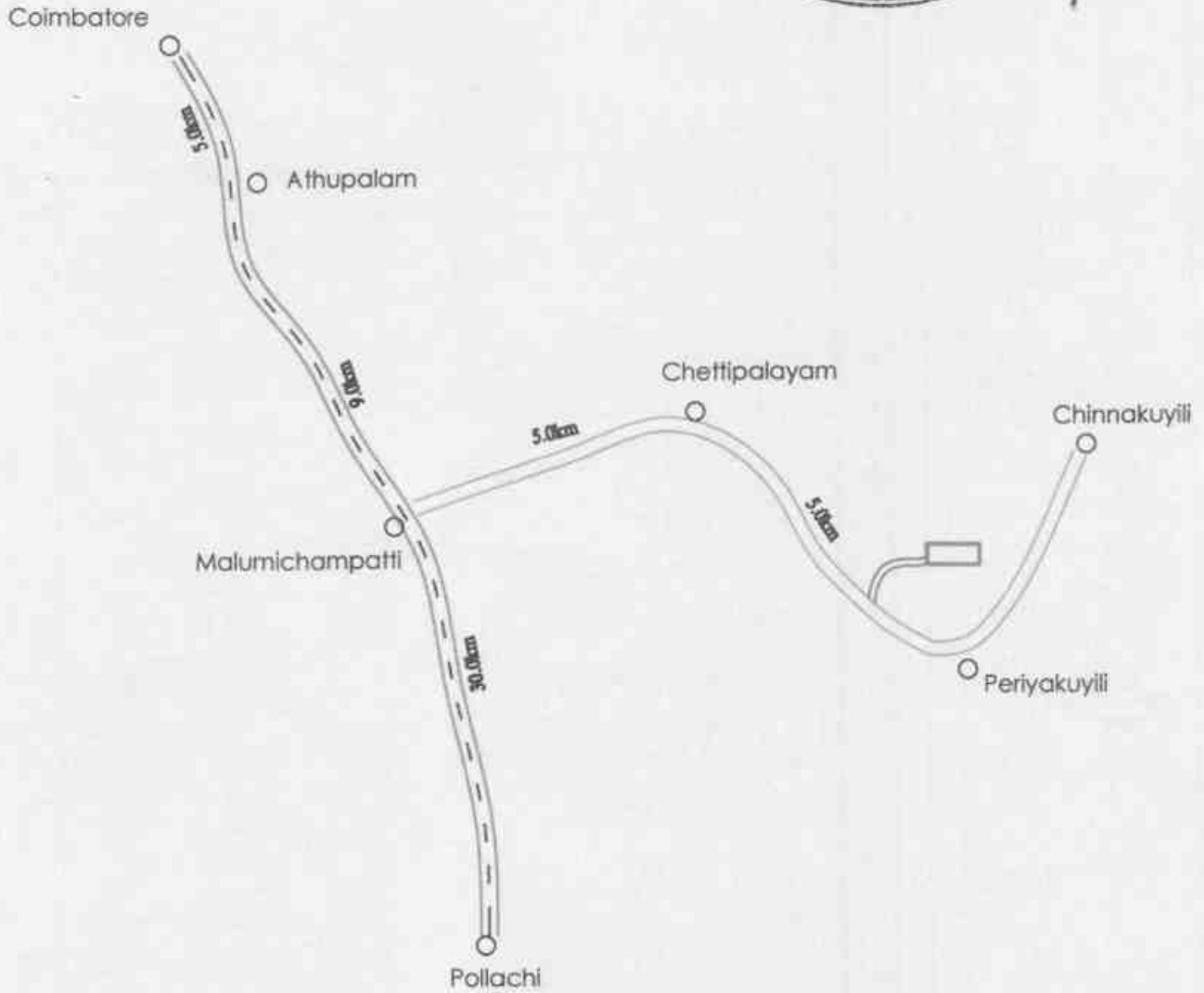
LAND USE PATTERN

| DESCRIPTION | PERCENTAGE | INDEX |
|----------------------|------------|-------|
| QUARRY PIT & CRUSHER | (16%) | |
| TREES | (06%) | |
| SEASONAL AGRI LAND | (37%) | |
| ROADS | (07%) | |
| HABITATION | (09%) | |
| BARREN LAND | (25%) | V V |
| TOTAL | 100% | |





TOPO SHEET NO. : 56 F/01
 LATITUDE : 10° 54' 11.91" N to 10° 54' 17.17" N
 LONGITUDE : 77° 04' 01.21" E to 77° 04' 06.86" E

JULY TO SEPTEMBER

PLATE NO : I-C
ROUTE MAP



INDEX

- LEASE APPLIED AREA 
- NATIONAL HIGHWAY 
- PANCHAYAT ROAD 
- MUD ROAD 

APPLICANT :

Thiru.R.S.SENTHIL KUMAR,
S/O.R.R.SUBBIYAN,
NO.31,SATHYAMOORTHY RAOD,
RAMNAGAR,
COIMBATORE-641009.

LOCATION OF Q.L.A AREA:

S.F.NO'S: 285/3(P) & 286/2 (P),
EXTENT : 1.95.0 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT: COIMBATORE,
STATE : TAMIL NADU.

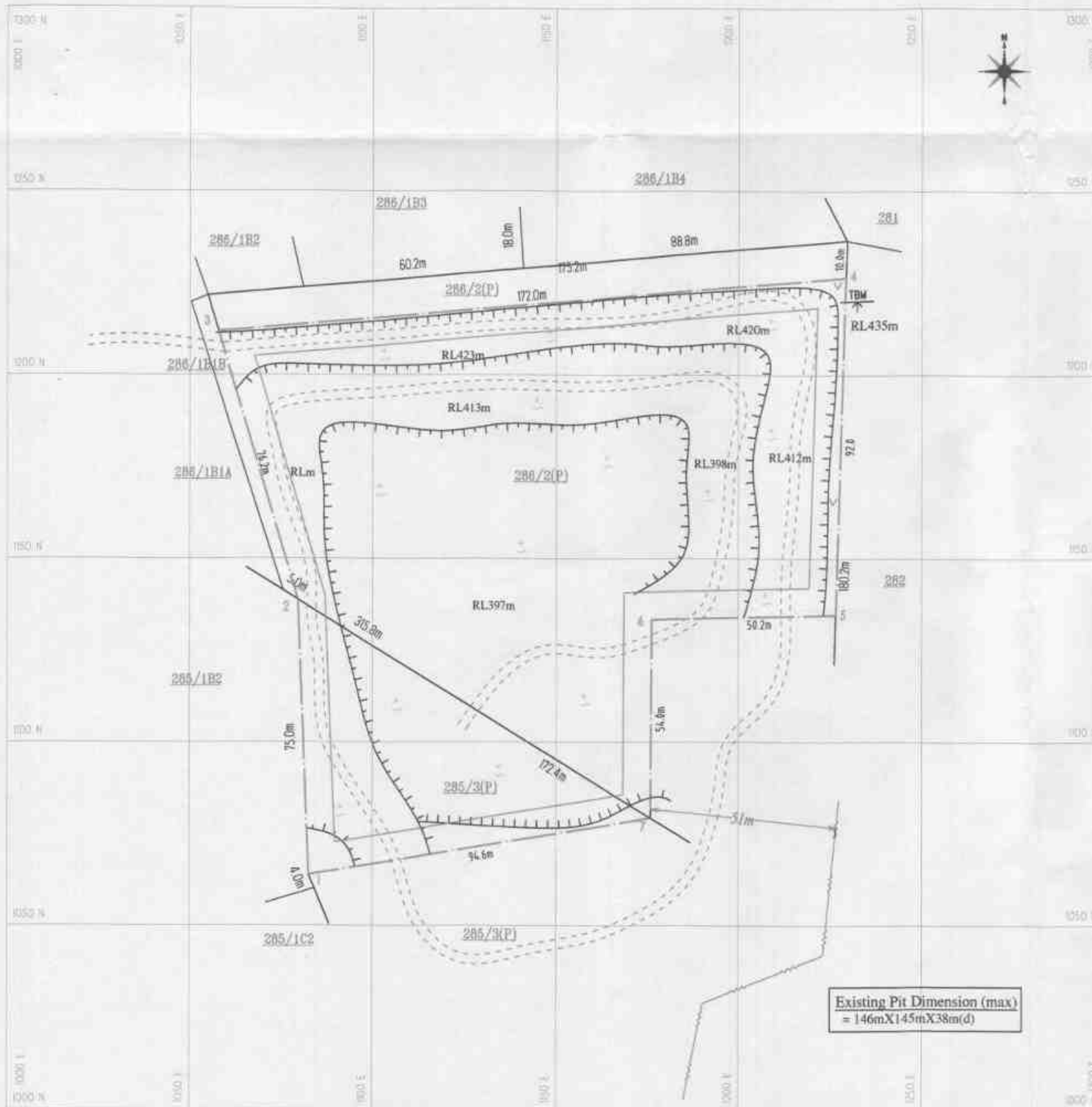
SCALE :

NOT TO SCALE

PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT


B. Venkatasagari M.Sc.,
QUALIFIED PERSON









BOUNDARY CO-ORDINATES

| S.N. | LATITUDE | LONGITUDE |
|------|------------------|------------------|
| 1 | 10° 54' 11.9174" | 77° 04' 02.007E" |
| 2 | 10° 54' 14.3574" | 77° 04' 01.917E" |
| 3 | 10° 54' 16.7374" | 77° 04' 01.231E" |
| 4 | 10° 54' 17.1774" | 77° 04' 06.967E" |
| 5 | 10° 54' 14.1874" | 77° 04' 08.737E" |
| 6 | 10° 54' 14.1574" | 77° 04' 05.097E" |
| 7 | 10° 54' 12.3974" | 77° 04' 09.077E" |

DATUM : UTM-WGS84, ZONE 43 NORTH

INDEX

-  Q.L. APPLIED AREA BOUNDARY
-  7.5m SAFETY DISTANCE
-  TEMPORARY BENCH MARK
-  QUARRY HAUL ROAD
-  APPROACH ROAD
-  E.B LINE

APPLICANT :

Thiru.R.S.SENTHIL KUMAR,
S/O.R.R.SUBBIYAN,
NO.31.SATHYAMOORTHY RAOD,
RAMNAGAR,
COIMBATORE-641009.

LOCATION OF Q.L.A AREA:

S.F.NO'S: 285/3(P) & 286/2 (P),
EXTENT : 1.95.0 Ha,
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

PLATE NO - II

DATE OF SURVEY : 24.10.2024

QUARRY LEASE PLAN &
SURFACE PLAN

SCALE: 1:1000

PREPARED BY :

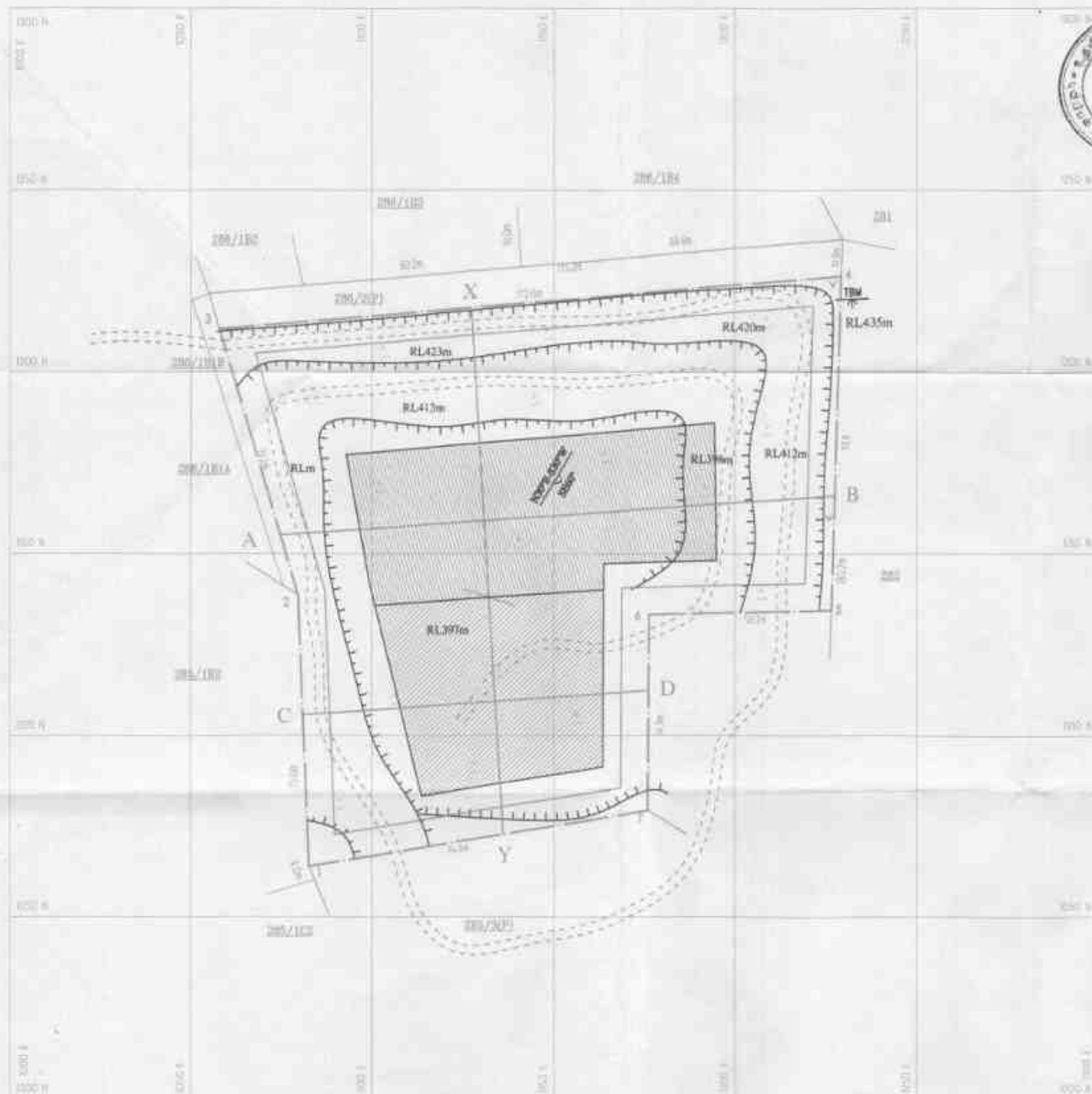
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PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT



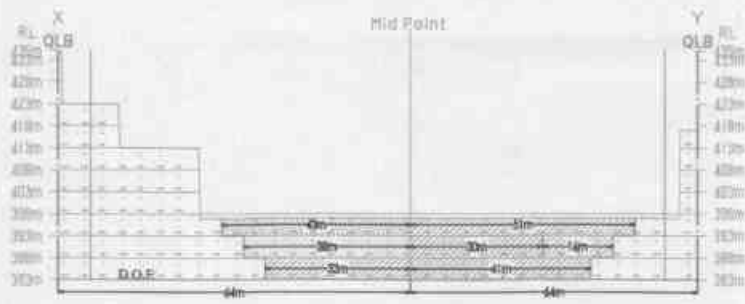
ANGULAR COORDINATES

| S.N. | LATITUDE | LONGITUDE |
|------|-----------------|-----------------|
| 1 | 10° 54' 11.81"N | 77° 04' 02.00"E |
| 2 | 10° 54' 14.20"N | 77° 04' 01.91"E |
| 3 | 10° 54' 16.72"N | 77° 04' 01.71"E |
| 4 | 10° 54' 17.77"N | 77° 04' 01.64"E |
| 5 | 10° 54' 14.18"N | 77° 04' 04.72"E |
| 6 | 10° 54' 14.15"N | 77° 04' 03.07"E |
| 7 | 10° 54' 13.20"N | 77° 04' 03.07"E |

DATUM : UTM-WGS84, ZONE 43 NORTH



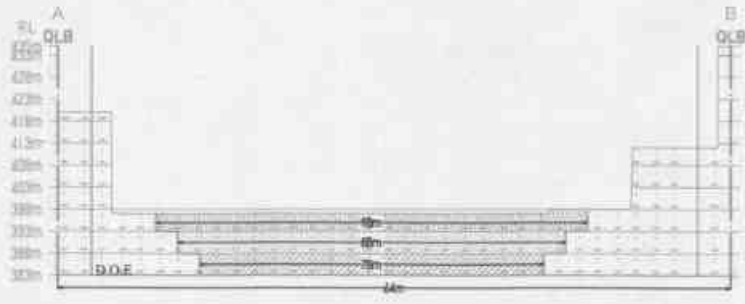
SECTION ALONG X-Y



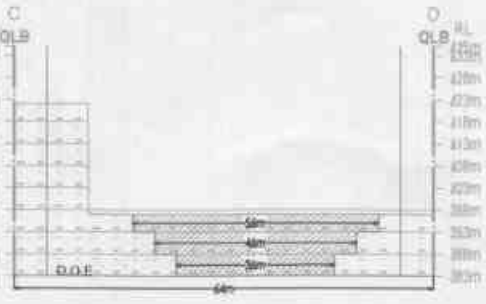
Existing Pit Dimension (max)
= 140mX145mX38m(d)

- I - yr Proposed area to be Quarried
- II - yr Proposed area to be Quarried
- III - yr Proposed area to be Quarried
- IV - yr Proposed area to be Quarried
- V - yr Proposed area to be Quarried

SECTION ALONG A-B



SECTION ALONG C-D



INDEX

- Q.L. APPLIED AREA BOUNDARY
- 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- GRAVEL
- ROUGHSTONE
- STRIKE & DIP
- QUARRY PIT
- QUARRY HAUL ROAD
- APPROACH ROAD
- D.O.E DEPTH OF ESTIMATION

APPLICANT :
 THIRU.R.S.SENTHIL KUMAR,
 S/O.R.R.SUBBIYAN,
 NO.31,SATHYAMOORTHY RAOD,
 RAMNAGAR,
 COIMBATORE-641009.

LOCATION OF Q.L.A. AREA:
 S.F.NO'S: 285/3(P) & 286/2 (P),
 EXTENT : 1.95.0 Ha,
 VILLAGE : PACHAPALAYAM,
 TALUK : SULLUR,
 DISTRICT: COIMBATORE,
 STATE : TAMIL NADU.

PLATE NO - III
 DATE OF SURVEY : 24.10.2024

**TOPOGRAPHY, GEOLOGICAL PLAN,
 YEARWISE DEVELOPMENT &
 PRODUCTION PLAN & SECTIONS**
 SCALE: 1:1000

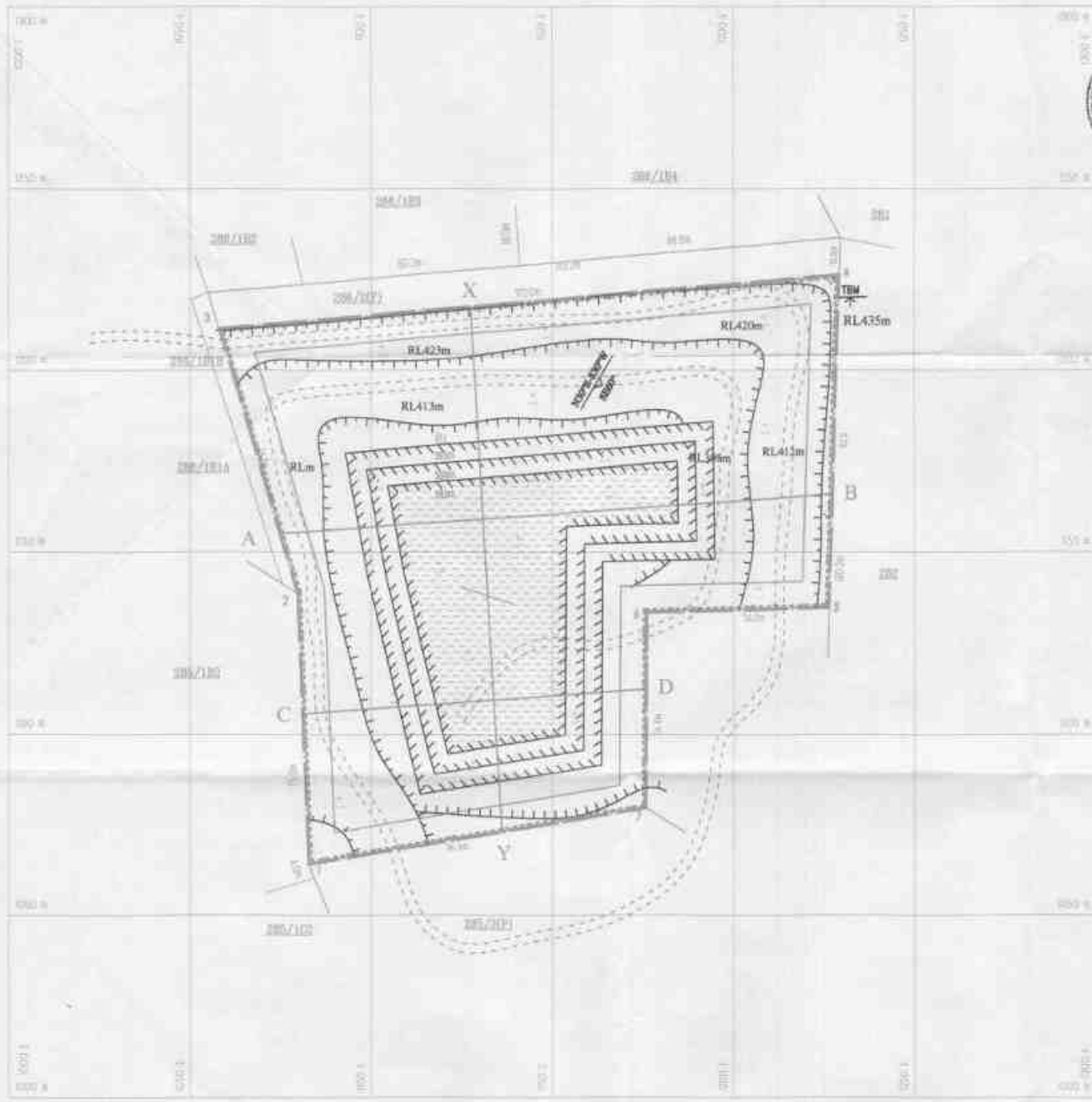
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 KNOWLEDGE BASED UPON THE BEST OF MY
 AUTHENTICATED BY STATE GOVERNMENT

121A



| S. NO. | LATITUDE | LONGITUDE |
|--------|-----------------|-----------------|
| 1 | 10° 54' 11.81"N | 77° 04' 02.00"E |
| 2 | 10° 54' 14.30"N | 77° 04' 01.81"E |
| 3 | 10° 54' 16.79"N | 77° 04' 01.62"E |
| 4 | 10° 54' 17.17"N | 77° 04' 01.82"E |
| 5 | 10° 54' 14.18"N | 77° 04' 06.75"E |
| 6 | 10° 54' 14.13"N | 77° 04' 06.09"E |
| 7 | 10° 54' 12.38"N | 77° 04' 05.07"E |

DATUM : UTM-WGS84, ZONE 43 NORTH

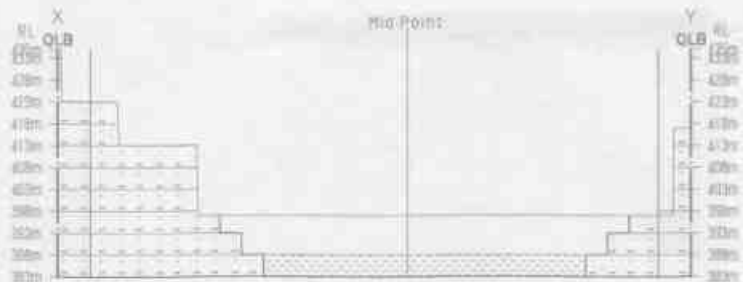


Proposed Pit Dimension (max)
 XY-AB = 43mX98mX52m(d)
 XY-CD = 51mX56mX2m(d)

INDEX

- Q.L. APPLIED AREA BOUNDARY
- 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- GRAVEL
- ROUGHSTONE
- STRIKE & DIP
- QUARRY PIT
- QUARRY HAUL ROAD
- APPROACH ROAD
- BARBED WIRE FENCING
- PROPOSED GARLAND DRAIN
- OLD SURFACE LEVEL
- FINISHED SURFACE LEVEL
- RAIN WATER STORAGE

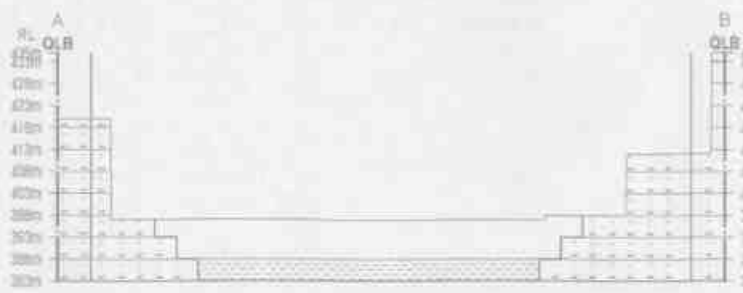
SECTION ALONG X-Y



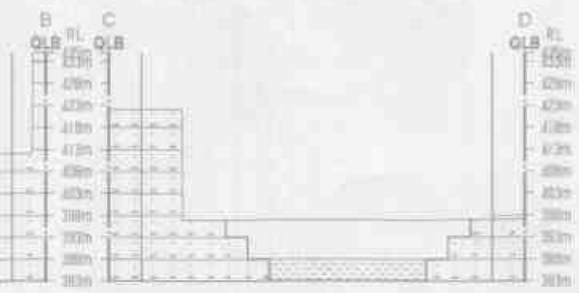
LAND USE PATTERN

| DESCRIPTION | PRESENT AREA (In Ha) | AREA AT THE END OF THIS QUARRYING PERIOD (In Ha) |
|------------------|----------------------|--|
| QUARRYING PIT | 1.900 | 1.900 |
| INFRASTRUCTURE | Nil | Nil |
| ROADS | 0.020 | 0.020 |
| GREEN BELT | Nil | Nil |
| UN-UTILIZED AREA | 0.030 | 0.030 |
| TOTAL | 1.950 | 1.950 |

SECTION ALONG A-B



SECTION ALONG C-D



APPLICANT:
 THIRU.R.S.SENTHIL KUMAR,
 S/O.R.M.SUBBIYAN,
 NO.31,SATHYAMOORTHY ROAD,
 RAMNAGAR,
 COIMBATORE-641009.

LOCATION OF Q.L.A. AREA:
 S.F.NO'S: 285/3(P) & 286/2 (P),
 EXTENT : 1.95.0 Ha,
 VILAGE : PACHAPALAYAM,
 TALUK : SULLUR,
 DISTRICT : COIMBATORE,
 STATE : TAMIL NADU.

PLATE NO - IV
 DATE OF SURVEY : 24.10.2024

PROGRESSIVE QUARRY CLOSURE PLAN & SECTIONS
 SCALE: 1:1000

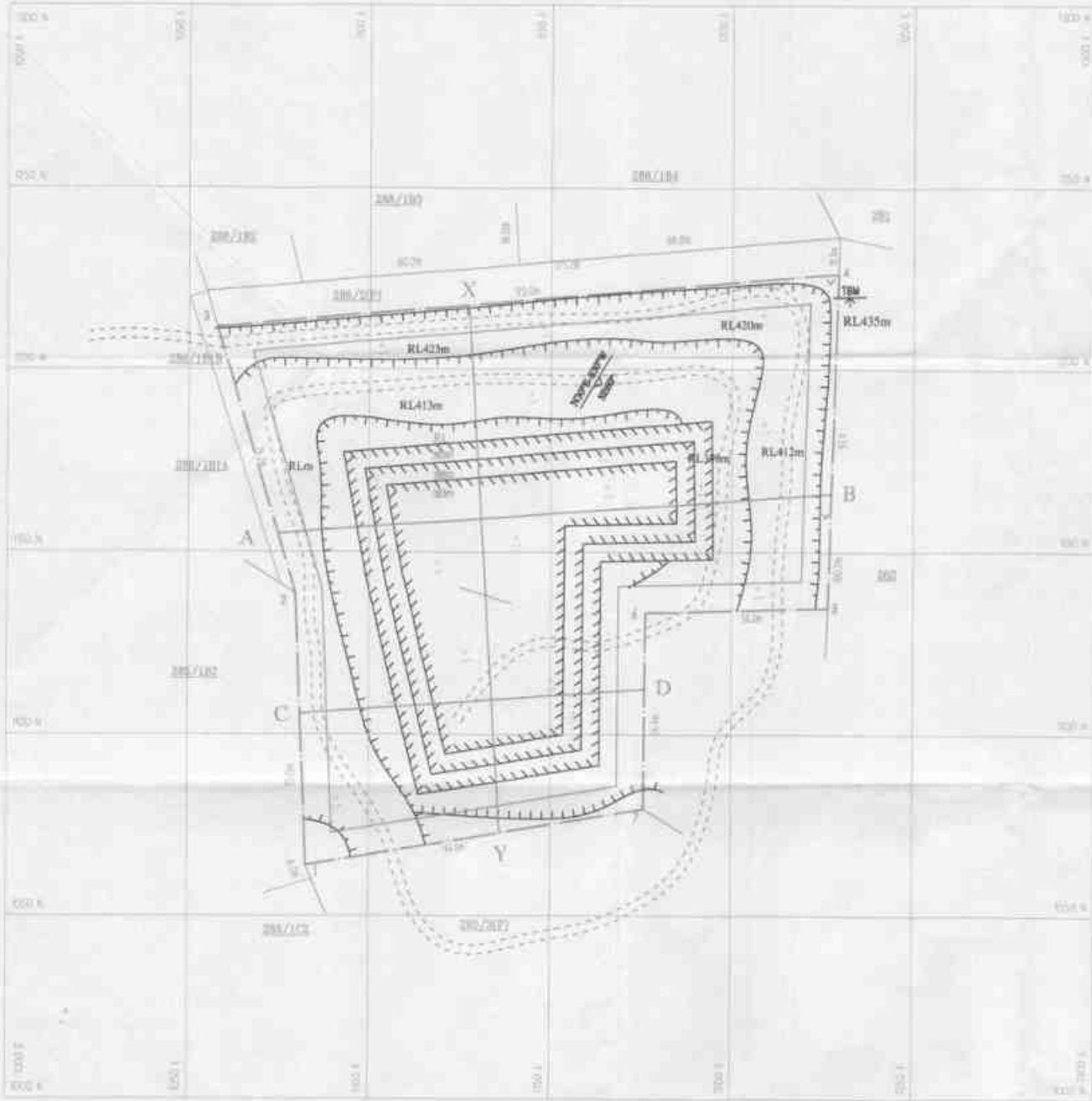
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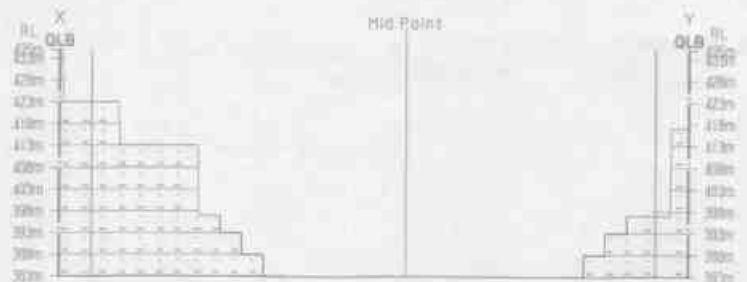
PRIMARY CO-ORDINATE

| S.N | LATITUDE | LONGITUDE |
|-----|-----------------|-----------------|
| 1 | 10° 54' 11.77"N | 77° 04' 02.87"E |
| 2 | 10° 54' 14.37"N | 77° 04' 05.91"E |
| 3 | 10° 54' 16.73"N | 77° 04' 01.21"E |
| 4 | 10° 54' 13.17"N | 77° 04' 06.84"E |
| 5 | 10° 54' 14.18"N | 77° 04' 06.73"E |
| 6 | 10° 54' 14.15"N | 77° 04' 02.97"E |
| 7 | 10° 54' 10.37"N | 77° 04' 02.57"E |

DATUM : UTM-WGS84, ZONE 43 NORTH

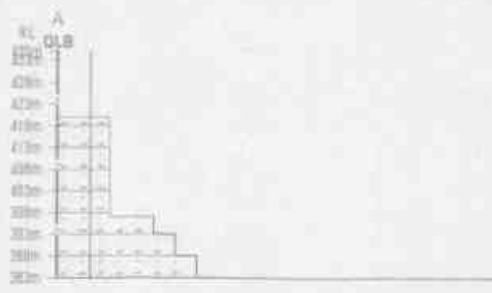


SECTION ALONG X-Y

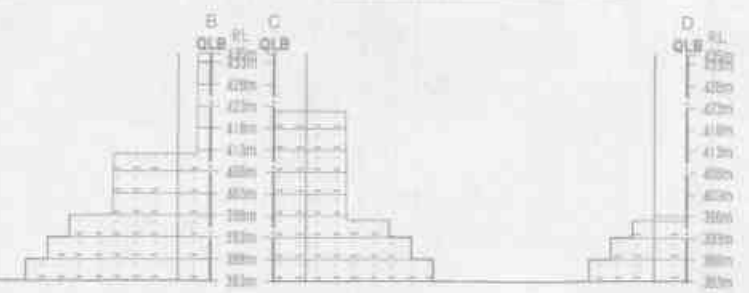


Ultimate Pit Dimension (max)
 XY-AB = 79mX150mX52m(d)
 XY-CD = 65mX95mX52m(d)

SECTION ALONG A-B



SECTION ALONG C-D



INDEX

- Q.L. APPLIED AREA BOUNDARY
- 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- GRAVEL
- ROUGHSTONE
- STRIKE & DIP
- QUARRY PIT
- QUARRY HAUL ROAD
- APPROACH ROAD

APPLICANT:
 Thiru.R.S.SENTHIL KUMAR,
 S/O.R.R.SUBBIYAN,
 NO.31,SATHYAMOORTHY RAOD,
 RAMNAGAR,
 COIMBATORE-641009.

LOCATION OF Q.L.A. AREA:
 S.F.NO'S: 285/3(P) & 286/2 (P).
 EXTENT : 1.95.0 Ha.
 VILLAGE : PACHAPALAYAM,
 TALUK : SULUR,
 DISTRICT: COIMBATORE,
 STATE : TAMIL NADU.

PLATE NO - V
 DATE OF SURVEY : 24.10.2024

CONCEPTUAL PLAN & SECTIONS
 SCALE: 1/1000

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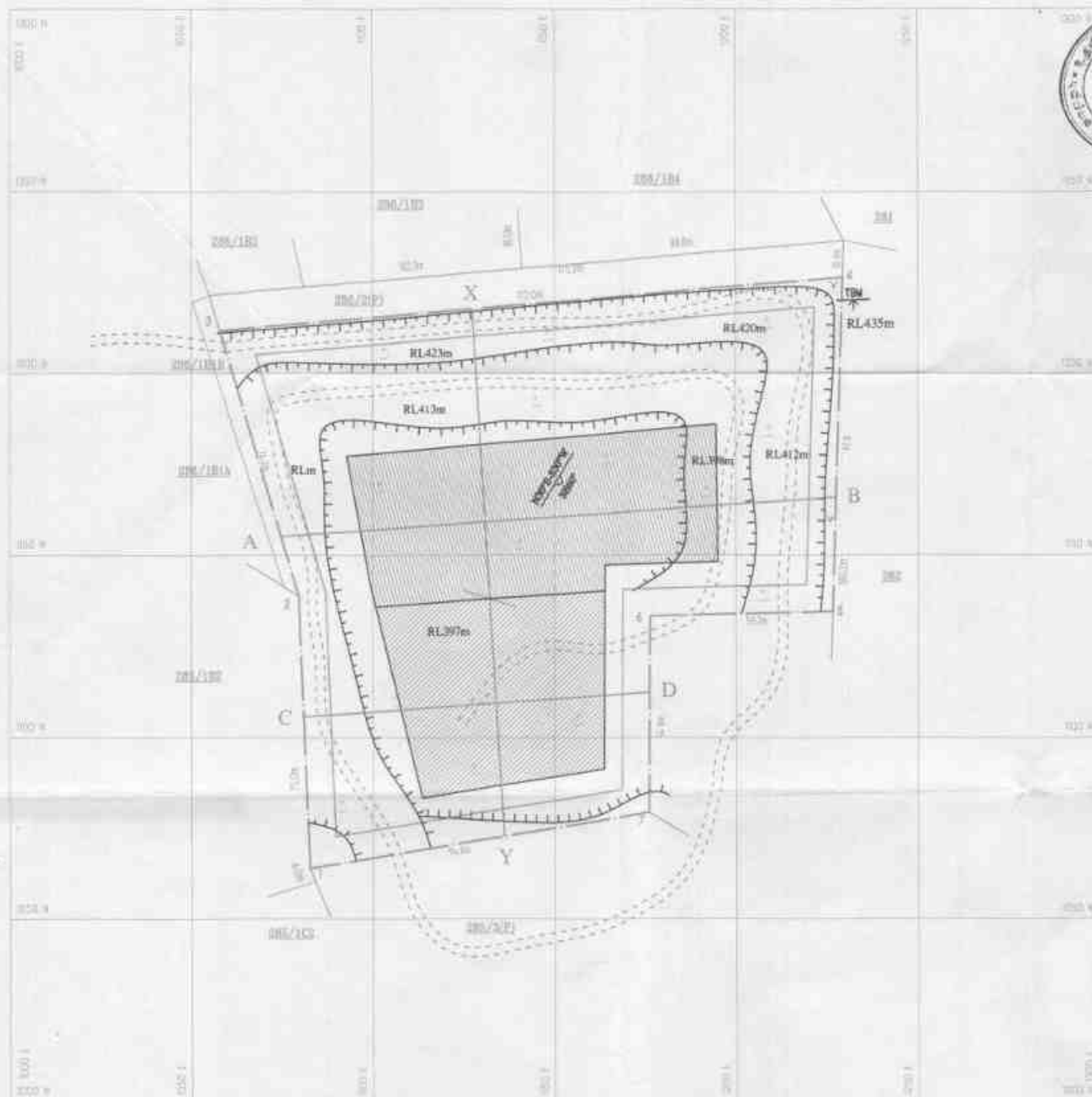
123 A



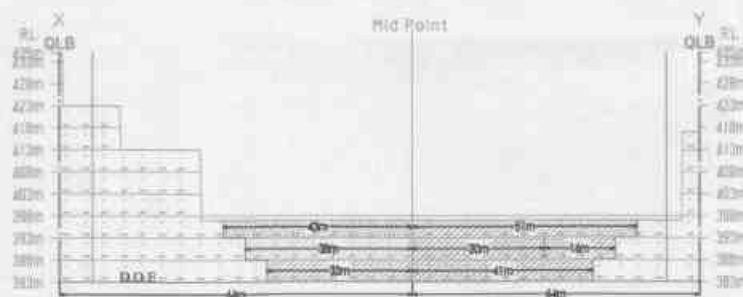
BOUNDARY COORDINATES

| S/N | LATITUDE | LONGITUDE |
|-----|-----------------|-----------------|
| 1 | 10° 54' 11.87"N | 77° 04' 08.00"E |
| 2 | 10° 54' 14.20"N | 77° 04' 01.91"E |
| 3 | 10° 54' 14.29"N | 77° 04' 01.21"E |
| 4 | 10° 54' 17.37"N | 77° 04' 04.86"E |
| 5 | 10° 54' 14.19"N | 77° 04' 06.79"E |
| 6 | 10° 54' 14.15"N | 77° 04' 06.09"E |
| 7 | 10° 54' 12.29"N | 77° 04' 08.07"E |

DATUM : UTM-WGS84, ZONE 43 NORTH



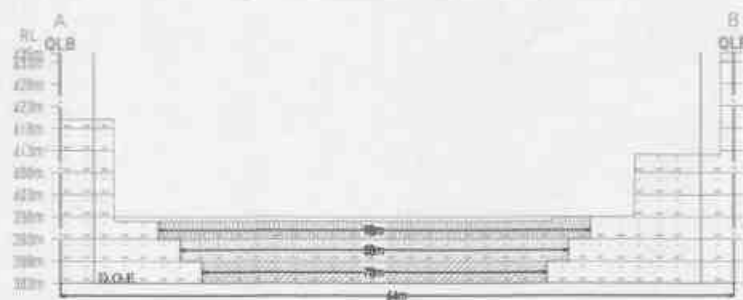
SECTION ALONG X-Y



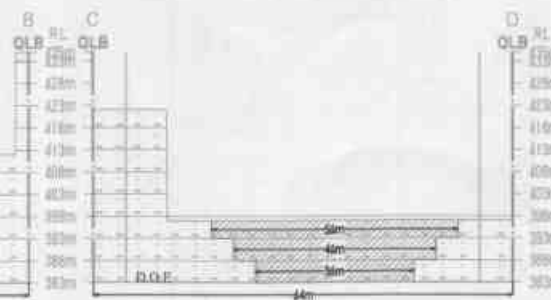
Existing Pit Dimension (max)
= 146mX145mX38m(d)

- I - yr Proposed area to be Quarried
- II - yr Proposed area to be Quarried
- III - yr Proposed area to be Quarried
- IV - yr Proposed area to be Quarried
- V - yr Proposed area to be Quarried

SECTION ALONG A-B



SECTION ALONG C-D



INDEX

| | |
|--|----------------------------|
| | Q.L. APPLIED AREA BOUNDARY |
| | 7.5m SAFETY DISTANCE |
| | TEMPORARY BENCH MARK |
| | GRAVEL |
| | ROUGHSTONE |
| | STRIKE & DIP |
| | QUARRY PIT |
| | QUARRY HAUL ROAD |
| | APPROACH ROAD |
| | DEPTH OF ESTIMATION |

APPLICANT:
 Thiru.R.S.SENTHIL KUMAR,
 S/O.R.R.SUBBHYAN,
 NO.31,SATHYAMOORTHY RAOD,
 RAMNAGAR,
 COMBATORRE-641009.

LOCATION OF Q.L.A. AREA:
 S.F.NO'S: 285/3(P) & 286/2 (P).
 EXTENT : 1.95.0 Ha.
 VILLAGE : PACHAPALAYAM.
 TALUK : SULLUR,
 DISTRICT: COMBATORRE.
 STATE : TAMIL NADU.

PLATE NO - III
 DATE OF SURVEY : 24.10.2024

TOPOGRAPHY, GEOLOGICAL PLAN,
 YEARWISE DEVELOPMENT &
 PRODUCTION PLAN & SECTIONS
 SCALE: 1:1000

PREPARED BY:
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HYDRO - GEOLOGICAL STUDIES OF
ROUGH STONE AND GRAVEL QUARRY PROJECT AT
PACHAPALAYAM VILLAGE, SULUR TALUK,
COIMBATORE DISTRICT, TAMILNADU

Table of Contents

| | |
|--|----|
| 1. INTRODUCTION | 75 |
| 1.1. Scope of Study | 75 |
| 1.2. Profiles in the Study Area | 76 |
| 2. STUDY AREA DESCRIPTION | 76 |
| 2.1 Topography of the Lease Area and Its Surrounding Environments: | 77 |
| 3. REGIONAL GEOLOGY OF COIMBATORE DISTRICT | 77 |
| 4. RAINFALL OF THE DISTRICT AND CLIMATE CONDITIONS. | 79 |
| 4.1 Rainfall..... | 79 |
| 4.2 Climatic Conditions. | 79 |
| 5. HYDROGEOLOGY | 79 |
| 6. METHODOLOGY OF STUDY | 80 |
| 6.1 Geophysical Investigation..... | 80 |
| 6.1.1 Vertical Electrical resistivity sounding for aquifer study. | 80 |
| 6.1.2 Basic Principles | 81 |
| 6. GEOPHYSICAL DATA INTERPRETATION & GRAPH | 83 |
| 7. CONCLUSION | 88 |

**HYDRO - GEOLOGICAL STUDIES AT THIRU. R. S. SENTHIL KUMAR
ROUGH STONE AND GRAVEL QUARRY PACHAPALAYAM VILLAGE,
SULUR TALUK, COIMBATORE DISTRICT, TAMILNADU.**

1. INTRODUCTION

Proprietor of **Thiru. R. S. Senthil kumar** in Rough Stone and Gravel Quarry Over an extent of 1.95.0 hectares of patta land in S.F. Nos. 285/3 (part) and 286/2 (part) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State on the hydrological regime of the area, The above area has been studied & investigated for finding out Ground water level and aquifer thickness and water quality in and around mine lease area. The electrical resistivity method, in Rough stone and gravel quarry and genesis rock with determine the shallow and deeper freshwater aquifer in the proposed mining area in Thiru. R. S. Senthil kumar, Pachapalayam Village.

1.1. Scope of Study

In the present study, the main aim of the shallow and deeper aquifer investigation through electrical resistivity VES, Method is used to measure the apparent resistivity of the Study area. The present study is estimating the ground water level Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu of proposed leasehold area and their surrounding area. The study area is mostly covered by Water level, type of sand, type of rock and their basement rock characters. The main aim of the study is to determine the water table and flow movement of this Lease and surrounding area (Fig.1).

1.2. Profiles in the Study Area.

| | |
|--------------------|---|
| Name of the Lessee | : Thiru. R. S. Senthil kumar |
| Survey Nos | : S.F. Nos. 285/3 (part) and 286/2 (part) |
| Extent | : 1.95.0 hectares |
| Village | : Pachapalayam village |
| Taluka | : Sulur Taluk |
| District | : Coimbatore |
| State | : Tamil Nadu |

2. STUDY AREA DESCRIPTION

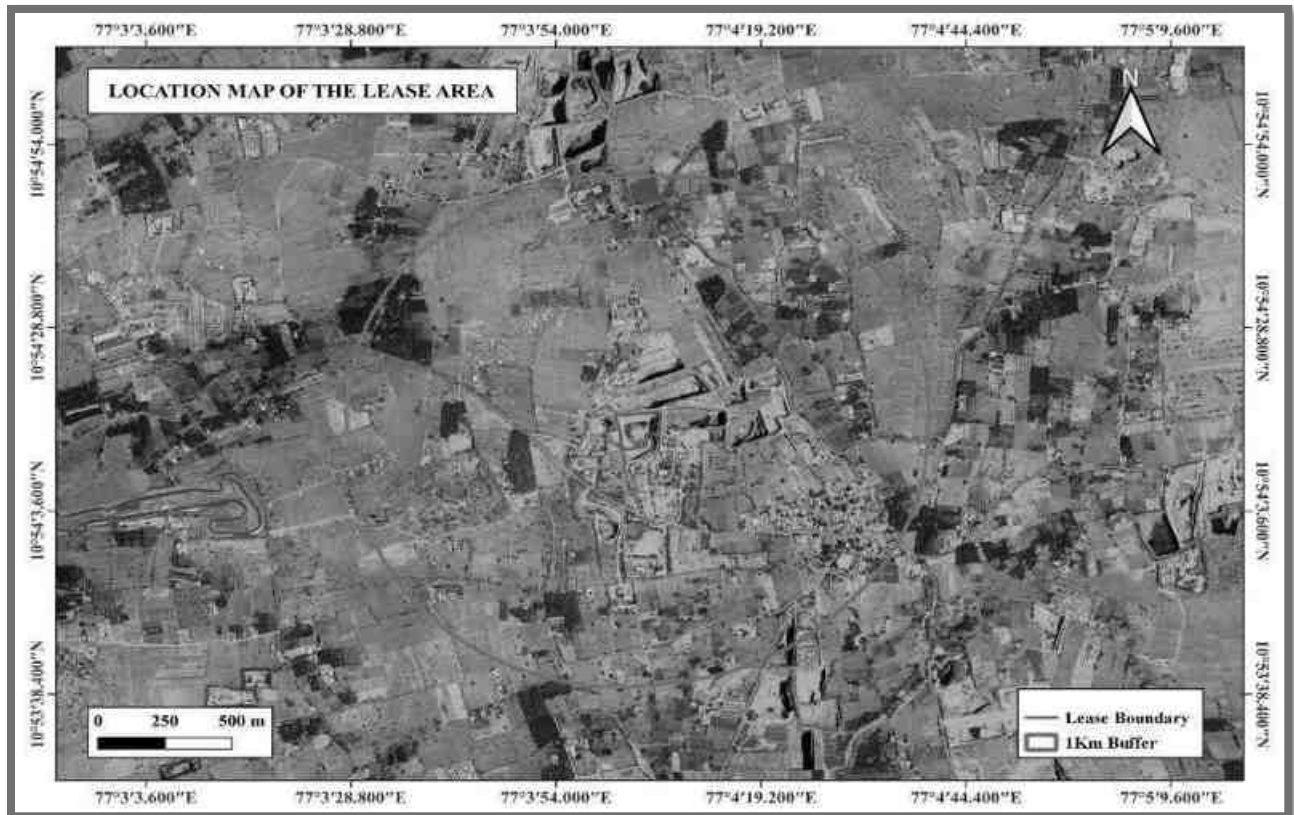
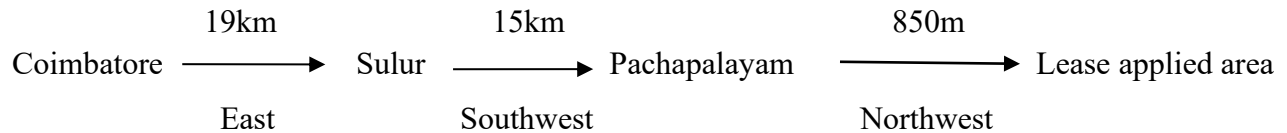


Figure.1. Shows proposed mine lease area

The lease applied area is located about 18km Southeastern side of Coimbatore town, 15km Southwestern side of Sulur town and 850m Northwest of Pachapalayam Village. The lease applied area falls in the **Topo sheet No: 58 - F/01** Latitude between: **10°54'11.91"N to 10°54'17.17"N** and Longitude between: **77°04'01.21"E to 77°04'06.86"E** on WGS datum-1984.



2.1 Topography of the Lease Area and Its Surrounding Environments:

The lease applied area exhibits Plain topography. The area has gentle sloping towards Eastern side and altitude of the area is 435m above from Mean sea level. The area is covered by 2m thickness of Gravel and followed by Massive Charnockite which is clearly inferred from the existing quarry pit. (Fig.2).

The Water level in the surrounding area 65m – 70m below from general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 1206mm.



Figure 2. Topography and Outcrop in the lease area

3. REGIONAL GEOLOGY OF COIMBATORE DISTRICT

Geologically, the district is occupied by Charnockite Group of rocks consisting of Charnockite, pyroxene granulites and associated magnetite quartzite, the Knodalite Group comprising gametiferous – sillimanite gneiss, calc-granulite, crystalline limestone, sillimanite quartzites and associated migmatitic gneisses. The rocks are restricted to the central and southern portions of the district, especially around Palladam, Udumalaipettai and Pollachi taluks.

The fissile homblende gneisses (Peninsular gneiss – younger phase) of Bhavani Group with enclaves of schistose, micaceous and amphibolitic rocks, fuchsite – kyanite quartzites, ferruginous quartzite (Satyamangalam Group) intruded by a number of ultramafic and basic rocks and granites are seen in the Northern portions of the district especially around Mettupalayam, Avinashi and Northern areas of Coimbatore. The granites are Proterozoic age and occupy the Western end and

Eastern Part of the District as separate bodies and are recognized as Maruthamalai Granite and Punjapuliyampatti Granites respectively.

The quaternary alluvium is seen in the West and Northwestern areas of Udumalaipettai and Western areas of Coimbatore town. The alluvium is more than 30m thick in the Chinnathadagam valley northwest of Coimbatore and in the Siruvani valley west of Coimbatore. In the Udumalaipettai taluk area, it overlies the kankar deposit.

Stratigraphy Sequence of Coimbatore District

| LITHOLOGY | FORMATION | GROUP | SUPER GROUP | AGE |
|---------------------------------------|------------------------|---------------------------------------|--|--------------------------------|
| Gypseous Clay | Coimbatore Palladam | | | Holocene |
| Granite | | Acid intrusive | | Neo Proterozoic |
| Dolerite/ Basic Dyke | | Basic intrusive | | Meso Proterozoic |
| Quartzofeldspathic gneiss / Garnet | | | Peninsular gneissic Complex - II | Archean to Paleoproterozoic |
| Hornblende Biotite Gneiss | | | | |
| Charnockite | | | Southern Granulite Complex- I | Archean |
| Grey Hornblende Biotite Gneiss | | | Peninsular Gneissic Complex - I | |
| Gabbro | | Sitampundi Mettupalayam Complex | | |
| Ambhipolite | | | | |
| Magnetite Quartzite | | Satyamangalam | | |
| Talc-tremolite- Actinolite Schist | | | | |

4. RAINFALL OF THE DISTRICT AND CLIMATE CONDITIONS.

4.1 Rainfall

Coimbatore, receives an average of 952 millimeters (mm) of rainfall annually, with the monsoon season lasting from July to October. October is the wettest month, with an average of 229 mm of rainfall, while January is the driest month, with an average of 0.2 mm.

4.2 Climatic Conditions.

Coimbatore, has a tropical wet and dry climate. It's mostly warm year-round, with temperatures ranging from 25°C to 33°C on average. The city experiences hot and humid summers from March to June, with temperatures ranging from 25°C to 38°C. The monsoon season lasts from July to October.

5 HYDROGEOLOGY

The district is underlain by both porous and fissured formations. The important aquifer systems in the district are constituted by

- i) unconsolidated formations
- ii) Weathered and fractured crystalline rocks.

The porous formations in the district are represented by alluvium and colluvium. The Colluvial formations are occurring in the western boarder of Coimbatore district especially in Chinnathadagam and Chitrachavadi sub-basins of Noyil river basin. Studies carried out in this area indicate that the sand and gravel beds constitute more than 60 to 70 percent of the colluvium in the western part of Chinnathadagam basin. The Colluvial material in Chitrachavadi basin is mostly composed of silt and kantar with admixtures of sands and gravels. Ground water is occurring under phreatic conditions in the colluviums and is developed by means of dug wells and bore wells. The depth range of these shallow aquifers ranges from 34 to 56 m. The saturated thickness of these aquifers ranges from a few meters in Chitrachavadi basin to as much as 56 m at the center of Chinnathadagam sub-basin. The river alluvium is occurring along the major river courses.

The hard consolidated crystalline rocks are represented by weathered and fractured Granite Gneisses, Granites, Charnockites and other associated rocks. Ground water occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fractured zones. The shallow aquifers in the major part of the district occur within the depth of 30 m while in the western

most part of Coimbatore; they are more than 30 m. The depth of the wells ranged from 7 to 45 m bgl. The yield of large diameter wells in the district, tapping the weathered mantle of crystalline rocks ranges from 50 to 300 lpm and are able to sustain pumping for 2 to 4 hours per day. The Specific capacity of large diameter wells tested in crystalline rocks from 6.28 to 200.00 lpm / m. of drawdown. The yield of bore wells drilled down to a depth of 50 to 100 m, by various state agencies mainly for domestic purposes ranged from 1 to 5 lps. The yield of successful bore wells drilled down to a depth of 304 m bgl during the ground water exploration programme of Central Ground Water Board ranged from <1 to 10 lps. The aquifer and well parameters of the wells show wide variation.

6 METHODOLOGY OF STUDY

1. Open well and bore well water level measurement, depth of water level diameter of open well, agriculture land survey.
2. Geophysical survey for deep aquifer in nearby site Rock and soil geology also collected for the aquifer characteristic study
3. Aquifer thickness and quality measurement study in nearby proposed mine site areas of the study area.

6.1 Geophysical Investigation

6.1.1 Vertical Electrical resistivity sounding for aquifer study.

The electrical resistivity study is used to determine aquifer and occurred rock in the proposed site. The DDR 3 equipment was used for data collection (**Fig.3**)



Figure 3. Electrical resistivity survey in the mine lease area.

6.1.2 Basic Principles

The electrical properties of rocks in the upper part of the earth's crust are dependent upon the lithology, porosity, and the degree of pore space saturation and the salinity of the pore water. Saturated rocks have lower resistivity than unsaturated and dry rocks. The higher the porosity of the saturated rock, or the higher the salinity of the saturating fluids, the lower is the resistivity. The presence of clays and conductive minerals also reduces the resistivity of the rock.

The resistivity of earth materials can be studied by measuring the electrical potential distribution produced at the earth's surface by an electric current that is passed through the earth. Current is moved through the subsurface from one current electrode to the other and the potential difference is recorded as the current passes. From this information, resistivity values of various layers are acquired and layer thickness can be identified.

The apparent resistivity values determined are plotted as a log function versus the log of the spacing between the electrodes. These plotted curves identify thickness of layers. If there are multiple layers (more than 2), the acquired data is compared to a master curve to determine layer thickness.

This method is least influenced by lateral in-homogeneities and capable of providing higher depth of investigation.

The resistance R of a certain material is directly proportional to its length L and cross-sectional area A , expressed as:

$$R = R_s * L/A \text{ (in Ohm)}$$

Where R_s is known as the specific resistivity (characteristic of the material and independent of its shape or size)

With Ohm's Law,

$$R = dV/I \text{ (Ohm)}$$

Where dV is the potential difference across the resistor and I is the electric current through the resistor. The specific resistivity may be determined by:

$$R_s = (A/L) * (dV/I) \text{ (in Ohm m)}$$

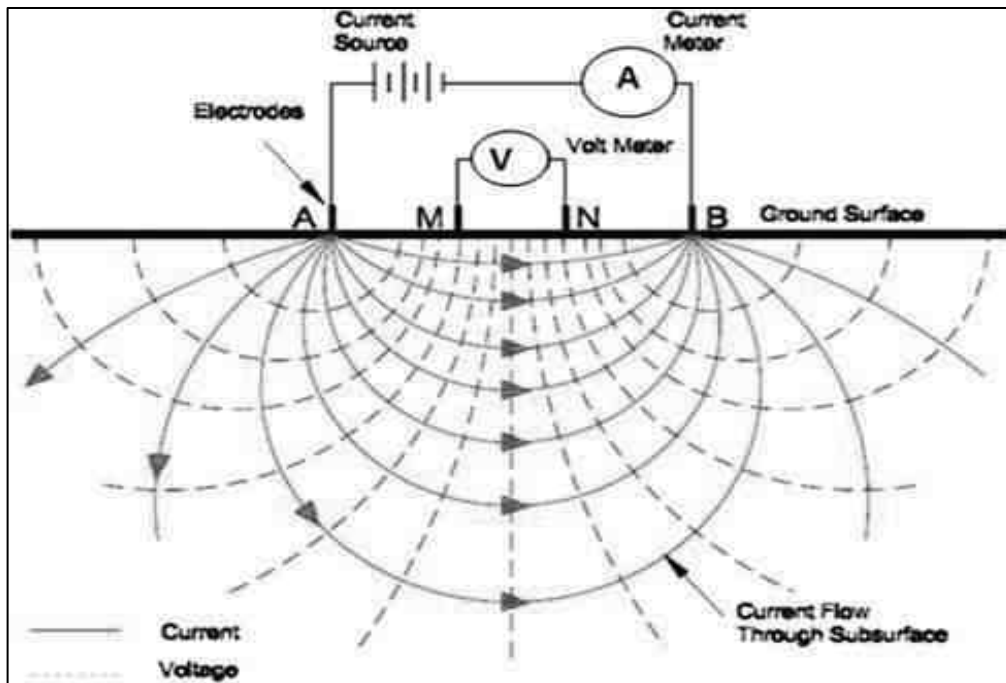


Figure 4. Schematic Diagram of Electrical resistivity principle

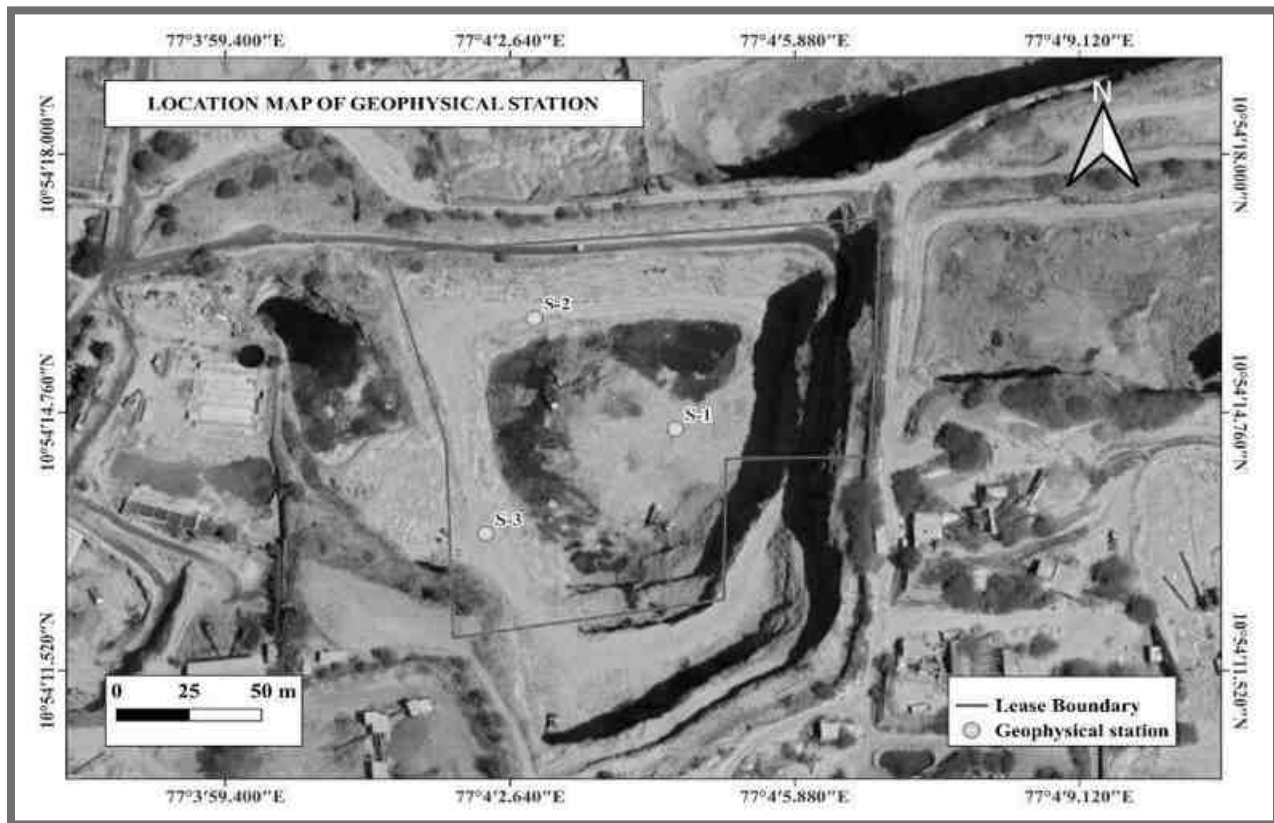


Figure 5. Geophysical survey location in the lease area

6. GEOPHYSICAL DATA INTERPRETATION & GRAPH

Table 1 Geophysical data of Station 1

| <i>S. No</i> | <i>Ab/2</i> | <i>Mn /2</i> | <i>K</i> | <i>R</i> | <i>Rho</i> |
|--------------|-------------|--------------|----------|----------|------------|
| 1 | 2 | 1 | 4.7 | 39.68 | 186.99 |
| 2 | 4 | 1 | 23.6 | 11.42 | 269.08 |
| 3 | 6 | 1 | 55.0 | 6.3 | 346.36 |
| 4 | 8 | 1 | 99.0 | 4.1 | 405.74 |
| 5 | 10 | 1 | 155.5 | 2.85 | 443.20 |
| 6 | 10 | 5 | 23.6 | 12.23 | 288.16 |
| 7 | 15 | 5 | 62.8 | 5.27 | 331.12 |
| 8 | 20 | 5 | 117.8 | 2.95 | 347.54 |
| 9 | 25 | 5 | 188.5 | 1.85 | 348.72 |
| 10 | 30 | 5 | 274.9 | 1.44 | 395.84 |
| 11 | 35 | 5 | 377.0 | 1.06 | 399.61 |
| 12 | 40 | 5 | 494.8 | 0.68 | 336.47 |
| 13 | 50 | 5 | 775.5 | 0.52 | 404.32 |

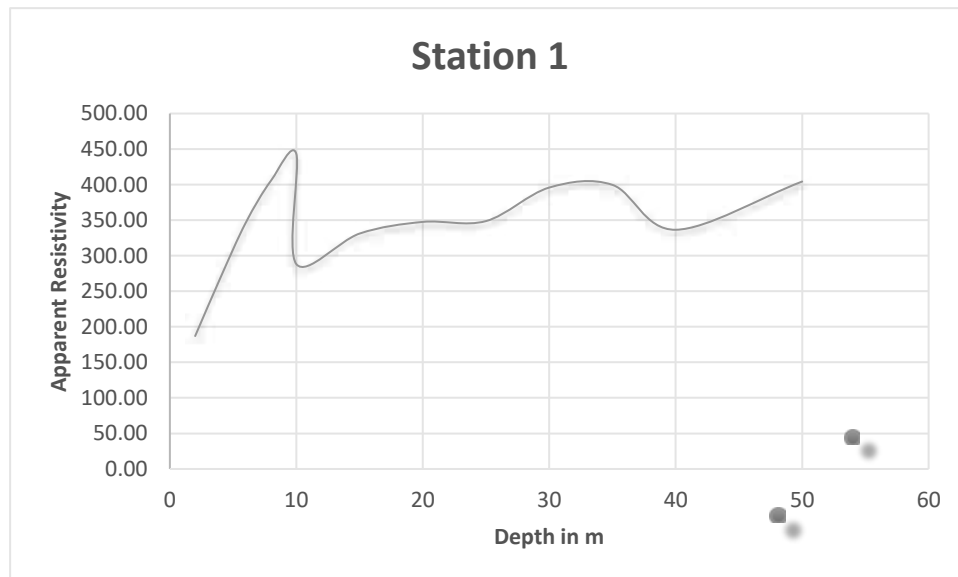


Figure 6 Graphical Representation of Geophysical data Station 1

Table 2 Geophysical data of Station 2

| S. No | Ab/2 | Mn /2 | K | R | Rho |
|--------------|-------------|--------------|----------|----------|------------|
| 1 | 2 | 1 | 4.7 | 25.84 | 121.77 |
| 2 | 4 | 1 | 23.6 | 9.8 | 230.91 |
| 3 | 6 | 1 | 55.0 | 4.75 | 261.15 |
| 4 | 8 | 1 | 99.0 | 2.83 | 280.06 |
| 5 | 10 | 1 | 155.5 | 2.01 | 312.57 |
| 6 | 10 | 5 | 23.6 | 10.55 | 248.58 |
| 7 | 15 | 5 | 62.8 | 4.65 | 292.17 |
| 8 | 20 | 5 | 117.8 | 2.47 | 290.99 |
| 9 | 25 | 5 | 188.5 | 1.62 | 305.36 |
| 10 | 30 | 5 | 274.9 | 1.2 | 329.87 |
| 11 | 40 | 5 | 494.8 | 0.74 | 366.15 |
| 12 | 50 | 5 | 777.5 | 0.69 | 536.51 |

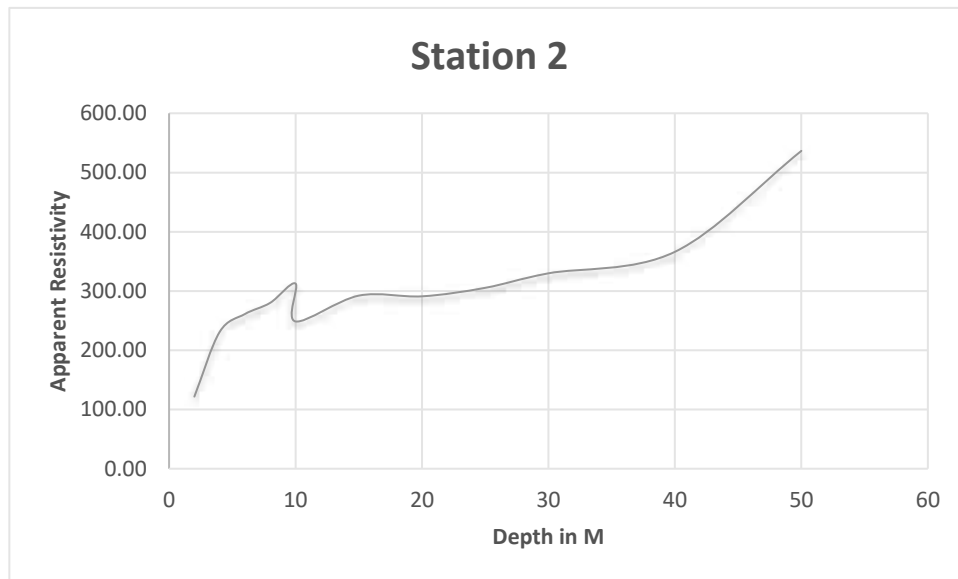


Figure 7 Graphical Representation of Geophysical data Station 2

Table 3 Geophysical data of Station 3

| <i>S. No</i> | <i>Ab/2</i> | <i>Mn/2</i> | <i>K</i> | <i>R</i> | <i>Rho</i> |
|--------------|-------------|-------------|----------|----------|------------|
| 1 | 2 | 1 | 4.7 | 34.66 | 163.33 |
| 2 | 4 | 1 | 23.6 | 11.06 | 260.60 |
| 3 | 6 | 1 | 55.0 | 5.63 | 309.53 |
| 4 | 8 | 1 | 99.0 | 3.62 | 358.24 |
| 5 | 10 | 1 | 155.5 | 2.34 | 363.89 |
| 6 | 10 | 5 | 23.6 | 12.92 | 304.42 |
| 7 | 15 | 5 | 62.8 | 5.45 | 342.43 |
| 8 | 20 | 5 | 117.8 | 3.06 | 360.50 |
| 9 | 25 | 5 | 188.5 | 2.08 | 392.07 |
| 10 | 30 | 5 | 274.9 | 1.6 | 439.82 |
| 11 | 40 | 5 | 494.8 | 1.07 | 529.44 |
| 12 | 50 | 5 | 777.5 | 0.96 | 746.44 |

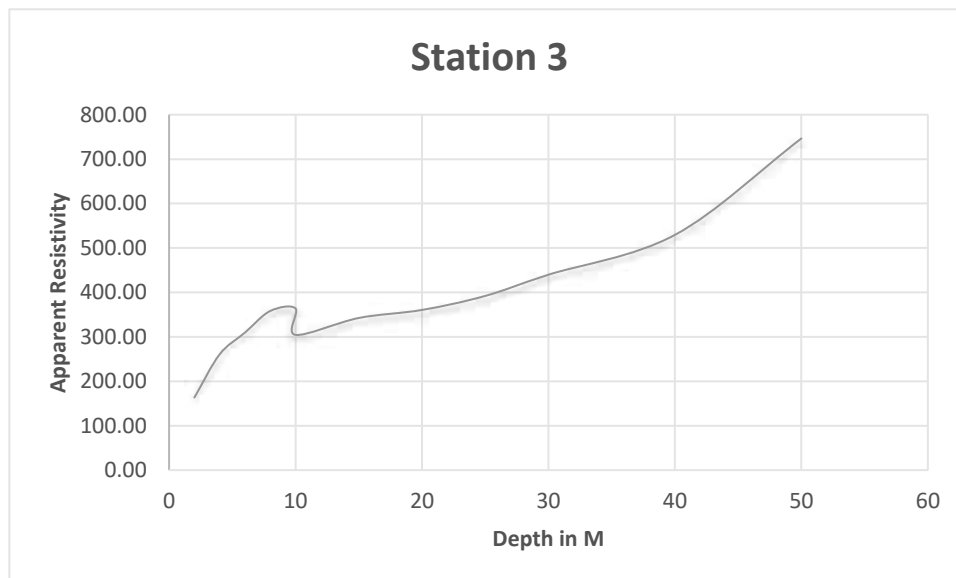


Figure 8 Graphical Representation of Geophysical data Station 3

Table 4 Geophysical data of Station 4

| S. No | Ab/2 | Mn/2 | K | R | Rho |
|--------------|-------------|-------------|----------|----------|------------|
| 1 | 2 | 1 | 4.7 | 22.68 | 106.88 |
| 2 | 4 | 1 | 23.6 | 7.52 | 177.19 |
| 3 | 6 | 1 | 55.0 | 4.34 | 238.60 |
| 4 | 8 | 1 | 99.0 | 2.65 | 262.25 |
| 5 | 10 | 1 | 155.5 | 1.89 | 293.91 |
| 6 | 10 | 5 | 23.6 | 11.12 | 262.01 |
| 7 | 15 | 5 | 62.8 | 4.92 | 309.13 |
| 8 | 20 | 5 | 117.8 | 2.65 | 312.20 |
| 9 | 25 | 5 | 188.5 | 1.7 | 320.44 |
| 10 | 30 | 5 | 274.9 | 1.22 | 335.37 |
| 11 | 40 | 5 | 494.8 | 0.79 | 390.89 |
| 12 | 50 | 5 | 777.5 | 0.67 | 520.96 |

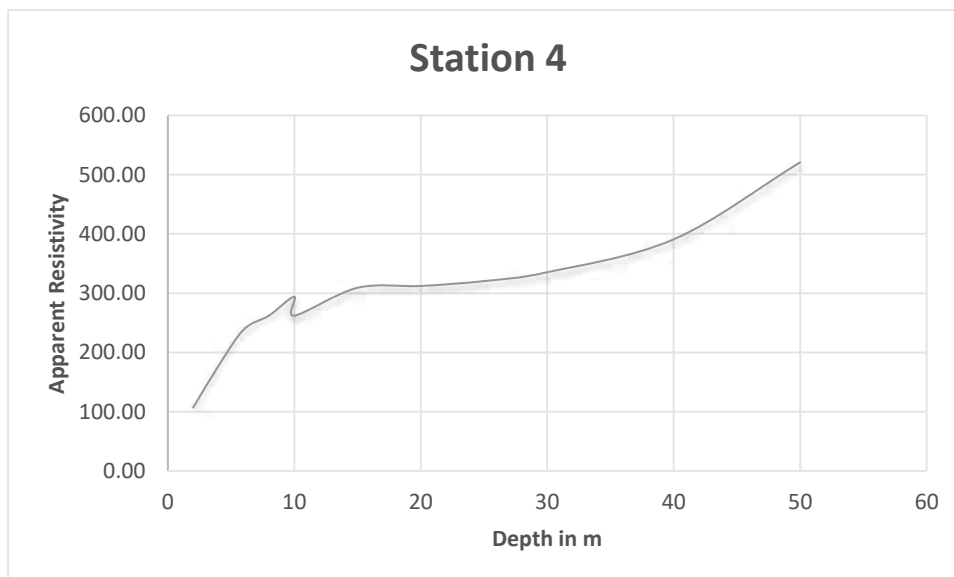


Figure 9 Graphical Representation of Geophysical data Station 4

Table 5 Geophysical data of Station 5

| <i>Sr. No.</i> | <i>AB/2</i> | <i>MN/2</i> | <i>K</i> | <i>R</i> | <i>Rho</i> |
|----------------|-------------|-------------|----------|----------|------------|
| 1 | 2 | 1 | 4.7 | 27.93 | 131.62 |
| 2 | 4 | 1 | 23.6 | 8.64 | 203.58 |
| 3 | 6 | 1 | 55.0 | 5.09 | 279.84 |
| 4 | 8 | 1 | 99.0 | 3.35 | 331.52 |
| 5 | 10 | 1 | 155.5 | 2.52 | 391.88 |
| 6 | 10 | 5 | 23.6 | 11.95 | 281.57 |
| 7 | 15 | 5 | 62.8 | 6.38 | 400.87 |
| 8 | 20 | 5 | 117.8 | 4.6 | 541.93 |
| 9 | 25 | 5 | 188.5 | 3.37 | 635.23 |
| 10 | 30 | 5 | 274.9 | 2.7 | 742.20 |
| 11 | 40 | 5 | 494.8 | 1.73 | 856.01 |
| 12 | 50 | 5 | 777.5 | 1.69 | 1314.05 |

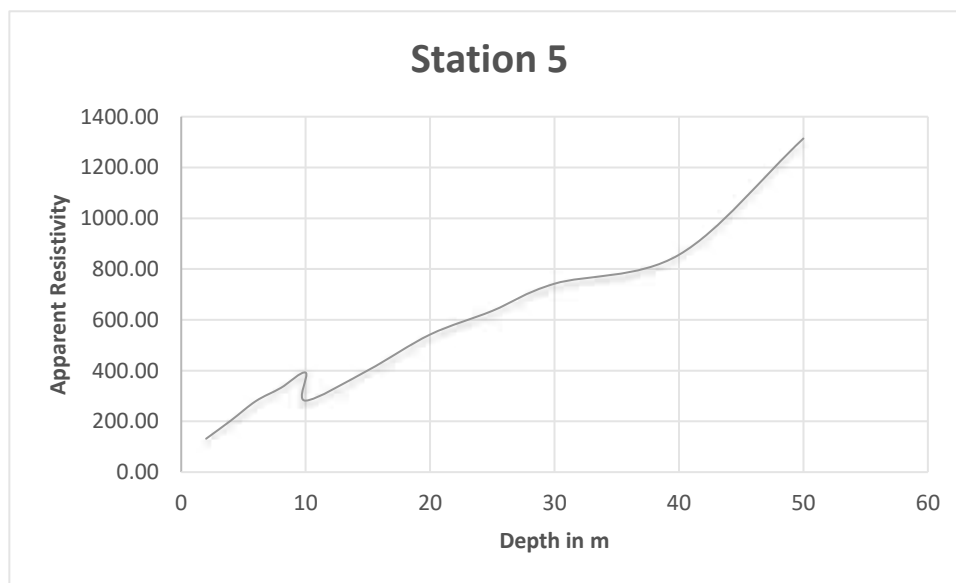
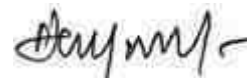


Figure 10 Graphical Representation of Geophysical data Station 5

7.CONCLUSION

- ❖ The lease applied area is exhibit plain topography. The area has gentle sloping towards Eastern side and altitude of the area is 435m above from Mean Sea level.
- ❖ The geological study of the given area covered by gravel and rough stone in the entire area. The discharge of the groundwater controlled by the massive charnockite rock
- ❖ The study area exhibit massive formation of Charnockite rock. So it act as a barrier and restrict the groundwater flow movement.
- ❖ Based on the geophysical investigation, Vertical Electrical Sounding (VES) were conducted to determine the subsurface water table and rock types up to depth of 50m.
- ❖ The subsurface formation up to this depth can be categorized as follows,
 - ❖ **0m to 2m (Average) - Top Soil**
 - ❖ **2m to 50m (Average) – weathered formation & Charnockite Formation (Massive Formation)**
- ❖ Water level from open and bore in nearby proposed site – open well having recharge water in the Shallow perched aquifer well built by the rainwater.
- ❖ In this mine lease area, groundwater occurs at shallow depths, depending on the intensity of weathering and its development is much less compared to gneissic formation. The mine area such no major intersections of water table are expected up to 50m.
- ❖ The aquifer are found within the weathered / fractured metamorphic terrain. Currently the aquifers are located at 65 to 70 meters below ground level (BGL). However, considering the approved mining plan depth, which is **52 meters** below ground level. It will not impact the groundwater table.
- ❖ To obviate the impact due to catchment of rainwater as surface runoff management, effective measures like construction of peripheral garland drain, settling pond and ensuring water flow to the nearby downstream users are devised and will be implemented during the course of mining.
- ❖ From the above study it can be concluded there will be no adverse effect on the hydrological regime, water drainage, environment, and livelihood. Agricultural activity in the region.



Dr. P. Thangaraju, M.Sc., Ph.D.,

Govt. Approved Hydro Geologist

M/s. Geo Exploration and Mining Solutions,
Regd. Office: No. 17, Advaita Ashram Road,
Alagapuram, Salem – 636 004, Tamil Nadu

SENTHIL EXPLOSIVES

20, PANCHAYAT OFFICE STREET, SULUR, COIMBATORE - 641 402

Date: 05/11/24

To

R.S.Senthil Kumar,
S/o. R.R.Subbaiyan,
No.31 Ramnagar,
Sathiyamoorthy Road,
Coimbatore District,
Tamil Nadum State.

Sir,

Sub: Regarding blasting work using Explosives in your proposed quarry.

We are having explosives license in from 22 holding No.E42667 situate in survey number SF:NO: 126/2(V) NO:80, Sulur village, Sulur Taluk, Coimbatore District, our office functioning at address.

Senthil Explosives ,20, Panchayat office street, Sulur, Coimbatore-641402.

We are enacting 7 explosives vans for transporting detonators and class: 2 separately for our magazine to our work site and well experienced and licensed blasters and mate for safe blasting work since 5 years without untoward incident.

We are willing to undertake blasting work on contract basic at your proposed quarry at SF.No: 285/3(P) ,286/2(P) Pachapalayam Village, Sulur Taluk , Coimbatore District, Tamilnadu.

Enclosure: 1. Licence Copies

For SENTHIL EXPLOSIVES


Partner

3854



खान अधिनियम, 1952
THE MINES ACT, 1952

विस्फोटकर्ता समर्थता प्रमाण-पत्र
BLASTER'S CERTIFICATE OF COMPETENCY

(धातु उत्पादक खान विनियमावली, 1961 के अधीन)
(Under Metalliferous Mines Regulations, 1961)

(केवल विवृत खनितों वाली खानों के लिए)
(Restricted to Metalliferous Mines having open cost workings only)

श्री सुपुत्र गांव
पाना जिला राज्य
को जिनकी वृत्तवृत्ति है अपनी आयु, आरोग्यता, अच्छे आचरण, साक्षरता और अनुभव के संबंध में संतोषजनक प्रमाण दे देने और से तारीख को हुई परीक्षा पास करने पर धातु उत्पादक खान विनियमावली, 1961 के अधीन विस्फोटकर्ता प्रमाण-पत्र दिया जाता है। यह प्रमाण-पत्र केवल विवृत खनितों वाली खानों तक सीमित है।

Shri. S. RAMASAMY
of Village Madukkarai & Post, Thana Madukkarai
District Coimbatore, State Tamilnadu
born on 16.06.1966 (16th June, Sixty Six) of R. Solaiappan
having given satisfactory evidence of his age, medical fitness, good conduct, literacy and experience and having passed an examination held at Oorgattam Centre on 20.01.2000 is hereby granted a BLASTER'S CERTIFICATE under the Metalliferous Mines Regulations, 1961 restricted to Mines having opencast workings only.

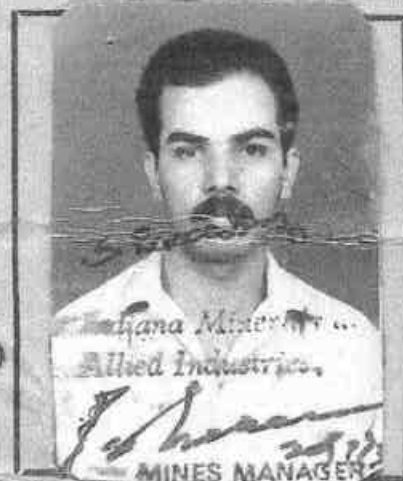
सचिव,
खनन परीक्षा बोर्ड
Secretary,
Board of Mining Examinations.

अध्यक्ष,
खनन परीक्षा बोर्ड
Chairman,
Board of Mining Examinations

तारीख
Dated... 02/6/2000

बाएँ हाथ के अंगूठे का निशान
Left hand thumb impression

19-07-2021 (Valid upto 15-06-2026)
Director of Mines Safety, Chennai Region



प्रमाणित किया जाता है कि उसकी स्वास्थ्य परीक्षा कर ली गई है और वह वहरोपन, संदेव दृष्टि या अन्य किसी ऐसे मानसिक अथवा शारीरिक अशक्तता से मुक्त पाया गया है जो उसके कर्तव्यों को प्रभावी रूप से करने में बाधक हो।

Certified that he was examined and found free from deafness, defective vision or any other infirmity, mental or physical, likely to interfere with the efficient discharge of his duties.

- 1. On 13/07/2006
- 2. On 30/06/2011
- 3. On 12/07/2011
- 4. On 01/06/2016
- 5. On
- 6. On

अनुज्ञप्ति प्ररूप एल. ई.-3 | LICENCE FORM LE-3

(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1,2,3,4,5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने के लिए अनुज्ञप्ति
Licence to possess : (e) for use,explosives of class 1, 2,3,4,5,6 or 7 in a magazine

अनुज्ञप्ति सं. (Licence No.) : E/HQ/TN/22/377(E42667)
वार्षिक फीस रूपए (Annual Fee Rs): 9800/-

1. Licence is hereby granted to:

M/s Senthil Explosives, (अधिभोगी / Occupier) : S.SAKTHIVEL), . 20, PANCHAYAT OFFICE STREET, SULUR, COIMBATORE
Dist., Town/Village - ,SULUR, District-COIMBATORE, State-Tamil Nadu, Pincode - 641402



को अनुज्ञप्ति अनुदत्त की जाती है।

2. अनुज्ञप्तिधारी की प्राप्ति | Status of licensee : Partnership Firm

3. अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमान्य है।
Licence is valid only for the following purpose.

4. अनुज्ञप्ति विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमान्य है।
Licence is valid for the following kinds and quantity of explosives: - (क) (a)

| क्र Sr. No. | नाम और विवरण Name and Description | वर्ग और प्रभाग Class & Division | उप-प्रभाग Sub-division | मात्रा किसी एक समय में Quantity at any one time |
|----------------|--------------------------------------|------------------------------------|---------------------------|--|
| 1. | Slurry Explosives | 2,0 | 0 | 4900 Kg. |
| 2. | Safety Fuse | 6,1 | 0 | 20000 Mtrs |
| 3. | Detonating Fuse | 6,2 | 0 | 10000 Mtrs |
| 4. | Detonators | 6,3 | 0 | 44000 Nos. |

20 times
as above.

(ख) किसी एक कलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा (अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञप्ति के लिए।
(b) Quantity of explosives to be purchased in a calendar month [applicable for licence under article 3(b) and (c)]:

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञप्ति परिसर की पृष्टि होती है।
The licensed premises shall conform to the following drawing(s):

रेखाचित्र क्र. (Drawing No.) E/HQ/TN/22/377(E42667)
दिनांक (Dated) 23/09/1991

6. अनुज्ञप्ति परिसर निम्नलिखित पते पर स्थित हैं। The licensed premises are situated at following address:
Survey No(s), 126/2,(s) No. 80 . ग्राम (Town/Village) : SULUR

पुलिस थाना (Police Station) : COIMBATORE
जिला (District) : COIMBATORE राज्य (State) : Tamil Nadu पिनकोड (Pincode)
दूरभाष (Phone) ई. मेल (E-Mail) फैक्स (Fax)

7. अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्भूत हैं।
The licensed premises consist of following facilities:

a main magazine room, a lobby and a detonator storage room.

8. अनुज्ञप्ति समय - समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपायबद्धों के अधीन रहते हुए अनुदत्त की जाती है।
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2004 framed there under and the conditions, additional conditions and the following Annexures.

- उपर्युक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, सन्निर्माण संबंधी और अन्य विवरण दर्शित करते हुए)।
Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
- अनुज्ञप्ति प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञप्ति की शर्तों और अतिरिक्त शर्तों।
Conditions and Additional Conditions of this licence signed by the licensing authority.
- दूरी प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञप्ति तारीख 31 मार्च 1993 तक विधिमान्य रहेगी। This licence shall remain valid till 31st day of March 1993.

यह अनुज्ञप्ति, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपबर्णित इस अनुज्ञप्ति की शर्तों का अधिकरण करने या यदि अनुज्ञप्ति परिसर मौजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंशुद्ध की जा सकती है, जहां वह लागू हो।
This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख | The Date - 23/09/1991

मुख्य विस्फोटक नियंत्रक | Chief Controller of Explosives

Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 27/08/2015
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 29/08/2018
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 07/01/2019
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 20/01/2022
- Change in Authorized Signatory/Occupier/Partners/Directors dated : 07/11/2023

नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

| नवीकरण की तारीख Date of Renewal | समाप्ति की तारीख Date of Expiry | अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of licensing authority and stamp |
|------------------------------------|------------------------------------|--|
| 01/02/2024 | 31/03/2029 | Jt. Chief Controller of Explosives, South Circle, Chennai |

कानूनी चेतावनी : विस्फोटकों को गलत ढंग से चलाने या उनका दुरुपयोग विधि के अधीन गंभीर दंडिक अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

Digitally signed by Dr T L THANULINGAM
Reason: Licence No. : E/HQ/TN/22/377
Location:Chennai [E42667]
Date:01-02-2024 11:54:22 AM

அனுப்புநர்
திரு.வை.இளங்கோ.B.Sc.,
வருவாய் கோட்டாட்சியர்,
கோயம்புத்தூர் தெற்கு.

பெறுநர்
மாவட்ட ஆட்சித் தலைவர்
கோயம்புத்தூர்

அய்யா,
மூ.மு.எண் : 3194/2022/அ2,

நாள் : 02.08.2022

பொருள் : கனிமங்களும் சுரங்கங்களும் - கோயம்புத்தூர் மாவட்டம் - சூலூர் வட்டம் - பச்சாபாளையம் கிராமம் - புல எண். 285/3-ல் 0.98.5 ஹெக்டேர் மற்றும் 286/2-ல் 2.16.5 ஹெக்டேர் ஆக மொத்தம் 3.15.0 பரப்புள்ள பட்டாபூமி — திரு.R.S.செந்தில்குமார் என்பவர் சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோருதல் - அறிக்கை அனுப்புதல் - தொடர்பாக.

- பார்வை :
1. திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் சத்தியமூர்த்தி ரோடு, ராம் நகர், கோயம்புத்தூர் மாவட்டம். என்பவர் விண்ணப்பம் நாள்:13.05.2022.
 2. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, கோயம்புத்தூர். ந.க.எண்.557/கனிமம்/2022, நாள்:13.05.2022.
 3. இவ்வலுவலக ந.க.எண்.3194/2022/அ2, நாள்:23.05.2022.
 4. வட்டாட்சியர், சூலூர். ந.க.2425/2022/அ7, நாள்:08.07.2022.

கோயம்புத்தூர் மாவட்டம், கோயம்புத்தூர் தெற்கு வட்டம், டவுன் கிராமம், கதவு எண்.31 என்ற முகவரியில் வசித்து வரும் திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் என்பவர், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள்.285/3-ல் 0.98.5 டி.ஹெக்டேர் மற்றும் 286/2-ல் 2.16.5 டி.ஹெக்டேர் ஆக மொத்தம் 3.15.0 டி.ஹெக்டேர் பரப்புள்ள பட்டா பூமியில், சாதாரண கற்கள் மற்றும் கிராவல் மண் வெண்டியெடுக்க கல்குவாரி குத்தகை உரிமம் கோரி பார்வை 1-இல் விண்ணப்பித்துள்ளது தொடர்பாக, பார்வை 4-இல் காணும் சூலூர் வட்டாட்சியரின் அறிக்கை வரப்பெற்றுள்ளதையடுத்து, புலத்தணிக்கை மேற்கொண்டு எனதறிக்கையினைப் பின்வருமாறு சமர்ப்பித்துக் கொள்கிறேன்.

கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள்.285/3-ல் 0.98.5 டி.ஹெக்டேர் மற்றும் 286/2-ல் 2.16.5 டி.ஹெக்டேர் ஆக மொத்தம் 3.15.0 டி.ஹெக்டேர் பரப்புள்ள பூமியானது சூலூர் சார்பதிவாளர் அலுவலக பாக பாத்திய விடுதலை பத்திரம் எண்.12458/2011-ன்படியும், பட்டா எண்.178-ன்படியும் திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் என்பவருக்கு தனியாக பாத்தியப்பட்டதாகும். கோயம்புத்தூர் மாவட்ட ஆட்சித் தலைவரின் செயல்முறைகள் R.C.No.101/கனிமம்/2017, நாள்:11.11.2017-ன்படி

11.11.2017 முதல் 10.11.2022 வரை உரிமம் பெற்று தற்போது மேற்படி பூமியில் கண்குவாரியானது இயங்கிவருகிறது.

மேற்படி பிரஸ்தாப புலத்தின் எல்லைகள்:

கிழக்கில்: க.ச.எண்.285/1B2 நெ.காலை உள்ளது.

மேற்க்கில்: க.ச.எண்.284 நெ.காலை உள்ளது.

வடக்கில்: க.ச.எண்.286/1B3 மற்றும் 286/1B4 நெ.காலைகள் உள்ளது.

தேற்கில்: க.ச.எண்.285/1C2 நெ.காலை உள்ளது.

புலத்தில் உள்ள நான்கு எல்லைகள் சரிபார்க்கப்பட்டதில் சரியாக உள்ளது

விண்ணப்பதாரர் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குத்தகை உரிமம் கோரியுள்ள புலத்தில்,

1. மேற்படி பூமியில் அரசு புறம்போக்கு நிலம் ஏதும் இல்லை.
2. மேற்படி பூமியானது நகர்ப்புற உச்சவரம்பு சட்டம் 1978-ன் கீழ் கவரப்படவில்லை
3. மேற்படி பூமியானது நில சீர்த்திருத்த சட்டம் 1961-ன் கீழ் கவரப்படவில்லை
4. நிலம் கையகப்படுத்தும் சட்டம் 1984 பிரிவு 4(1)-ன் கீழ் இதுவரை அறிவிப்பு ஏதும் செய்யப்படவில்லை.
5. மேற்படி பூமியில் 500 மீட்டர் சுற்றளவில் விலையுயர்ந்த மரங்கல், கோவில் மசூதி, தேவாலயம், வழிபாட்டுத்தளங்கள் மற்றும் புராதானச் சின்னங்களோ ஏதும் இல்லை.
6. மேற்படி புலத்தில் உயர்/தாழ் அழுத்த மின்கம்பிகள் ஏதும் செல்லவில்லை.
7. மேற்படி புலத்திலிருந்து 300 மீட்டர் சுற்றளவில் மாநில மற்றும் தேசிய நெடுஞ்சலைகள் ஏதுமில்லை.
8. மேற்படி புலத்திலிருந்து 300 மீட்டர் சுற்றளவில் அங்கீகரிக்கப்பட்ட வீட்டுமனைகள் ஏதும் இல்லை.
9. மனுதாரர் அரசுக்கு செலுத்த வேண்டிய கனிம வரி நிலுவை இல்லை என்பதற்கான உறுதிமொழி, வழங்குரைஞர் முன்னிலையில் கையொப்பம் இட்டுள்ளார் அதன் நகல் இணைக்கப்பட்டுள்ளது.

கோயம்புத்தூர். மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல

எண்கள்.285/3-ல் 0.98.5 பு.ஹெக் மற்றும் 286/2-ல் 2.16.5 பு.ஹெக் ஆக மொத்தம் 3.15.0

பு.ஹெக் விஸ்தீரணமுள்ள பட்டா பூமியில், சாதாரண கற்கள் மற்றும் கிராவல் மண்

வெட்டியெடுக்க திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் என்பவருக்கு அனுமதி வழங்கலாம்

என்பதைப் பணிவுடன் தெரிவித்துக்கொள்கிறேன்.

இணைப்பு: தொடர்புடைய ஆவணங்கள்

தங்கள் உண்மையுள்ள,

வருவாய் கோட்டாட்சியர்
கோயம்புத்தூர் தெற்கு

21/11/2022

புலத்தணிக்கைக் குறிப்பு

| | |
|----------------------------------|---|
| தணிக்கை அலுவலர் | : வருவாய் கோட்டாட்சியர், கோயம்புத்தூர் தெற்கு |
| தணிக்கை நாள் | : 28.07.2022 |
| தணிக்கை கிராமம் | : பச்சாபாளையம் கிராமம் |
| தணிக்கை புலங்கள் | : 285/3 மற்றும் 286/2 |
| தணிக்கையின் நோக்கம் | : கனிமங்களும் சுரங்கங்களும் - கோயம்புத்தூர் மாவட்டம் - சூலூர் வட்டம் - பச்சாபாளையம் கிராமம் - புல எண். 285/3-ல் 0.98.5 ஹெக்டேர் மற்றும் 286/2-ல் 2.16.5 ஹெக்டேர் ஆக மொத்தம் 3.15.0 பரப்புள்ள பட்டாபூமி — திரு.R.S.செந்தில்குமார் என்பவர் சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோருதல் - அறிக்கை அனுப்புகல் - தொடர்பாக. |
| தணிக்கையின் போது உடனிருந்தவர்கள் | : 1. வட்டாட்சியர், சூலூர். 2. உள்வட்ட நிலவருவாய் ஆய்வாளர், செலக்கரிச்சல். 3. கிராம நிர்வாக அலுவலர், பச்சாபாளையம் கிராமம் |

கோயம்புத்தூர் மாவட்டம், கோயம்புத்தூர் தெற்கு வட்டம், டவுன் கிராமம், கதவு எண்.31 என்ற முகவரியில் வசித்து வரும் திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் என்பவர், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள்.285/3-ல் 0.98.5 பு.ஹெக் மற்றும் 286/2-ல் 2.16.5 பு.ஹெக் ஆக மொத்தம் 3.15.0 பு.ஹெக் பரப்புள்ள பட்டா பூமியில், சாதாரண கற்கள் மற்றும் கிராவல் மண் வெண்டியெடுக்க கல்குவாரி குத்தகை உரிமம் கோரி பார்வை 1-இல் விண்ணப்பித்துள்ளது தொடர்பாக, பார்வை 4-இல் காணும் சூலூர் வட்டாட்சியரின் அறிக்கை வரப்பெற்றுள்ளதையடுத்து, புலத்தணிக்கை மேற்கொண்டு எனதறிக்கையினைப் பின்வருமாறு சமர்ப்பித்துக் கொள்கிறேன்.

மேற்படி பிரஸ்தாப புலத்தின் எல்லைகள்:

கிழக்கில்: க.ச.எண்.285/1B2 நெ.காலை உள்ளது.

மேற்க்கில்: க.ச.எண்.284 நெ.காலை உள்ளது.

வடக்கில்: க.ச.எண்.286/1B3 மற்றும் 286/1B4 நெ.காலைகள் உள்ளது.

தேற்கில்: க.ச.எண்.285/1C2 நெ.காலை உள்ளது.

புலத்தில் உள்ள நான்கு எல்லைகள் சரிபார்க்கப்பட்டதில் சரியாக உள்ளது

விண்ணப்பதாரர் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெண்டியெடுக்க குத்தகை உரிமம் கோரியுள்ள புலத்தில்,

1. மேற்படி பூமியில் அரசு புறம்போக்கு நிலம் ஏதும் இல்லை.
2. மேற்படி பூமியானது நகர்ப்புற உச்சவரம்பு சட்டம் 1978-ன் கீழ் கவரப்படவில்லை
3. மேற்படி பூமியானது நில சீர்த்திருத்த சட்டம் 1961-ன் கீழ் கவரப்படவில்லை

4. நிலம். கையகப்படுத்தும் சட்டம் 1984 பிரிவு 4(1)-ன் கீழ் இதுவரை அறிவிப்பு ஏதும் செய்யப்படவில்லை.
5. மேற்படி பூமியில் 500 மீட்டர் சுற்றளவில் விலையுயர்ந்த மரங்கல், கோவில் மசூதி, தேவாலயம், வழிபாட்டுத்தளங்கள் மற்றும் புராதானச் சின்னங்களோ ஏதும் இல்லை.
6. மேற்படி புலத்தில் உயர்/தாழ் அழுத்த மின்கம்பிகள் ஏதும் செல்லவில்லை.
7. மேற்படி புலத்திலிருந்து 300 மீட்டர் சுற்றளவில் மாநில மற்றும் தேசிய நெடுஞ்சலைகள் ஏதுமில்லை.
8. மேற்படி புலத்திலிருந்து 300 மீட்டர் சுற்றளவில் அங்கீகரிக்கப்பட்ட வீட்டுமனைகள் ஏதும் இல்லை.
9. மனுதாரர் அரசுக்கு செலுத்த வேண்டிய கனிம வரி நிலுவை இல்லை என்பதற்கான உறுதிமொழி, வழங்குரைஞர் முன்னிலையில் கையொப்பம் இட்டுள்ளார் அதன் நகல் இணைக்கப்பட்டுள்ளது.

கோயம்புத்தூர் மாவட்டம், குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள்.285/3-ல் 0.98.5 பு.ஹெக் மற்றும் 286/2-ல் 2.16.5 பு.ஹெக் ஆக மொத்தம் 3.15.0 பு.ஹெக் விஸ்தீரணமுள்ள பட்டா பூமியில், சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் என்பவருக்கு அனுமதி வழங்கலாம் என தெரிவித்து கோயம்புத்தூர் மாவட்ட ஆட்சியருக்குக் கடித வரைவு வைக்கவும்.

வருவாய் கோட்டியர்
கோயம்புத்தூர் தெற்கு

அனுப்புநர்

மு.சுகுணா,
வட்டாட்சியர்,
குலூர்.

பெறுநர்

வருவாய் கோட்டாட்சியர்,
கோயம்புத்தூர் (தெற்கு).

ந.க.2425/2022/அ7

நாள்:06.07.2022

அய்யா.,

பொருள்: - கனிமங்கள் மற்றும் சுரங்கங்கள் - கோயம்புத்தூர் மாவட்டம் - குலூர் வட்டம் - பச்சாபாளையம் கிராமம், புல எண்கள் 285/3-இல் 0.98.5 ஹெக்டேர் மற்றும் 286/2-இல் 2.16.5 ஹெக்டேர் ஆக மொத்தம் 3.15.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் திரு.R.S.செந்தில்குமார் என்பவர் சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரியது - தொடர்பாக.

பார்வை:

1. திரு.R.S.செந்தில்குமார் என்பவரின் விண்ணப்பம் நாள்:13.05.2022
2. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, கோயம்புத்தூர் அவர்களின் கடித ந.க.557/கனிமம்/2022 நாள்:13.05.2022
3. வருவாய் கோட்டாட்சியர் கோயம்புத்தூர் (தெற்கு) அவர்களின் ந.க.3194/2022/அ2 நாள்:23.05.2022
4. பச்சாபாளையம் கிராம நிருவாக அலுவலர் அறிக்கை, நாள்:28.06.2022
5. செலக்கரிச்சல் உள்வட்ட வருவாய் ஆய்வாளர் அறிக்கை, நாள்:30.06.2022

கோயம்புத்தூர் மாவட்டம், குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள் 285/3-இல் 0.98.5 ஹெக்டேர் மற்றும் 286/2-இல் 2.16.5 ஹெக்டேர் ஆக மொத்தம் 3.15.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் திரு.R.S.செந்தில்குமார் என்பவர் சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரியது தொடர்பாக பிரஸ்தாப புலம் தணிக்கை செய்து எனதறிக்கையினை கிழ்கண்டவாறு சமர்ப்பித்துக்கொள்கிறேன்.


கோயம்புத்தூர் மாவட்டம், கோயம்புத்தூர் டவுன், ராம் நகர், கதவு எண்.31 எனும் முகவரியில் வசிக்கும் மனுதாரர் திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் என்பவருக்கு பச்சாபாளையம் கிராமம், புல எண்கள் 285/3 இல் பு.ஹெக் 0.98.5 மற்றும் 286/2 இல் பு.ஹெக் 2.16.5 ஆக மொத்தம் பு.ஹெக் 3.15.0 பரப்பளவுள்ள பூமியானது குலூர் சார்பதிவாளர் அலுவலக பாக பாத்திய விடுதலை பத்திரம் எண்.12458/2011 நாள்:04.10.2011 மற்றும் பட்டா எண்.178-இன்படியும் மேற்படியாருக்கு தனியாக பாத்தியப்பட்டதாகும். மேற்படி பூமியில் கல்குவாரியானது இயங்கிவருகிறது.

மேற்படி பூமிக்கு நாற்புற எல்லைகளானது க.ச.எண்.285/1C2 காலைக்கு வடக்கிலும், க.ச.எண்.286/1B3, மற்றும் க.ச.எண்.286/1B4 காலைக்கு தெற்கிலும், க.ச.எண்.284 காலைக்கு கிழக்கிலும், க.ச.எண்.285/1B2 காலைக்கு மேற்கிலும் அமைந்துள்ளது.

1. மேற்படி பூமியில் அரசு புறம்போக்கு நிலம் ஏதும் இல்லை.
2. மேற்படி பூமியிலிருந்து 300 மீ சுற்றளவில் நத்தம் குடியிருப்புகளோ, அங்கீகரிக்கப்பட்ட வீட்டுமனைகளோ ஏதுமில்லை.
3. மேற்படி பூமியானது நகர்ப்புற நில உச்சவரம்பு சட்டம் 1978-ன் கீழ் கவரப்படவில்லை.
4. மேற்படி பூமியானது நில சீர்த்திருத்த சட்டம் 1961-ன் கீழ் கவரப்படவில்லை.
5. மேற்படி பூமியிலிருந்து 500 மீ சுற்றளவில் கோவில், மசூதி, தேவாலயம் போன்ற மத வழிபாட்டுத்தளங்கள், புராதானச் சின்னங்களோ அல்லது விலையுயர்ந்த மரங்களோ ஏதும் இல்லை.
6. மேற்படி பூமியிலிருந்து 300 மீட்டர் சுற்றளவில் தேசிய மற்றும் மாநில நெடுஞ்சாலைகள் ஏதும் செல்லவில்லை.
7. மேற்படி பூமியில் 50 மீட்டர் சுற்றளவில் குறைமின்னழுத்தக்கம்பிகள், உயர் மின்னழுத்தக்கம்பிகள் ஏதும் செல்வதில்லை.

எனவே மனுதாரர் திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் என்பவருக்கு குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள் 285/3-இல் 0.98.5 ஹெக்டேர் மற்றும் 286/2-இல் 2.16.5 ஹெக்டேர் ஆக மொத்தம் 3.15.0 ஹெக்டேர் பரப்பளவில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் புதுப்பித்து வழங்கலாம் என்பதை பணிவுடன் தெரிவித்துக்கொள்கிறேன்.

இணைப்பு: தொடர்புடைய ஆவணங்கள்

தங்கள் உண்மையுள்ள

 வட்டாட்சியர்
 குலூர்.


 08.07.2018

புலத்தணிக்கை குறிப்பு

நாள்: 08.07.2022

கிராமம்: பச்சாபாளையம் கிராமம்

புல எண்கள்: 285/3, 286/2

உடனிருந்த அலுவலர்கள்: செலக்கிச்சல் வருவாய் ஆய்வாளர், பச்சாபாளையம் கிராம நிர்வாக அலுவலர் மற்றும் கிராம உதவியாளர்

கோயம்புத்தூர் மாவட்டம், குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள் 285/3-இல் 0.98.5 ஹெக்டேர் மற்றும் 286/2-இல் 2.16.5 ஹெக்டேர் ஆக மொத்தம் 3.15.0 ஹெக்டேர் பரப்பளவில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க கல்குவாரி குத்தகை உரிமம் கோரி திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் என்பவர் மனு அளித்தது தொடர்பாக பிரஸ்தாப புலம் (08.07.2022)அன்று என்னால் தணிக்கை செய்யப்பட்டது.

மேற்படி பூமிக்கு நாற்புற எல்லைகளானது க.ச.எண்.285/1C2 காலைக்கு வடக்கிலும், க.ச.எண்.286/1B3, மற்றும் க.ச.எண்.286/1B4 காலைக்கு தெற்கிலும், க.ச.எண்.284 காலைக்கு கிழக்கிலும், க.ச.எண்.285/1B2 காலைக்கு மேற்கிலும் அமைந்துள்ளது.

1. மேற்படி பூமியில் அரசு புறம்போக்கு நிலம் ஏதும் இல்லை.
2. மேற்படி பூமியிலிருந்து 300 மீ சுற்றளவில் நத்தம் குடியிருப்புகளோ, அங்கீகரிக்கப்பட்ட வீட்டுமனைகளோ ஏதுமில்லை.
3. மேற்படி பூமியானது நகர்ப்புற நில உச்சவரம்பு சட்டம் 1978-ன் கீழ் கவரப்படவில்லை.
4. மேற்படி பூமியானது நில சீர்த்திருத்த சட்டம் 1961-ன் கீழ் கவரப்படவில்லை.
5. மேற்படி பூமியிலிருந்து 500 மீ சுற்றளவில் கோவில், மசூதி, தேவாலயம் போன்ற மத வழிபாட்டுத்தளங்கள், புராதானச் சின்னங்களோ அல்லது விலையுயர்ந்த மரங்களோ ஏதும் இல்லை.
6. மேற்படி பூமியிலிருந்து 300 மீட்டர் சுற்றளவில் தேசிய மற்றும் மாநில நெடுஞ்சாலைகள் ஏதும் செல்லவில்லை.
7. மேற்படி பூமியில் 50 மீட்டர் சுற்றளவில் குறைமின்னழுத்தக்கம்பிகள், உயர் மின்னழுத்தக்கம்பிகள் ஏதும் செல்லவில்லை.

எனவே மனுதாரர் திரு.R.S.செந்தில்குமார் த/பெ.சுப்பையன் என்பவருக்கு குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள் 285/3-இல் 0.98.5 ஹெக்டேர்

மற்றும் 286/2-இல் 2.16.5 ஹெக்டேர் ஆக மொத்தம் 3.15.0 ஹெக்டேர் பரப்பளவில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் புதுப்பித்து வழங்க முன்மொழிவுகள் தயார் செய்யவும்.

செ.இரா.
வட்டாட்சியர்
குலூர்

U.2

கோயமுத்தூர் ஸ்தலம், சங்கரா விஸ்வம்,

புராணாணமம் கிராமம் 400 ஏக்கர்கள் 285/3-

0.98.5 ஏக்கர் பரம்பல் 286/2 - 2.16.5 ஏக்கர் 285/3

3.15.0 ஏக்கர் பரம்பல் பரம்பல்

கோயமுத்தூர் ஸ்தலம், கோயமுத்தூர் ஸ்தலம், ராமநாதர்,

சங்கரா விஸ்வம் எனும் பெரிய சங்கரா விஸ்வம் R.S.

சங்கரா விஸ்வம் எனும் பெரிய சங்கரா விஸ்வம்

சங்கரா விஸ்வம் எனும் பெரிய சங்கரா விஸ்வம்

சங்கரா விஸ்வம் எனும் பெரிய சங்கரா விஸ்வம்

கோயமுத்தூர் ஸ்தலம், சங்கரா விஸ்வம்,

புராணாணமம் கிராமம் 400 ஏக்கர்கள் 285/3

0.98.5 ஏக்கர் பரம்பல் 286/2 - 2.16.5 ஏக்கர் 285/3

3.15.0 ஏக்கர் பரம்பல் பரம்பல்

சங்கரா விஸ்வம் எனும் பெரிய சங்கரா விஸ்வம்

சங்கரா விஸ்வம் எனும் பெரிய சங்கரா விஸ்வம்

சங்கரா விஸ்வம் எனும் பெரிய சங்கரா விஸ்வம்

சங்கரா விஸ்வம் எனும் பெரிய சங்கரா விஸ்வம்

சங்கரா விஸ்வம் - 285/102 சங்கரா விஸ்வம் - 285/102

சங்கரா விஸ்வம் - 286/183, 286/184 சங்கரா விஸ்வம் - 286/183

சங்கரா விஸ்வம் - 2.84 சங்கரா விஸ்வம் - 2.84

சங்கரா விஸ்வம் - 285/182 சங்கரா விஸ்வம் - 285/182

சங்கரா விஸ்வம்

V. S. S. S.

കോളിംഗോൾ
 കോളിംഗോൾ

2.15.2020 മുതൽ 2.15.2021 വരെ
 - 2.15.2020 മുതൽ 2.15.2021 വരെ
 കോളിംഗോൾ

1. കോളിംഗോൾ കോളിംഗോൾ
2. കോളിംഗോൾ കോളിംഗോൾ
3. കോളിംഗോൾ കോളിംഗോൾ
4. കോളിംഗോൾ കോളിംഗോൾ
5. കോളിംഗോൾ കോളിംഗോൾ
6. കോളിംഗോൾ കോളിംഗോൾ
7. കോളിംഗോൾ കോളിംഗോൾ
8. കോളിംഗോൾ കോളിംഗോൾ
9. കോളിംഗോൾ കോളിംഗോൾ

U.2

கோயமுத்தூர் காவலம், சத்யா வீடம்,

புள்ளாப்பாணையம் கிராமம் 400 ஏக்கர்கள் 285/3-

0.98.5 ஏக்கர் பரங்கம் 286/2 - 2.16.5 ஏக்கர் 285/2

3.15.0 ஏக்கர் புறப்புள்ளா பூங்கம்

கோயமுத்தூர் காவலம், கோயமுத்தூர் லேவர், ராமநாதர்,

சந்திரமோகன் ரோடு ஸெலிப்கள் சார்பிங் டைக்ரீட்ரீட் பி.டி.

ஸ்டாம்பர் சாதாரண சரிசெய்தல் மெரிட் கார்ட்டர் கோரி

செய்யவேண்டிய உடல் கோரி ஸெலிப்களினால் திரைப்படம்

பிரகாரம் சார்பிசெய்யவேண்டியது.

கோயமுத்தூர் காவலம், சத்யா வீடம்,

புள்ளாப்பாணையம் கிராமம் 400 ஏக்கர்கள் 285/3

0.98.5 ஏக்கர் பரங்கம் 286/2 - 2.16.5 ஏக்கர் 285/2

3.15.0 ஏக்கர் புறப்புள்ளா பூங்கம் கோயமுத்தூர்

சார்பிசெய்யவேண்டிய உடல் - 12458/2011 பரங்கம் புள்ளாப்பாணையம்

சுட்டி 0.11 ஏக்கர் - 173-ல் பு. ரி. சி. டைக்ரீட் கோரி

ஸ்டாம்பர் (செலிப்கள்) ஸ்டாம்பர் (செலிப்கள்) . செலிப்கள் ஸெலிப்கள்

கோரி உடல் கோரி ஸெலிப்களினால் திரைப்படம்

கி.சீ.எம். - 285/102 காண்பிக்கும் - 216/6.

கி.சீ.எம். - 286/183, 286/184 காண்பிக்கும் - 216/6

கி.சீ.எம். - 287/5 காண்பிக்கும் - 216/6

கி.சீ.எம். - 285/182 காண்பிக்கும் - 216/6

உடல் (செலிப்கள்).

மேல்நிலை ஆராய்ச்சித் திட்டம் தொடங்குவதற்கான

1. மேல்நிலை ஆராய்ச்சித் திட்டம் அரசு அங்கீகரிக்கப்பட்டு நிறைவேற்றம் செய்யப்பட்டது.
2. மேல்நிலை ஆராய்ச்சித் திட்டம் 300 லட்ச ரூபாய்க்கான நிதி ஒதுக்கீடு செய்யப்பட்டு, அந்த நிதியை மூலக் கட்டணமாக அரசு அங்கீகரிக்கப்பட்டது.
3. மேல்நிலை ஆராய்ச்சித் திட்டம் 1978-ல் உத்தரவிடப்பட்டது.
4. மேல்நிலை ஆராய்ச்சித் திட்டம் 1961-ல் உத்தரவிடப்பட்டது.
5. மேல்நிலை ஆராய்ச்சித் திட்டம் 500 லட்ச ரூபாய்க்கான நிதி ஒதுக்கீடு செய்யப்பட்டு, அந்த நிதியை மூலக் கட்டணமாக அரசு அங்கீகரிக்கப்பட்டது.
6. மேல்நிலை ஆராய்ச்சித் திட்டம் 1978-ல் உத்தரவிடப்பட்டது.
7. மேல்நிலை ஆராய்ச்சித் திட்டம் 300 லட்ச ரூபாய்க்கான நிதி ஒதுக்கீடு செய்யப்பட்டு, அந்த நிதியை மூலக் கட்டணமாக அரசு அங்கீகரிக்கப்பட்டது.
8. மேல்நிலை ஆராய்ச்சித் திட்டம் 50 லட்ச ரூபாய்க்கான நிதி ஒதுக்கீடு செய்யப்பட்டு, அந்த நிதியை மூலக் கட்டணமாக அரசு அங்கீகரிக்கப்பட்டது.

மேல்நிலை ஆராய்ச்சித் திட்டம் R.S. துணை அமைச்சர்

தலைநகரில் 2.16.5 ரூபாய்க்கான 3.15.0 க்கான பரவலாகிய வெள்ளி
 உதவியை அளிக்க அரசு அங்கீகரிக்கப்பட்டது.

V. Jeyaraj
 கிராம நிர்வாக அலுவலர்
 43, பச்சாபாளையம்,
 சூலூர் வட்டம்



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

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU
3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.8581/ToR- 1286/2022 Dated:08.10.2022.

To

Tvl. Gomuki Blue Metals L.L.P.,
Periyakuyili
Pachapalayam
Sulur Taluk,
Coimbatore-641201

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with public Hearing (ToR) for the Proposed Rough stone & gravel quarry lease over an extent of 2.47.9 Ha at S.F.Nos.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu by Tvl.Gomuki Blue Metals L.L.P - under project category – “B1” and Schedule S.No.1 (a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

Ref: 1. Online proposal No.SIA/TN/MIN/62942/2021 dated 10.09.2022.
2. Your application submitted for Terms of Reference dated: 24.06.2021.
3. Minutes of the 312th meeting of SEAC held on 16.09.2022.
4. Minutes of the 557th SEIAA meeting held on 08.10.2022.

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


MEMBER SECRETARY
SEIAA-TN

The proponent, Tvl.Gomuki Blue Metals L.L.P has submitted application for Terms of Reference (ToR) in Form-I, Pre- Feasibility report for the Proposed Rough stone & gravel quarry lease over an extent of 2.47.9 Ha at S.F.Nos.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu.

Discussion by SEAC and the Remarks:-

Proposed Rough stone & gravel quarry lease over an extent of 2.47.9 Ha at S.F.Nos.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu by Tvl.Gomuki Blue Metals L.L.P- For Terms of Reference.

(SIA/TN/MIN/62942/2021 Dt.10.09.2022)


The proposal was placed in 312th SEAC meeting held on 16.09.2022. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

1. The Project Proponent, Tvl.Gomuki Blue Metals L.L.P has applied for Terms for Reference for the proposed Rough stone & gravel quarry lease over an extent of 2.47.9 Ha at S.F.Nos.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. The Production for the five years states that total quantity should not exceed 3,11,184 m³ of rough stone & 5,576 m³ of gravel with an ultimate depth of mining is 37m BGL (2m Gravel + 35m Rough Stone).


Based on the presentation made by the proponent, SEAC has decided to recommend grant of **Terms of Reference (TOR) with Public Hearing** for the production of 3,11,184m³ of Rough Stone & 5,576m³ of Gravel in 5 years with an ultimate depth 37m BGL, subject to the following TORs, in addition to the standard terms of reference for EIA study and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The PP shall furnish DFO letter in regard to shortest distance of Reserve Forest & protected areas/Wildlife sanctuaries & wild life corridors etc.
2. The Proponent shall enumerate the number of structures belonging to the owner (Proponent) & not belonging to the owner (Proponent) existing within 100m, 200m, 300 m and 500 m

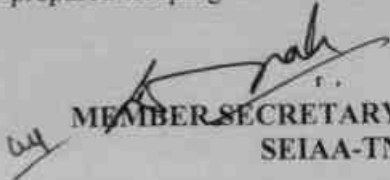

MEMBER SECRETARY
SEIAA-TN

distance from the boundary of the existing quarry, indicating the details about the type of building & its structure constructional features, details of occupants, partly/fully occupied, etc during the EIA appraisal.

3. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.
4. The Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
5. 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.
6. 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 20 m from the blast site, in particular attention paid to the railway track existing nearby and the surrounding habitations/structures.
7. 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.
8. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b. Quantity of minerals mined out.
 - c. Highest production achieved in any one year
 - d. Detail of approved depth of mining.
 - e. Actual depth of the mining achieved earlier.
 - f. Name of the person already mined in that leases area.
 - g. If EC and CTO already obtained, the copy of the same shall be submitted.


MEMBER SECRETARY
SEIAA-TN

- h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
9. 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).
 10. The PP shall carry out Drone video survey covering the cluster, Green belt , fencing etc.,
 11. 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.
 12. 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.
 13. 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.
 14. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD/TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
 15. 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.
 16. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned

by  MEMBER SECRETARY
SEIAA-TN

- quarry and the surrounding habitations in the mind.
17. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
 18. 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.
 19. 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.
 20. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
 21. 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.
 22. Impact on local transport infrastructure due to the Project should be indicated.
 23. 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.
 24. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
 25. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
 26. The Public hearing advertisement shall be published in one major National daily and one most circulated Tamil daily.
 27. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.


MEMBER SECRETARY
SEIAA-TN

28. 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.
29. 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.
30. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
31. 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.
32. 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.
33. 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.
34. 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.
35. 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.
36. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.


MEMBER SECRETARY
SEIAA-TN

37. 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.
38. 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.
39. 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.
40. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Appendix -I
List of Native Trees Suggested for Planting

| No | Scientific Name | Tamil Name | Tamil Name |
|----|---------------------------------|--------------------|--------------------------|
| 1 | <i>Azela marmelos</i> | Vilvam | விவம் |
| 2 | <i>Adenanthura pavonina</i> | Manjadi | மஞ்சள் ஆவாக்குத்திப்பூமி |
| 3 | <i>Albizia lebbek</i> | Vaagai | வாகை |
| 4 | <i>Albizia amara</i> | Usil | உசில் |
| 5 | <i>Bauhinia purpurea</i> | Mantharai | மந்தாரை |
| 6 | <i>Bauhinia racemosa</i> | Aathi | ஆதி |
| 7 | <i>Bauhinia tomentosa</i> | Iruvathu | இருவாத்தி |
| 8 | <i>Buchanania axillaris</i> | Kattuma | காட்டுமர |
| 9 | <i>Borassus flabellifer</i> | Panai | பனை |
| 10 | <i>Butea monosperma</i> | Murukkamaram | முருக்கமரம் |
| 11 | <i>Bobax ceda</i> | Ilavu, Sevvilavu | இலவு |
| 12 | <i>Calophyllum inophyllum</i> | Puzhai | புழை |
| 13 | <i>Cassia fistula</i> | Sarakondrai | சர்க்காண்டரை |
| 14 | <i>Cassia roxburghii</i> | Sengondrai | செங்காண்டரை |
| 15 | <i>Chloroxylon sweetena</i> | Purasamaram | புரசாமரம் |
| 16 | <i>Cochlospermum religiosum</i> | Kongu, Marijallavu | கொங்கு, மஞ்சள் இலவு |
| 17 | <i>Cordia dichotoma</i> | Naruvuli | நருவூலி |
| 18 | <i>Croton adansonii</i> | Mavalingum | மாவிளங்குமரம் |
| 19 | <i>Dillenia indica</i> | Uva, Uzha | உவா |
| 20 | <i>Dillenia pentagyna</i> | SiruUva, Sitruzha | சிறு உவா |
| 21 | <i>Diospyro sebium</i> | Karungali | கருங்காலை |
| 22 | <i>Diospyro schloroxylon</i> | Vaganai | வாகை |
| 23 | <i>Ficus amplissima</i> | Kallichi | கால் சிசி |
| 24 | <i>Hibiscus tiliaceo</i> | Aatrupoovaradu | ஆத்ரபூவரடா |
| 25 | <i>Hardwickia binata</i> | Aacha | ஆச்சா |
| 26 | <i>Holoptelia integrifolia</i> | Aayili | ஆயில் மரம், ஆயில் |
| 27 | <i>Lantana coromandelica</i> | Odhan | ஒதன் |
| 28 | <i>Lagerstroemia speciosa</i> | Poo Marudhu | பூ மருது |
| 29 | <i>Leptaanthus tetraphylla</i> | Neikottaimaram | நெய் கொட்டை மரம் |
| 30 | <i>Limonia acidissima</i> | Vila maram | வில்லா மரம் |
| 31 | <i>Litsea glutinos</i> | Pisinpattai | பிசின்பட்டை |
| 32 | <i>Malluca longifolia</i> | Blupai | இலுப்பை |
| 33 | <i>Manikara hexandra</i> | UlakkaiPaalai | உலக்கை பாலை |
| 34 | <i>Mimusops elengi</i> | Magizhamaram | மாழிமரம் |
| 35 | <i>Mitragyna parvifolia</i> | Kadambu | கடம்பு |
| 36 | <i>Morinda pubescens</i> | Nuna | நுனா |
| 37 | <i>Morinda citrifolia</i> | Vellai Nuna | வெள்ளை நுனா |
| 38 | <i>Phoenix sylvestre</i> | Eachai | ஏச்சா |
| 39 | <i>Pongamia pinnat</i> | Pungam | புங்கம் |


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SEIAA-TN

| | | | |
|----|--------------------------------|-------------------------|-----------------------|
| 40 | <i>Premna mollissima</i> | Munnai | முள்ளை |
| 41 | <i>Premna serratifolia</i> | Narumunnai | நறு முள்ளை |
| 42 | <i>Premna tomentosa</i> | Malapoovarasu | மலை பூவரசு |
| 43 | <i>Prosopis cinerea</i> | Vanni maram | வள்ளி மரம் |
| 44 | <i>Pterosarpus maritimum</i> | Vengai | வேங்கை |
| 45 | <i>Pterospermum canescens</i> | Vennangu, Tada | வேண்டாங்கு |
| 46 | <i>Pterospermum xylocarpum</i> | Folavu | புலவு |
| 47 | <i>Putranjiva roxburghii</i> | Karpala | கற்பலா |
| 48 | <i>Salvadora persica</i> | Ugaa Maram | ஊகா மரம் |
| 49 | <i>Sapindus emarginatus</i> | Marupungan, Soapukai | மரப்பங்கை சோபுகாய் |
| 50 | <i>Saraca asoca</i> | Asoca | அசோகா |
| 51 | <i>Strobilus asper</i> | Piray maram | பிராய் மரம் |
| 52 | <i>Strychnos nuxvomica</i> | Yetti | எட்டி |
| 53 | <i>Strychnos potatorum</i> | Therthang Kottai | தேத்தாள் கொட்டை |
| 54 | <i>Syzygium cumini</i> | Naval | நாவல் |
| 55 | <i>Terminalia belleric</i> | Thandri | தாந்தி |
| 56 | <i>Terminalia arjuna</i> | Ven marudhu | வேன் மருது |
| 57 | <i>Toona ciliata</i> | Sandhana vembu | சந்தா வேம்பு |
| 58 | <i>Thespesia populnea</i> | Puvarasu | பூவரசு |
| 59 | <i>Walsuratrifoliata</i> | valbura | வால்புரா |
| 60 | <i>Wrightia tinctoria</i> | Veppalai | வேப்பலை |
| 61 | <i>Pithecellobium dulce</i> | Kodukkapuli | கொடுக்காப்பளி |

Discussion by SEIAA and the Remarks:-


The proposal was placed in the 557th Authority meeting held on 08.10.2022. 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 & normal condition in addition to the following conditions in 'Annexure B' of this minutes.

Annexure 'B'


1. Cluster Management Committee, which must include all the proponents in the cluster as members including the existing as well as proposed quarry.
2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.

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SEIAA-TN


4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.
7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & bio-diversity.
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.
11. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
12. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.
13. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.


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14. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplanted of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.
15. Impact on surrounding agricultural fields around the proposed mining Area.
16. Erosion Control measures.
17. Impact on soil flora & vegetation around the project site.
18. 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.
19. 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.
20. 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.
21. 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.
22. 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.
23. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
24. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
26. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
27. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
28. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.


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29. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
31. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
32. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
33. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
34. 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.
35. 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.
36. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
37. 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.
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.
39. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.


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40. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.
41. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of



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the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.

- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.


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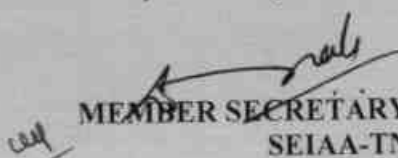
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic


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- aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
 - 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
 - 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
 - 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
 - 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
 - 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
 - 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

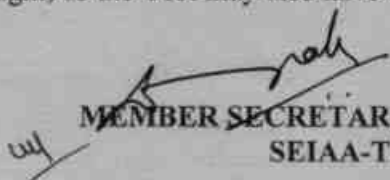

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- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative


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SEIAA-TN

dimensions may be given with time frames for implementation.

- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(T) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to


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be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

- i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.


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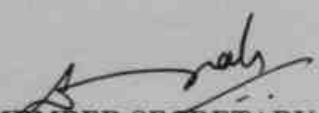
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics


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irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

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


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Coimbatore District.
7. The EO/BDO, Pachapalayam Village, Sulur Taluk, Coimbatore District
8. Stock File.

From
Dr.A. Kalaiselvan,
Assistant Director(i/c),/
Joint Director,
Dept of Geology and Mining,
Coimbatore.

To
Tvl.Gomuki Blue Metals L.L.P.,
S.F.No.238/2,
Periyakuyili,
Pachapalayam,
Sulur Taluk,
Coimbatore District.

Rc.No. 325/Mines / 2018 dated: 16 .10.2019

Sir,

Sub: Mines & Minerals - Minor Mineral - Coimbatore District - Sulur Taluk - Pachapalayam Village - patta land Survey No.238/2(P) (0.37.0 hec), 239/1B(0.17.0 hec), 239/2B (0.02.0 hec), 240/2B(P)(0.02.0 hec), 241/1 (P) (0.27.5 hec), 241/2 (P) (0.59.2 hec), 241/3 (P) (0.56.5 hec) & 241/4 (P) (0.46.7 hec) - over an extent of 2.47.9 hectares - Application preferred by Tvl.Gomuki Blue Metals for quarrying Roughstone and Gravel - Precise area communicated - Details of quarries situated within 500 meter radial distance - furnished - reg.

Ref: 1. District Collector, Coimbatore Letter Rc.No.325/Mines /2018, Dated: 11.01.2019
2. Tvl.Gomuki Blue Metals letter dated: 1.08.2019.

I invite kind attention to the reference cited wherein Tvl.Gomuki Blue Metals L.L.P., have been issued precise area for the grant of quarry lease for Rough Stone and Gravel over an extent of 2.47.9 hectares of patta land in Survey No. 238/2(P), 239/1B, 239/2B, 240/2B(P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) of Pachapalayam Village, Sulur Taluk, Coimbatore District.

In the reference 2nd cited Tvl.Gomuki Blue Metals L.L.P., have requested to furnish the details of quarries situated in a 500 meters radial distance from the proposed area.

In this connection the details of other quarries situated within a 500 meters radial distance from the proposed quarry is furnished below.

i) Existing Quarries

| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease period | Remarks |
|---------|----------------------------|--|-----------------|--------------------------------|---------|
| 1 | Thiru. R.S.Senthilkumar | Pachapalayam 285/3, 286/2 | 3.15.0 | 11.11.2017 to 10.11.2022 | |
| 2 | Thiru. K.Chinnasamy | Pachapalayam 282/1A 282/1B | 1.73.0 | 06.12.2017 to 05.12.2022 | |
| 3 | Thiru. T.Ragupathi | Pachapalayam 273/1B 273/2B 273/3E 274/1A 274/2A | 2.62.0 | 03.01.2019 to 02.01.2024 | |
| 4 | Thiru. V.Shanmugam | Pachapalayam 238/1(P) | 1.00.0 | 25.01.2019 to 24.01.2024 | |

ii) Expired Quarries

| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease period | Remarks |
|---------|----------------------------|--|-----------------|--------------------------------|---------|
| 1 | Thiru. V.Gopalakrishnan | Pachapalayam 282/2A2 | 1.28.5 | 02.06.2014 to 01.06.2018 | |
| 2 | Thiru.B.Sakthivel | Pachapalayam 285/1B1 | 1.72.5 | 08.08.2012 to 07.08.2016 | |
| 3 | Thiru. V.Shanmugam | Pachapalayam 236/2A 238/1 239/1A,2A 240/1,2A | 3.73.0 | 10.12.2009 to 09.12.2014 | |

iii) **Abandoned Quarries**

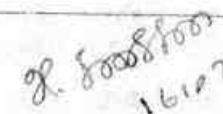
| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease period | Remarks |
|-----------|-------------------|--------------------|-----------------|--------------|---------|
| ---NIL--- | | | | | |

iv) **Proposed quarries**

| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease period | Remarks |
|---------|-------------------------|--|-----------------|--------------|--------------|
| 1 | Tvl. Gomuki Blue Metals | Pachapalayam 238/2(P) 239/1B 239/2B 240/2B (P) 241/1 (P) 241/2 (P) 241/3 (P) 241/4 (P) | 2.47.9 | - | Subject area |

v) **Future Proposed quarries**

| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease period | Remarks |
|-----------|-------------------|--------------------|-----------------|--------------|---------|
| ---NIL--- | | | | | |


 16/10/19
 Assistant Director (i/c)/
 Joint Director
 Dept. of Geology and Mining,
 Coimbatore.


 16/10/19

From
Dr.A. Kalaiselvan,
Joint Director /
Assistant Director(i/c),
Dept of Geology and Mining,
Coimbatore.

To
Tvl.Gomuki Blue Metals L.L.P.,
S.F.No.238/2,
Periyakuyili,
Pachapalayam,
Sulur Taluk,
Coimbatore District.

Rc.No.325/Mines/2018, Dated: 04.02.2019

Sir,

Sub: Mines & Minerals - Minor Mineral - Coimbatore District - Sulur Taluk - Pachapalayam Village - patta land Survey No.238/2(P) (0.37.0 hec), 239/1B(0.17.0 hec), 239/2B (0.02.0 hec), 240/2B(P)(0.02.0 hec), 241/1 (P) (0.27.5 hec), 241/2 (P) (0.59.2 hec), 241/3 (P) (0.56.5 hec) & 241/4 (P) (0.46.7 hec) - over an extent of 2.47.9 hectares - Application preferred by Thiru.S.Mohanraj Partner of Tvl.Gomuki Blue Metals for quarrying Roughstone and Gravel - Submission of mining plan for approval - Approved - Regarding.

- Ref: 1. Quarry lease application dated 04.06.2018 preferred by Thiru.S.Mohanraj Partner of Tvl.Gomuki Blue Metals L.L.P., S.F.No.238/2,Periyakuyili, Pachapalayam, Sulur Taluk, Coimbatore District.
2. District Collector, Coimbatore Letter Rc.No.325/Mines /2018, Dated: 11.01.2019 .
3. Mining Plan submitted by Tvl.Gomuki Blue Metals dated: 24.01.2019.

In response to the precise area communicated by the District Collector, Coimbatore, the applicant Thiru.S.Mohanraj Partner of Tvl.Gomuki Blue Metals L.L.P., vide reference 3rd cited has submitted three copies of mining plan for the area applied for the grant of quarry lease for Roughstone and Gravel over an extent of 2.47. 9 hectares of patta land in Survey No.238/2(P) (0.37.0 hec), 239/1B(0.17.0 hec), 239/2B (0.02.0 hec), 240/2B(P)(0.02.0 hec), 241/1 (P) (0.27.5 hec), 241/2 (P) (0.59.2 hec), 241/3 (P) (0.56.5 hec) & 241/4 (P) (0.46.7 hec) of Pachapalayam village, Sulur Taluk, Coimbatore District.

2. The mining plan submitted for the grant of quarry lease for Roughstone and Gravel over an extent of 2.47.9 hectares of patta land in Survey No.238/2(P) (0.37.0 hec), 239/1B(0.17.0 hec), 239/2B (0.02.0 hec), 240/2B(P)(0.02.0 hec), 241/1 (P) (0.27.5 hec), 241/2 (P) (0.59.2 hec), 241/3 (P) (0.56.5 hec) & 241/4 (P) (0.46.7 hec) of Pachapalayam village, Sulur Taluk, Coimbatore District has been verified in detail.

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

- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (ii) This approval of the mining plan does not in any way imply the approval of the Government in terms or any other provisions of the Mines and Minerals (Development and Regulation) Amended Act, 2015, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Explosives Act, 1884 (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv) As per the District Collector, Coimbatore letter Rc.No.325/Mines/2018, Dated:11.01.2019 the following conditions have been incorporated in the Mining Plan .

- a) A safety distance of 7.5 meters should be provided for adjacent patta land from the applied area.
- b) A safety distance of 10 meters should be provided for Cart track and Village road respectively.
- c) A safety distance of 50 meters Should be provided for Low tension EB Line and EB Transformer respectively.
- d) EB line passing on the Eastern side should be shifted to 50 meters away from the lease applied area before grant of lease.
- (v) Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

Encl: Two copy of Approved Mining Plan.

28 3000/8001
11.12.19
Joint Director /
Assistant Director (i/c),
Dept. of Geology and Mining,
Coimbatore.

Copy submitted to:

10/12/19

The Director of Geology and Mining, Chennai-32.



MINING PLAN FOR PACHAPALAYAM ROUGH STONE AND GRAVEL QUARRY

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED UNDER TAMIL NADU MINOR MINERAL
CONCESSION RULES, 1959)

Lease period = Five years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 2.47.9ha
S.F.NO's : 238/2 (P), 239/1B, 239/2B, 240/2B
(P), 241/1 (P), 241/2 (P), 241/3 (P) &
241/4 (P)
VILLAGE : PACHAPALAYAM
TALUK : SULUR
DISTRICT : COIMBATORE
STATE : TAMIL NADU

FOR

APPLICANT

Tvl.Gomuki Blue Metals L.L.P.,

S.F.No.238/2, Periyakuyili,
Pachapalayam,
Sulur Taluk,
Coimbatore.

PREPARED BY

Dr.P.Thangaraju, M.Sc., Ph.D.,
Qualified Person

Regd.off. No.17, Advaita Ashram Road,
Alagapuram, Salem-636 004.
Cell: 94433 56539.
E-Mail: infogeoexploration@gmail.com

Tvl.Gomuki Blue Metals L.L.P.,

S.F.No.238/2, Periyakuyili,

Pachapalayam,

Sulur Taluk,

Coimbatore.



CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of Rough stone and Gravel Quarry lease applied area in S.F.No's.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) over an extent of 2.47.9ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared by

Dr.P.Thangaraju, M.Sc., Ph.D.,

Qualified person

We request the District Collector, Coimbatore to make further correspondence regarding the modification of the Mining Plan with the said qualified person at his following address.

Dr.P.Thangaraju, M.Sc., Ph.D.,

Regd.off.No.17,

Advaitha Ashram Road,

Alagapuram, Salem-636 004.

Cell: 94433 56539.

We hereby undertake that all the modifications, if any made in the mining plan by the qualified person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Signature of the Applicant
For Tvl.Gomuki Blue Metals L.L.P.,

Place: Coimbatore

Date: 12.01.2019

Tvl.Gomuki Blue Metals L.L.P.,

S.F.No.238/2, Periyakuyili,

Pachapalayam,

Sulur Taluk,

Coimbatore.



DECLARATION OF THE APPLICANT

The Mining Plan in respect of Rough stone and Gravel Quarry lease applied area in S.F.No's.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) over an extent of 2.47.9ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared in full consultation with me.

We have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to Quarry.

Signature of the Applicant
For Tvl.Gomuki Blue Metals L.L.P.,

Place: Coimbatore

Date: 12.01.2019



CERTIFICATE

Certified that I. **Dr.P.THANGARAJU, M.Sc., Ph.D.**, having an office at Regd.off.No.17, Advaita Ashram Road, Alagapuram, Salem – 636 004, am a Post Graduate in Geology (M.Sc.Geology) from Madras University, Chennai and I worked in the field of Geology in a role of Geologist.

Rule 15(I)(a) and (b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) Concession Rules 2016 stipulates the eligibility for preparing Mining plans as “(I)(a) a post graduate degree in Geology granted by a university established” and (I)(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 (I)(a) and (I)(b) of 15 of the said Rules, I am eligible to prepare Mining Plans for both Major and Minor Minerals.

Accordingly, I prepare this Mining Plan in respect of Rough stone and Gravel Quarry lease applied area in S.F.No’s.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) over an extent of 2.47.9ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State for **Tvl.Gomuki Blue Metals L.L.P.**, S.F.No.238/2, Periyakuyili, Pachapalayam, Sulur Taluk, Coimbatore. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person

Dr. P.Thangaraju, M.Sc., Ph.D.,

Place: Salem

Date: 23.01.2019

Dr. P.Thangaraju, M.Sc., Ph.D.,

Regd.off.No.17,

Advaita Ashram Road,

Alagapuram, Salem-636 004.

Cell: 94433 56539.



CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959 have been observed in the preparation of Mining Plan for Rough stone and Gravel Quarry lease applied area in S.F.No's.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) over an extent of 2.47.9ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared for

TvI.Gomuki Blue Metals L.L.P.,

S.F.No.238/2, Periyakuyili,

Pachapalayam,

Sulur Taluk,

Coimbatore.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of the District Collectorate, Coimbatore, Tamilnadu for such permissions/ exemptions / relaxations and approvals.

It is also certified that information furnished in the above Mining plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

Dr. P.Thangaraju, M.Sc., Ph.D.,

Place: Salem

Date: 23.01.2019

Dr. P.Thangaraju, M.Sc., Ph.D.,

Regd.off.No.17,

Advaitha Ashram Road,

Alagapuram, Salem-636 004.

Cell: 94433 56539.



CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations and Orders made there under have been observed in the preparation of Mining Plan for Rough stone and Gravel Quarry lease applied area in S.F.No's.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) over an extent of 2.47.9ha in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamilnadu State has been prepared for

Tvl.Gomuki Blue Metals L.L.P.,

S.F.No.238/2, Periyakuyili,

Pachapalayam,

Sulur Taluk,

Coimbatore.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of Director General of Mines Safety (DGMS), No. 5, IInd Street, Block – AA, Anna Nagar, Chennai-40, Tamilnadu for such permissions/exemptions/relaxations and approvals.

It is also certified that information furnished in the mining plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

A handwritten signature in black ink, appearing to read 'P. Thangaraju'.

Dr. P.Thangaraju, M.Sc., Ph.D.,

Place: Salem

Date: 23.01.2019



LIST OF CONTENTS

| S. No. | Description | Page No. |
|--------|--|----------|
| 1.0 | Introduction and Executive Summary | 1 |
| 2.0 | General Information | 4 |
| 3.0 | Location | 5 |
| | <u>PART-A</u> | |
| 4.0 | Geology and Mineral Reserves | 7 |
| 5.0 | Mining | 11 |
| 6.0 | Blasting | 15 |
| 7.0 | Mine Drainage | 17 |
| 8.0 | Other Permanent Structures | 18 |
| 9.0 | Employment Potential & Welfare Measures | 20 |
| | <u>PART-B</u> | |
| 10.0 | Environment Management Plan | 22 |
| 11.0 | Mine Closure Plan | 28 |
| 12.0 | Any Other Details Intend to Furnish by the Applicant | 30 |

LIST OF ANNEXURES



| S. No. | Description | Annx.no. |
|--------|--------------------------------------|----------|
| 1. | Copy of Precise Area Communication | I |
| 2. | Copy of FMB | II |
| 3. | Copy of Combined map | III |
| 4. | Copy of Patta | IV |
| 5. | Copy of Adangal | V |
| 6. | Copy of A-Register | VI |
| 7. | Copy of LLP Agreement | VII |
| 8. | Copy of Consent Document | VIII |
| 9. | Copy of ID Proof | IX |
| 10. | Copy of Qualified Person Certificate | X |

LIST OF PLATES

| S. No | Description | Plate No |
|-------|---|----------|
| 1. | LOCATION PLAN | I |
| 2. | TOPOSKETCH OF QUARRY LEASE APPLIED AREA FOR 10KM RADIUS | IA |
| 3. | ENVIRONMENTAL & LANDUSE PLAN | IB |
| 4. | KEY PLAN | IC |
| 5. | QUARRY LEASE & SURFACE PLAN | II |
| 6. | TOPOGRAPHY, GEOLOGICAL PLAN YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS | III |
| 7. | CONCEPTUAL PLAN & SECTIONS | IV |

**MINING PLAN FOR PACHAPALAYAM ROUGH STONE AND GRAVEL QUARRY
OVER AN EXTENT OF 2.47.9ha IN PACHAPALAYAM VILLAGE, SULUR TALUK,
COIMBATORE DISTRICT, TAMILNADU**

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED UNDER TAMIL NADU MINOR MINERAL
CONCESSION RULES, 1959)



1.0 INTRODUCTION AND EXECUTIVE SUMMARY

The Mining Plan and Environment Management plan is prepared for Tvl.Gomuki Blue Metals L.L.P., S.F.No.238/2, Periyakuyili, Pachapalayam, Sulur Taluk, Coimbatore, Tamilnadu State.

The applicant applied to quarry Rough stone and Gravel quarry in the S.F.No's.238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) over an extent of 2.47.9ha in Pachapalayam Village, Sulur Taluk, Coimbatore District as per the Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959.

The application was processed by the District Collector, Coimbatore and passed a letter vide **Re.No.325/Mines/2018, Dated: 11.01.2019** submit Mining Plan for the approval in Department of Geology and Mining, Coimbatore, Environment Clearance from the Appropriate Authorities, Tamil Nadu.

In order to ensure compliance of the order of the Honorable Supreme Court Dated: 27.02.2012 in I.A.No.12-13 of 2011 in Special Leave Petition SLP (C) No 19628-19629 of 2009, it has been now decided that all mining projects of minor minerals including their renewal irrespective of sizes of the lease would hence forth require prior Environment clearance mining project within the lease applied area up to less than 100ha including projects or minor mineral with lease applied area less than 5ha would be treated as category B as defined in the EIA notification 2006 and will be considered by the state notified by MoEF as prescribed procedure prescribed under EIA notification 2006.

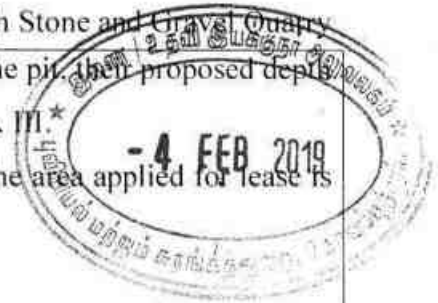
In the above circumstances the applicant through his consultant is hereby preparing the mining plan for approval and subsequent submission of Form-I and Pre-feasibility report to obtain Environment clearance from the Appropriate Authorities, Tamilnadu, Rough stone and Gravel quarry. This mining plan is prepared by considering the TNMMCR, 1959 and as per the EIA Notification 2006 and it are subsequent Amended and judgments up till 14.08.2018.

Short Notes of Mining plan:

- a. Village Panchayat - Pachapalayam
- b. Panchayat Union - Sulur
- c. The Geological Resources are **8,60,510m³** of Rough stone and **49,172m³** of Gravel in the entire area.
- d. The Total Mineable Reserves are **3,11,184m³** of Rough stone and **5,576m³** of Gravel in the entire area.
- e. The proposed quantity of reserves/ (level of production) to be mined are **3,11,184m³** of Rough stone for five years and **5,576m³** of Gravel for three years in the entire area.
- f. Total extent of the lease applied area is about 2.47.9ha.
- g. Topography of the area = The area is exhibits plain terrain
- h. Existing Pit Depth = 15m below ground level ✓
- i. Proposed Depth of mining = 37m below ground level ✓
- j. This Mining Plan period = Five years
- k. It is a fresh application. The lease area has been quarried in earlier.
- l. Method of mining / level of mechanization.
Opencast mechanized method, the quarry operation involves shallow jack hammer drilling, slurry blasting.
- m. Type of machineries proposed in the quarrying operation.
Excavators attached with rock breaker (Rental Basis).
Jack hammer, Compressor (Diesel drive) (4 Jack Hammer capacity) (Rental Basis).
- n. No trees will be uprooted due to this quarrying operation.
- o. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough stone and Gravel.
- p. There is No Export of this Rough stone and Gravel.
- q. Topo sketch covering 10Km and 1Km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archeological importance, places of worships is marked and enclosed as Plate No. IA and IB.
- r. The lease applied area is about 2.47.9ha bounded by seventeen corners; the corners are designated as 1-17 clock-wise from the Southwestern corner the Co – ordinates for the all the corners are clearly marked in the Topography, Geological Plan and section enclosed as Plate No-III.



- s. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depths and maximum area of proposed quarrying are enclosed as Plate No. III.*
- t. General conditions will not be applicable for the proposed area. The area applied for lease is 10Km away from the,
- i) Interstate Boundary,
 - ii) Protected area under wild life protection ACT 1972,
 - iii) Critically polluted areas as identified by CPCB,
 - iv) Notified Eco sensitive areas.
- u. There are no wastages anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- v. Around 33 employees are deploying in the quarrying operation.
- w. Total Cost of the project is about **Rs.63,09,792/-**.



2.0 GENERAL INFORMATION**2.1 a) Name of the Applicant : Tvl.Gomuki Blue Metals L.L.P.;****b) Address of the Applicant (With Phone No and Aadhaar No)**

Address : Tvl.Gomuki Blue Metals L.L.P.,
S.F.No.238/2, Periyakuyili,
Pachapalayam,
Sulur Taluk,
Coimbatore.

Pin Code : 641 201

Mobile No : 98940 36376

Aadhaar No : 4413 0104 8480

c) Status of the Applicant (Individual / Company / Firm):

The applicant is a Partnership Firm. Thiru.S.Subramaniam, Thiru.S.Shanmuganand and Thiru.S.Moganraj are the Partners and Signing Authorization of the Firm. Refer Tvl.Gomuki Blue Metals L.L.P. Agreement as Annexure No. VII.

2.2 a) Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough stone and Gravel only.

b) Precise area communication letter details received from the Competent Authority of the Government:

The precise area communication letter was received from the District Collector, Coimbatore vide **Rc.No.325/Mines/2018, Dated: 11.01.2019** to obtain mining plan and obtain Environment Clearance from the Appropriate Authorities, Tamilnadu./

c) Period of permission / lease to be granted:

The applicant applied permission to quarry Rough Stone and Gravel for the period of Five years/ The District Collector considered for the Grant of quarry lease for the period of Five years for Rough stone and three years for Gravel./

d) Name and address of the Qualified Person preparing the mining plan:

Name : **Dr.P.Thangaraju, M.Sc., Ph.D.,**
Address : Regd. off. New No.17,
Advaita Ashram Road,
Alagapuram, Salem – 636 004.
Tele Fax : 0427- 2431989 (Office)
Cell Phone No : 94433 56539
Email : infogeoexploration@gmail.com

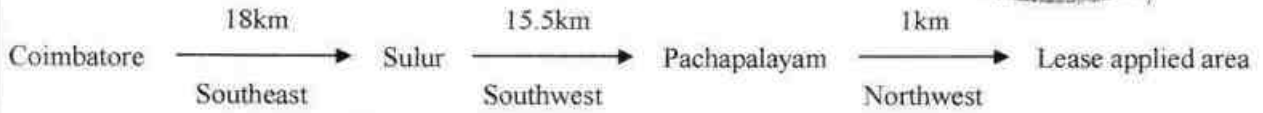




3.0 LOCATION

a) Details of the area with location map:

The lease applied area is about 18km Southeastern side of Coimbatore, 15.5km Southwestern side of Sular and 1km Northwestern side of Pachapalayam Village.



Location Map of the Lease Applied area

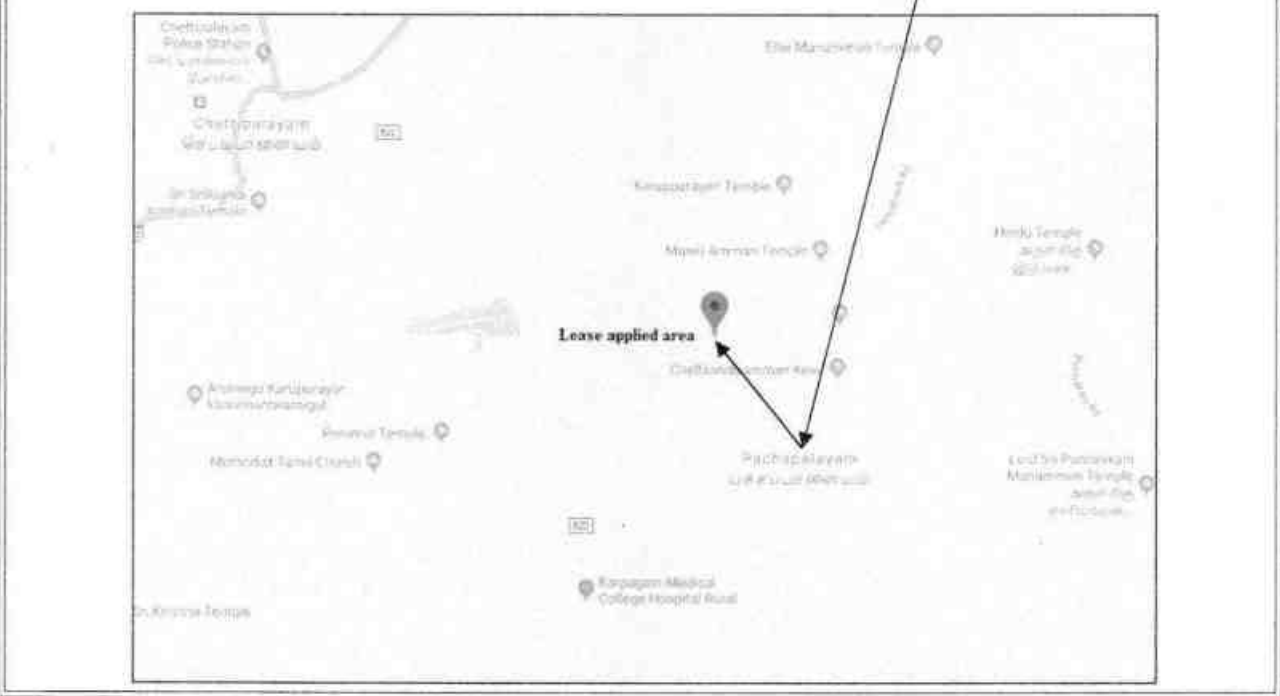
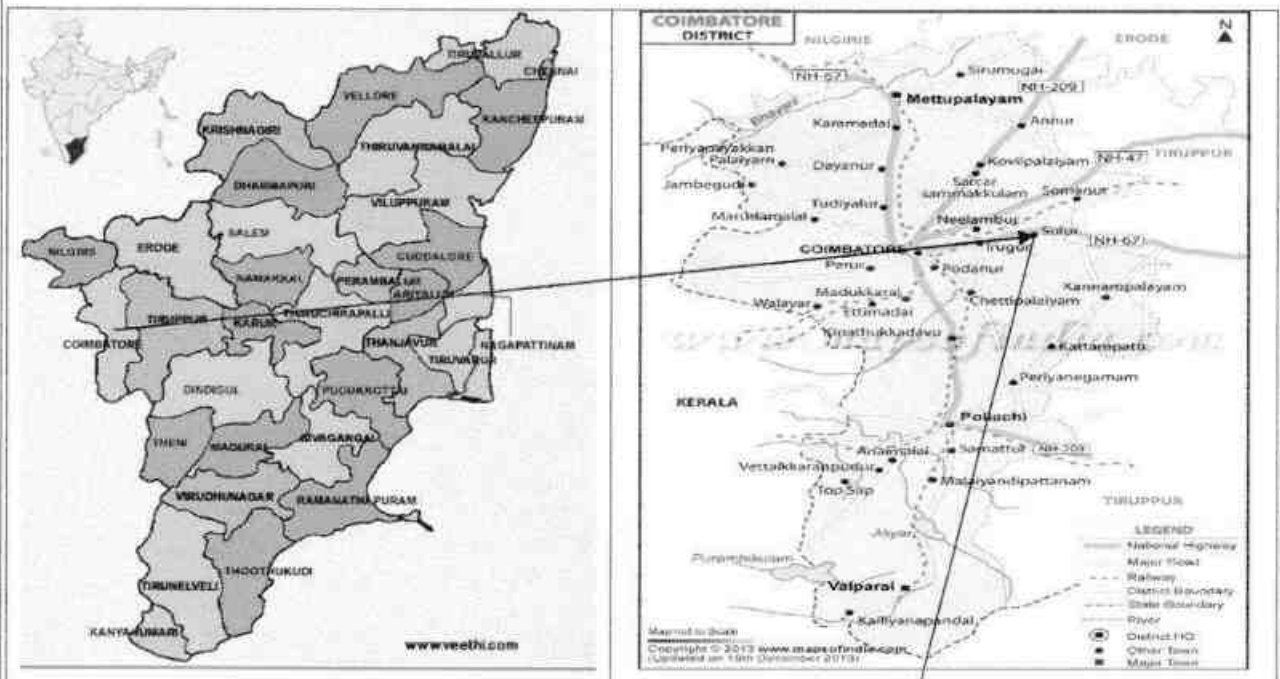


TABLE - 1

| District | Taluk | Village | S.F. No. | Lease Applied Area in ha. |
|---------------------|-------|--------------|------------|---------------------------|
| Coimbatore | Sulur | Pachapalayam | 238/2 (P) | |
| | | | 239/1B | 0.17.0 |
| | | | 239/2B | 0.02.0 |
| | | | 240/2B (P) | 0.02.0 |
| | | | 241/1 (P) | 0.27.5 |
| | | | 241/2 (P) | 0.59.2 |
| | | | 241/3 (P) | 0.56.5 |
| | | | 241/4 (P) | 0.46.7 |
| Total Extent | | | | 2.47.9ha |



b) Classification of the area (Ryotwari/ Poramboke / others):

It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation.

c) Ownership / Occupancy of the applied area (surface right):

It is a Patta land, Registered in the name of the applicant Thiru.S.Moganraj (Tvl.Gomuki Blue Metals L.L.P.), vide Patta No.1438 (S.F.No.238/2) and Thiru.S.Shanmuganand, vide Patta No.1439 (S.F.No's.239/1B (P), 239/2B (P), 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P)). The applicant has been obtain consent from the Pattadhar. Refer the Patta & Consent copy as Annexure Nos. IV & VIII.

d) Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No: **58 - F/01** Latitude between: **10°53'55.84"N** to **10°54'02.25"N** and Longitude between: **77°04'02.13"E** to **77°04'07.94"E** on WGS datum-1984. Please refer the Plate Nos. I to II.

e) Existence of public road / Railway line, if any nearby and approximate distance:

The metal road is situated on the Northern side of the applied area which connects the village road at a distance 30m.

Multiple road access is available from the quarry to state highways and National Highway, no villages are enrooted hence the traffic density is not much more due to the transportation of Rough stone.

The same road will be maintained and utilized for haulage, besides trees will be planted on the either side of the road to prevent dust and noise propagation to the nearby areas.

The Nearest Railway line is Coimbatore - Pollachi which is about 3.5km on the Western side of the area.



PART - A

4.0 GEOLOGY AND MINERAL RESERVES

4.1 Brief description of the Topography and general Geology of the area (with plans):

The lease applied area exhibits plain terrain. The area has gentle sloping towards Southwestern side. The altitude of the area is 411m (Max) above Mean sea level. The area is covered by the Gravel which is about 2m thickness. Massive Charnockite is found after 2m (Gravel) which is clearly inferred from the existing quarry pits.

The Water level in the surrounding area is 55-50m below general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 850mm during monsoon.



Topographical View of lease applied area

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body N30°E – S30°W with dipping towards SE60°.

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

| ↑ | AGE | FORMATION |
|---|------------------------|--|
| | Recent | - Quaternary formation (Gravel) |
| | -----Unconformity----- | |
| | Archaean | - Charnockite Peninsular Gneiss complex |



4.2 Details of exploration already carried out if any:

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the Regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Coimbatore District. Besides, the Qualified Person and his team members made a detailed geological of the proposal area. The Rough stone formation is clearly inferred from the existing quarry pits.

4.3 Estimation of Reserves:

a) Geological reserves with geological sections on a scale of 1:1000 / 1:2000

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,

Totally five sections have been drawn, two sections are drawn Length wise as (X-Y) & (X1-Y1) and another three sections are drawn Width wise as (A-B), (C-D) & (E-F) to cover the maximum area considered for lease.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in 1:1000 and vertical as 1:1000 scale (please refer the Geological plan and sections Plate No- III). As the sale of Rough stone are in terms of cubic metres (Volume) only and not in terms of tonnage.

Geological Resources (Plate No. III):

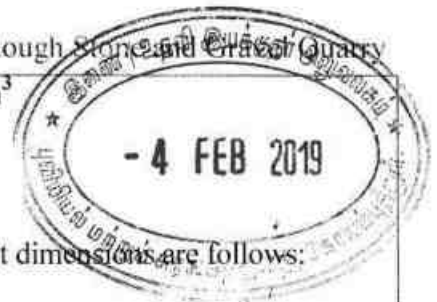
The Geological Resources of Rough Stone and Gravel Quarry are calculated up to a maximum depth of 37m below ground level.

TABLE-2

GEOLOGICAL RESOURCES

| Section | Bench | Length in (m) | Width in (m) | Depth in (m) | Geological Resources in Rough stone (m ³) | Gravel formation (m ³) |
|--------------------|--------------|------------------|-----------------|-----------------|--|---------------------------------------|
| XY-AB | I | 97 | 76 | 2 | - | 14744 |
| | II | 97 | 76 | 5 | 36860 | - |
| | III | 97 | 76 | 5 | 36860 | - |
| | IV | 97 | 76 | 5 | 36860 | - |
| | V | 97 | 76 | 5 | 36860 | - |
| | VI | 97 | 76 | 5 | 36860 | - |
| | VII | 97 | 76 | 5 | 36860 | - |
| | VIII | 97 | 76 | 5 | 36860 | - |
| | Total | | | | | 258020 |
| XY-CD | I | 47 | 70 | 2 | - | 6580 |
| | II | 47 | 70 | 5 | 16450 | - |
| | III | 47 | 70 | 5 | 16450 | - |
| | IV | 47 | 70 | 5 | 16450 | - |
| | V | 47 | 70 | 5 | 16450 | - |
| | VI | 47 | 70 | 5 | 16450 | - |
| | VII | 47 | 70 | 5 | 16450 | - |
| | VIII | 47 | 70 | 5 | 16450 | - |
| | Total | | | | | 115150 |
| X1Y1-AB | I | 54 | 60 | 2 | - | 6480 |
| | II | 54 | 60 | 5 | 16200 | - |
| | III | 54 | 60 | 5 | 16200 | - |
| | IV | 54 | 60 | 5 | 16200 | - |
| | V | 54 | 60 | 5 | 16200 | - |
| | VI | 54 | 60 | 5 | 16200 | - |
| | VII | 54 | 60 | 5 | 16200 | - |
| | VIII | 54 | 60 | 5 | 16200 | - |
| | Total | | | | | 113400 |
| X1Y1-CD | I | 59 | 101 | 2 | - | 11918 |
| | II | 59 | 101 | 5 | 29795 | - |
| | III | 59 | 101 | 5 | 29795 | - |
| | IV | 59 | 101 | 5 | 29795 | - |
| | V | 59 | 101 | 5 | 29795 | - |
| | VI | 59 | 101 | 5 | 29795 | - |
| | VII | 59 | 101 | 5 | 29795 | - |
| | VIII | 59 | 101 | 5 | 29795 | - |
| | Total | | | | | 208565 |
| X1Y1-EF | I | 45 | 105 | 2 | - | 9450 |
| | II | 45 | 105 | 5 | 23625 | - |
| | III | 45 | 105 | 5 | 23625 | - |
| | IV | 45 | 105 | 5 | 23625 | - |
| | V | 45 | 105 | 5 | 23625 | - |
| | VI | 45 | 105 | 5 | 23625 | - |
| | VII | 45 | 105 | 5 | 23625 | - |
| | VIII | 45 | 105 | 5 | 23625 | - |
| | Total | | | | | 165375 |
| Grand Total | | | | | 860510 | 49172 |



Total Geological Resources of Rough Stone : 8,60,510m³Total Geological Resources of Gravel : 49,172m³**Existing Pit Dimension:**

The lease applied area has been quarried in earlier the existing pit dimensions are follows:

TABLE-3

| Pit | Length in m (max) | Width in m (max) | Depth in m (max) |
|-----|-------------------|------------------|----------------------------|
| I | 104 | 101.5 (Avg) | 2m below the ground level |
| II | 81 | 68 | 15m below the ground level |

Available Mineable Reserves:

The available mineable reserves are calculated after leaving 7.5m safety distance from the Patta Land, 10m safety distance from the Cart Track & Village Road, 50m safety distance from the Transformer & Power line and Bench loss.

TABLE-4

| MINEABLE RESERVES | | | | | | |
|-------------------|-------|---------------|--------------|--------------|--|------------------------------------|
| Section | Bench | Length in (m) | Width in (m) | Depth in (m) | Mineable Reserves in Rough stone (m ³) | Gravel formation (m ³) |
| XY-AB | III | 6 | 10 | 2 | 120 | - |
| | III | 19 | 10 | 3 | 570 | - |
| | IV | 13 | 10 | 1 | 130 | - |
| | IV | 37 | 21 | 2 | 1554 | - |
| | IV | 70 | 59 | 2 | 8260 | - |
| | V | 65 | 54 | 5 | 17550 | - |
| | VI | 60 | 49 | 5 | 14700 | - |
| | VII | 55 | 44 | 5 | 12100 | - |
| | VIII | 50 | 39 | 5 | 9750 | - |
| Total | | | | | 64734 | - |
| XY-CD | II | 30 | 57 | 5 | 8550 | - |
| | III | 25 | 52 | 5 | 6500 | - |
| | IV | 20 | 47 | 5 | 4700 | - |
| | V | 15 | 42 | 5 | 3150 | - |
| | VI | 10 | 37 | 5 | 1850 | - |
| | VII | 5 | 32 | 5 | 800 | - |
| Total | | | | | 25550 | - |
| XIYI-AB | II | 36 | 47 | 5 | 8460 | - |
| | III | 31 | 42 | 5 | 6510 | - |
| | IV | 26 | 37 | 5 | 4810 | - |
| | V | 21 | 32 | 5 | 3360 | - |
| | VI | 16 | 27 | 5 | 2160 | - |
| | VII | 11 | 22 | 5 | 1210 | - |
| Total | | | | | 26510 | - |

| | | | | | | |
|--------------------|--------------|----|----|---------------|---------------|-------------|
| X1Y1-CD | I | 59 | 4 | 2 | - | - |
| | II | 59 | 89 | 5 | 26255 | - |
| | III | 59 | 84 | 5 | 24780 | - |
| | IV | 59 | 79 | 5 | 23305 | - |
| | V | 59 | 74 | 5 | 21830 | - |
| | VI | 59 | 69 | 5 | 20355 | - |
| | VII | 59 | 64 | 5 | 18880 | - |
| | VIII | 59 | 59 | 5 | 17405 | - |
| | Total | | | | 152810 | 472 |
| X1Y1-EF | I | 29 | 88 | 2 | - | 5104 |
| | II | 34 | 82 | 5 | 13940 | - |
| | III | 29 | 72 | 5 | 10440 | - |
| | IV | 24 | 62 | 5 | 7440 | - |
| | V | 19 | 52 | 5 | 4940 | - |
| | VI | 14 | 42 | 5 | 2940 | - |
| | VII | 9 | 32 | 5 | 1440 | - |
| | VIII | 4 | 22 | 5 | 440 | - |
| | Total | | | | 41580 | 5104 |
| Grand Total | | | | 311184 | 5576 | |

The available mineable reserves have been computed as **3,11,184m³** of Rough stone and **5,576m³** of Gravel at the rate of 100% recovery upto a maximum depth of 37m below ground level for a period of five years.

5.0 MINING

5.1. Method of mining (opencast / underground):

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

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 petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act - 1952.

5.2. Mode of working (mechanized, semi mechanized, manual):

The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves shallow jack hammer drilling, slurry explosives in blasting, excavation, Loading and transportation of Rough stone to the needy crusher.

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.

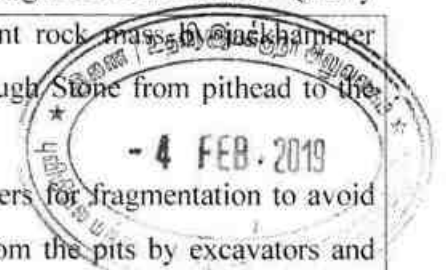
Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.

5.3. Proposed Bench Height and Width:

The bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height.

5.4. Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.):

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government. The excavated rough stone will be directly loaded into tippers to the needy customers. The Composite plan, Development plan and section indicating the Pit lay out, Green belt development are shown in Plate No-III.



Yearwise Development and Production

TABLE-5

YEARWISE PRODUCTION DETAILS

| Year | Section | Bench | Length in (m) | Width in (m) | Depth in (m) | Recoverable Reserves in Rough stone (m ³) | Gravel formation (m ³) | | |
|----------------------|--------------|--------------|---------------|--------------|--------------|---|------------------------------------|--------------|---|
| 1 st Year | X1Y1-EF | I | 29 | 88 | 2 | - | 5104 | | |
| | | II | 34 | 82 | 5 | 13940 | - | | |
| | X1Y1-CD | I | 59 | 4 | 2 | - | 472 | | |
| | | II | 59 | 89 | 5 | 26255 | - | | |
| | X1Y1-AB | II | 36 | 47 | 5 | 8460 | - | | |
| | | II | 30 | 57 | 5 | 8550 | - | | |
| Total | | | | | | 57205 | 5576 | | |
| 2 nd Year | XY-CD | III | 25 | 52 | 5 | 6500 | - | | |
| | | IV | 20 | 47 | 5 | 4700 | - | | |
| | | III | 6 | 10 | 2 | 120 | - | | |
| | XY-AB | III | 19 | 10 | 3 | 570 | - | | |
| | | IV | 13 | 10 | 1 | 130 | - | | |
| | | IV | 37 | 21 | 2 | 1554 | - | | |
| | | IV | 70 | 59 | 2 | 8260 | - | | |
| | X1Y1-AB | III | 31 | 42 | 5 | 6510 | - | | |
| | X1Y1-CD | III | 59 | 84 | 5 | 24780 | - | | |
| | X1Y1-EF | III | 29 | 72 | 5 | 10440 | - | | |
| | | Total | | | | | | 63564 | - |
| | | IV | 24 | 62 | 5 | 7440 | - | | |
| 3 rd Year | X1Y1-CD | V | 19 | 52 | 5 | 4940 | - | | |
| | | IV | 59 | 79 | 5 | 23305 | - | | |
| | V | 59 | 74 | 5 | 21830 | - | | | |
| | IV | 26 | 37 | 5 | 4810 | - | | | |
| | Total | | | | | | 62325 | - | |
| 4 th Year | X1Y1-AB | V | 21 | 32 | 5 | 3360 | - | | |
| | | VI | 16 | 27 | 5 | 2160 | - | | |
| | X1Y1-CD | VI | 59 | 69 | 5 | 20355 | - | | |
| | XY-CD | V | 15 | 42 | 5 | 3150 | - | | |
| | | VI | 10 | 37 | 5 | 1850 | - | | |
| | XY-AB | V | 65 | 54 | 5 | 17550 | - | | |
| VI | | 60 | 49 | 5 | 14700 | - | | | |
| Total | | | | | | 63125 | - | | |
| 5 th Year | XY-CD | VII | 55 | 44 | 5 | 12100 | - | | |
| | | VIII | 50 | 39 | 5 | 9750 | - | | |
| | XY-CD | VII | 5 | 32 | 5 | 800 | - | | |
| | X1Y1-AB | VII | 11 | 22 | 5 | 1210 | - | | |
| | | VII | 59 | 64 | 5 | 18880 | - | | |
| | X1Y1-CD | VIII | 59 | 59 | 5 | 17405 | - | | |
| | | VI | 14 | 42 | 5 | 2940 | - | | |
| | X1Y1-EF | VII | 9 | 32 | 5 | 1440 | - | | |
| | | VIII | 4 | 22 | 5 | 440 | - | | |
| Total | | | | | | 64965 | - | | |
| Grand Total | | | | | | 311184 | 5576 | | |



The Recoverable reserves have been computed as **3,11,184m³** of Rough Stone for five years and **5,576m³** of Gravel for three years at the rate of 100% recovery upto depth of 37m below ground level for a mining period.

The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation. Besides the rough stone locked up in benches will be exploited after obtaining necessary permission from the office of **Director General of Mine Safety**, Chennai region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

| | | |
|---|---|---|
| One lorry load | = | 6m ³ (approx.) |
| Total No of Working days | = | 260 Days per year |
| Total quantity to be removed in this five years plan period | = | 3,11,184m ³ |
| Hence total Lorry loads per day | = | 3,11,184m ³ /6m ³ |
| | = | 51864 Lorry loads |
| | = | 51864/5 years |
| | = | 10373/260 |
| | = | 39-40 Lorry loads per day |

Working hours = 8.00 am to 6.00 pm (with 1-2 pm lunch break)

5.5. **Machineries to be used:**

a) **For Mining:**

The following machineries are utilized on rental basis for the development and production work at this quarry.

TABLE - 6

I. DRILLING MACHINE:

| S.No. | Type | Nos | Dia Hole mm | Size Capacity | Motive power |
|-------|-------------|-----|-------------|---------------|----------------|
| 1 | Jack hammer | 8 | 30-35 | 1.2m to 2.0m | Compressed air |
| 2 | Compressor | 2 | - | 400 psi | Diesel Drive |

II. EXCAVATION & LOADING EQUIPMENT:

| S.No. | Type | Nos | Capacity | Motive Power |
|-------|--|-----|----------|--------------|
| 1 | Excavator with Bucket and Rock Breaker | 2 | 300 | Diesel Drive |

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

| S.No. | Type | Nos | Capacity | Motive Power |
|-------|---------|-----|-----------|--------------|
| 1 | Tippers | 4 | 10 tonnes | Diesel Drive |

5.6. Disposal of Overburden/Waste:

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas. There is no disposal of Gravel. The excavated rough stone will be directly loaded into tippers to the needy customers.

5.7. Brief note on conceptual mining plan for the entire lease period base on the geological, mining and Environment considerations:

Conceptual mining plan is prepared with an object of long term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

As the applicant has applied quarry lease for Five years, the ultimate pit limit (dimension) at the end of this mining plan period is given below:

TABLE-7

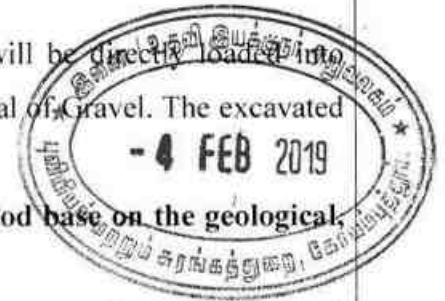
| Length (Max) (m) | Width (Max) (m) | Depth (Max) (m) |
|------------------|-----------------|------------------------|
| 136 | 154 | 37m below ground level |

Greenbelt has proposed on the 7.5m safety barrier or Panchayat roads by planting Neem/Casuarina trees of native species. All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF&CC Norms. Please refer Plate No. III & IV.

It is propose to engage any local institution to monitor the EIA and EMP during the course of quarrying operation after the grant of quarry lease.

6.0 BLASTING**6.1 Blasting pattern:**

The quarrying operation is proposed to carried out by Mechanized Opencast Method in conjunction with conventional method of mining using Jack hammer drilling and blasting for shattering effect and loosen the Rough stone.

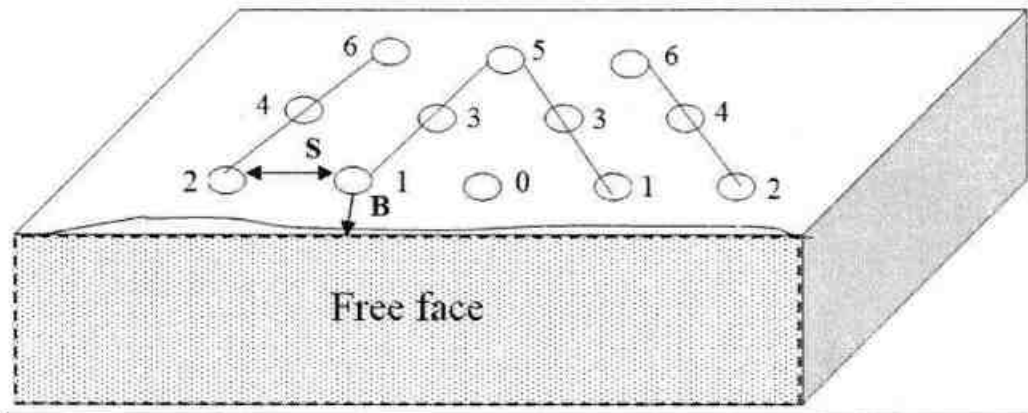


Drilling and blasting parameters are as follows:

| | | |
|-------------------------|---|----------------------|
| Depth of Each hole | : | 1.5m |
| Diameter of hole | : | 30-32mm |
| Spacing between holes | : | 1.2m |
| Burden for hole | : | 1.0m |
| Pattern of hole | : | Zigzag – Multi-rows |
| Inclination of holes | : | 80° from horizontal |
| Use of delay detonators | : | 25millisecond relays |
| Detonating fuse | : | “Detonating” Cord |



BLASTING PATTERN DRAWING



Staggered “V” Pattern of Blasting Design

| | | |
|-------------------------------|---|-----------|
| Spacing | = | 1.2m |
| Burden | = | 1.0m |
| Depth of the hole | = | 1.5m |
| No of holes proposed per day= | | 208 Holes |

6.2 Type of explosives to be used:

Small Dia. 25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.

6.3 Measures proposed to minimize ground vibration due to blasting:

The quarry is situated more than 300m from the nearby villages, Controlled blasting measures is being adopt for minimizing ground vibration and fly rock.

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

Delay detonators:

Delay blasting (millisecond delays) permits to divide the shot in to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantages of delay blasting are:

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

**Blasting program for the production per day:**

| | |
|---------------------------|------------------------------|
| No of Holes | = 208 Holes |
| Yield | = 624 Tons |
| Powder factor | = 6 Tons/Kg of explosives |
| Total explosive required | = 104 Kg-Slurry explosives |
| Charge/ hole | = 0.5 Kg |
| Blasting at day time only | = 5-6p.m (whenever required) |

6.4 Storage and safety measures to be taken while blasting:

The applicant will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies should be have the valid Blaster certificate. He will blast holes in the quarry site. After the completion of Blasting the explosives Agencies will take it out back the remaining quantity of Explosives. The magazine is available at the quarry site to temporarily store the explosives.

7.0 MINE DRAINAGE**7.1 Depth of water table (based on nearby wells and water bodies):**

The water table in the area is about 55m BGL in summer season and 50m in Rainy season which is observed from the nearby wells and the data obtained from existing private boreholes. The lease area is fully covered by Massive Charnockite formation and it is revealed from the adjacent quarries. Hence the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt.

TABLE - 8

| Type | Distance & Direction | Location |
|-----------|------------------------|--------------------------------|
| Open Well | 120m Southeastern side | 10°53'53.12"N 77°04'08.98"E |

| | | | West | 238/1, 239/1A, 239/2A & 240/2A | Patta land | 7.5m |
|----|---|------|---|-----------------------------------|------------|------|
| 7. | Reserve forest | 50m | There is no Reserve forest within the radius of 50m. | | | |
| 8. | Wild life sanctuary/ Protected area/ ECO sensitive area | 10km | There is no ECO sensitive area/Wild Life Sanctuary within the radius of 10km from the lease applied area. | | | |

9.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES

9.1 Employment potential (skilled, semi-skilled, un skilled):

The following manpower's are proposed in the mining plan to carry out ~~the~~ day-to-day quarrying activities, the same employment is maintaining aimed at the proposed production target and also to comply with the statutory provisions of the Metalliferous mines regulations, 1961.

a. Skilled labour:

| | | |
|-------------------------------|---|----|
| Mine Foreman | : | 1 |
| Blaster/mate | : | 1 |
| Excavator – Operator & Driver | : | 5 |
| Jack hammer operator | : | 16 |

b. Semi-skilled:

| | | |
|----------|---|---|
| Watchman | : | 1 |
|----------|---|---|

c. Unskilled:

| | | |
|-----------------|---|-----------|
| Labour & Helper | : | 5 |
| Cleaner | : | 4 |
| Total | : | 33 |

Allowing 10% absenteeism the man power would be around 30, the above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations. It is been ensured that the labor will not be employed less than 18 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labors engaged for quarrying operations will be insured during the quarry lease period.

9.2 Welfare Measures:

a) Drinking Water:

Packaged drinking water is available from the nearby approved water vendors in Pachapalayam which is about 1km from the Southeastern side of the lease applied area.

b) Sanitary Facilities:

Hygienic modern Sanitary Facilities will be constructed with in the safety area as semi permanent structure and it will be maintained periodically.

**7.2 Arrangements and places where the mine water is finally proposed to be discharged:**

Quarry operations are confined well above the water table during the entire lease period. If water is encountered due to rain water and seepage, the same will be pumped out by 5HP water pumps to the Green belt development areas. Besides, the water will also be used for dust suppression on haul roads during Haulage of machineries.

8.0 OTHER PERMANENT STRUCTURES (also shown in the map)**8.1 Habitations/ Villages natham:**

There is no approved habitation within 300m radius from the lease applied area.

8.2 Power Lines (HT/LT):

Power line and Transformer is situated from the Northern side of the lease applied area and 50m safety distance has been maintained and Eastern side passing the LT line will be shifted before the lease execution.

8.3 Water bodies (river, pond, lake, odai, canal, etc.):

Odai is passing about 260m from the Western side and Tank is situated about 300m from the Northwestern side of the lease applied area.

8.4 Archaeological / historical monuments:

There is no Archaeological / historical monuments within 50m radius from the lease applied area.

8.5 Road (NH, SH others):

The Nearest National Highway (NH-209) Coimbatore – Dindigul is about 7km on the Southwestern side of the lease area.

The State Highway (SH-163) Palladam - Cochin Frontier is about 3km from the Northwestern side of the lease area.

8.6 Places of worships:

There is no place of worships within the radius of 500m from the lease applied area.

8.7 Reserved forest / forest / social forest / wild life sanctuary etc.:

There is no reserved forest / forest / social forest / wild life sanctuary etc., within radius of 500m of the lease applied area.



| SALIENT FEATURES | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|--|---|-----------|---------------------|--|-----------------|--------------|---|------------|--------------|-----------------------|-----|-----------|-----------------|------------|---------------|-------------------|--|------------|------|
| S. No. | Salient Features Present around site | Prescribed safety distance | Actual Distance from the site | | | | | | | | | | | | | | | | | | |
| 1. | Railways, Highways, Reservoirs or Canal | 50m | Railway line – 3.5km (Coimbatore – Pollachi) Western side of the lease applied area. National Highway (NH-209) Coimbatore – Dindigul 7km from Southwestern side of the lease applied area. Reservoir – No reservoir within 10km radius. Canal – No Canal within 1km radius. | | | | | | | | | | | | | | | | | | |
| 2. | Village Road | 10m | Village road is 30m from the Northern side of the lease applied area. | | | | | | | | | | | | | | | | | | |
| 3. | Habitation / Village | 300m | There is no approved habitation within 300m radius from the lease applied area. Actual distance is clearly marked in the Plate No I-B. | | | | | | | | | | | | | | | | | | |
| | | | <table border="1"> <thead> <tr> <th>S. No.</th> <th>Name of the Village</th> <th>Approximate distance & Direction from lease applied area</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Chinnakuyili</td> <td>3.5km – Northeast</td> </tr> <tr> <td>2.</td> <td>Pachapalayam</td> <td>1km – Southeast</td> </tr> <tr> <td>3.</td> <td>Karacheri</td> <td>3km – Southwest</td> </tr> <tr> <td>4.</td> <td>Chettipalayam</td> <td>3.5km – Northwest</td> </tr> </tbody> </table> | S. No. | Name of the Village | Approximate distance & Direction from lease applied area | 1. | Chinnakuyili | 3.5km – Northeast | 2. | Pachapalayam | 1km – Southeast | 3. | Karacheri | 3km – Southwest | 4. | Chettipalayam | 3.5km – Northwest | | | |
| S. No. | Name of the Village | Approximate distance & Direction from lease applied area | | | | | | | | | | | | | | | | | | | |
| 1. | Chinnakuyili | 3.5km – Northeast | | | | | | | | | | | | | | | | | | | |
| 2. | Pachapalayam | 1km – Southeast | | | | | | | | | | | | | | | | | | | |
| 3. | Karacheri | 3km – Southwest | | | | | | | | | | | | | | | | | | | |
| 4. | Chettipalayam | 3.5km – Northwest | | | | | | | | | | | | | | | | | | | |
| 4. | Adjacent Patta Land | 7.5m | North – S.F.No's.240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) East – S.F.No.242 South – S.F.No's.238/2 (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) West – S.F.No's.238/1, 239/1A, 239/2A & 240/2A 7.5m safety distance has been maintained from the Patta land. | | | | | | | | | | | | | | | | | | |
| 5. | Power House, EB line (HT & LT Line) | 50m | There is no approved habitation within the 300m radius from the lease applied area. HT/LT Line – Power line and Transformer is situated from the Northern side of the lease applied area and 50m safety distance has been maintained and Eastern side passing the LT line will be shifted before the lease execution. | | | | | | | | | | | | | | | | | | |
| 6. | Boundaries of the permitted area | 7.5m | The boundaries of the permitted areas is as follows: <table border="1"> <thead> <tr> <th>Direction</th> <th>S.F.No</th> <th>Classification</th> <th>Safety Distance</th> </tr> </thead> <tbody> <tr> <td rowspan="2">North</td> <td rowspan="2">240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P)</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>LT line & Transformer</td> <td>50m</td> </tr> <tr> <td>East</td> <td>242</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>South</td> <td>238/2 (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P)</td> <td>Patta land</td> <td>7.5m</td> </tr> </tbody> </table> | Direction | S.F.No | Classification | Safety Distance | North | 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) | Patta land | 7.5m | LT line & Transformer | 50m | East | 242 | Patta land | 7.5m | South | 238/2 (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) | Patta land | 7.5m |
| Direction | S.F.No | Classification | Safety Distance | | | | | | | | | | | | | | | | | | |
| North | 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) | Patta land | 7.5m | | | | | | | | | | | | | | | | | | |
| | | LT line & Transformer | 50m | | | | | | | | | | | | | | | | | | |
| East | 242 | Patta land | 7.5m | | | | | | | | | | | | | | | | | | |
| South | 238/2 (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) | Patta land | 7.5m | | | | | | | | | | | | | | | | | | |

**c) First aid facility:**

First aid kits are kept in Mines office room, in case of such eventuality is 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 3.5km Northwestern side in Chettipalayam by a vehicle earmarked for the purpose the competent and statutory foreman/permit manager/mate will be in charge of first aid.

d) Labour Health:

Periodically medical check-up related to occupational health safety will be conducted to all the workers in applicant own cost.

e) Precautionary safety measures to the labourers:

- Helmets,
- Mine Goggles,
- Ear plugs,
- Ear muffs,
- Dust mask,
- Reflector jackets,
- Safety Shoes

As personal protective device as per the specification approved by Director of mines safety. Periodically medical check-up will be conducted for all workers for any mine health related problems. Proper training and vocational education will be given by qualified and experienced safety officer to all the employees about the safety and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically, to carry out the quarrying operations scientifically and to safe guard the men and machinery and to create awareness about conventional opencast quarrying operations.

PART - B**10.0 ENVIRONMENT MANAGEMENT PLAN****10.1 Existing Land use pattern:**

The quarry lease applied area exhibits plain terrain. The area is a dry barren land devoid of Agriculture and Habitations. The land is not used for any specific vegetation.

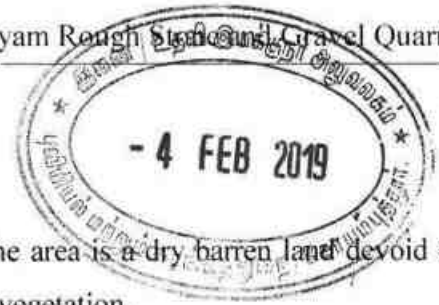
LAND USE TABLE-9

| Description | Present area in (ha) | Area at the end of this quarrying period (ha) |
|----------------------|----------------------|---|
| Area Under Quarrying | 1.52.2 | 1.90.0 |
| Infrastructure | Nil | Nil |
| Roads | 0.01.0 | 0.02.0 |
| Green Belt | Nil | 0.25.9 |
| Unutilized Area | 0.94.7 | 0.30.0 |
| Grand Total | 2.47.9 | 2.47.9 |

10.2 Water Regime:

It is a simple opencast quarry operation. The quality of water will not be affected due to this quarrying operation. However, mitigation measures will be carried out like Garland drains constructed on all sides of quarry pit to avoid rain water entering into the pit.





The waste water discharged to water bodies will be met the standard prescribed under the Environment (Protection) Act – 1986 by The Ministry of Environment, Forest and Climatic change.









10.3 Flora and Fauna:

TABLE-10

List of Flora

| S.No | Name of the plant (Scientific) | Family Name | Common Name | Habit | Picture |
|------|--------------------------------|----------------|----------------------|-------|--|
| 1 | Calotropis gigantea | Asclepiadaceae | Crown Flower, Erukku | Shrub |  |
| 2 | Borassus flabellifera | Areaceae | Palmyra Palm | Tree |  |
| 3. | Azadirachta indica | Meliaceae | Neem, Vembu | Tree |  |
| 4. | Acacia nilotica | Mimosaceae | Babul, Karuvelam | Tree |  |
| 5. | Cocus nucifera | Areaceae | Coconut, Thennai | Tree |  |

List of Fauna

| S.No. | Scientific Name | Common Name | Picture |
|-------|-------------------------|----------------|---|
| 1. | Hieroglyphus sp | Grasshopper |  |
| 2. | Carausius sp | Stick insect |  |
| 3. | Hamitermes silvestri | Termite |  |
| 4. | Danaus plexippus | Striped tiger |  |
| 5. | Mantis religiosa | Praying mantis |  |
| 6. | Agrion sp & Petalura sp | Dragon fly |  |

10.4 Climatic Conditions:

The area receives rainfall of about 850mm per annum and the rainy season is mainly from Oct - Jan during monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 23°C.

10.5 Human settlement:

There are few villages located in this area within 5km radius; the approximate distance and population are given below:

TABLE – 11

| S. No | Name of the Village | Approximate distance & Direction from lease applied area | Approximate population |
|-------|---------------------|--|------------------------|
| 1. | Chinnakuyili | 3.5km – Northeast | 500 |
| 2. | Pachapalayam | 1km – Southeast | 300 |
| 3. | Karacheri | 3km – Southwest | 600 |
| 4. | Chettipalayam | 3.5km – Northwest | 1000 |

Basic human welfare Amenities such as Health Centre, Schools, Communication Facilities, and Commercial Centres etc are available at Chettipalayam located at a distance of 3.5km on the Northwestern side of the area.

10.6 Plan for air, dust suppression:

The air quality will be affected by the Suspended Particulate Matter (SPM) generated by the blasting, jack hammer drilling, Loading and unloading during the Rough stone quarry operation.

The following Mitigations measures will be carried out:

- Mist Water spraying will be carried out by means of water sprinklers to suppress the dust emission in the Haul roads.
- Vegetations will be formed on the non-quarrying area.
- Avoiding spillages during the transportation.

Air quality will be monitored periodically as per Norms and Mitigative measures carried out to prevent dust and Air propagation in to air. The estimated budget for dust suppression would be around Rs.52,000/year.

10.7 Plan for Noise level control:

The noise level increased due to the Excavation, Drilling, Blasting and Transportation.

Engineering Noise control:

Noise will be created due to the usage of Machineries and Vehicles. The Noise will be controlled in the following manner.

- Selection of new low – noise equipments for the Rough stone quarry operation.
- Modifications of older equipments.
- Implementation of effective preventive maintenance which reduces noise more than 50%.
- Developing Green belts which act as Acoustic barrier, pollution absorbent and noise controller.
- The drivers will be strictly instructed to move the vehicle during the transportation not exceed 40km per hour.
- Sentries with flags & whistle will posted in village road junction and populated area to control and regulate traffic.

Shallow holes of 32mm diameter and maximum depth of 1.5m will be drilled and conventional low power explosives such as Slurry Explosives, ordinary safety fuse will be used for rough stone. Hence, ground vibration and noise pollution i.e., minimal and restricted within the quarry working area.

Noise level monitoring and other Mitigation measures will be carried out to reduce Noise and Vibration. The estimated budget for Noise level monitoring would be around Rs.2,000/Year.

10.8 Environment impact assessment statement describing impact of mining on the next five years:

In the mining plan proposed for a production of Rough stone does not involve deep hole drilling and blasting. Such limited mining activity is not likely to cause any impact adversely on the environment. As far as pollution of air, water and noise concerned, the environmental impact studies will be conducted as per EIA notification issued by MoEF& CC. It is B2 Category mine. The estimated budget would be around Rs.3,80,000/-.

10.9 Proposal for waste management:

There is no waste anticipated in this Rough stone and Gravel quarrying operation. The entire quarried out materials will be utilized (100%).

10.10 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.):

In the mining plan only to a maximum depth of 37m below ground level has been envisaged as workable depth for safe & economic mining during entire lease area. Hence, after quarry reaches the ultimate pit limit of 37m below ground level, fencing will be constructed around the quarried pits to prevent inadvertent entry of the public and cattle. There is no proposal for reclamation and rehabilitation. The barbed wire fencing cost would be around Rs.1,00,000/-



10.11 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):

7.5m safety barrier or Nearest Panchayat Roads has been identified to be utilized for Greenbelt appropriate native species of Neem/ Casuarina trees will be planted in a phased manner as described below.

TABLE - 12

| Year | No. of trees proposed to be planted | Survival % | Area to be covered sq.m | Name of the species | No. of trees expected to be grown |
|------|-------------------------------------|------------|-------------------------|---------------------|-----------------------------------|
| I | 60 | 80% | 518 | Neem/ Casuarina | 48 |
| II | 60 | 80% | 518 | Neem/ Casuarina | 48 |
| III | 60 | 80% | 518 | Neem/ Casuarina | 48 |
| IV | 60 | 80% | 518 | Neem/ Casuarina | 48 |
| V | 60 | 80% | 518 | Neem/ Casuarina | 48 |

Nearly 2,590sq.m area is proposed to use under Greenbelt by planting 60 Nos of Neem/ Casuarina trees every year with an anticipated survival rate of 80% (Please refer Plate No.III). The estimated budget for plantation and maintenance of Green belt development would be around **Rs.30,000/-** for the period of five years.

10.12 Proposed financial estimate / budget for (EMP) environment management:

Budget Provision for the entire quarrying period:

TABLE - 13

| S. No | Monitory and Analysis Description | Rate per location | No. of location | Total Charges/ six months | Total Charges/ year |
|-----------------------------|-----------------------------------|-------------------|-----------------|---------------------------|---------------------|
| 1 | Ambient air quality monitoring | 6500 | 4 | 26000 | 52000 |
| 2 | Noise level monitoring | 250 | 4 | 1000 | 2000 |
| 3 | Ground vibration monitoring | 1000 | 2 | 2000 | 4000 |
| 4 | Water sampling and analysis | 9000 | 1 | 9000 | 18000 |
| Total EMP Cost/ year | | | | | 76,000 |

The EMP cost would be around **Rs. 3,80,000/-** for the period of five years.



| A. Project cost / investment | | |
|--|--|-------------------------|
| i) Land cost | The Land value as per the Government Guideline land cost is about, S.F.No.240/2B (P) = 0.02.0 X Rs.19,87,000/- = Rs.39,740/- S.F.No's.238/2 (P), 239/1B, 239/2B, 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) = 2.45.9 X Rs.8,28,000/- = Rs.20,36,052/- Total Cost of 2.47.9ha is about Rs.20,75,792/- (source : https://tnreginet.gov.in/portal/) | = Rs.20,75,792/- |
| ii) Machinery to be used | The following machineries are proposed to meet out the productions. Excavator attached with rock breaker Tipper, Tractor mounted compressor With jack Hammer and loose tools (Rental Basis) | = Rs.30,00,000/- |
| iii) Refilling/ Fencing | Fencing will be constructed around the quarry pit to prevent the inadvertent entry of public and cattles cost would be around | = Rs.1,00,000/- |
| iv) Labourers shed | Labour sheds will be constructed as semi permanent structure. The cost would be around | = Rs.85,000/- |
| v) Sanitary facility | Adequate latrine and urinal accommodation shall be provided at conveniently accessible places the cost would be around | = Rs.50,000/- |
| vi) Others items | First aid room & accessories | = Rs.85,000/- |
| vii) Drinking water facility for the labourers | Packaged drinking water will be provided for all the Labors. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around | = Rs.1,00,000/- |
| viii) Sanitary arrangement | The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around | = Rs.50,000/- |
| ix) Safety kit | All the Safety kit such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided to the workers by the applicant own cost which would be around | = Rs.1,00,000/- |
| x) Water sprinkling | Water will be sprinkled in the haul roads by water sprinklers the cost would be around | = Rs.1,00,000/- |
| xi) Greenbelt etc. | Greenbelt program will be carried out in the boundary barrier the cost would be around | = Rs.30,000/- |
| | Total Project Cost | = Rs.57,75,792/- |



| | |
|---|-------------------------|
| B. EMP Cost :- (Per year) | |
| Air Quality monitoring | = Rs. 52,000/- |
| Water Quality Sampling | = Rs. 18,000/- |
| Noise Monitoring | = Rs. 2,000/- |
| Ground vibration test | = Rs. 4,000/- |
| Total Cost | = Rs. 76,000/- |
| Total EMP Cost for the five years period is Rs. 3,80,000/- | |
| A+B+= | |
| A. Project cost | = Rs.57,75,792/- |
| B. EMP Cost | = Rs. 3,80,000/- |
| Total Project Cost (A+B) | = Rs.61,55,792/- |
| <p>The applicant Indents to involve corporate social responsibilities (CSR) activity like providing note books to nearby school, providing drinking water facilities to the nearby villages etc., at 2.5% from the total project cost the cost would be around Rs.1,54,000/-</p> | |
| Total Project cost | = Rs.61,55,792/- |
| CSR Cost (2.5%) | = Rs. 1,54,000/- |
| Total cost | = Rs.63,09,792/- |
| <p>(The Total cost of the project including EMP Cost is Rupees sixty three lakhs nine thousand seven hundred and ninety two only).</p> | |

11.0 MINE CLOSURE PLAN

11.1 Steps proposed for phased restoration, reclamation of already mined out areas:

There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of the life of lease will be fenced to prevent inadvertent entry of public and cattles. After treating the water the same will be utilized for agriculture purpose of the agriculture lands.

11.2 Measures to be under taken on mine closure as per Act & Rules:

Measure will be taken as per Act & Rules. There is no proposal for back filling, reclamation and rehabilitation. The quarry pit will be fenced by barbed wire to prevent inadvertent entry of public and cattle.

The quarried out pit will be allowed to collect rain and seepage water which will act as a temporary reservoir for storage. This water storage will enhance the static level and ground water and to recharge the nearby wells and also it will be used for irrigating the nearby agriculture lands.

**11.3 Mitigation measure to be undertaken for safety and restoration / reclamation of the already mined out area:**

Air quality: (Air quality will be degrade due to the drilling, blasting, mining operation and transportation)

Mitigation measures:

Drilling will be carried out by wet drilling mode to control the dust propagation into the air. Blasting will be carried out on limited scale. Mist Water spraying on haul road is proposed to prevent the dust propagation into the air. Air quality will be monitored periodically as per norms.

NOISE AND VIBRATION: (The noise will be formed due to the drilling, blasting, loading and movement of Machineries)

Mitigation measures:

The applicant proposed to carry out the plantation all along the boundary to prevent Noise besides wet drilling will be practiced to prevent dust. All the machineries will be maintained in good conditions as per RTO and TNPCB Norms to prevent Noise, Smoke and vibration.

WATER REGIME:**Mitigation Measures:**

The quarry operation proposed upto a depth of 37m below ground level for the five year period, the proposed depth is well above the water table (summer in 55m and rainy seasons in 50m), hence the water table will not be affected in any.

The seepage and rain water will be drained out from the pit by the 5H.P motor pump and discharged through filter media to the greenbelt area in the boundary barrier. The excess water will be sprayed on haul roads to prevent dust propagation in to the atmosphere. The Rough stone quarry will not produce any harmful toxic effluents.

HUMAN HEALTH & SAFETY: Dust will be limited due to the mine operation:

All the labours have been provided with safety equipments like helmet, Safety Goggles, Ear muff, Hand Gloves, safety jacket, safety belt, Mine boots etc., by the applicant own cost as per Director of mines safety. The foreman/Permit Mines Manager will provide first aid for small & minor injuries. In case of any eventualities, the victim will be taken to the nearby hospital by the applicant vehicle which is always available in the mines office. The hospital is about 3.5km in Chettipalayam (NW).

**12.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT:**

This Mining plan for Rough stone (Charnockite) and Gravel is under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied within the quarrying operation, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Concerned Department.

Prepared by

Dr.P.Thangaraju, M.Sc., Ph.D.,

Qualified Person

Place: Salem

Date: 23.01.2018

This Mining Plan is Approved
subject to the conditions / stipulation
& indicated in the Mining Plan Approval
Letter No: 325/mines/2018 dt: 04/02/2019
office of the A.D, Geology & Mining Coimbatore

This Mining Plan is Approved based on the
incorporation of the particulars specified
in the letter of the commissioner of Geology
and Mining, Chennai ref No: 3863/LC/2012
Dated 19.11.2012 and subjected to further
fulfillment of the condition laid down under
Tamilnadu Minor Mineral Concession Rules 1959.

JOINT DIRECTOR AND
ASSISTANT DIRECTOR (i/c)
DEPARTMENT OF GEOLOGY & MINING
COIMBATORE.

6/2/19
4/2/19

குறிப்பாணை



பொருள்: கனிமங்களும் குவாரிகளும் - கோயம்புத்தூர் மாவட்டம் - சூலூர் வட்டம் - பச்சாபாளையம் கிராமம் - புல எண்கள் முறையே 238/2(பகுதி)-ல் 0.37.0 ஹெக்டேர், 239/1B-ல் 0.17.0 ஹெக்டேர், 239/2B-ல் 0.02.0 ஹெக்டேர், 240/2B(P)-ல் 0.02.0 ஹெக்டேர், 241/1(P) (0.27.5 ஹெக்டேர்), 241/2(P)-ல் 0.59.2 ஹெக்டேர், 241/3(P)-ல் 0.56.5 ஹெக்டேர், 241/4(P)-ல் 0.46.7 ஹெக்டேர் ஆக மொத்தம் 4.45.5 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 2.47.9 ஹெக்டேர் பரப்பில் மட்டும் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி செய்ய தி/வா. கோமுகி புளு மெட்டல்ஸ் எல்.எல்.பி நிறுவனத்திற்கு - குவாரி குத்தகை அனுமதி வழங்குவது - தொடர்பாக.

- பார்வை: 1. தி/வா. கோமுகி புளு மெட்டல்ஸ் எல்.எல்.பி நிறுவனத்தின் பங்குதாரர் திரு.S.மோகன்ராஜ், எஸ்.எப்.238/2, பெரியகுயிலி, பச்சாபாளையம், சூலூர் வட்டம், கோயம்புத்தூர் என்பவரது விண்ணப்பம் நாள் 04.06.2018 மற்றும் 19.12.2018
2. இவ்வலுவலக இதே ந.க.எண் மற்றும் நாள். 11.06.2018.
3. வருவாய் கோட்டாட்சியர், கோயம்புத்தூர் தெற்கு அவர்களின் கடித ந.க.எண். 2012/2018/A2 நாள் 17.07.2018 இவ்வலுவலகத்தில் கிடைக்கப்பெற்ற நாள் 06.08.2018.
4. இணை இயக்குநர் மற்றும் உதவி இயக்குநர்(பொ), புவியியல் மற்றும் சுரங்கத்துறை, கோயம்புத்தூர் தணிக்கை அறிக்கை நாள் 04.09.2018.

பார்வை 1-ல் கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம், பெரியகுயிலி, எஸ்.எப்.238/2 என்ற முகவரியில் உள்ள தி/வா. கோமுகி புளு மெட்டல்ஸ் எல்.எல்.பி நிறுவனம் சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள் முறையே 238/2(பகுதி)-ல் 0.37.0 ஹெக்டேர், 239/1B-ல் 0.17.0 ஹெக்டேர், 239/2B-ல் 0.02.0 ஹெக்டேர், 240/2B(P)-ல் 0.02.0 ஹெக்டேர், 241/1(P) (0.27.5 ஹெக்டேர்), 241/2(P)-ல் 0.59.2 ஹெக்டேர், 241/3(P)-ல் 0.56.5 ஹெக்டேர், 241/4(P)-ல் 0.46.7 ஹெக்டேர்

ஆக மொத்தம் 4.45.5 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 2.47.9 ஹெக்டேர் பரப்பில் மட்டும் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி செய்ய, குத்தகை உரிமம் கோரி விண்ணப்பித்துள்ளார்.

மேற்படி மனு தொடர்பாக, கோயம்புத்தூர் தெற்கு வருவாய் கோட்டாட்சியர் மற்றும் கோயம்புத்தூர், புவியியல் மற்றும் சுரங்கத்துறை இணை இயக்குநர் மற்றும் உதவி இயக்குநர்(பொ), ஆகியோர் புலத்தணிக்கை மேற்கொண்டு சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள் முறையே 238/2(பகுதி)-ல் 0.37.0 ஹெக்டேர், 239/1B-ல் 0.17.0 ஹெக்டேர், 239/2B-ல் 0.02.0 ஹெக்டேர், 240/2B(P)-ல் 0.02.0 ஹெக்டேர், 241/1(P) (0.27.5 ஹெக்டேர்), 241/2(P)-ல் 0.59.2 ஹெக்டேர், 241/3(P)-ல் 0.56.5 ஹெக்டேர், 241/4(P)-ல் 0.46.7 ஹெக்டேர் ஆக மொத்தம் 4.45.5 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 2.47.9 ஹெக்டேர் பரப்பில் மட்டும் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி செய்ய கீழ்க்கண்ட நிபந்தனைகளுடன் பரிந்துரை செய்துள்ளார்கள்.

நிபந்தனைகள்

1. அருகிலுள்ள பட்டா நிலங்களுக்கும் மற்றும் பொது மக்களுக்கும், எவ்வித இடையூறும் இன்றி சாதாரண கல் மற்றும் கிராவல் குவாரி மேற்கொள்ள வேண்டும்.
2. அருகில் உள்ள பட்டா நிலத்திற்கு 7.5 மீட்டர், வண்டிப்பாதை மற்றும் கிராம சாலைக்கு 10 மீட்டர் மற்றும் மின்சார கம்பி பாதைக்கும், மின்மாற்றிக்கும் 50 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
3. மெருகேற்றக்கூடிய கிராணைட் கற்கள் வெட்டியெடுக்க கூடாது.
4. குழந்தை தொழிலாளர்களை வேலைக்கு அமர்த்தல் கூடாது.

அனுமதி கோரும் புல எண். 238/2 ஆனது பட்டா எண். 1438-ன் படி தி/வா.கோமுகி புளூ மெட்டல்ஸ் எல்.எல்.பி நிறுவனத்திற்காக திரு.மோகன்ராஜ் என்பவர் பெயரில் தனிப்பட்டவாக கிராம கணக்கில் தாக்கலாகியுள்ளது. மேலும் புல எண்கள். 239/1B, 239/2B, 240/2B(P), 241/1(P), 241/2(P), 241/3(P), 241/4(P) ஆகியவை பட்டா எண். 1439-ன் படி சுப்பிரமணியம் மகன் சண்முகானந்த் என்பவர் பெயரில் தனிப்பட்டவாக கிராம கணக்கில் தாக்கலாகியுள்ளது. மேற்படி பட்டாதாரரான திரு. சண்முகானந்த் என்பவர் தனது சொத்துக்களை மனுதாரரின் நிறுவனத்திற்கு 10 ஆண்டுகளுக்கு சுரங்கத்தொழில் நடத்திக்

கொள்ள குத்தகை ஒப்பந்தம் செய்து கொண்டுள்ளனர். எனவே, மேற்படி நிலத்தில் கல் குவாரி செய்ய தகுதியுடையவர் தரப்படும்.

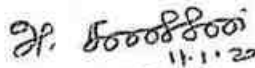
எனவே, கோயம்புத்தூர் தெற்கு வருவாய் கோயம்புத்தூர், புவியியல் மற்றும் சுரங்கத்துறை இணை இயக்குநர் மற்றும் உதவி இயக்குநர்(பொ) ஆகியோரது அறிக்கையின் அடிப்படையில் சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள் முறையே 238/2(பகுதி)-ல் 0.37.0 ஹெக்டேர், 239/1B-ல் 0.17.0, ஹெக்டேர், 239/2B-ல் 0.02.0 ஹெக்டேர், 240/2B(P)-ல் 0.02.0 ஹெக்டேர், 241/1(P) (0.27.5 ஹெக்டேர்), 241/2(P)-ல் 0.59.2 ஹெக்டேர், 241/3(P)-ல் 0.56.5 ஹெக்டேர், 241/4(P)-ல் 0.46.7 ஹெக்டேர் ஆக மொத்தம் 4.45.5 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 2.47.9 ஹெக்டேர் பரப்பில் மட்டும் 5 (ஐந்து) ஆண்டுகளுக்கு சாதாரண கல் வெட்டியெடுக்கவும் மற்றும் 3 (மூன்று) ஆண்டுகளுக்கு கிராவல் வெட்டியெடுக்கவும் மேல் கண்ட நிபந்தனைகளுக்கு உட்பட்டு குவாரி குத்தகை வழங்குவதற்குரிய நிலப்பரப்பாக (Precise Area Communication) கருதப்படுகிறது.

மேலும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள், 1959ன் விதி எண். 41 மற்றும் 42-ன் படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறும், சுற்றுச்சூழல் அனுமதி பெற்று சமர்ப்பிக்குமாறும் மனுதாரரை கேட்டுக் கொள்ளப்படுகிறது.

ஓம்.XXX
மாவட்ட ஆட்சியர்
கோயம்புத்தூர்.

பெறுதல்:
தி/வா. கோமுகி புளு மெட்டல்ஸ் எல்.எல்.பி
எஸ்.எப்.238/2, பெரியகுயிலி,
பச்சாபாளையம்,
சூலூர் வட்டம்,
கோயம்புத்தூர்.

/உண்மை நகல்//உத்திரவுப்படி/

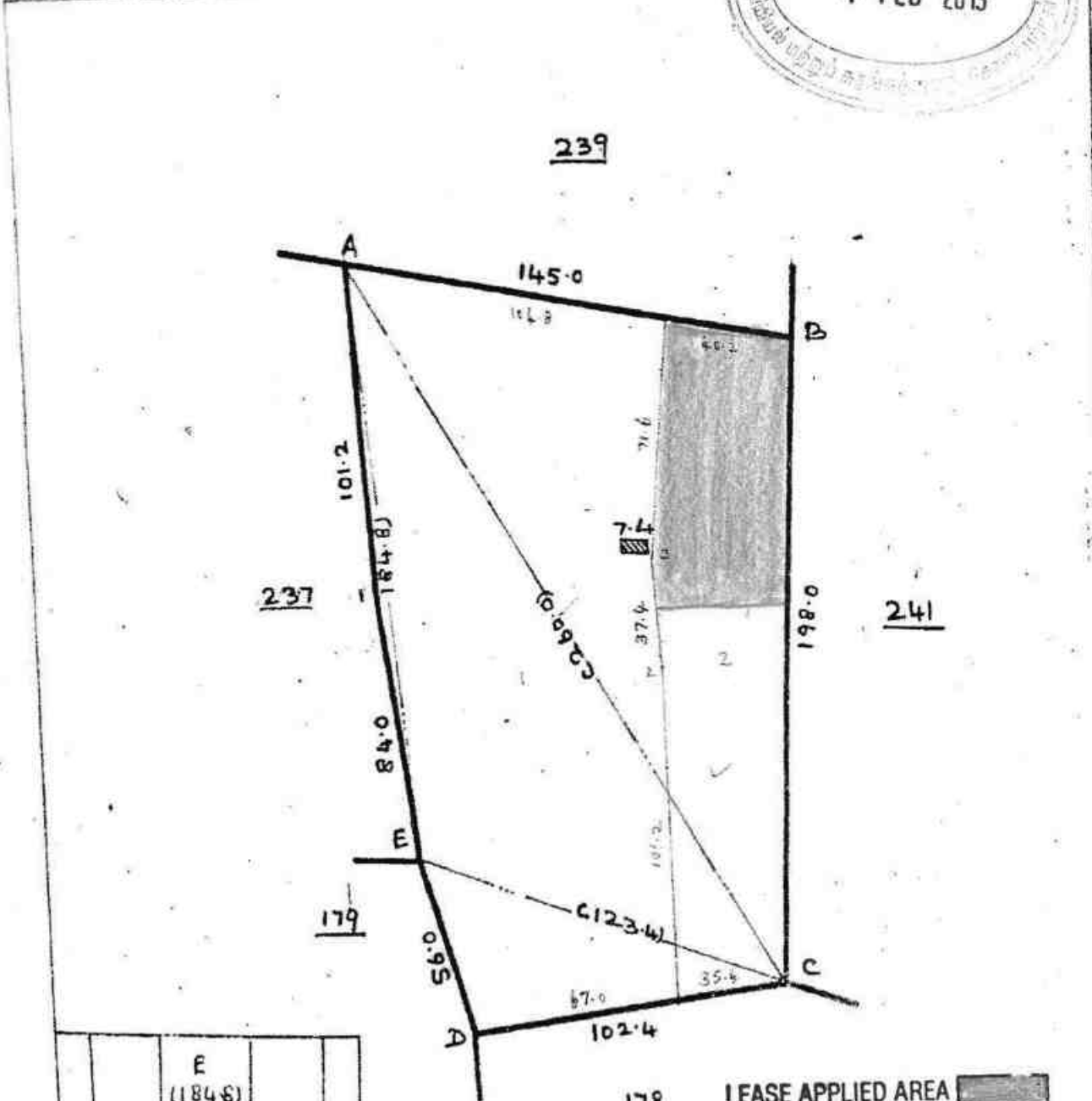

11.11.2019
மாவட்ட ஆட்சியருக்காக
கோயம்புத்தூர்.



புறக்கூலி கட்டுமானம்

செல்லிட: 1410/16
 490 ஏக்கர், 238

எண்: 98
 கிராமம்: ...



| | | | |
|-------|---------|------|----|
| | E | | |
| | (184.8) | | |
| | 101.0 | 4.6 | .1 |
| | A | | |
| | (260.0) | | |
| | 142.2 | 31.2 | H |
| | 32.0 | 38.0 | H |
| | 138.8 | 29.2 | H |
| | 100.0 | 19.0 | L |
| E 796 | 936 | | |
| | C | | |
| | (123.4) | | |
| | 21.2 | | |

சுயம் நிர்வாக அலுவலர்
 4.3. 10 சாலைக்கோடு
 கன்னியாகுமரி மாவட்டம்

பெயர்: சிவசுந்தரி

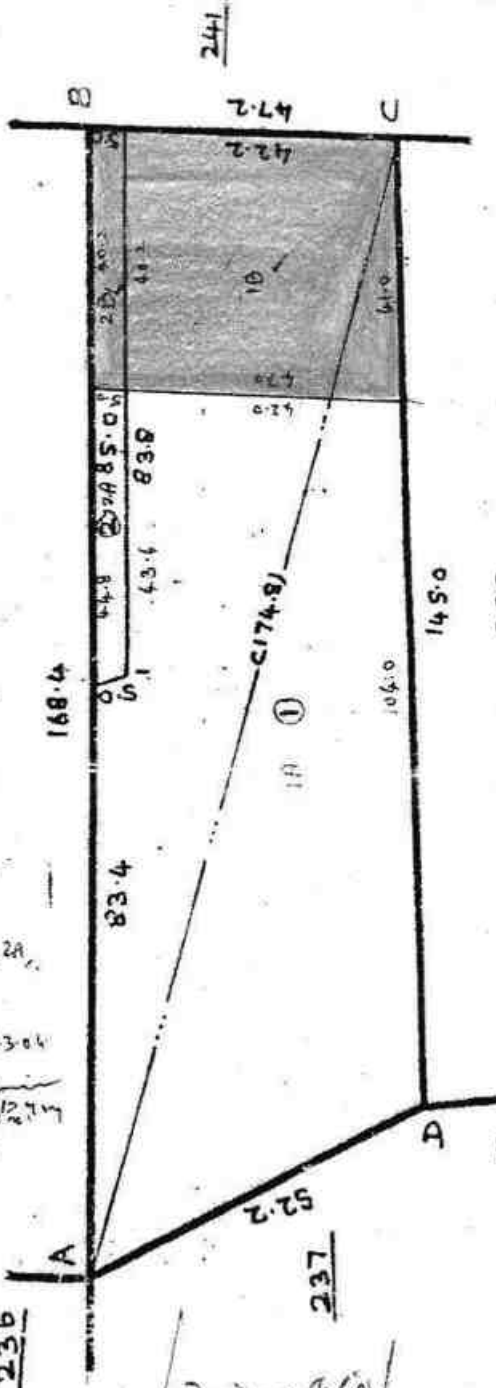
பெயர்: சிவசுந்தரி

புள்ளி: 239

பெயர்: சிவசுந்தரி



N



LEASE APPLIED AREA

Now sub. division 239/1A, 1B, 2A, 2B plotted by me on plan T.K.8A/189/1413, dt. 22.3.04

Signature

| | | | |
|-----|---------|------|---|
| | A | | |
| | (174.8) | | |
| 239 | 129.8 | 18.2 | 1 |
| | 41.8 | 45.2 | B |
| | 13.4 | | |
| | C | | |

Signature

சுற்றுலா துறை

எண். 98

கிராமம்

பெரிய படுகாத்தா

015

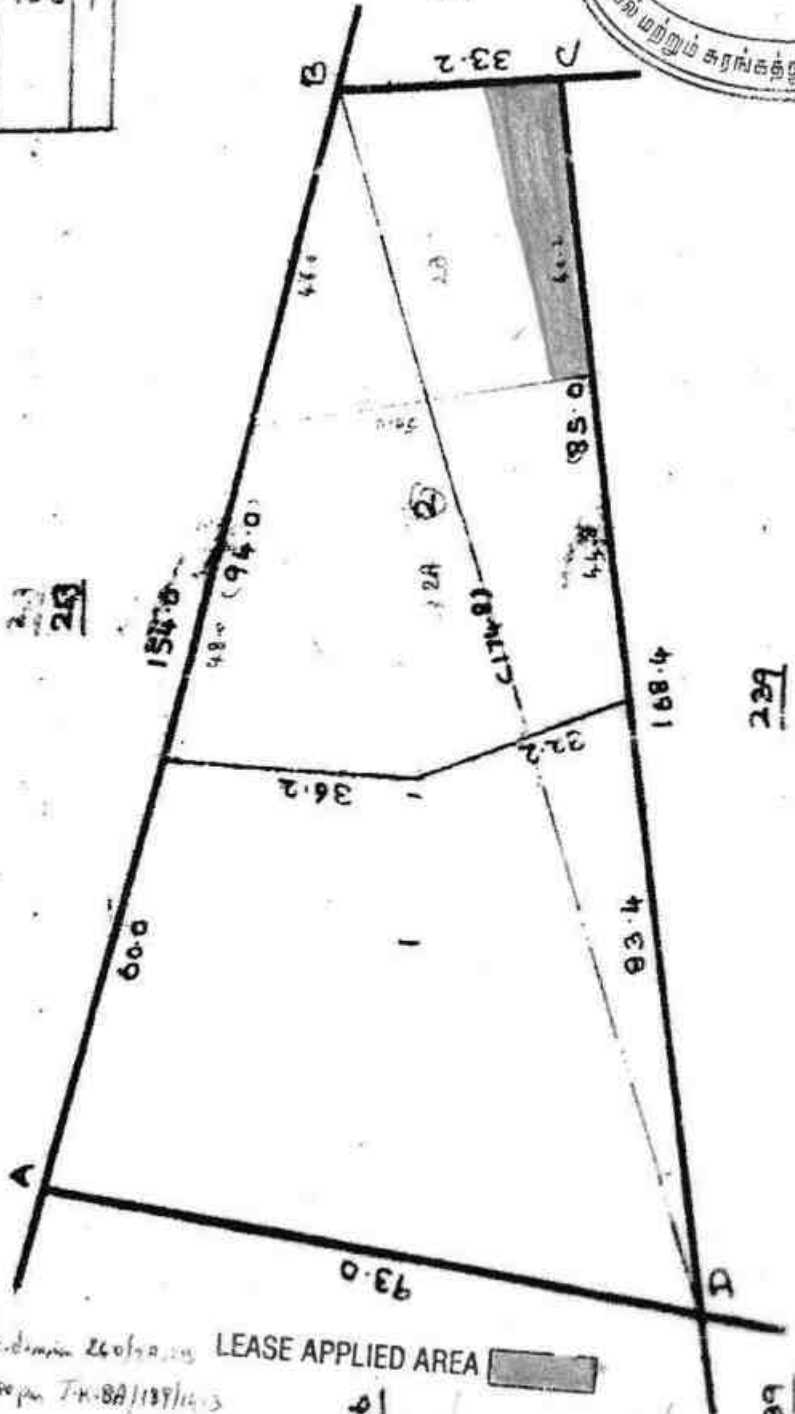
பகுதி 240

பகுதி 240

பகுதி 240



| | | | |
|---|-------|------|---|
| | D | | |
| | 074.0 | | |
| | 92.0 | 16.0 | 1 |
| C | 32.8 | 8.8 | |
| | | B | |




23 26

237

236

239

LEASE APPLIED AREA 

Plotted by me upon TN-8A/137/14-3
dt. 22.3.04

[Signature]
dt. 22.3.04

மாண்புமிகு
கிராமம்

அளவு: 1:1000

கிராம நிர்வாக அலுவலர்

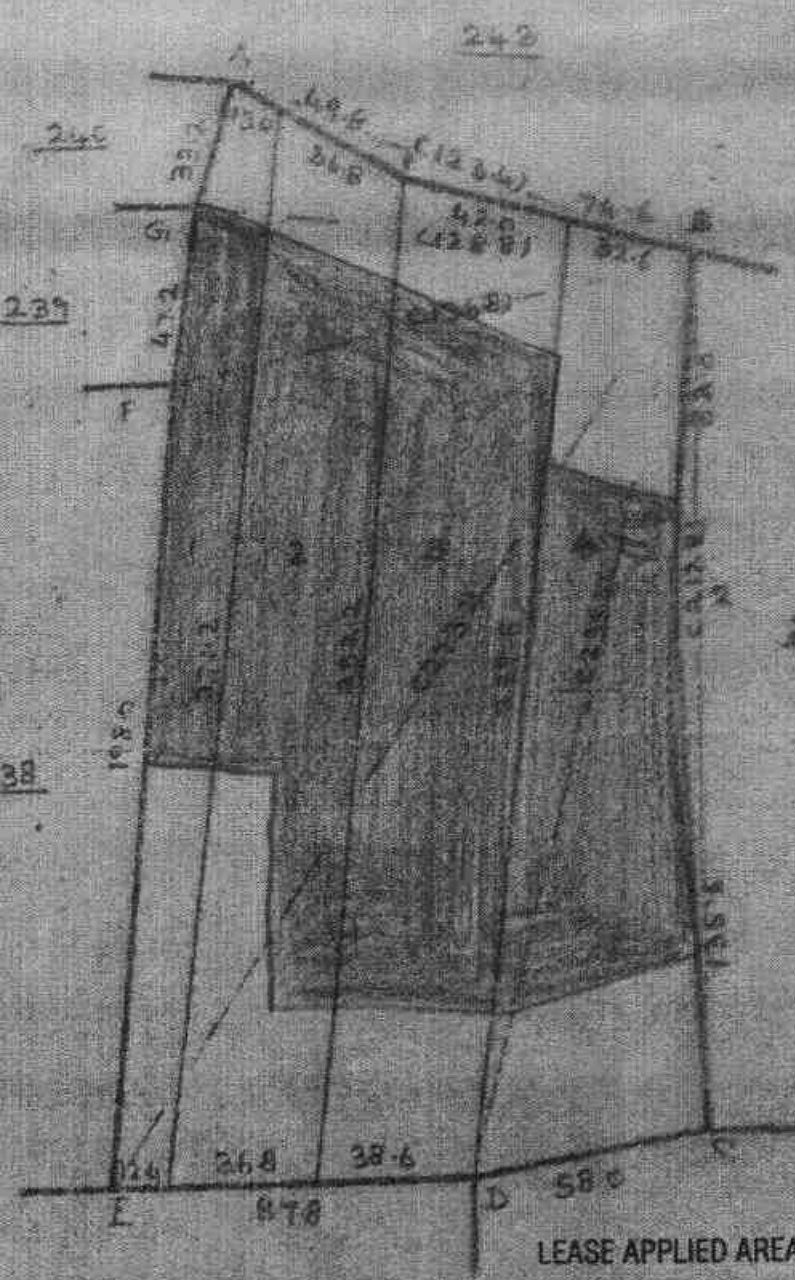
43, இலட்சுமிநாயகர் தெரு

சென்னை - 600 079

23-7-84

Handwritten text at the top left, possibly including a name or address.

Handwritten text at the top right, possibly including a date or location.



238

239

242

242

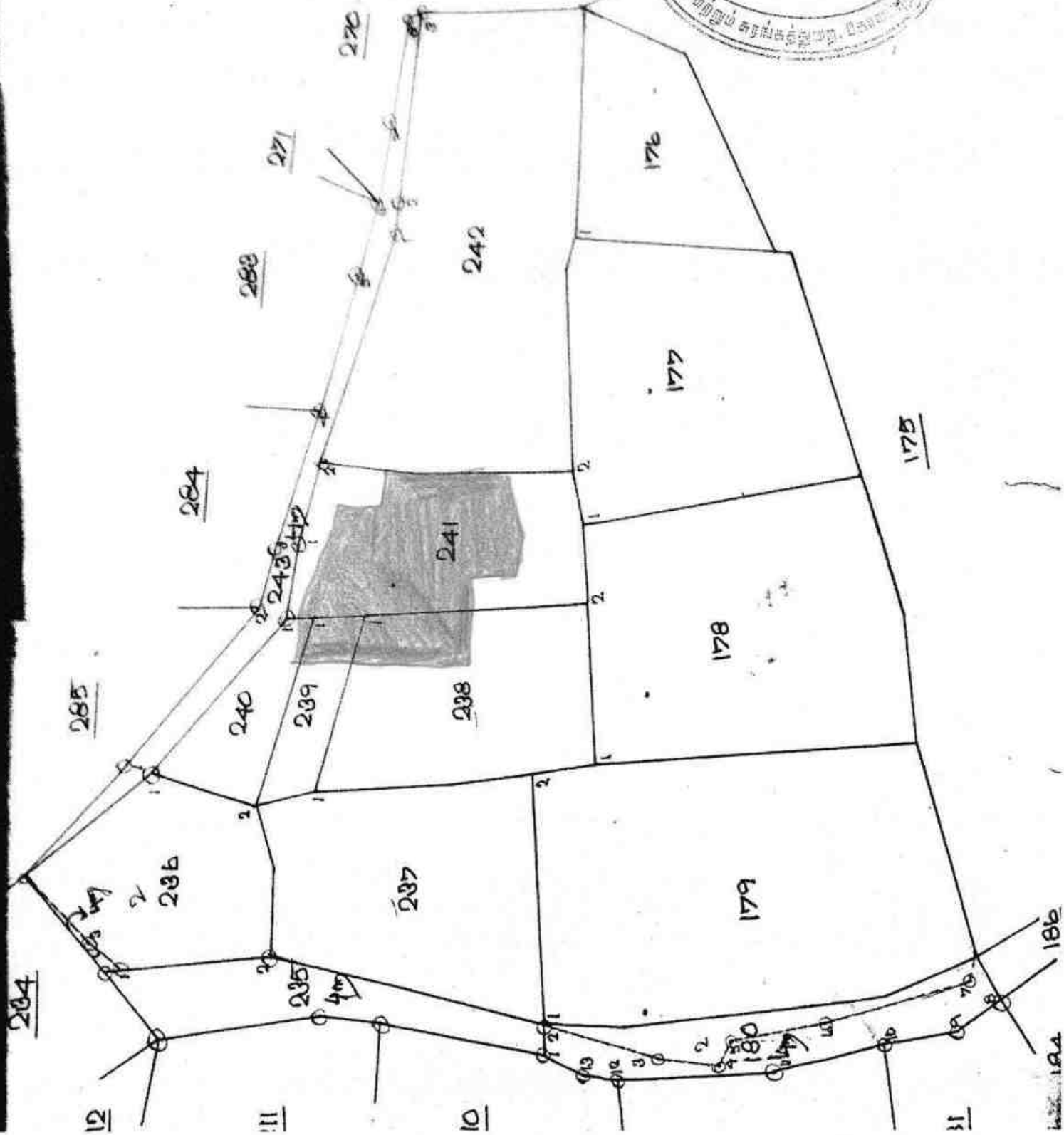
LEASE APPLIED AREA

178

177

Handwritten signatures and text at the bottom of the diagram, including what appears to be a name and a date.

| | |
|---|------|
| C | 21.7 |
| D | 21.7 |
| E | 21.7 |
| F | 21.7 |
| G | 21.7 |
| H | 21.7 |
| I | 21.7 |
| J | 21.7 |
| K | 21.7 |
| L | 21.7 |
| M | 21.7 |
| N | 21.7 |
| O | 21.7 |
| P | 21.7 |
| Q | 21.7 |
| R | 21.7 |
| S | 21.7 |
| T | 21.7 |
| U | 21.7 |
| V | 21.7 |
| W | 21.7 |
| X | 21.7 |
| Y | 21.7 |
| Z | 21.7 |



LEASE APPLIED AREA 



தமிழக அரசு

வருவாய்த் துறை

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



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தூலூர்

வருவாய் கிராமம் : பச்சாபாளையம்

பட்டா எண் : 1438

உரிமையாளர்கள் பெயர்

1. கோமுகி புளுமெட்டல்ஸ் எல்எல்பி என்ற நிறுவனத்திற்காக சுப்பிரமணியம்

மகன் மோகனராஜ்

| நன்செய் | | புன்செய் | | மற்றவை | | | |
|---------|-----------|------------|---------|------------|---------|------------|---------|
| பரப்பு | தீர்வை | பரப்பு | தீர்வை | பரப்பு | தீர்வை | | |
| புல எண் | உட்பிரிவு | ஹெக் - ஏர் | ரூ - பை | ஹெக் - ஏர் | ரூ - பை | ஹெக் - ஏர் | ரூ - பை |
| 238 | 2 | -- | -- | 0 - 79.00 | 2.19 | -- | -- |
| | | | | 0 - 79.00 | 2.19 | | |

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/10/025/01438/30586 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 07-11-2018 அன்று 12:34:32 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தலூர்

வருவாய் கிராமம் : பச்சாபாளையம்

பட்டா எண் : 1439

உரிமையாளர்கள் பெயர்

| 1. | சுப்பிரமணியம் | | மகன் | | சண்முகானந்த | | | |
|----|---------------|-----------|-------------|---------|-------------|---------|-------------|---------|
| | நன்செய் | | புன்செய் | | மற்றவை | | | |
| | பரப்பு | தீர்வை | பரப்பு | தீர்வை | பரப்பு | தீர்வை | | |
| | புல எண் | உட்பிரிவு | ஹெக்ட - ஏர் | ரூ - பை | ஹெக்ட - ஏர் | ரூ - பை | ஹெக்ட - ஏர் | ரூ - பை |
| | 239 | 2B | -- | -- | 0 - 2.00 | 0.06 | -- | -- |
| | 241 | 3 | -- | -- | 0 - 94.50 | 2.63 | -- | -- |
| | 241 | 1 | -- | -- | 0 - 47.00 | 1.30 | -- | -- |
| | 240 | 2B | -- | -- | 0 - 17.00 | 0.47 | -- | -- |
| | 239 | 1B | -- | -- | 0 - 17.00 | 0.47 | -- | -- |
| | 241 | 4 | -- | -- | 0 - 94.50 | 2.63 | -- | -- |
| | 241 | 2 | -- | -- | 0 - 94.50 | 2.63 | -- | -- |
| | | | | | 3 - 66.50 | 10.19 | | |

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/10/025/01439/30597 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 07-11-2018 அன்று 12:35:36 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

Form 2: கட்டிடப் பணிகள் தொடர்பான அட்டவணை

| பகுதி | பெயர் | பெரிய அளவு | பெரிய அளவு | | | | | மொத்தம் | குறிப்புகள் |
|-------|-------|------------|------------|------|------|------|------|---------|-------------|
| | | | அளவு | அளவு | அளவு | அளவு | அளவு | | |
| 1 | ... | ... | ... | ... | ... | ... | ... | ... | |
| 2 | ... | ... | ... | ... | ... | ... | ... | ... | |
| 3 | ... | ... | ... | ... | ... | ... | ... | ... | |
| 4 | ... | ... | ... | ... | ... | ... | ... | ... | |



Form 2: கட்டிடப் பணிகள் தொடர்பான அட்டவணை

| பகுதி | பெயர் | பெரிய அளவு | பெரிய அளவு | | | | | மொத்தம் | குறிப்புகள் |
|-------|-------|------------|------------|------|------|------|------|---------|-------------|
| | | | அளவு | அளவு | அளவு | அளவு | அளவு | | |
| 1 | ... | ... | ... | ... | ... | ... | ... | ... | |
| 2 | ... | ... | ... | ... | ... | ... | ... | ... | |
| 3 | ... | ... | ... | ... | ... | ... | ... | ... | |
| 4 | ... | ... | ... | ... | ... | ... | ... | ... | |



அ-பதிவேடு விவரங்கள்



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தூலூர்

கிராமம் : பச்சாபாளையம்

| | | | |
|------------------------------|------------|-------------------------------|-------------|
| 1. புல எண் | 238 | 9. மண் வயனமும் ரகமும் | 8 - 2 |
| 2. உட்பிரிவு எண் | 2 | 10. மண் தரம் | 4 |
| 3. பழைய புல உட்பிரிவு எண் | 238 | 11. தீர்வை (ரூ - ஹெ) | 2.77 |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் ஏர்) | 0 - 79.00 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 2.19 |
| 6. நிலத்தின் வகை | பஞ்சை | 14. பட்டா எண் | 1438 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | - |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.மோகன்ராஜ் |

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40586 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.



வட்டாட்சியர் அலுவலக இணைய சேவை - அ-ப

http://eservices.tn.gov.in/eservices/arcog/extra/40597

அ-பதிவேடு விவரங்கள்

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தலூர்

கிராமம் : பச்சாபாளையம்

| | | | |
|------------------------------|------------|--------------------------------|----------------|
| 1. புல எண் | 239 | 9. மண் வயனமும் ரகமும் | 8 - 2 |
| 2. உட்பிரிவு எண் | 1B | 10. மண் தரம் | 4 |
| 3. பழைய புல உட்பிரிவு எண் | 239-1 | 11. தீர்வை (ரூ - ஹெ) | 2.77 |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் - ஏர்) | 0 - 17.00 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 0.47 |
| 6. நிலத்தின் வகை | பஞ்சை | 14. பட்டா எண் | 1439 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | - |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.சண்முகானந்த் |

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40597 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தலூர்

கிராமம் : பச்சாபாளையம்

| | | | |
|------------------------------|------------|--------------------------------|---------------|
| 1. புல எண் | 239 | 9. மண் வயனமும் ரகமும் | 8 - 2 |
| 2. உட்பிரிவு எண் | 2B | 10. மண் தரம் | 4 |
| 3. பழைய புல உட்பிரிவு எண் | -2 | 11. தீர்வை (ரூ - ஹெ) 2.77 | |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் - ஏர்) | 0 - 2.00 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 0.06 |
| 6. நிலத்தின் வகை | பஞ்சை | 14. பட்டா எண் | 1439 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | - |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.சண்முகானந்த |

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40597 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தூலூர்

கிராமம் : பச்சாபாளையம்

| | | | |
|------------------------------|------------|--------------------------------|----------------|
| 1. புல எண் | 240 | 9. மண் வயனமும் ரகமும் | 8 - 2 |
| 2. உட்பிரிவு எண் | 2B | 10. மண் தரம் | 4 |
| 3. பழைய புல உட்பிரிவு எண் | -2 | 11. தீர்வை (ரூ - ஹெ) | 2.77 |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் - ஏர்) | 0 - 17.00 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 0.47 |
| 6. நிலத்தின் வகை | பஞ்சை | 14. பட்டா எண் | 1439 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | - |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.சண்முகானந்த் |

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40597 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தலூர்

கிராமம் : பச்சாபாளையம்

| | | | |
|------------------------------|------------|--------------------------------|----------------|
| 1. புல எண் | 241 | 9. மண் வயனமும் ரகமும் | 8 - 2 |
| 2. உட்பிரிவு எண் | 2 | 10. மண் தரம் | 4 |
| 3. பழைய புல உட்பிரிவு எண் | -P | 11. தீர்வை (ரூ - ஹெ) | 2.77 |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் - ஏர்) | 0 - 94.50 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 2.63 |
| 6. நிலத்தின் வகை | புஞ்சை | 14. பட்டா எண் | 1439 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | - |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.சண்முகானந்த் |

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40597 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தூலூர்

கிராமம் : பச்சாபாளையம்

| | | | |
|------------------------------|------------|--------------------------------|----------------|
| 1. புல எண் | 241 | 9. மண் வயனமும் ரகமும் | 8 - 2 |
| 2. உட்பிரிவு எண் | 1 | 10. மண் தரம் | 4 |
| 3. பழைய புல உட்பிரிவு எண் | 241-P | 11. தீர்வை (ரூ - ஹெ) | 2.77 |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் - ஏர்) | 0 - 47.00 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 1.30 |
| 6. நிலத்தின் வகை | பஞ்சை | 14. பட்டா எண் | 1439 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | - |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.சண்முகானந்த் |

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40597 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : கோயம்புத்தூர்
வட்டம் : தூலூர்
கிராமம் : பச்சாபாளையம்

| | | | |
|------------------------------|------------|--------------------------------|----------------|
| 1. புல எண் | 241 | 9. மண் வயனமும் ரகமும் | 8 - 2 |
| 2. உட்பிரிவு எண் | 4 | 10. மண் தரம் | 4 |
| 3. பழைய புல உட்பிரிவு எண் | -P | 11. தீர்வை (ரூ - ஹெ) | 2.77 |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் - ஏர்) | 0 - 94.50 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 2.63 |
| 6. நிலத்தின் வகை | புஞ்சை | 14. பட்டா எண் | 1439 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | - |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.சண்முகானந்த் |

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40597 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : தூலூர்

கிராமம் : பச்சாபாளையம்

| | | | |
|------------------------------|------------|-------------------------------|---------------|
| 1. புல எண் | 241 | 9. மண் வயனமும் ரகமும் | 8 - 2 |
| 2. உட்பிரிவு எண் | 3 | 10. மண் தரம் | 4 |
| 3. பழைய புல உட்பிரிவு எண் | -P | 11. தீர்வை (ரூ - ஹெ) 2.77 | |
| 4. பகுதி | - | 12. பரப்பு (ஹெக்டேர் ஏர்) | 0 - 94.50 |
| 5. அரசு / ரயத்துவாரி | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை) | 2.63 |
| 6. நிலத்தின் வகை | புஞ்சை | 14. பட்டா எண் | 1439 |
| 7. பாசன ஆதாரம் | - | 15. குறிப்பு | - |
| 8. இரு போகமா | 1 | 16. பெயர் | 1.சண்முகானந்த |

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணையதளத்தில் 40597 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளுமாறு கேட்டுக்கொள்கிறோம்.



தமிழ்நாடு தமில்நாடு TAMILNADU

34494 / 12.12.2017.

GOMUKI BLUE METALS
LLP

TIRUPUR.

₹ 100/-

Submi

BR 705465

S.க.சுப்ரமணியன்
சு.க.சு.மெட்டல்ஸ்
புதுப்பலா - 638056 / தி.
தருமபுரி - தமில்நாடு



LLP AGREEMENT
(As per Section 23(4) of LLP Act, 2008)

This Agreement of LLP made at TIRUPUR on this 14th day of December, 2017.

BETWEEN

1 SENGODA GOUNDER SUBRAMANIAM, Son of Mr. Sengoda Gounder Born on 28/02/1944 residing at 2/333, GOMUKI ILLAM, PALLAGOUDANPALAYAM, UTHUKKULI TALUK, TIRUPUR - 638056 TAMIL NADU, INDIA, which expression shall, unless it be repugnant to the subject or context thereof, include their legal heirs, successors, nominees and permitted assignees and hereinafter called the Party of the FIRST PART",

S. Subramaniam
S. SUBRAMANIAM

S. Shanmuganand
S. SHANMUGANAND

S. Moganraj
S. MOGANRAJ



தமிழ்நாடு தமில்நாடு TAMILNADU

134495 / 12.12.2017.

GOMUKI BLUE METALS
LLP

TIRUPUR.

₹ 100/-

S. Subramaniam

BR 705466

S. Subramaniam
Sri. Subramaniam
Gomuki Blue Metals
Tirupur - Tamil Nadu

- 2 SUBRAMANIAM SHANMUGANAND, Son of Mr. Subramaniam Born on 16/07/1978 residing at 2/333, GOMUKI ILLAM, PALLAGOUNDANPALAYAM, UTHUKKULI TALUK, TIRUPUR - 638056 TAMIL NADU, INDIA, which expression shall, unless it be repugnant to the subject or context thereof, include their legal heirs, successors, nominees and permitted assignees and hereinafter called the Party of the "SECOND PART".

S. Subramaniam
S. SUBRAMANIAM

S. Shanmuganand
S. SHANMUGANAND

S. Moganraj
S. MOGANRAJ



தமிழ்நாடு தமிழ்நாடு TAMILNADU

134496 / 12.12.2017

GOMUKI BLUE METALS
LLP

TIRUPUR

Subram

BR 705467

S. Shanmuganand
ச. சண்முகனந்த
புதிர் - திருப்பூர்

3 SUBRAMANIAM MOGANRAJ, Son of Mr. Sengoda Gounder Subramaniam born on 30/11/1980 residing at 2/333, GOMUKI ILLAM, PALLAGOUNDANPALAYAM, UTHUKKULI TALUK, TIRUPUR - 638056 TAMIL NADU, INDIA, which expression shall, unless it be repugnant to the subject or context thereof, include their legal heirs, successors, nominees and permitted assignees and hereinafter called the Party of the "THIRD PART".

S. Subramaniam
S. SUBRAMANIAM

S. Shanmuganand
S. SHANMUGANAND

S. Moganraj
S. MOGANRAJ

PARTIES OF ALL THREE PARTS SHALL BE DESIGNATED PARTNERS.

(THE THREE PARTS SHALL BE COLLECTIVELY REFERRED TO AS PARTNERS.)

NOW Parties of all the Three Parts are interested in forming a Limited Liability Partnership under the Limited Liability Partnership Act 2008 and that they intend to enter into the terms and conditions of the said formation and



IT IS HEREBY AGREED BY AND AMONG THE PARTIES HERETO AS FOLLOWS

Application of First Schedule of Limited Liability Partnership Act 2008:

Regulations contained in the first schedule to Limited Liability Partnership Act 2008 shall apply to this limited Liability Partnership to the extent they are not stated, modified, varied, amended, or altered by this Agreement.

Definition and Interpretation

Unless the context otherwise requires, following words shall have the meaning as stated herein below and words and expression used and not defined in this Agreement shall have the meanings, if any respectively assigned to them either in Limited Liability Partnership Act 2008, Limited Partnership Rules 2009 or in the Companies Act 2013, as the case may be.

1. "Accounting Year" means the financial year as defined in the LLP Act, 2008.
2. "Act" or "LLP Act" means the Limited Liability Partnership Act, 2008.
3. "Business" includes every trade, profession service and occupation.
4. "Change" means a change in the constitution of the body of Partners or Designated Partners other than their admission afresh.
5. "Designated Partner" means any partner designated as such.
6. "LLP" means the Limited Liability Partnership formed pursuant to this LLP Agreement.
7. "LLP Agreement" means this Agreement or any supplement thereof determining the mutual rights and duties of the partners and their rights and duties in relation to the LLP.
8. "Partner" means any person who becomes a partner in the LLP in accordance with this LLP Agreement.

"She" includes "he" or vice versa.

1. NAME:

A Limited Liability Partnership shall be carried on in the name and style of "GOMUKI BLUE METALS LLP" and hereinafter called as "the LLP".

2. REGISTERED OFFICE:

The LLP shall have its registered office at 283, MANGALAM ROAD, KARUVAMPALAYAM, TIRUPUR, 641604 and / or at such other place or places, as shall be agreed to by the majority of the partners from time to time.


S. SUBRAMANIAM


S. SHANMUGANAND


S. MOGANRAJ

3. PRINCIPAL PLACE OF BUSINESS:

The Principal place of the Business of the LLP shall be at TIRUPUR the state of TAMILNATHU.



4. CAPITAL CONTRIBUTION:

The initial Capital Contribution of the LLP shall be contributed by the partners in the following matters:

| Sr. No. | Name of the Partners | Capital Contributions In (Rs.) | Percentage |
|---------|----------------------|--------------------------------|------------|
| 1. | S. SUBRAMANIAM | 12,00,000 | 40.00% |
| 2. | S. SHANMUGANAND | 9,00,000 | 30.00% |
| 3. | S. MOGANRAJ | 9,00,000 | 30.00% |
| TOTAL | | 30,00,000 | 100.00 % |

If at any time after the commencement of the Partnership as LLP any further capital shall be required for the purposes of the LLP, the same shall be additionally contributed by the Partners in their respective proportion of capital contributions made, unless otherwise agreed upon by all the then Partners. Existing loans advanced or deemed as advanced by the Partners to the LLP shall not be convertible into such capital contribution.

Interest shall be paid/ credited on the credit debit balance in the account of the partners on the rate mutually agreed by the Designated Partners from time to time. However the rate of interest if any exceeds above the rates specified from time to time in section 40(b)(iv) of the income Tax Act, 1961 may be disallowed at the time of computing tax liability.

The LLP shall have a common seal to be affixed on documents as defined by partners under the signature of any of the Designated Partners.

5. PURPOSE:

The business of the LLP shall be as follow:

1. To carry on the business of mining, extracting, crushing of stones, manufacturing, Trading & supplying of M-sand, aggregates, fly ash bricks, blocks, ready mix concrete, asphalt concrete and other building materials.
2. To carry on the business of importing and exporting, trading, producing, crushing, acquiring, buying, selling, treating, processing, developing, re-treating, storing, distributing, transporting and otherwise dealing in all kinds and classes of mining, extracting, crushing of stones, manufacturing & supplying of M-sand, aggregates, fly ash bricks, blocks, ready mix concrete and other building materials.
3. To carry on in India or elsewhere the business of prospecting, exploring, operating and working on mines, quarries and to win, set crush smelt, manufacture, process, excavate, break, acquire, develop, exercise, turn to account, survey, produce, prepare, remove, undertake, barter, convert, finish, load, unload, handle, transport, buy, sell, import,


S. SUBRAMANIAM


S. SHANMUGANAND


S. MOGANRAJ



export, supply and to act as agent, broker, stockiest, distributor, consultants, importers, exporters, contractors, manager, operator, mine owner or other persons in connection with minerals, their concentrates, products, by-products, substances, sands, stones, clay, china clay, marbles, stones, granites, iron ore, fine ores, dolomites, coal, lime, bauxite ore, copper ore, rare earth ore, manganese ore, lead, zinc, tin, limestone, brass, precious and other stones, and to do all incidental acts and things necessary for the attainment of the foregoing objects.

4. To carry on the business of generating, producing electrical energy, power by conventional or non-conventional methods including Coal, Gas, Oil, Bio-mass, Wastes, Thermal, Solar, Hydel, Geo hydel, Wind and tidal Waves including promote, own, acquire, erect, construct, establish, maintain, improve, manage, operate, alter, control, take on Hire/lease Power Plants, Cogenerations Power plants, Energy Conservation Projects, Power Houses Transmission and distribution systems for captive consumption and supply, sell, trade and distribute to others in commercial and non-commercial purposes.
5. To carry on the business of buying, selling, reselling, importing, exporting, transporting, storing, developing, promoting, marketing or supplying, trading, dealing in any manner whatsoever in all type of goods on retail as well as on wholesale basis in India or elsewhere.
6. To carry on the business as exhibitors of various goods, services and merchandise and to undertake the necessary activities to promote sales of goods, services and merchandise manufactured/dealt with/provided by the Company.
7. Other than the main activity, the company can carry on any other business in any other manner as may be decided by the majority of Partners.

6. ACCOUNTING AND SHARE IN PROFIT AND LOSS:

1. Subject to the applicable provisions of Law, LLP shall follow the Method of Accounting and for valuation of properties and assets as may be agreed upon by the Partners.
2. The first accounting year of the LLP shall commence from the date of its registration in terms of the provisions of the LLP Act up to the period ending on the ensuing 31st March, 2018. Subsequent accounting years shall be from 1st April to 31st March and so on.
3. The profits and/or losses of the LLP shall be divided among the partners as per attached schedule 1 and subsequently among the partners present on the year end i.e. 31st March of every year and so on.
4. Any change in sharing of Profit/loss
 1. Without admission of Partner/ partners on retirement/Death will be made by providing new **Schedule 1** to that effect.
 2. With admission of Partner/ partners on retirement/Death will be made by executing supplementary deed and by providing new **Schedule 1** to that effect.


S. SUBRAMANIAM


S. SHANMUGANAND


S. MOGANRAJ



5. The accounts of the partnership shall be duly and properly maintained under the supervision of the designated partners and all the transactions of the business of the LLP shall be duly recorded in the books of account of the LLP. The books of account shall be closed once in every year ending on 31st March and the balance sheet shall be prepared as on such date. The net profit or losses coming to the share of each of the parties hereto as stated in clause No. 3 here in above shall be adjusted and given effect at the end of each accounting year, in the personal account of each of the parties hereto. Unless otherwise decided by the partners, the final balance sheet shall be authenticated by specified designated partners hereto in taken of having confirmed the same and the same shall be finally and conclusively binding upon the Parties upon.

6. During the continuation of the LLP, partners shall be entitled to draw such sums of money per month or otherwise as may be decided by the partners from time to time. All drawings made by the partner shall be debited to their respective personal accounts and shall be taken into account in making up the final accounts.

7. REMUNERATION:

It is hereby agreed that in consideration of the services to render by designated partners, they shall be paid yearly remuneration at the following scales.

The Yearly Remuneration shall be calculated as percentage of "Book Profit" as defined in explanation 3 of Section 40(b) of the Income Tax, 1961 as per return of income of the firm for each accounting year of period or any other applicable provisions as may be in force for the relevant accounting year.

8. ADMISSION OF NEW PARTNER:

- a. No new Partner shall be admitted without consent of Designated Partners and upon such terms and conditions as may be agreed upon by the Designated Partners.
- b. Admission of New Partner shall be made by executing supplementary deed to be signed by the new partner and the profit sharing ratio of the incoming partner will be in proportion to his contribution towards the capital of LLP.
- c. Persons admitted as partners shall duly comply with the provisions of section 25(1) of LLP Act and Rule 22(1) and Form 6 of the LLP Rules & Forms, 2008.
- d. The Contribution of the partner may be tangible, intangible, Moveable or immoveable property. Contribution of an incoming partner will be mutually decided by all the existing designated partners.

9. RIGHTS OF PARTNER:

- a. All the partners hereto shall have the rights, title and interest in all the assets and properties in the said LLP in the proportion of their Capital Account.
- b. Every partner has a right to have access to and to inspect and copy any books of the LLP.


S. SUBRAMANIAM


S. SHANMUGANAND


S. MOGANRAJ



- c. Each of the parties hereto shall be entitled to carry on their own, separate and independent business as hitherto they might be doing or they may hereafter do as they deem fit and proper and other partners and the LLP shall have no say in the business provided that the said partner has intimated the said fact to the LLP before the start of the independent business and moreover he shall not use the name of the LLP to carry on the said business.
- d. LLP shall have perpetual succession; Death, retirement or insolvency of any partner shall not dissolve the LLP unless there remains only one partner in this LLP for the period exceeding six Months.
- e. If the premises, plant and machinery and furniture of any partner are utilized by the LLP, the same shall carry Rent/Hiring Charges as mutually agreed upon. If any of the employees of the existing business of any partner is utilized for the business of the LLP, the same shall be at stipulated rate and with all the benefits as continuous service.

10. RETIREMENT AND DEATH OF PARTNER:


- a. On retirement of a partner, the retiring partner shall be entitled to full payment in respect of all his rights, title and interest in the partner as herein provided. However, upon insolvency of a partner his or her rights, title and interest in the LLP shall come to an end. Upon the death of any of the partners herein any one of his or her heirs will be admitted as a partner of the LLP in place of such deceased partner with the permission of all designated remaining partners as on date. The heirs, executors and administrators of such deceased partners shall be entitled to and shall be paid the full payment in respect of the right, title and interest of such deceased partner.
- b. Retirement of Partner shall be made by executing supplementary deed to be signed by the retiring partner and a partner who receives his proportion in the Profit sharing ratio only and will be agreed upon by all the partners.
- c. On the death of any partner, if his or her heir opts not to become the partner, the surviving partners shall have the option to purchase the contribution of the deceased partner in the LLP.

11. DUTIES OF PARTNERS:

- a. Every partner shall account to the limited liability partnership for any benefit derived by him without the consent of the limited liability partnership from any transaction concerning the limited liability partnership, or from any use by him of the property, name or any business connection of the limited liability partnership.
- b. Every partner shall indemnify the limited liability partnership and the other existing partner for any loss caused to it by his fraud in the conduct of the business of the limited liability partnership.
- c. Each partner shall render true accounts and full information of all things affecting the limited liability partnership to any partner or his legal representatives.
- d. In case any of the Partners of the LLP desires to transfer or assign his interest or Shares in the LLP he has to offer the same to the remaining designated partners.


S. SUBRAMANIAM


S. SHANMUGANAND


S. MOGANRAJ



e. Each partner shall—

1. Punctually pay and discharge the separate debts of the partnership and indemnify the other partners and the LLP assets against the same and all other claims and demands in respect thereof.
2. Give time and attention as may be required for the fulfillment of the objectives of the LLP business and they all shall be the working partners.

f. The Designated Partners shall be responsible for the doing of all acts, matters and things as are required to be done by the limited liability partnership in respect of compliance of the provisions of this Act including filing of any document, return, statement and the like report pursuant to the provisions of Limited Liability Partnership Act, 2008.

g. The Designated Partners shall be responsible for the doing of all acts arising out of this agreement


12. OBLIGATIONS OF PARTNERS:

No partner shall, without consent of all designated partners in writing,

- a. introduce any partner to the LLP
- b. Employ any money, goods or effects of the LLP or pledge the credit thereof except in the ordinary course of business and upon the account or for the benefit of the LLP.
- c. Lend money or give credit on behalf of the LLP or to have any dealings with any persons, company or firm whom the other partner previously in writing have forbidden it to trust or deal with. Any loss incurred through any breach of provisions shall be made good with the LLP by the partner incurring the same.
- d. Enter into any bond or becomes surety or security with or for any person or do knowingly cause or suffer to be done anything whereby the LLP property or any part thereof may be seized.
- e. Assign, mortgage or charge his or her share in the LLP or any asset or property thereof or make any other person a partner therein.
- f. Compromise or compound or (except upon payment in full) release or discharge any debt due to the LLP except upon the written consent given by the other partners.

13. EXPULSION OF THE PARTNER:

This provision of this Agreement shall operate as an express agreement of the partner: A partner may not be expelled by unanimous decision of the designated partners save in good faith and in the interest of the partnership business only after a show-cause notice in writing is served on that partner or designated partner giving 7 days' time for his response; and in that event the partner expelled shall be entitled to the benefits of a retiring Partner in accordance with provisions of this Agreement in that behalf.


S. SUBRAMANIAM


S. SHANMUGANAND


S. MOGANRAJ



14. CESSATION OF EXISTING PARTNERS:

- a. Partner may cease to be partner of the LLP by giving a notice in writing to the other partners within TWO months to the other partners of his intention to resign as partner.
- b. The LLP can be wound up with the consent of all the designated partners subject to the provisions of Limited Liability Partnership Act 2008.
- c. On the resignation of any partner, the remaining partners shall have the right to continue the same business either jointly with others or in proprietorship in the same or different name as mutually decided.

15. INTEREST ON PARTNERS' LOAN:

Interest at the rate of 12% per annum or at such rate as agreed between the partners from time to time shall be paid by each of the partners in respect of the loan given or standing to his credit as on the last day of the Financial Year.

16. MEETING:

- a. All the matters related to the LLP as mutually decided by all partners shall be decided by a resolution passed unanimously by all partners. For the purpose of all Meetings each person shall have one vote.
- b. The meeting of the Partners may be called by sending 7 days prior notice to all the partners at their residential address or by mail at the Email ids provided by the individual Partners in writing to the LLP. In case any partner is a foreign resident the meeting may be conducted by serving 15 days prior notice through email. Provided the meeting be called at shorter notice, if majority of the partners agrees in writing to the same either before or after the meeting.
- c. The meeting of Partners shall ordinarily be held at the registered office of the LLP or at any other place as per the convenience of partners.
- d. With the written Consent of all the partners, a meeting of the Partners may be conducted through Teleconferencing.
- e. Every limited liability partnership shall ensure that decisions taken by it are recorded in the minutes within thirty days of taking such decisions and are kept and maintained at the registered office of the LLP.

17. DISSOLUTION:

The LLP can be wound up with the consent of all the partners subject to the provisions of Limited Liability Partnership Act 2008.

18. EXTENT OF LIABILITY OF LLP:

LLP is not bound by anything done by a partner in dealing with a person if—

- a. The partner in fact has no authority to act for the LLP in doing a particular act; and


S. SUBRAMANIAM


S. SHANMUGANAND


S. MOGANRAJ

- b. The person knows that he has no authority or does not know or believe him to be a partner of the LLP.



19. MISCELLANEOUS PROVISIONS:

- a. The limited liability partnership shall indemnify each partner in respect of liabilities made and personal liabilities incurred by him—
- In the ordinary and proper conduct of the business of the limited liability partnership;
 - or
 - In or about anything necessarily done for the preservation of the business or property of the limited liability partnership.
- b. The designated partners can jointly or severally with the written confirmation of others can approach any banks includes scheduled, nationalized, commercial and any other non-banking financial institutions for availing loans and advances for the purpose of LLP.

20. BOOK OF ACCOUNTS:

All necessary books of account and other papers relating the affairs of the LLP as prescribed under Rule 24 of LLP Rules & Forms, 2008 pursuant to section 34(1) of the LLP Act 2008 shall be ensured by the designated partners for the time being to be kept at the principal place of business of the LLP or at other place or places as mutually agreed upon by all the Partners, and regularly maintained on cash basis or accrual basis and according to double entry system of accounting with all books duly posted with entries arising from day to day up-to-date on any day so as to give a true and fair view of the state of affairs of the LLP. Such books of account shall not be removed from the designated place of business without the consent of all the Partners. Each Partner shall have access and be entitled for taking a copy or an extract of any books of account or related papers of the LLP.

21. ANNUAL STATEMENTS OF ACCOUNTS AND SOLVENCY:

The Designated Partners of the LLP shall, within a period of six months from the end of each financial year, prepare the Annual Statements of Accounts and Solvency for the financial year as at its last day of all the capital contributions, assets and liabilities and of the profits and losses of the LLP, and the same shall be signed by each Partner in addition in addition to the signing thereof by the Designated partners of the LLP as required under section 34(2) of the Act in token of his being bound thereby. If, in the event, any Partner refuses to sign the Annual Statements of Accounts and Solvency giving no valid reason, a copy of the same shall be posted to him by Registered Post Acknowledgement Due to his last known address as supplied by him to the LLP, and same shall be deemed to have been signed by him on the date of such posting.

22. AUDIT:

The Statements of Accounts and Solvency of the LLP made each year shall be audited by a qualified Chartered Accountant in practice in accordance with the rules prescribed under section 34(3) of the LLP Act, 2008, namely, Rule 24 of the LLP Rules & Forms, 2008. It shall be the responsibility of the Designated Partners of the LLP to comply with Rule 24 of the said Rules in every respect.


S. SUBRAMANIAM


S. SHANMUGANAND


S. MOGANRA

23. AUDITOR:

- a. Designated Partners are authorized to appoint/ re-appoint the Auditors of the LLP. If required, such appointment may be of the first auditors or on causal vacancy or resignation or removal of the Auditors.
- b. LLP may cause the removal of the Auditor/s before the expiry of his term. LLP may give notice of such Auditor/s of its intention to do so to the Auditor/s by his representation of reasonable length in writing. Such representation should be made by such Auditor/s to the LLP within two weeks from the date of receipt of such notice. Upon considering the said representation, if any, tendered by the said Auditor/s, if all the designated Partners are having consensus for his removal, said Auditor/s shall be removed and he shall be informed about the decision of the designated partners by the LLP within seven days from the date thereof.



24. DIVISION OF ANNUAL PROFIT OF THE LLP

As soon as the Annual Statements of Accounts and Solvency shall have been signed by the Partners the net profits, if any, of the LLP business, shall be divided between the Partners in the proportion specified in and in accordance with the provisions of this Agreement.

25. THE DESIGNATED PARTNERS HAVE THE FOLLOWING ADDITIONAL POWERS AND RESPONSIBILITIES:

- (a) To retain any existing Auditors for the following accounting Period;
- (b) To appoint new Auditors;
- (c) To remove any existing Auditors from their office;
- (d) The power to agree to the rate of remuneration for any Auditors.
- (e) At the end of each Accounting Period a profit and loss and balance sheet shall be prepared and audited in accordance with all relevant financial reporting standards, including the disclosure of Partner's interests in the LLP and further notes or information and in a format as required by the Act.
- (f) The Partners shall meet and approve the accounts, in accordance with the Act.
- (g) After approval, the accounts will become binding upon all Partners.
- (h) After approval, each Partner will receive a copy of the accounts in accordance with the Act.

26. BANKING:

- a. All funds of the Partnership business shall be deposited in its name in such banking account or accounts as shall be determined by the Designated Partners. All withdrawals are to be made by Cheque signed jointly and severally.


S. SUBRAMANIAM


S. SHANMUGANAND


S. MOGANRAJ

- b. The writing and signing of cheque or instructions for electronic transfers done for the business purposes of the LLP, any person's use is strictly prohibited and would breach any Partner's duties and responsibilities to the LLP.



27. ARBITRATION

- a. All the matters not expressly provided in this agreement shall require the consent of all the designated Partners in writing. Failing such consent, all questions about and in connection with the LLP under this Agreement arising between the Partners or between any one of them and the legal representative of the Partners or with the LLP at any time and from time to time, shall be settled by conciliation or by arbitration as provided under the Arbitration and Conciliation Act, 1996 as if the parties to the dispute have consented in writing for determination of the same as aforesaid and the provisions of the said Act apply accordingly.
- b. If any question arises whether the dispute relates to formation, management or business of the LLP, the question shall be referred to the arbitrator, whose decision thereon shall be final.

S. SUBRAMANIAM

S. SHANMUGANAND

S. MOGANRAJ

IN WITNESS WHEREOF the parties have hereunto put and subscribed their respective hands in the presence of the witness the day and year first hereunto written



SIGNED & DELIVERED BY "GOMUKI BLUE METALS LLP"

1. S. Subramaniam
S. SUBRAMANIAM



2. S. Shanmuganand
S. SHANMUGANAND



3. S. Moganraj
S. MOGANRAJ



IN THE PRESENCE OF WITNESS

1. En. Vellingiri
Name: EN VELLINGIRI
Father Name: OP NAYARAJAN
Address: AVALIYANILLEN
21 PERIYAR STREET, ERODE
Occupation: ACCOUNTANT

2. V. Ashok Kumar
Name: V. ASHOK KUMAR
Father Name: P. VELURANI
Address: 75, MEENKUDU, E. VAYANAKUNSIAM
ERODE, ERODE - 56
Occupation: ACCOUNTANT



SCHEDULE I

Profits and/or losses sharing ratio
In the
LLP



| Sr. No. | Name of the Partners. | Share of Profit / Loss |
|---------|-----------------------|------------------------|
| 1. | S, SUBRAMANIAM | 40.00% |
| 2. | S. SHANMUGANAND | 30.00% |
| 3. | S. MOGANRAJ | 30.00% |
| TOAL | | 100.00 % |

1. S. Subramaniam
S. SUBRAMANIAM

2. S. Shanmuganand
S. SHANMUGANAND

3. S. Moganraj
S. MOGANRAJ



இந்திய அரசாங்கம்
Government of India

சனமுகேந்த் சுப்ரமணியம்
Shanmuganend Subramaniam



பிறந்த நாள்: DOB: 16/07/1978
ஆண்கள்: Male

9026 1158 7132



ஆதார - சாதாரண மனிதனின் அதிகாரம்



இந்திய தனிப்பட்ட அடையாள அமைப்பு
Unique Identification Authority of India

முகலி 20 சிபிஎஸ்சிஎம் 2333
கோமுகி இலம்: முகலிபுண்டன்பலையம்
முகலிபுண்டன்பலையம்
முகலிபுண்டன்பலையம், திருப்பூர்
தமிழ் நாடு 538056

Address: S/O
Subramaniam, 2/333,
GOMUKI ILLAM,
PALLAGOUNDANPALAYAM
Mukasipallagoundanpalayam,
Pallagoundanpalayam,
Truppur, Tamil Nadu,
538056

9026 1158 7132

1947
1800 300 1947

help@uidai.gov.in

www.uidai.gov.in

mm



भारतीय विशिष्ट पहचान प्राधिकरण
भारत सरकार
Unique Identification Authority of India
Government of India



E-Aadhaar Letter

பதிவேட்டு எண்/Enrolment No.: 1111/52992/03900



Subramaniam Sengoda (சுப்பிரமணியம் செங்கோடா)

S/O: Sengoda, 2/333, GOMUKI illam,
PALLAGOUNDANPALAYAM AVINASI,
Mukasipallagoundanpalayam, Tiruppur,
Tamil Nadu - 638056

Date: 30/09/2015

- ஆதார் அடையாளத்திற்கான சான்று
- அடையாள சான்றை ஆன்லைன் ஆதர்ப்பு கேள்வி மூலமாகப் பெறவும்.
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- To establish identity, authenticate online.
- This is electronically generated letter.

உங்கள் ஆதார் எண்/Your Aadhaar No.:

8702 9559 2033



ஆதார் -சாதாரண மனிதனின் அதிகாரம்



1947
1800 300 1947



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Signature Not Verified

Digitally signed by UNIQUE IDENTIFICATION AUTHORITY OF INDIA
Date: 2015.09.30 13:49:09 IST

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- ஆதார் ஆதார் பெறுவதற்கு ஒரே ஒரு முறை மட்டுமே நீங்கள் விண்ணப்பத்தை பூர்த்தி செய்து பதிவு செய்ய வேண்டிய அவசியம் ஏற்படும்.
- தயவுசெய்து உங்களின் சமீபத்தைய புதிய மொபைல் நம்பர் மற்றும் e-மெயில் முகவரியை பதிவு செய்யவும். இதனால் உங்களுக்கு பல்வேறு வசதிகளை பெற்றுக் கொள்ளும் சௌகரியம் கிடைக்கும்.

- Aadhaar is valid throughout the country.
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भारत सरकार
GOVERNMENT OF INDIA



भारतीय विशिष्ट पहचान प्राधिकरण
UNIQUE IDENTIFICATION AUTHORITY OF INDIA



சுப்பிரமணியம் செங்கோடா
Subramaniam Sengoda
பிறந்த நாள்/ DOB: 28/02/1944
ஆண் / MALE



முகவரி:

S/O: செங்கோடா, 2/333,
கோமுகி இல்லம்,
பல்லகவுண்டன்பாளையம்
அவினாசி,
முகாசிபல்லக்கவுண்டம்பாளையம், திருப்பூர்,
தமிழ்நாடு - 638056

Address:

S/O: Sengoda, 2/333, GOMUKI illam,
PALLAGOUNDANPALAYAM
AVINASI,
Mukasipallagoundanpalayam,
Tiruppur,
Tamil Nadu - 638056

8702 9559 2033

8702 9559 2033

ஆதார் -சாதாரண மனிதனின் அதிகாரம்

Aadhaar-Aam Admi ka Adhikar



2121010

சென்னை பல்கலைக் கழகம்

University of Madras

அறிவியல் புலம்
FACULTY OF SCIENCE

சென்னைப் பல்கலைக் கழகப் பேரவை..... 1994 ஆம் ஆண்டு.....
 உப்ரல்..... மாநம் நடந்த..... கனிமவியல்..... தோலில்
 எப. தங்கராசு..... என்பவர்..... முதல்..... வகுப்பில்
 தேர்ச்சி பெற்றார் என்று தக்க தோலாளர்கள் சான்றித்தபடி அறிவியல் நிறைஞர்
 என்னும் பட்டத்தை அவருக்குப் பல்கலைக் கழக இலச்சினையுடன் வழங்குகிறது.

The Senate of the UNIVERSITY OF MADRAS hereby makes known that P. Thangaraju has been admitted to the Degree of Master of Science, he/she having been certified by duly appointed Examiners to be qualified to receive the same in Geology and was placed in the First Class, at the Examination held in April 1994.

Given under the seal of the University



சேப்பாக்கம், Chepauk
 சென்னை, Madras
 25-01-1999

பதிவாளர்.
 Registrar.

P.T. Jambales
 துணை வேந்தர்.
 Vice-Chancellor
 257A

GOVERNMENT OF INDIA
MINISTRY OF LABOUR AND REHABILITATION
OFFICE OF THE DIRECTOR GENERAL OF MINES SAFETY



Certificate of Practical experience granted by the Manager to a candidate for Manager's / Surveyor's / Foremen's / Over man's / Sirdar's / Mate's / Short hand / Director's Certificate of competency (Restricted) examination under the Metalliferous Mines Regulations 1961.

I T.VENKATARAJAGOPALAN being the Mines Agent of M/S.LIMENAPH CHEMICALS, RAJAPALAYAM OF LIMESTONE PRODUCTS (Thenmali Limestone Mine) do hereby certify that Thiru. P.THANGARAJU, son of S.PERIASAMY (whose signature is appended) worked as a Geologist in the above mine from 02.05.1994 to 30.12.1999. During his term of work aforesaid, he has obtained practical experience as detailed overleaf. The duties connected with his work have involved continuous attendance at the mine and have been efficiently performed by him.

I believe him to be of good character and a fit and proper candidate to be examined for Certificate of Competency.

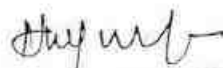

10/6/06
Agent (Mines)
(Signature with date and official Seal)
[T.VENKATARAJAGOPALAN]

Mines Agent:

P.O. : ARUKANGULAM

District : TIRUNELVELI

State : TAMIL NADU


(Signature of Candidate)

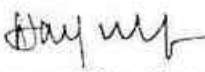
(State name of Mineral) : LIMESTONE

| S.No | Particulars of practical Experience (a) | Place of Experience (b) | Period of practical experience(c) | | Total Experience (e) | | |
|--|---|----------------------------------|-----------------------------------|------------|----------------------|-----------|-----------|
| | | | From | To | Yr. | Month | Day |
| 01. | As a Trainee in Drilling Operation. | Semi Meehanised Opencast working | 02.05.1994 | 15.07.1995 | 01 | 02 | 14 |
| 02. | As a Trainee in Blasting Operation. | | 16.07.1995 | 10.12.1996 | 01 | 04 | 25 |
| 03. | Exploration | | 11.12.1996 | 31.01.1998 | 01 | 01 | 20 |
| 04. | Surveying | | 01.02.1998 | 25.06.1998 | 00 | 04 | 25 |
| 05. | Sampling Quality control and | | 26.06.1998 | 20.07.1999 | 01 | 00 | 24 |
| 06. | Supervision in HEMM Operation. | | 21.07.1999 | 30.12.1999 | 00 | 05 | 10 |
| GRAND TOTAL | | | | | 05 | 07 | 28 |
| (Five Years Seven Months Twenty Eight Days Only) | | | | | | | |

AVERAGE MONTHLY OUTPUT (D) / AVERAGE DAILY EMPLOYMENT (e) DURING THE ABOVE PERIOD IS GIVEN BELOW :

| In below ground working | In open – cast working | In all |
|-------------------------|------------------------|--------|
| Nil | 35 | 35 |
| Nil | | |

OF THENMALAI LIME STONE MINES


Signature of Candidate


Signature of Manager with Date & Seal (Agent-Mines)
[T.VENKATARAJAGOPALAN]

Name of the Mine :

Instructions :-

01. State clearly the nature of duties
02. State whether on surface, in open cast workings or below ground .
03. State specifically the period spent by the applicant in different mining operations, or surveying operations, as the case may be. If the employment has not been such as to involve continuous attendance of the applicant at the mine, it must be stated how many days a week he was employed at the mine, whether underground or above ground and in what capacity.
04. Delete if the mine is a Metalliferous mine.
05. Delete if the mine is a Coal mine.

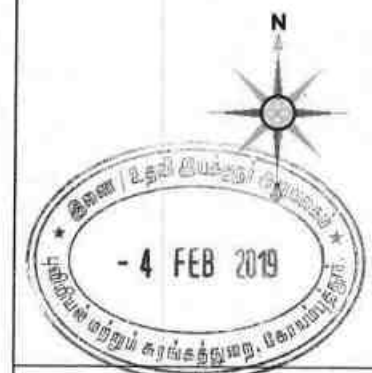
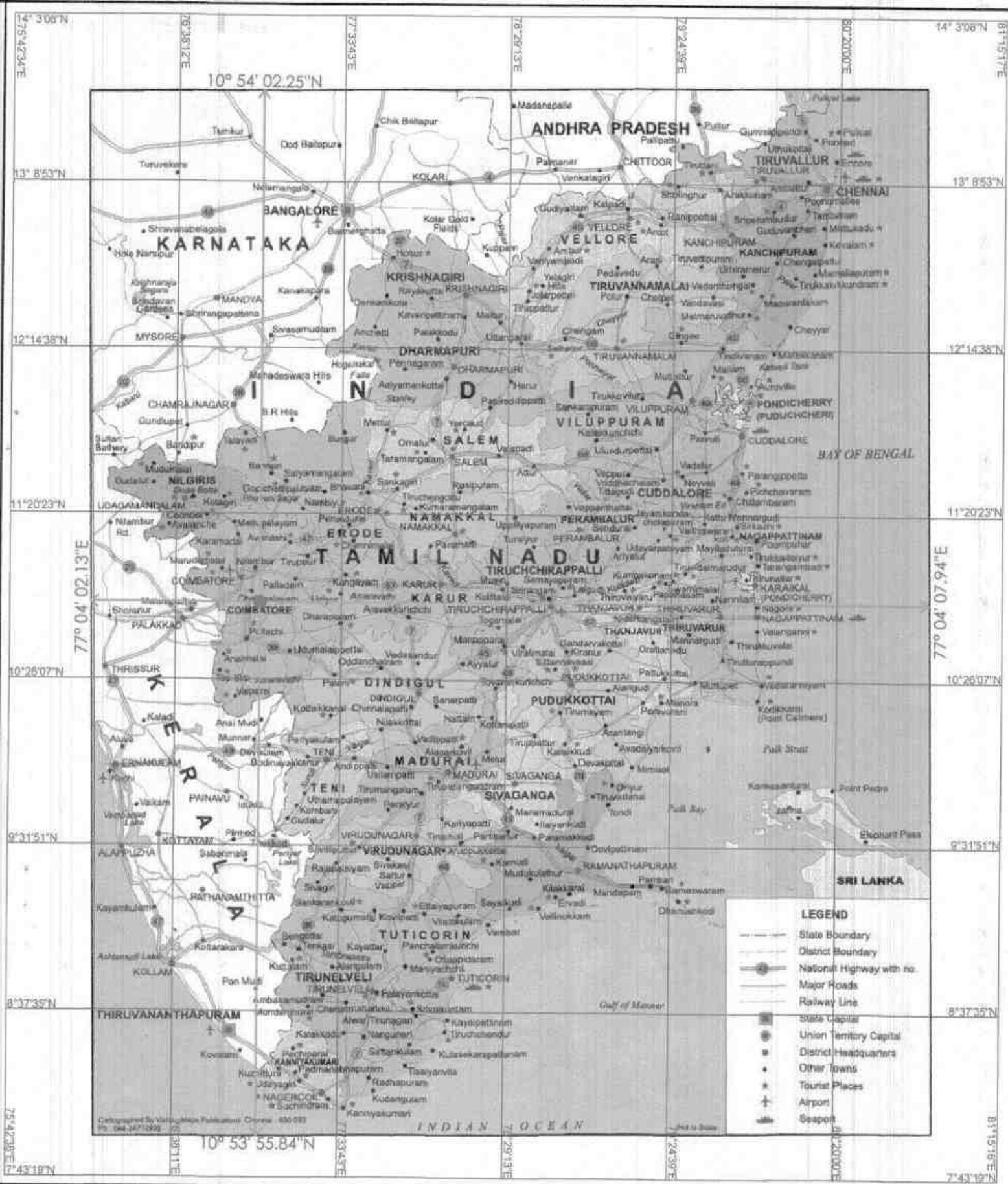


PLATE NO: I
 DATE OF SURVEY : 18.01.2019

APPLICANT:
 TV.GOMUKI BLUE METALS LLP,
 S.F.NO.238/2, PERIYAKUYILI,
 PACHAPALAYAM,
 SULUR TALUK,
 COIMBATORE DISTRICT.

LOCATION OF QUARRY LEASE APPLIED AREA:
 S.F.NO.S : 238/2(P), 239/1B, 2B, 240/2B(P) etc.,
 EXTENT : 2.47.9 Ha.
 VILLAGE : PACHAPALAYAM,
 TALUK : SULUR,
 DISTRICT : COIMBATORE,
 STATE : TAMIL NADU.

INDEX
 Q. L.A. AREA : ●
 TOPO SHEET NO. : 58 F/01
 LATITUDE : 10° 53' 55.84"N to 10° 54' 02.25"N
 LONGITUDE : 77° 04' 02.13"E to 77° 04' 07.94"E

LOCATION PLAN
 SCALE 1:24,00,000

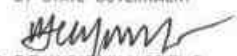
PREPARED BY :
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP AUTHENTICATED BY STATE GOVERNMENT

 Dr. P. THANGARAJU, M.Sc., Ph.D.,
 QUALIFIED PERSON
 260 A

PLATE NO:I-A

DATE OF SURVEY : 18.01.2019

APPLICANT:

T.VI.GOMUKI BLUE METALS LTD,
S.F.NO.238/2, PERIYAKUYIKI,
PACHAPALAYAM,
SULUR TALUK,
COIMBATORE DISTRICT.



LOCATION OF QUARRY

LEASE APPLIED AREA:

S.F.NO.S : 238/2(P), 239/1B, 2B, 240/2B(P) etc.,
EXTENT : 2.47.9 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

ROADS

Hard surface, all weather
more than two lanes wide..... CLASSIFIED LANE
Two lanes wide..... UNCLASSIFIED LANE
Less than two lanes wide..... UNCLASSIFIED LANE
Loose surface
Graded, all weather..... UNCLASSIFIED LANE
Dry weather, or dirt..... UNCLASSIFIED LANE
Track; Trail..... UNCLASSIFIED LANE

RAILROADS

Normal gauge (5'.6")..... SINGLE TRACK MULTIPLE TRACK
Narrow gauge..... UNCLASSIFIED LANE

BOUNDARIES

International..... UNCLASSIFIED LANE
State..... UNCLASSIFIED LANE
Landplane airport..... UNCLASSIFIED LANE
Landing area..... UNCLASSIFIED LANE
Seaplane airport..... UNCLASSIFIED LANE
Seaplane anchorage..... UNCLASSIFIED LANE
Unclassified stream..... UNCLASSIFIED LANE
Buildings or landmark feature..... UNCLASSIFIED LANE
Mine..... UNCLASSIFIED LANE
Horizontal control point..... UNCLASSIFIED LANE
spot elevation in feet..... 792
swamp; Orchard, vineyard..... UNCLASSIFIED LANE
Woods-brushwood..... UNCLASSIFIED LANE

TOPO SKETCH OF QUARRY

LEASE APPLIED AREA FOR

10Km RADIUS

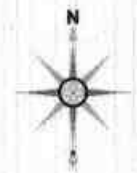
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PREPARED BY:

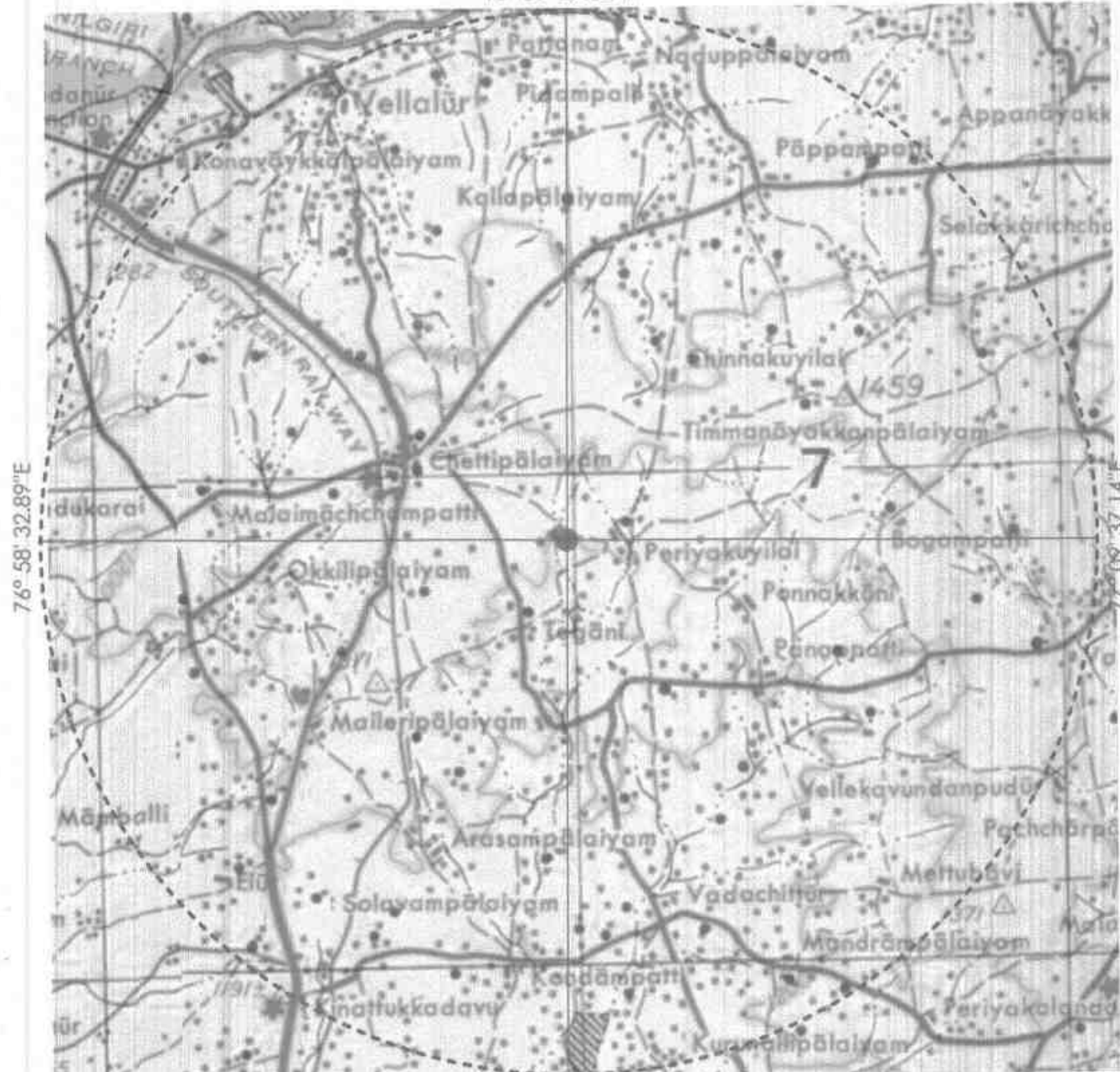
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP
AUTHENTICATED
BY STATE GOVERNMENT

D.P. THANGARAJU, M.Sc, Ph.D.,
QUALIFIED PERSON

261 A



10° 59' 27.62"N



76° 58' 32.89"E

76° 09' 37.14"E

10° 48' 30.47"N

TOPO SHEET NO. : 58 F/01

LATITUDE : 10° 53' 55.84"N to 10° 54' 02.25"N

LONGITUDE : 77° 04' 02.13"E to 77° 04' 07.94"E

10KM RADIUS :

Q.L.APPLIED AREA :

OCTOBER TO DECEMBER

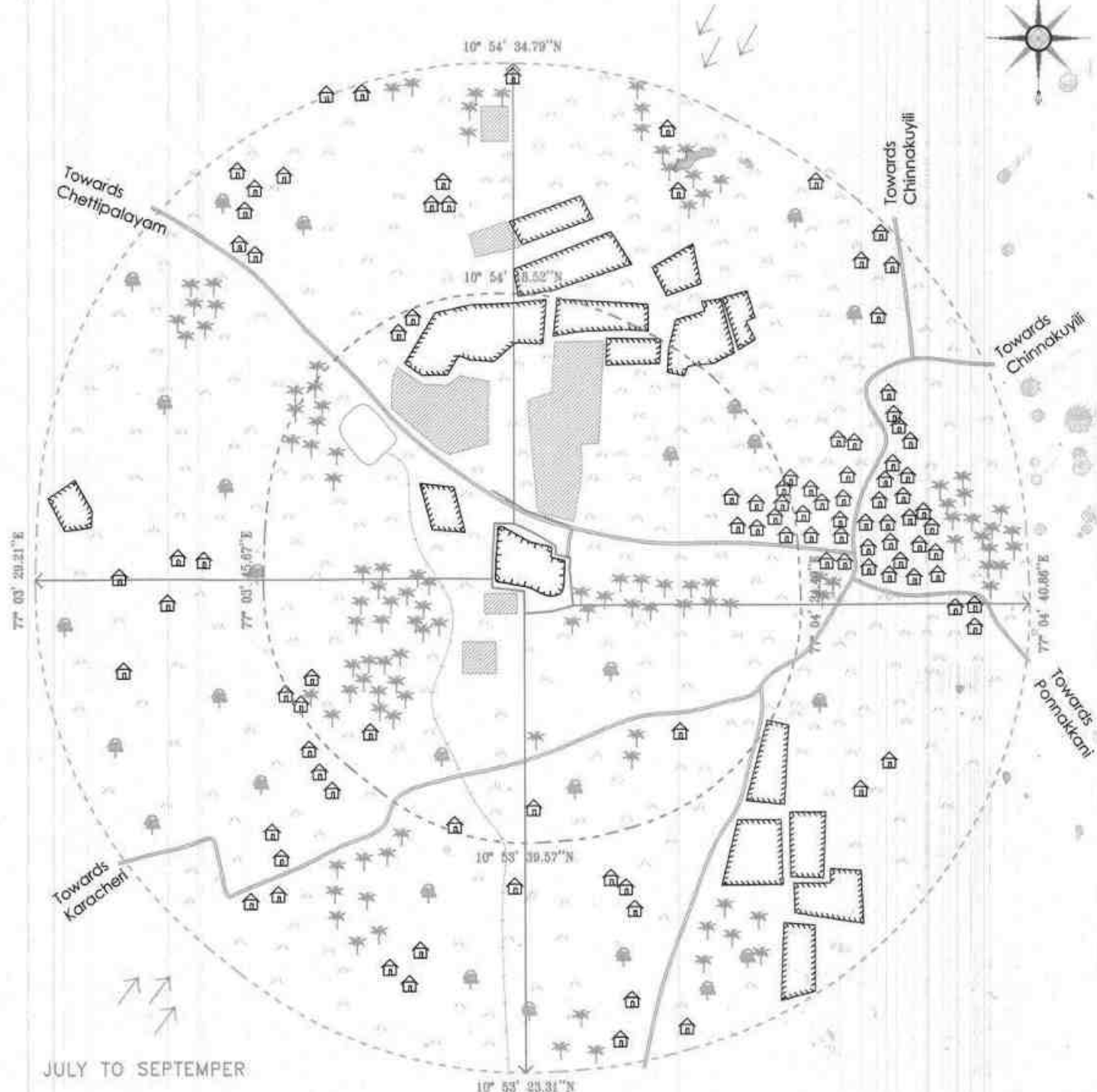


PLATE NO: I-B
DATE OF SURVEY : 18.01.2019

1Km Radius :
500m Radius :
Q.L.Applied Area :
TOPO SHEET NO. : 58 F/01
LATITUDE : 10° 53' 55.84"N to 10° 54' 02.25"N
LONGITUDE : 77° 04' 02.13"E to 77° 04' 07.94"E

APPLICANT:
TVI.GOMUKI BLUE METALS LLP,
S.F.NO.238/2, PERIYAKUYILI,
PACHAPALAYAM,
SULUR TALUK,
COIMBATORE DISTRICT.



LOCATION OF QUARRY LEASE APPLIED AREA:
S.F.NO.S : 238/2(P),239/1B,2B,240/2B(P)etc.,
EXTENT : 2.47.9 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

- APPROACH ROAD
- VILLAGE ROAD
- HABITATION
- TREES
- AGRICULTURAL LAND
- PIT
- WIND DIRECTION
- CRUSHER PLANT
- POWER LINE
- TANK
- ODAI

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 1Km RADIUS

SCALE- 1:10,000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP AUTHENTICATED BY STATE GOVERNMENT

Dr. P. THANARAJU, M.Sc., Ph.D.,
QUALIFIED PERSON

LANDUSE PATTERN

| DESCRIPTION | PERCENTAGE | INDEX |
|-------------------|------------|-------|
| ROADS | (10%) | |
| HABITATION | (10%) | |
| TREES | (20%) | |
| AGRICULTURAL LAND | (40%) | |
| PIT\CRUSHER PLANT | (20%) | |

JULY TO SEPTEMPER

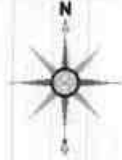


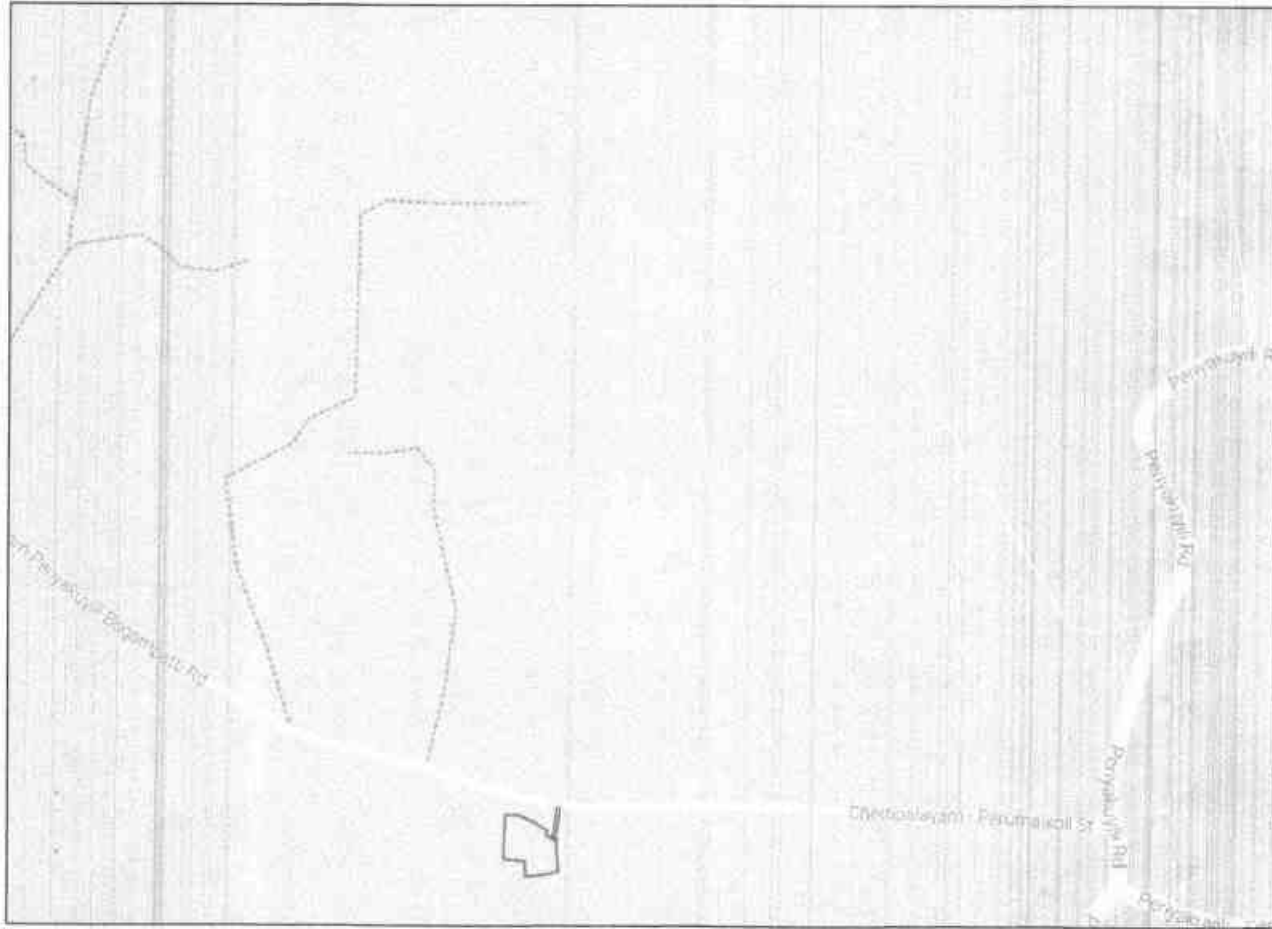
PLATE NO: IC - 4 FEB 2019
DATE OF SURVEY : 18.01.2019

APPLICANT:
T.VI.GOMUKI BLUE METALS P.P.,
S.F.NO.238/2, PERIYAKUYILI,
PACHAPALAYAM,
SULUR TALUK,
COIMBATORE DISTRICT.

LOCATION OF QUARRY

LEASE APPLIED AREA:

S.F.NO.S : 238/2(P), 239/1B, 2B, 240/2B(P) etc.,
EXTENT : 2.47.9 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.



INDEX

Q.L.APPLIED AREA



CART TRACK



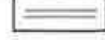
MAJOR ROAD



VILLAGE ROAD



APPROACH ROAD



KEY PLAN

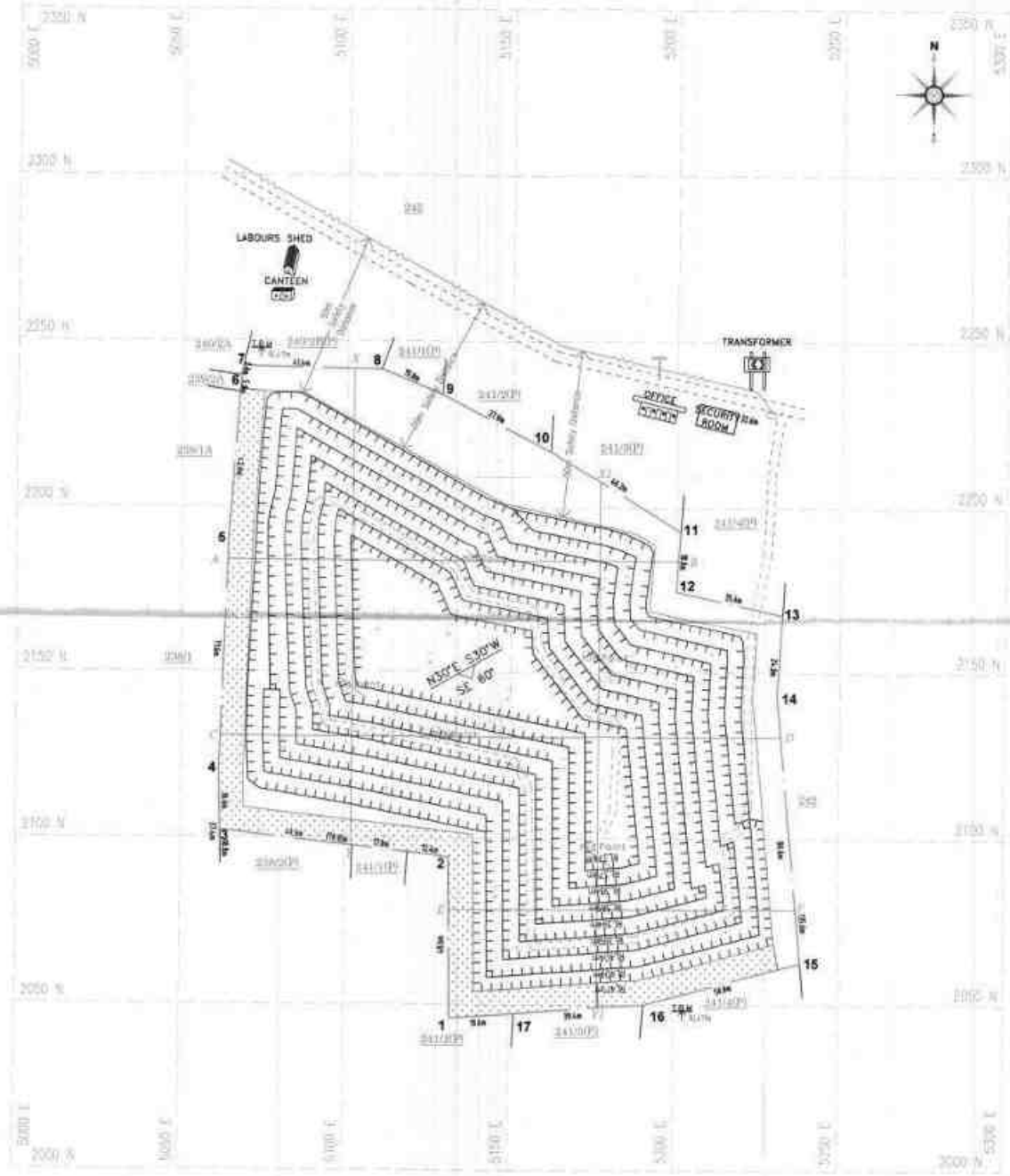
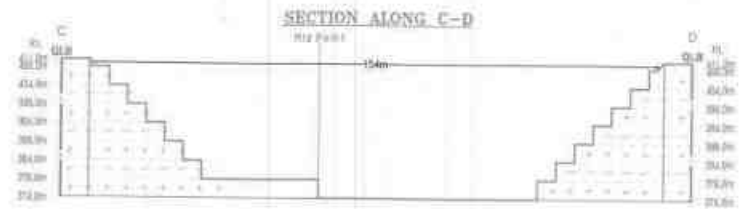
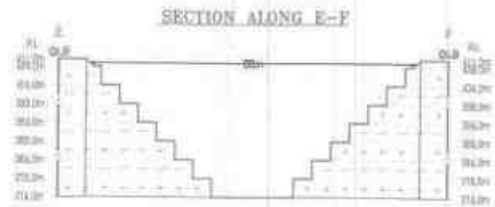
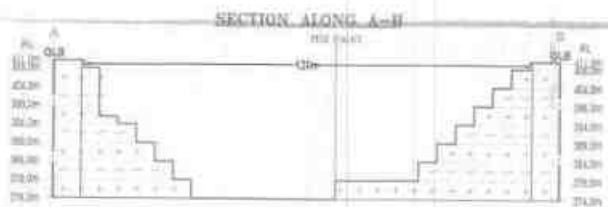
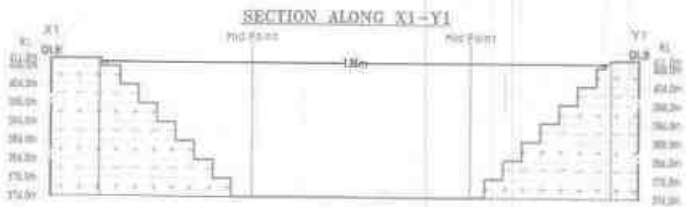
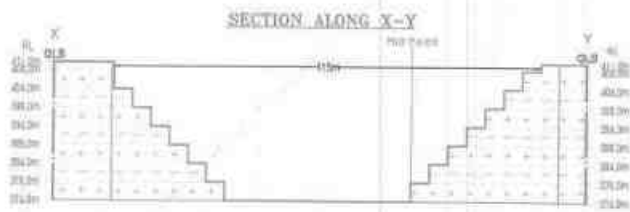
Not To Scale

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP

AUTHENTICATED
BY STATE GOVERNMENT

Dr. P. Thangaraju
Dr.P.THANGARAJU, M.SC., M.D.,
QUALIFIED PERSON



BOUNDARY CO-ORDINATES

| S.N. | LATITUDE | LONGITUDE |
|------|-----------------|-----------------|
| 1 | 10° 53' 55.84"N | 77° 04' 04.43"E |
| 2 | 10° 53' 57.42"N | 77° 04' 04.45"E |
| 3 | 10° 53' 57.89"N | 77° 04' 02.14"E |
| 4 | 10° 53' 58.30"N | 77° 04' 02.13"E |
| 5 | 10° 54' 00.65"N | 77° 04' 02.23"E |
| 6 | 10° 54' 02.15"N | 77° 04' 02.35"E |
| 7 | 10° 54' 02.35"N | 77° 04' 02.37"E |
| 8 | 10° 54' 02.22"N | 77° 04' 03.76"E |
| 9 | 10° 54' 01.87"N | 77° 04' 04.36"E |
| 10 | 10° 54' 01.40"N | 77° 04' 05.44"E |
| 11 | 10° 54' 00.61"N | 77° 04' 06.74"E |
| 12 | 10° 54' 00.02"N | 77° 04' 06.69"E |
| 13 | 10° 53' 59.76"N | 77° 04' 07.76"E |
| 14 | 10° 53' 58.98"N | 77° 04' 07.71"E |
| 15 | 10° 53' 58.36"N | 77° 04' 07.94"E |
| 16 | 10° 53' 55.97"N | 77° 04' 06.51"E |
| 17 | 10° 53' 55.89"N | 77° 04' 05.08"E |

DATUM WGS-84

PLATE NO-IV
DATE OF SURVEY : 18.01.2019

APPLICANT:
M/GOMMUKI BLUE METALS LLP
S.J.NO.238/2, PERIYAKUYLE
PACHAPALAYAM,
SULUR TALUK,
COIMBATORE DISTRICT. - 4 FEB 2019

LOCATION OF QUARRY
LEASE APPLIED AREA:
S.F.NO.S : 236/2(P), 239/2
EXTENT : 2.47.9 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

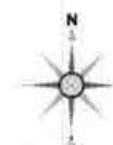
| | |
|----------------------------|--|
| Q.L. AFFUED AREA BOUNDARY | |
| 7.5m & 50m SAFETY DISTANCE | |
| TEMPORARY BENCH MARK | |
| APPROACH ROAD | |
| QUARRY PIT | |
| QUARRY ROAD | |
| ROUGH STONE | |
| GRAVEL | |
| STRKE AND DIP | |
| ROAD | |
| POWER LINE | |

CONCEPTUAL PLAN & SECTIONS
SCALE 1 : 1000
SECTION HOR 1 : 1000, VER 1 : 1000

PREPARED BY:
M/G. TO CERTIFY THAT THE INFORMATION IN THIS PLAN IS TRUE AND CORRECT TO THE BEST OF HIS KNOWLEDGE UNDER THE OATHSWORN.
S. R. HANDEGALM METALS
SULUR, COIMBATORE
264A

3-V TY PLANTATION

Ultimate Pit Dimension/Max
130mX154mX37m(d)



BOUNDARY CO-ORDINATES

| S.N. | LATITUDE | LONGITUDE |
|------|-----------------|-----------------|
| 1 | 10° 53' 55.84"N | 77° 04' 04.43"E |
| 2 | 10° 53' 57.42"N | 77° 04' 04.43"E |
| 3 | 10° 53' 57.89"N | 77° 04' 02.14"E |
| 4 | 10° 53' 58.30"N | 77° 04' 02.13"E |
| 5 | 10° 54' 00.65"N | 77° 04' 02.23"E |
| 6 | 10° 54' 02.15"N | 77° 04' 02.35"E |
| 7 | 10° 54' 02.25"N | 77° 04' 02.37"E |
| 8 | 10° 54' 02.22"N | 77° 04' 03.76"E |
| 9 | 10° 54' 01.97"N | 77° 04' 04.36"E |
| 10 | 10° 54' 01.40"N | 77° 04' 05.44"E |
| 11 | 10° 54' 00.61"N | 77° 04' 06.74"E |
| 12 | 10° 54' 00.02"N | 77° 04' 06.69"E |
| 13 | 10° 53' 59.78"N | 77° 04' 07.76"E |
| 14 | 10° 53' 58.98"N | 77° 04' 07.71"E |
| 15 | 10° 53' 58.36"N | 77° 04' 07.94"E |
| 16 | 10° 53' 55.97"N | 77° 04' 06.37"E |
| 17 | 10° 53' 55.89"N | 77° 04' 05.08"E |

DATUM WGS-84

PLATE NO-II
DATE OF SURVEY - 18.01.2019

APPLICANT:
M. GOMUKI BLUE METALS LLP,
S.F.NO 238/2, PETH KUYILL,
PACHAPALAYAM,
SULUR TALUK,
COIMBATORE DISTRICT.

LOCATION OF QUARRY
LEASE APPLIED AREA:
S.F.NO.S : 238/2(P), 239/18, 28, 240/28(P) etc.,
EXTENT : 2.47.9 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

| | |
|----------------------------|--|
| Q.L. APPLIED AREA BOUNDARY | |
| 7.5m & 50m SAFETY DISTANCE | |
| TEMPORARY BENCH MARK | |
| APPROACH ROAD | |
| QUARRY PIT | |
| QUARRY ROAD | |
| ROUGH STONE | |
| GRAVEL | |
| STRIKE AND DIP | |
| ROAD | |
| POWER LINE | |

QUARRY LEASE & SURFACE PLAN
SCALE 1 : 1000

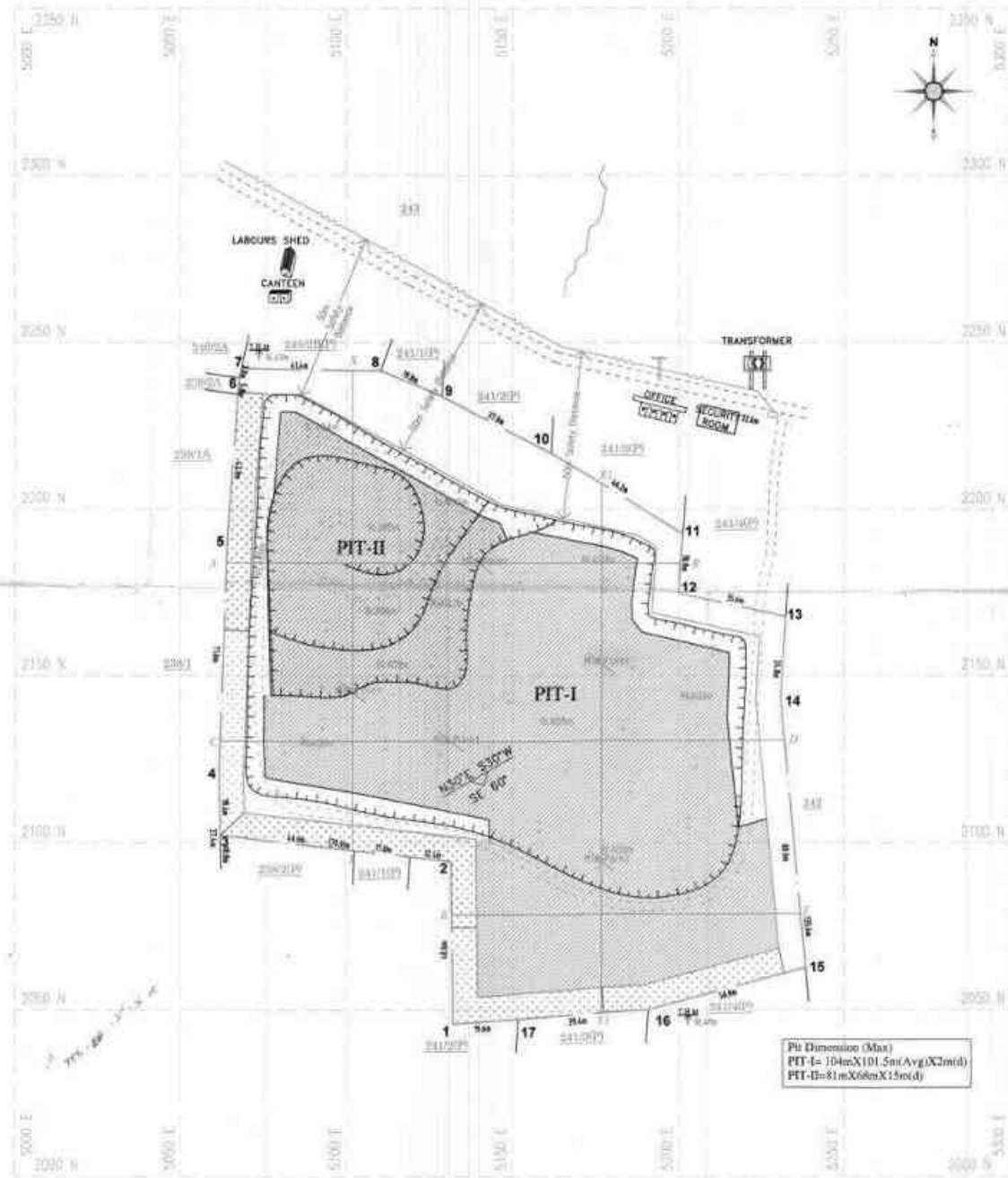
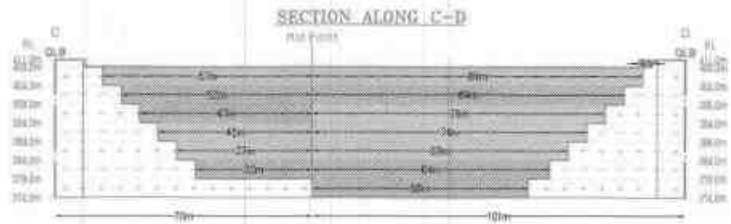
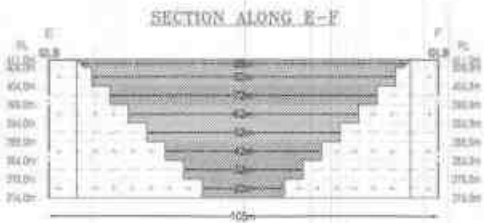
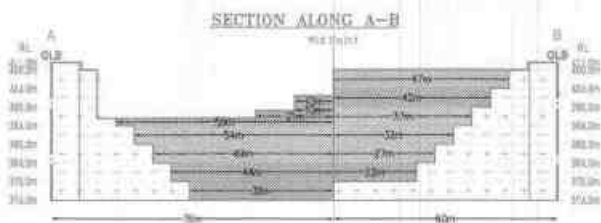
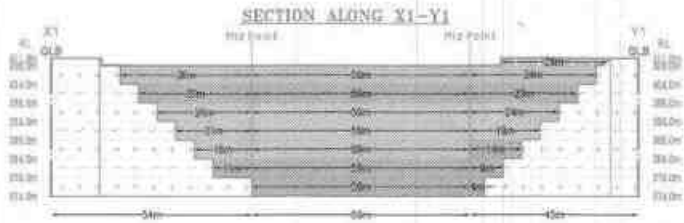
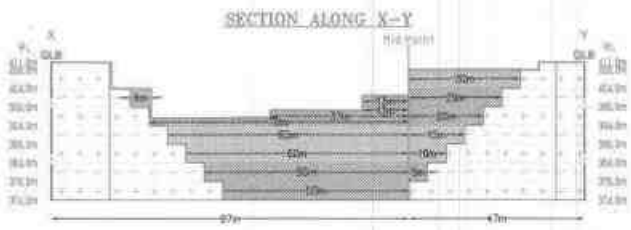
PREPARED BY:
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLAN IS TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE BASED UPON THE LEASER'S
AUTHENTICATED STATEMENT (BENCH MARK)

R.H. THAMBI RAJ, M.Sc.Ph.D.,
QUALIFIED PERSON

265 A



Pit Dimension (Max)
PIT-I= 104mX101.5m(Avg)X2m(d)
PIT-II=81mX68mX15m(d)



BOUNDARY CO-ORDINATES

| S.N. | LATITUDE | LONGITUDE |
|------|-----------------|-----------------|
| 1 | 10° 53' 55.84"N | 77° 04' 04.43"E |
| 2 | 10° 53' 57.42"N | 77° 04' 04.43"E |
| 3 | 10° 53' 57.88"N | 77° 04' 02.14"E |
| 4 | 10° 53' 58.30"N | 77° 04' 02.13"E |
| 5 | 10° 54' 00.65"N | 77° 04' 02.23"E |
| 6 | 10° 54' 02.15"N | 77° 04' 02.35"E |
| 7 | 10° 54' 02.25"N | 77° 04' 02.37"E |
| 8 | 10° 54' 02.22"N | 77° 04' 03.76"E |
| 9 | 10° 54' 01.97"N | 77° 04' 04.36"E |
| 10 | 10° 54' 01.40"N | 77° 04' 05.44"E |
| 11 | 10° 54' 00.61"N | 77° 04' 06.74"E |
| 12 | 10° 54' 00.02"N | 77° 04' 06.68"E |
| 13 | 10° 53' 58.78"N | 77° 04' 07.76"E |
| 14 | 10° 53' 58.98"N | 77° 04' 07.71"E |
| 15 | 10° 53' 56.38"N | 77° 04' 07.94"E |
| 16 | 10° 53' 55.97"N | 77° 04' 08.37"E |
| 17 | 10° 53' 55.89"N | 77° 04' 05.68"E |

DATE OF SURVEY : 18.01.2019

APPLICANT:
 VI. GOMURI BLUE METAL
 S.F. NO 238/2, PERIYAR STREET,
 PACHAPALAYAM,
 SULLUR TALUK,
 COMBATORE DISTRICT, FEB 2019

LOCATION OF QUARRY
LEASE APPLIED AREA:
 S.F. NO. S : 238/2(P), 239/1(B), 240/1(B) etc.,
 EXTENT : 2.479 Ha.
 VILLAGE : PACHAPALAYAM,
 TALUK : SULLUR,
 DISTRICT : COMBATORE,
 STATE : TAMILNADU.



INDEX

| | |
|----------------------------|--|
| Q.L. APPLIED AREA BOUNDARY | |
| 7.5m & 30m SAFETY DISTANCE | |
| TEMPORARY BENCH MARK | |
| APPROACH ROAD | |
| QUARRY PIT | |
| QUARRY ROAD | |
| ROUGH STONE | |
| GRAVEL | |
| STRIKE AND DIP | |
| ROAD | |
| POWER LINE | |

Pit Dimension (Mts)
 PIT-I = 104mX101.5mX5m(Avg)(X2m)d
 PIT-II = 81mX68mX15m(d)

PRESENT & POST LAND USE PATTERN

| DESCRIPTION | PRESENT AREA (Ha) | AREA AT THE END OF THIS QUARRYING PERIOD (Ha) |
|----------------------|-------------------|---|
| AREA UNDER QUARRYING | 1.82.2 | 1.86.0 |
| INFRASTRUCTURE | Nil | Nil |
| ROADS | 0.01.0 | 0.02.0 |
| GREEN BELT | Nil | 0.25.9 |
| UN-UTILIZED AREA | 0.64.7 | 0.30.0 |
| GRAND TOTAL | 2.47.8 | 2.47.8 |

| | |
|-------------------|-------------------|
| I Yr EXCAVATION | I Yr PLANTATION |
| II Yr EXCAVATION | II Yr PLANTATION |
| III Yr EXCAVATION | III Yr PLANTATION |
| IV Yr EXCAVATION | IV Yr PLANTATION |
| V Yr EXCAVATION | V Yr PLANTATION |

TOPOGRAPHY GEOLOGICAL, YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS
 SCALE 1 : 1000
 SECTION HOR 1 : 1000, VER 1 : 1000

PREPARED BY:
 THE IS TO CERTIFY THAT THE INFORMATION IN THIS PLAN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASING AGREEMENT & SURVEY INSTRUMENTS.
 S.P. HANUMANTHALU, S.P.A.S., QUARRYING PERSON

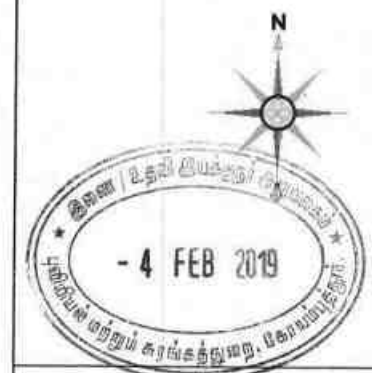
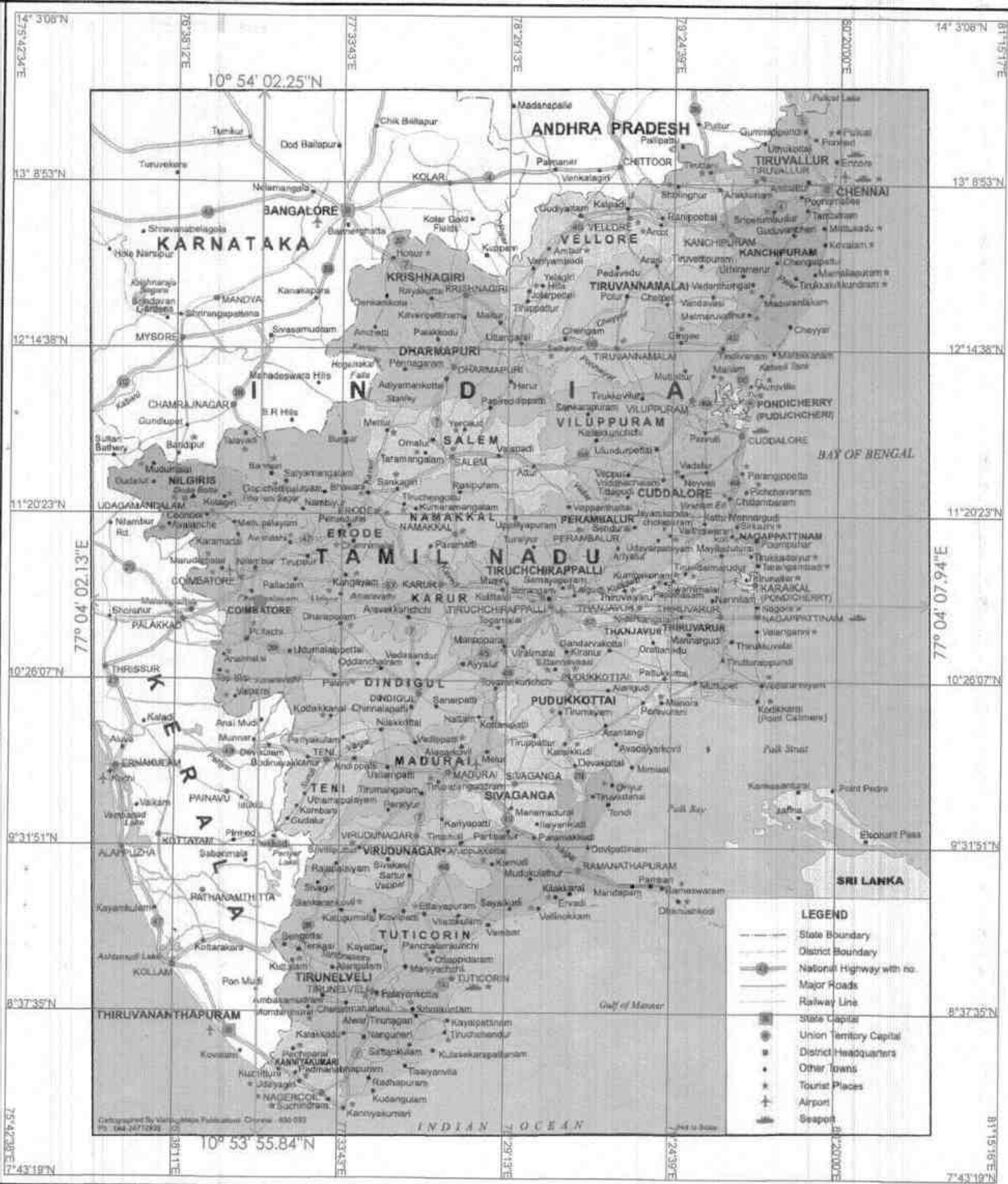


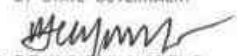
PLATE NO: I
 DATE OF SURVEY : 18.01.2019

APPLICANT:
 TV.GOMUKI BLUE METALS LLP,
 S.F.NO.238/2, PERIYAKUYILI,
 PACHAPALAYAM,
 SULUR TALUK,
 COIMBATORE DISTRICT.

LOCATION OF QUARRY LEASE APPLIED AREA:
 S.F.NO.S : 238/2(P),239/1B,2B,240/2B(P)etc.,
 EXTENT : 2.47.9 Ha.
 VILLAGE : PACHAPALAYAM,
 TALUK : SULUR,
 DISTRICT : COIMBATORE,
 STATE : TAMIL NADU.

INDEX
 Q. L.A. AREA : ●
 TOPO SHEET NO. : 58 F/01
 LATITUDE : 10° 53' 55.84"N to 10° 54' 02.25"N
 LONGITUDE : 77° 04' 02.13"E to 77° 04' 07.94"E

LOCATION PLAN
 SCALE 1:24,00,000

PREPARED BY :
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP AUTHENTICATED BY STATE GOVERNMENT

 Dr. P. THANGARAJU, M.Sc., Ph.D.,
 QUALIFIED PERSON
 267 A

- LEGEND**
- State Boundary
 - District Boundary
 - National Highway with no.
 - Major Roads
 - Railway Line
 - State Capital
 - Union Territory Capital
 - District Headquarters
 - Other towns
 - ★ Tourist Places
 - ✈ Airport
 - ⚓ Seaport

PLATE NO:I-A

DATE OF SURVEY : 18.01.2019

APPLICANT:

T.VI.GOMUKI BLUE METALS LTD,
S.F.NO.238/2, PERIYAKUYIKI,
PACHAPALAYAM,
SULUR TALUK,
COIMBATORE DISTRICT.



LOCATION OF QUARRY

LEASE APPLIED AREA:

S.F.NO.S : 238/2(P),239/1B,2B,240/2B(P)etc.,
EXTENT : 2.47.9 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

ROADS

- Hard surface,all weather more than two lanes wide.....
- Two lanes wide.....
- Less than two lanes wide.....
- Loose surface
- Graded,all weather.....
- Dry weather,or dirt.....
- Track;Trail.....

RAILROADS

- Normal gauge(5'.6").....
- Narrow gauge.....

BOUNDARIES

- International.....
- State.....
- Landplane airport.....
- Landing area.....
- Seaplane airport.....
- Seaplane anchorage.....
- Unclassified stream.....
- Buildings or landmark feature.....
- Mine.....
- Horizontal control point.....
- spot elevation in feet.....
- swamp;Orchard,vineyard.....
- Woods-brushwood.....

TOPO SKETCH OF QUARRY

LEASE APPLIED AREA FOR

10Km RADIUS

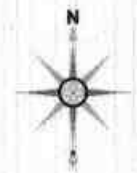
SCALE- 1:100000

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 LEASEMAP
AUTHENTICATED
BY STATE GOVERNMENT

[Signature]
DR.P.THANGARAJU,M.SC,PH.D.,
QUALIFIED PERSON

268 A



10° 59' 27.62"N



76° 58' 32.89"E

76° 09' 37.14"E

10° 48' 30.47"N

TOPO SHEET NO. : 58 F/01

LATITUDE : 10° 53' 55.84"N to 10° 54' 02.25"N

LONGITUDE : 77° 04' 02.13"E to 77° 04' 07.94"E

10KM RADIUS :

Q.L.APPLIED AREA :

OCTOBER TO DECEMBER

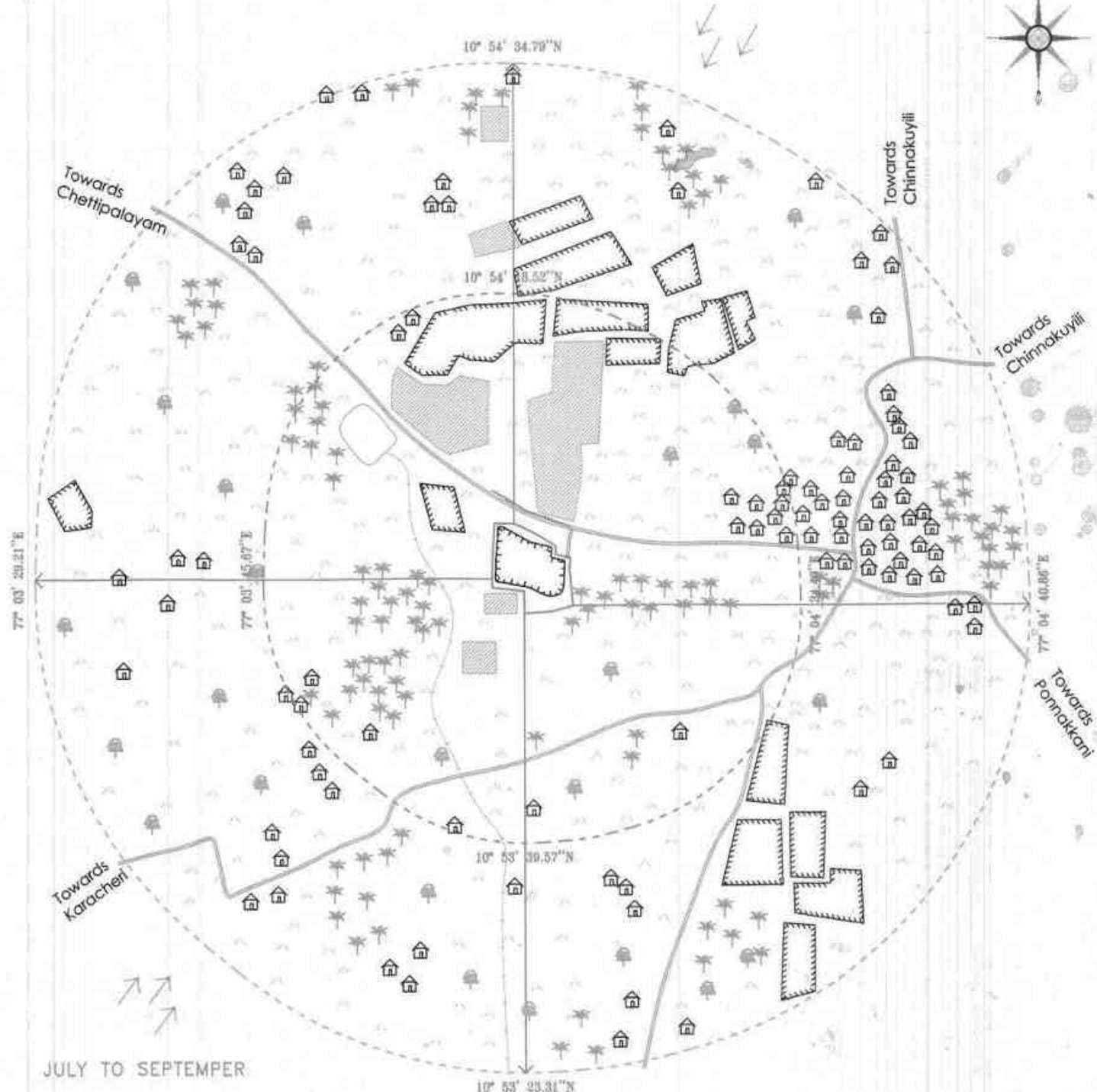


PLATE NO: I-B
DATE OF SURVEY : 18.01.2019

1Km Radius :

500m Radius :

Q.L.Applied Area :

TOPO SHEET NO. : 58 F/01

LATITUDE : 10° 53' 55.84"N to 10° 54' 02.25"N

LONGITUDE : 77° 04' 02.13"E to 77° 04' 07.94"E

APPLICANT:
T.VI.GOMUKI BLUE METALS LLP,
S.F.NO.238/2, PERIYAKUYILI,
PACHAPALAYAM,
SULUR TALUK,
COIMBATORE DISTRICT.



LOCATION OF QUARRY LEASE APPLIED AREA:
S.F.NO.S : 238/2(P),239/1B,2B,240/2B(P)etc.,
EXTENT : 2.47.9 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

| | |
|-------------------|--|
| APPROACH ROAD | |
| VILLAGE ROAD | |
| HABITATION | |
| TREES | |
| AGRICULTURAL LAND | |
| PIT | |
| WIND DIRECTION | |
| CRUSHER PLANT | |
| POWER LINE | |
| TANK | |
| ODAI | |

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 1Km RADIUS

SCALE- 1:10,000

PREPARED BY :
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP AUTHENTICATED BY STATE GOVERNMENT
Dr. P. Thanaraju 269 A
Dr.P.THANARAJU, M.Sc, Ph.D.,
QUALIFIED PERSON

JULY TO SEPTEMPER

| LANDUSE PATTERN | | |
|-------------------|------------|-------|
| DESCRIPTION | PERCENTAGE | INDEX |
| ROADS | (10%) | |
| HABITATION | (10%) | |
| TREES | (20%) | |
| AGRICULTURAL LAND | (40%) | |
| PIT\CRUSHER PLANT | (20%) | |

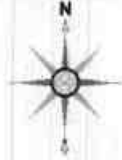


PLATE NO. IC - 4 FEB 2019
DATE OF SURVEY : 18.01.2019

APPLICANT:
T.VI.GOMUKI BLUE METALS P.P.,
S.F.NO.238/2, PERIYAKUYILI,
PACHAPALAYAM,
SULUR TALUK,
COIMBATORE DISTRICT.

LOCATION OF QUARRY

LEASE APPLIED AREA:

S.F.NO.S : 238/2(P), 239/1B, 2B, 240/2B(P) etc.,
EXTENT : 2.47.9 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

Q.L.APPLIED AREA



CART TRACK



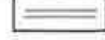
MAJOR ROAD



VILLAGE ROAD



APPROACH ROAD



KEY PLAN

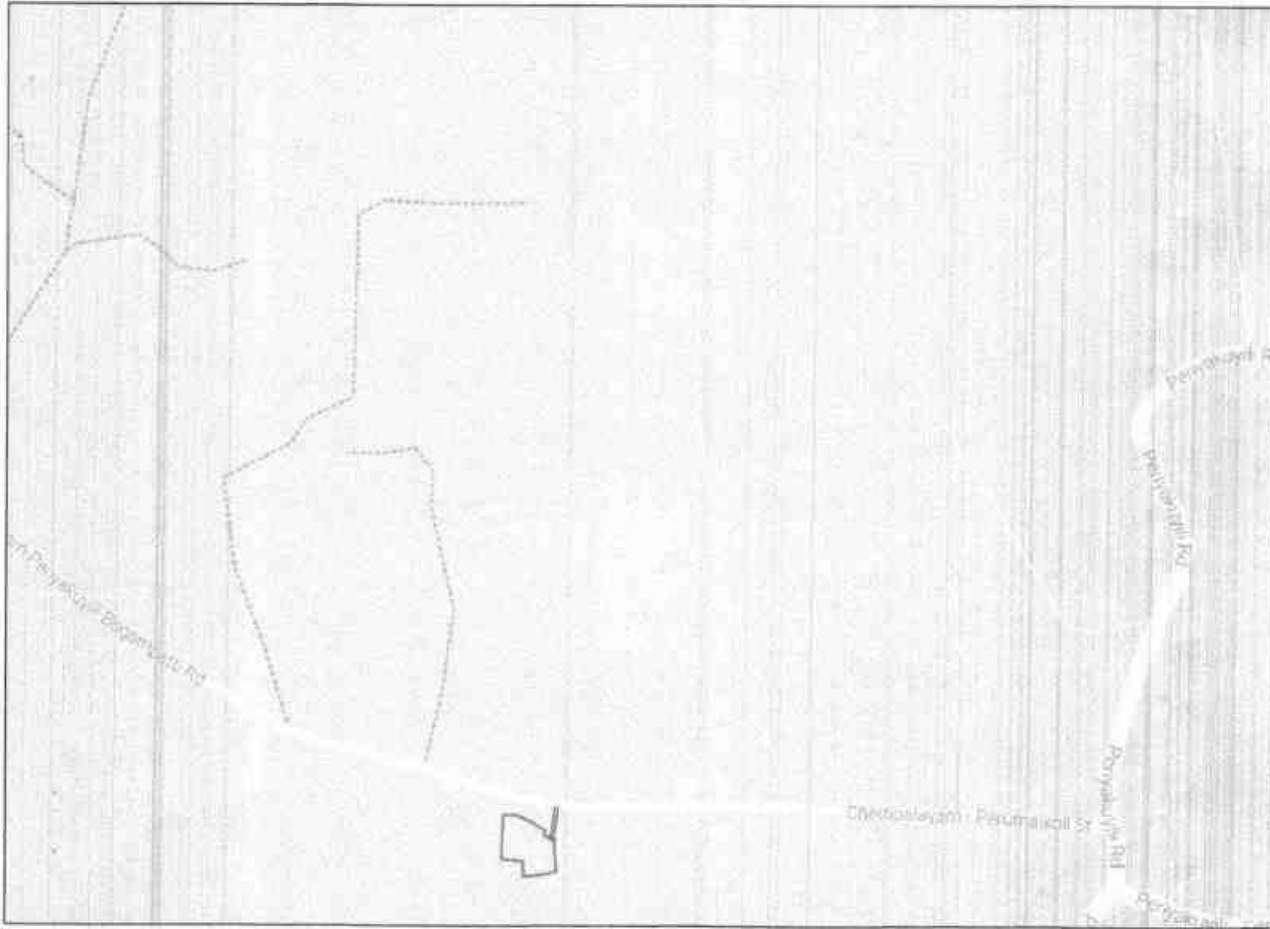
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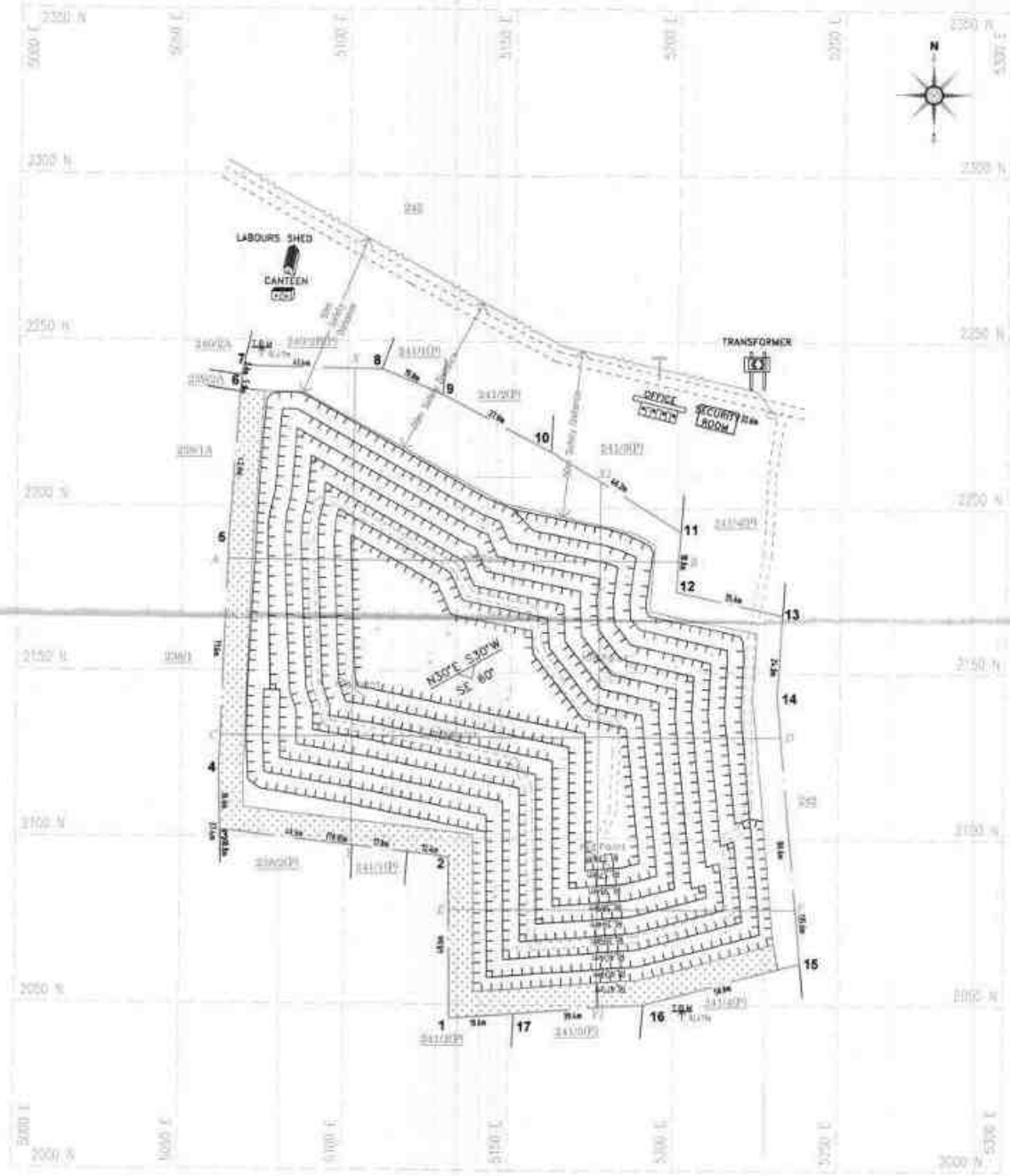
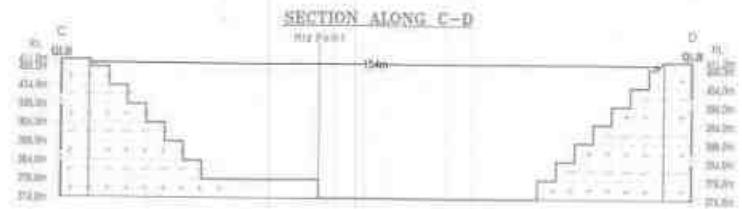
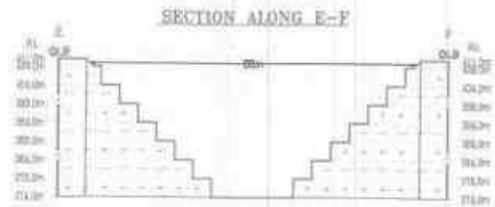
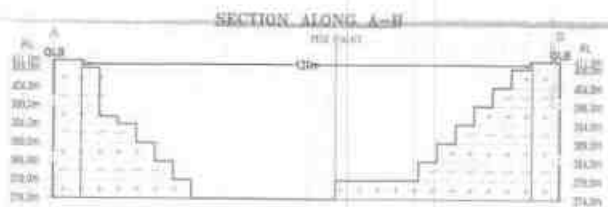
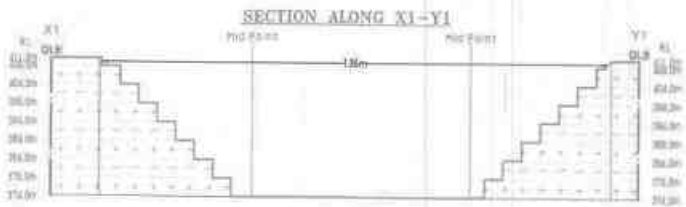
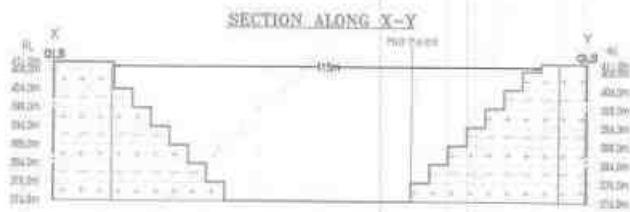
PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP

AUTHENTICATED
BY STATE GOVERNMENT


Dr.P.THANGARAJU, M.SC, M.D.,
QUALIFIED PERSON





BOUNDARY CO-ORDINATES

| S.N. | LATITUDE | LONGITUDE |
|------|-----------------|-----------------|
| 1 | 10° 53' 55.84"N | 77° 04' 04.43"E |
| 2 | 10° 53' 57.42"N | 77° 04' 04.45"E |
| 3 | 10° 53' 57.89"N | 77° 04' 02.14"E |
| 4 | 10° 53' 58.30"N | 77° 04' 02.13"E |
| 5 | 10° 54' 00.65"N | 77° 04' 02.23"E |
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| 12 | 10° 54' 00.02"N | 77° 04' 06.69"E |
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| 15 | 10° 53' 58.36"N | 77° 04' 07.94"E |
| 16 | 10° 53' 55.97"N | 77° 04' 06.31"E |
| 17 | 10° 53' 55.89"N | 77° 04' 05.08"E |

DATUM WGS-84

PLATE NO-IV
DATE OF SURVEY : 18.01.2019

APPLICANT:
M/GOMMUKI BLUE METALS LLP
S.J.NO.238/2, PERIYAKULI, SRI SANKARAPALLE, PACHAPALAYAM, SULLUR TALUK, COIMBATORE DISTRICT. - 4 FEB 2019

LOCATION OF QUARRY
LEASE APPLIED AREA:
S.F.NO.S : 238/2(P), 239/2, 240/2, 241/2, 242/2, 243/2, 244/2, 245/2, 246/2, 247/2, 248/2, 249/2, 250/2, 251/2, 252/2, 253/2, 254/2, 255/2, 256/2, 257/2, 258/2, 259/2, 260/2, 261/2, 262/2, 263/2, 264/2, 265/2, 266/2, 267/2, 268/2, 269/2, 270/2, 271/2, 272/2, 273/2, 274/2, 275/2, 276/2, 277/2, 278/2, 279/2, 280/2, 281/2, 282/2, 283/2, 284/2, 285/2, 286/2, 287/2, 288/2, 289/2, 290/2, 291/2, 292/2, 293/2, 294/2, 295/2, 296/2, 297/2, 298/2, 299/2, 300/2, 301/2, 302/2, 303/2, 304/2, 305/2, 306/2, 307/2, 308/2, 309/2, 310/2, 311/2, 312/2, 313/2, 314/2, 315/2, 316/2, 317/2, 318/2, 319/2, 320/2, 321/2, 322/2, 323/2, 324/2, 325/2, 326/2, 327/2, 328/2, 329/2, 330/2, 331/2, 332/2, 333/2, 334/2, 335/2, 336/2, 337/2, 338/2, 339/2, 340/2, 341/2, 342/2, 343/2, 344/2, 345/2, 346/2, 347/2, 348/2, 349/2, 350/2, 351/2, 352/2, 353/2, 354/2, 355/2, 356/2, 357/2, 358/2, 359/2, 360/2, 361/2, 362/2, 363/2, 364/2, 365/2, 366/2, 367/2, 368/2, 369/2, 370/2, 371/2, 372/2, 373/2, 374/2, 375/2, 376/2, 377/2, 378/2, 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INDEX

| | |
|----------------------------|--|
| Q.L. AFFUED AREA BOUNDARY | |
| 7.5m & 50m SAFETY DISTANCE | |
| TEMPORARY BENCH MARK | |
| APPROACH ROAD | |
| QUARRY PIT | |
| QUARRY ROAD | |
| ROUGH STONE | |
| GRAVEL | |
| STRKE AND DIP | |
| ROAD | |
| POWER LINE | |

CONCEPTUAL PLAN & SECTIONS
SCALE 1 : 1000
SECTION HOR 1 : 1000, VER 1 : 1000

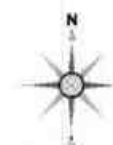
PREPARED BY:
M/G. TO CERTIFY THAT THE INFORMATION IN THIS PLAN IS TRUE AND CORRECT TO THE BEST OF HIS KNOWLEDGE AND BELIEF UNDER THE OATH.

271A

(Signature)
S.R. HANDESHAM METALS, SULLUR, PERIYAKULI

3-V TY PLANTATION

Ultimate Pit Dimension/Max (130mX154mX37m(d))



BOUNDARY CO-ORDINATES

| S.N. | LATITUDE | LONGITUDE |
|------|-----------------|-----------------|
| 1 | 10° 53' 55.84"N | 77° 04' 04.43"E |
| 2 | 10° 53' 57.42"N | 77° 04' 04.43"E |
| 3 | 10° 53' 57.89"N | 77° 04' 02.14"E |
| 4 | 10° 53' 58.30"N | 77° 04' 02.13"E |
| 5 | 10° 54' 00.65"N | 77° 04' 02.23"E |
| 6 | 10° 54' 02.15"N | 77° 04' 02.35"E |
| 7 | 10° 54' 02.25"N | 77° 04' 02.37"E |
| 8 | 10° 54' 02.22"N | 77° 04' 03.76"E |
| 9 | 10° 54' 01.97"N | 77° 04' 04.36"E |
| 10 | 10° 54' 01.40"N | 77° 04' 05.44"E |
| 11 | 10° 54' 00.61"N | 77° 04' 06.74"E |
| 12 | 10° 54' 00.02"N | 77° 04' 06.69"E |
| 13 | 10° 53' 59.78"N | 77° 04' 07.76"E |
| 14 | 10° 53' 58.98"N | 77° 04' 07.71"E |
| 15 | 10° 53' 58.38"N | 77° 04' 07.94"E |
| 16 | 10° 53' 55.97"N | 77° 04' 06.37"E |
| 17 | 10° 53' 55.89"N | 77° 04' 05.08"E |

DATUM WGS-84

PLATE NO-II
DATE OF SURVEY - 18.01.2019

APPLICANT:
M. GOMUKI BLUE METALS LLP,
S.F.NO 238/2, PETH KUYILL,
PACHAPALAYAM,
SULUR TALUK,
COIMBATORE DISTRICT.

LOCATION OF QUARRY
LEASE APPLIED AREA:
S.F.NO.S : 238/2(P), 239/18, 28, 240/28(P) etc.,
EXTENT : 2.47.9 Ha.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMIL NADU.

INDEX

| | |
|----------------------------|--|
| Q.L. APPLIED AREA BOUNDARY | |
| 7.5m & 50m SAFETY DISTANCE | |
| TEMPORARY BENCH MARK | |
| APPROACH ROAD | |
| QUARRY PIT | |
| QUARRY ROAD | |
| ROUGH STONE | |
| GRAVEL | |
| STRIKE AND DIP | |
| ROAD | |
| POWER LINE | |

QUARRY LEASE & SURFACE PLAN
SCALE 1 : 1000

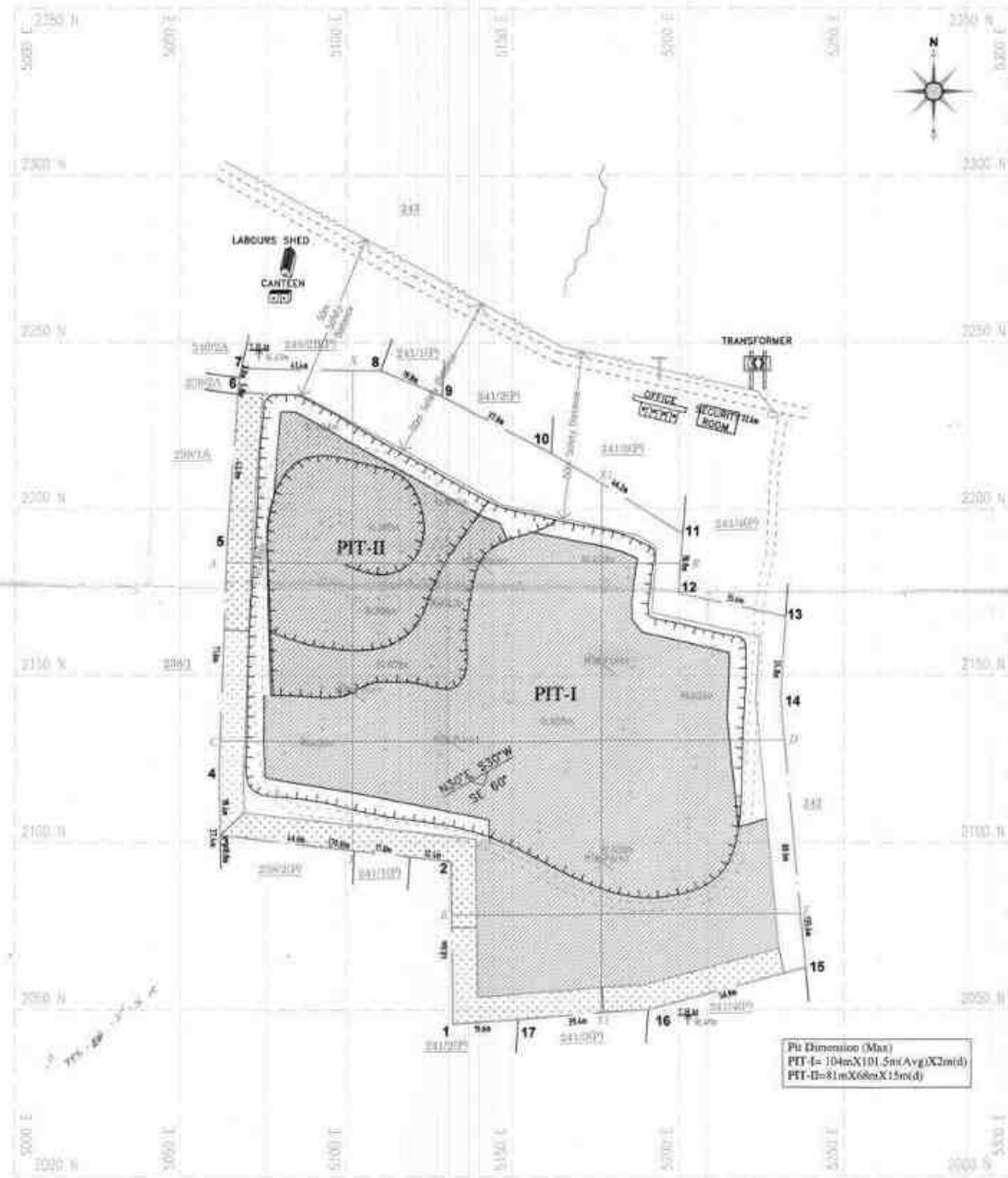
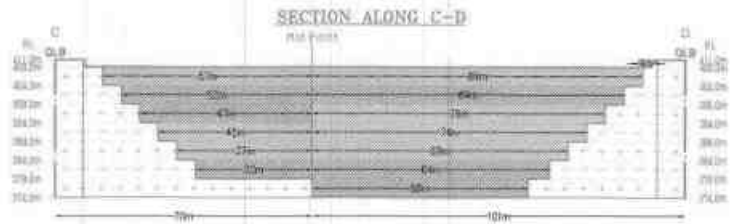
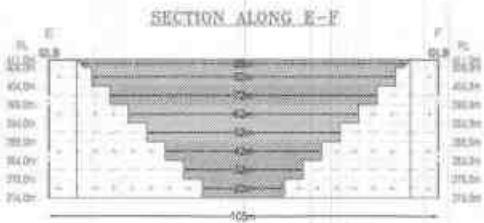
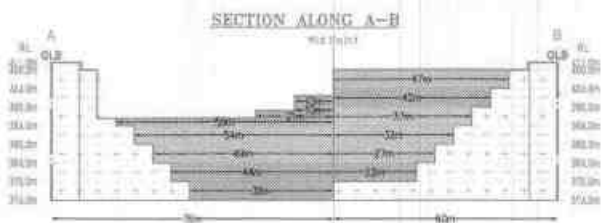
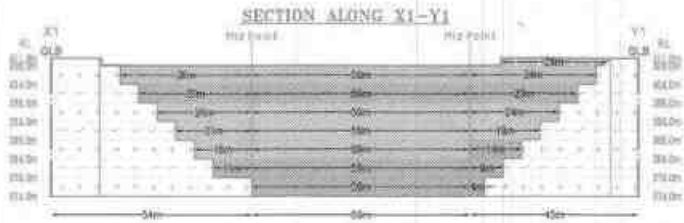
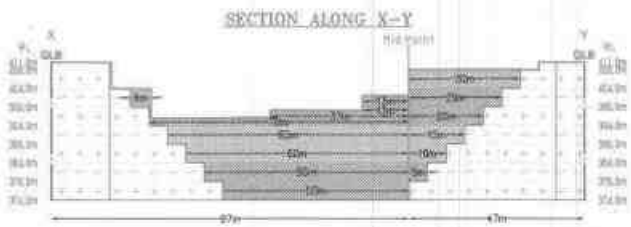
PREPARED BY:
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLAN IS TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE BASED UPON THE LEASER'S
AUTHENTICATED STATEMENT.

R. N. THAMBI RAJ, M.Sc.Ph.D.,
QUALIFIED PERSON

272 A



Pit Dimension (Max)
PIT-I= 104mX101.5m(Avg)X2m(d)
PIT-II=81mX68mX1.5m(d)



BOUNDARY CO-ORDINATES

| S.N. | LATITUDE | LONGITUDE |
|------|-----------------|-----------------|
| 1 | 10° 53' 55.84"N | 77° 04' 04.43"E |
| 2 | 10° 53' 57.42"N | 77° 04' 04.43"E |
| 3 | 10° 53' 57.88"N | 77° 04' 02.14"E |
| 4 | 10° 53' 58.30"N | 77° 04' 02.13"E |
| 5 | 10° 54' 00.65"N | 77° 04' 02.23"E |
| 6 | 10° 54' 02.15"N | 77° 04' 02.35"E |
| 7 | 10° 54' 02.25"N | 77° 04' 02.37"E |
| 8 | 10° 54' 02.22"N | 77° 04' 03.76"E |
| 9 | 10° 54' 01.97"N | 77° 04' 04.36"E |
| 10 | 10° 54' 01.40"N | 77° 04' 05.44"E |
| 11 | 10° 54' 00.61"N | 77° 04' 06.74"E |
| 12 | 10° 54' 00.02"N | 77° 04' 06.68"E |
| 13 | 10° 53' 58.78"N | 77° 04' 07.76"E |
| 14 | 10° 53' 58.98"N | 77° 04' 07.71"E |
| 15 | 10° 53' 56.38"N | 77° 04' 07.94"E |
| 16 | 10° 53' 55.97"N | 77° 04' 08.37"E |
| 17 | 10° 53' 55.89"N | 77° 04' 05.68"E |

DATE OF SURVEY : 18.01.2019

APPLICANT:
 VI. GOMURI BLUE METAL
 S.F. NO 238/2, PERIYARVIL
 PACHAPALAYAM
 SULLUR TALUK,
 COMBATORE DISTRICT, FEB 2019

LOCATION OF QUARRY
LEASE APPLIED AREA:
 S.F. NO. S : 238/2(P), 239/1(B), 240/1(B)
 EXTENT : 2.479 Ha.
 VILLAGE : PACHAPALAYAM,
 TALUK : SULLUR,
 DISTRICT : COMBATORE,
 STATE : TAMILNADU.



INDEX

| | |
|----------------------------|--|
| Q.L. APPLIED AREA BOUNDARY | |
| 7.5m & 30m SAFETY DISTANCE | |
| TEMPORARY BENCH MARK | |
| APPROACH ROAD | |
| QUARRY PIT | |
| QUARRY ROAD | |
| ROUGH STONE | |
| GRAVEL | |
| STRIKE AND DIP | |
| ROAD | |
| POWER LINE | |

Pit Dimension (Mts)
 PIT-I = 104mX101.5m(Avg)(X2m)d
 PIT-II = 81mX68mX15m(d)

PRESENT & POST LAND USE PATTERN

| DESCRIPTION | PRESENT AREA (Ha) | AREA AT THE END OF THIS QUARRYING PERIOD (Ha) |
|----------------------|-------------------|---|
| AREA UNDER QUARRYING | 1.82.2 | 1.86.0 |
| INFRASTRUCTURE | Nil | Nil |
| ROADS | 0.01.0 | 0.02.0 |
| GREEN BELT | Nil | 0.25.9 |
| UN-UTILIZED AREA | 0.64.7 | 0.30.0 |
| GRAND TOTAL | 2.47.8 | 2.47.8 |

| | | | |
|-------------------|--|-------------------|--|
| I Yr EXCAVATION | | I Yr PLANTATION | |
| II Yr EXCAVATION | | II Yr PLANTATION | |
| III Yr EXCAVATION | | III Yr PLANTATION | |
| IV Yr EXCAVATION | | IV Yr PLANTATION | |
| V Yr EXCAVATION | | V Yr PLANTATION | |

TOPOGRAPHY GEOLOGICAL, YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS
 SCALE 1 : 1000
 SECTION HOR 1 : 1000, VER 1 : 1000

PREPARED BY:
 THE IS TO CERTIFY THAT THE INFORMATION IN THIS PLAN IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE BASED UPON THE LEASING AGREEMENT & SURVEY INSTRUMENT.
 S.P. HANUMANTHALU, S.P.A.S., QUARRYING PERSON

പി

ഭരണാലയം മൂന്നാം ഘട്ടം പട്ടണത്തിൽ
 കിഴക്കൻ ഭാഗം വെള്ളക്കുളി തി.സി. 238/2. തി.
 കിഴക്കൻ ഭാഗം വെള്ളക്കുളി തി.സി. 238/2. തി.
 കിഴക്കൻ ഭാഗം വെള്ളക്കുളി തി.സി. 238/2. തി.
 കിഴക്കൻ ഭാഗം വെള്ളക്കുളി തി.സി. 238/2. തി.
 കിഴക്കൻ ഭാഗം വെള്ളക്കുളി തി.സി. 238/2. തി.

- ഭരണാലയം മൂന്നാം ഘട്ടം പട്ടണത്തിൽ
- 0.37.0 തി.സി. 238/2 (എ) തി.സി. 238/2 (എ)
 - 0.17.0 തി.സി. 239/1B തി.സി. 239/1B
 - 0.02.0 തി.സി. 240/2B (എ) തി.സി. 240/2B (എ)
 - 0.02.0 തി.സി. 241/1 (എ) തി.സി. 241/1 (എ)
 - 0.27.5 തി.സി. 241/2 (എ) തി.സി. 241/2 (എ)
 - 0.59.2 തി.സി. 241/3 (എ) തി.സി. 241/3 (എ)
 - 0.56.5 തി.സി. 241/4 (എ) തി.സി. 241/4 (എ)
 - 0.46.7 തി.സി. 247.9 തി.സി. 247.9

തി.സി. 1241/2018. തീയതി: 05.02.2018. തി.സി. 1241/2018.
 തീയതി: 05.02.2018. തി.സി. 1241/2018.
 തീയതി: 05.02.2018. തി.സി. 1241/2018.
 തീയതി: 05.02.2018. തി.സി. 1241/2018.
 തീയതി: 05.02.2018. തി.സി. 1241/2018.
 തീയതി: 05.02.2018. തി.സി. 1241/2018.

T. S. S. S. S.
 25.1.2018
 തി.സി. 1241/2018

Handwritten signature

HYDROGEOLOGICAL REPORT

1. INTRODUCTION

| | | | |
|----|---------------------------------|---|---|
| 1. | Name & Address of the applicant | : | Tvl.Gomuki Blue Metals L.L.P., S.F.No.238/2, Periyakuyili, Pachapalayam, Sulur Taluk, Coimbatore District - 641 201. Mobile No: 98940 36376 |
| 2. | Location site & Survey No | : | 238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) |
| 3. | Extent | : | 2.47.9Ha |
| 4. | Village | : | Pachapalayam |
| 5. | Taluk | : | Sulur |
| 6. | District | : | Coimbatore |

The Client requires detailed information on Ground Water Occurrences at Proposed Project Site. The objective of the present study is to assess the availability of groundwater and comment on aspects of depth to potential aquifers, aquifer availability and type, possible yields and water quality. For this purpose, all available hydrogeological information of the areas has been analyzed, and a geophysical survey was done.

The investigations involved hydrogeological, geophysical field investigations and a detailed study in which the available relevant geological and hydrogeological data were collected, analyzed, collated and evaluated within the context of the Client's requirements. The data sources consulted were mainly:

- a) Central Ground Water Board (CGWB) Data
 - b) State & District Geological and Hydrogeological Reports and Maps.
2. Technical reports of the area by various organizations.

SCOPE OF THE WORKS –

The scope of works includes:

- Site visits to familiarize with the project areas. Identify any issues that might impact the Ground Water Scenario due to proposed mining activities.
- To obtain, study and synthesize background information including the geology, hydrogeology and existing borehole data, for the purpose of improving the quality of assessment and preparing comprehensive hydrogeological reports,

- To carry out hydrogeological evaluation and geophysical investigations in the selected sites in order to determine potential for groundwater at project site.
3. To prepare hydrogeological survey reports in conformity with the provisions of the rules and procedure outlined by the Central Ground Water Board (CGWB), by Assessment of water quality and potential infringement of National standards, Assessment of availability of groundwater and Impact of proposed activity on aquifer, water quality and other abstractors.

BACKGROUND INFORMATION

Location

The investigated site falls in the **Toposheet No: 58 - F/01** Latitude between: **10°53'55.84"N to 10°54'02.25"N** and Longitude between: **77°04'02.13"E to 77°04'07.94"E** on WGS datum-1984.

GEOLOGY

The district is occupied by Charnockite Group of rocks consisting of Charnockite, pyroxene granulites and associated magnetite quartzite, the Knodalite Group comprising gametiferous – sillimanite gneiss, calc-granulite, crystalline limestone, sillimanite quartzites and associated migmatitic gneisses. The fissile hornblende gneisses (Peninsular gneiss – younger phase) of Bhavani Group with enclaves of schistose, micaceous and amphibolitic rocks, fuchsite – kyanite quartzites, ferruginous quartzite (Satyamangalam Group) intruded by a number of ultramafic and basic rocks and granites are seen in the Northern portions of the district especially around Pollachi, Avinashi and Northern areas of Coimbatore. The granites are Proterozoic age and occupy the Western end and Eastern Part of the District as separate bodies and are recognized as Maruthamalai Granite and Punjapuliampatti Granites respectively. The quaternary alluvium is seen in the West and Northwestern areas of Udumalaipettai and Western areas of Coimbatore town. The alluvium is more than 30m thick in the Chinnathadagam valley northwest of Coimbatore and in the Siruvani valley west of Coimbatore. In the Udumalaipettai Taluk area, it overlies the kankar deposit.

It is revealed the Coimbatore district is occupied by the rocks of Satyamangalam, Peninsular gneissic complex-I and Charnockite group of Archaean age, Peninsular Gneissic Complex-II of Archaean to Palaeoproterozoic age, Basic intrusive of Mesoproterozoic age, Younger intrusive of Neoproterozoic age and recent alluvium.

The Peninsular gneissic complex-I comprising hornblende biotite gneiss and granite area the major rock types exposed. Hornblende biotite granite is medium to coarse grained

and mesocratic and considered to be retrograded product of product of Charnockite – Pyroxene granulite. It is medium grained, White to pale pink colored with disseminations of limonitised magnetite. The white colored granite appears to be older and the pink colored cuts across the white colored granite. The younger phase of coarse-grained granite occurs as thin stringers and lesser in the southern part. The peripheral part of granite close to the gneiss is granitic in nature.

Stratigraphy succession

| Lithology | Group | Super Group | Age |
|---|---------------------------|---------------------------------------|----------------------------------|
| Gypseous clay | | | Holocene |
| Granite | Acid intrusives | | Neoproterozoic |
| Dolerite /basic dyke | Basic intrusives | | Mesoproterozoic |
| Quartzofeldspathic Gneiss Garnet. | | Peninsular Gneissic complex- II | Archaean to Palaeoproterozoic |
| Hornblende biotite gneiss | | | |
| Charnockite | | Southern Granulite Complex | |
| Grey Hornblend Biotite gneiss | | Peninsular Gneissiccomplex- I | |
| Gabbro | Sitampundi | | Archaean |
| Amphibolite | Pollachi Complex | | |
| Magnetite Quartzite | | | |
| Talc – Termolite – Actinolite Schist | Sathiyamanagalam Group | | |
| | | | |

4. GEOPHYSICAL INVESTIGATION METHODS

A variety of methods are available to assist in the assessment of geological sub-surface conditions. The main emphasis of the fieldwork undertaken was to determine the thickness and composition of the sub-surface formations and to identify water-bearing zones.

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This information was principally obtained in the field using, and vertical electrical soundings (VES). The VES probes the resistivity layering below the site of measurement. This method is described below.

Resistivity Method

Vertical electrical soundings (VES) were carried out to probe the condition of the subsurface and to confirm the existence of deep groundwater. The VES investigates the resistivity layering below the site of measurement.

Basic Principles

The electrical properties of rocks in the upper part of the earth's crust are dependent upon the lithology, porosity, and the degree of pore space saturation and the salinity of the pore water. Saturated rocks have lower resistivity than unsaturated and dry rocks. The higher the porosity of the saturated rock, or the higher the salinity of the saturating fluids, the lower is the resistivity. The presence of clays and conductive minerals also reduces the resistivity of the rock.

The resistivity of earth materials can be studied by measuring the electrical potential distribution produced at the earth's surface by an electric current that is passed through the earth. Current is moved through the subsurface from one current electrode to the other and the potential difference is recorded as the current passes. From this information, resistivity values of various layers are acquired and layer thickness can be identified.

The apparent resistivity values determined are plotted as a log function versus the log of the spacing between the electrodes. These plotted curves identify thickness of layers. If there are multiple layers (more than 2), the acquired data is compared to a master curve to determine layer thickness.

This method is least influenced by lateral in-homogeneities and capable of providing higher depth of investigation.

The resistance R of a certain material is directly proportional to its length L and cross-sectional area A, expressed as:

$$R = R_s * L/A \text{ (in Ohm)}$$

Where R_s is known as the specific resistivity (characteristic of the material and independent of its shape or size)

With Ohm's Law,

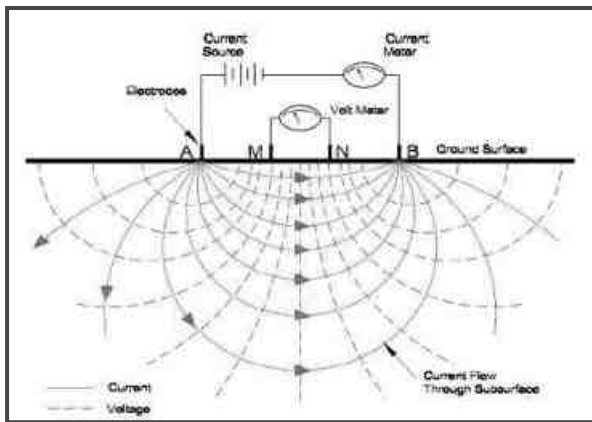
$$R = dV/I \text{ (Ohm)}$$

Where dV is the potential difference across the resistor and I is the electric current through the resistor. The specific resistivity may be determined by:

$$R_s = (A/L) * (dV/I) \text{ (in Ohm m)}$$

Vertical Electrical Sounding (VES)

When carrying out a resistivity sounding, current is led into the ground by means of two electrodes. With two other electrodes, situated near the center of the array, the potential field generated by the current is measured. From the observations of the current strength and the potential difference, and taking into account the electrode separations, the ground resistivity can be determined. During a resistivity sounding, the separation between the electrodes is step-wise increased (known as a Schlumberger Array), thus causing the flow of current to penetrate greater depths. When plotting the observed resistivity values against depth on double logarithmic paper, a resistivity graph is formed, which depicts the variation of resistivity with depth. This graph can be interpreted with the aid of a computer, and the actual resistivity layering of the subsoil is obtained. The depths and resistivity values provide the hydro geologist with information on the geological layering and thus the occurrence of groundwater.



GPS Co-ordinates of the VES Location

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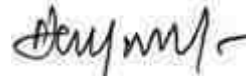
| No of station | Co-ordinates | Vertical Electrical Sounding (VES) depth in meters |
|---------------|----------------------------|--|
| Satation-1 | 10°54'1.08"N 77° 4'3.21"E | 100m |
| Satation-2 | 10°53'59.07"N 77° 4'5.00"E | 100m |
| Satation-3 | 10°53'56.66"N 77° 4'6.17"E | 100m |

Results

Interpreted results of the soundings are shown in the table presented below:

5. Conclusions

Based on the available information and the geophysical investigations it is concluded that the project area is considered to have medium to good groundwater potential. Productive aquifers are expected within weathered/fractured metamorphic terrain. Present scenario is shallow aquifers are expected above **90mBGL**. The ultimate pit limit as per the approved mining plan depth is **37m (2m Gravel + 35m Rough Stone) below ground level** which will have no impact on the Ground Water.



Dr.P.Thangaraju, M.Sc., Ph.D.,

Govt. Approved Hydro Geologist

M/s. Geo Exploration and Mining Solutions,

Regd. Office: No. 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004, Tamil Nadu

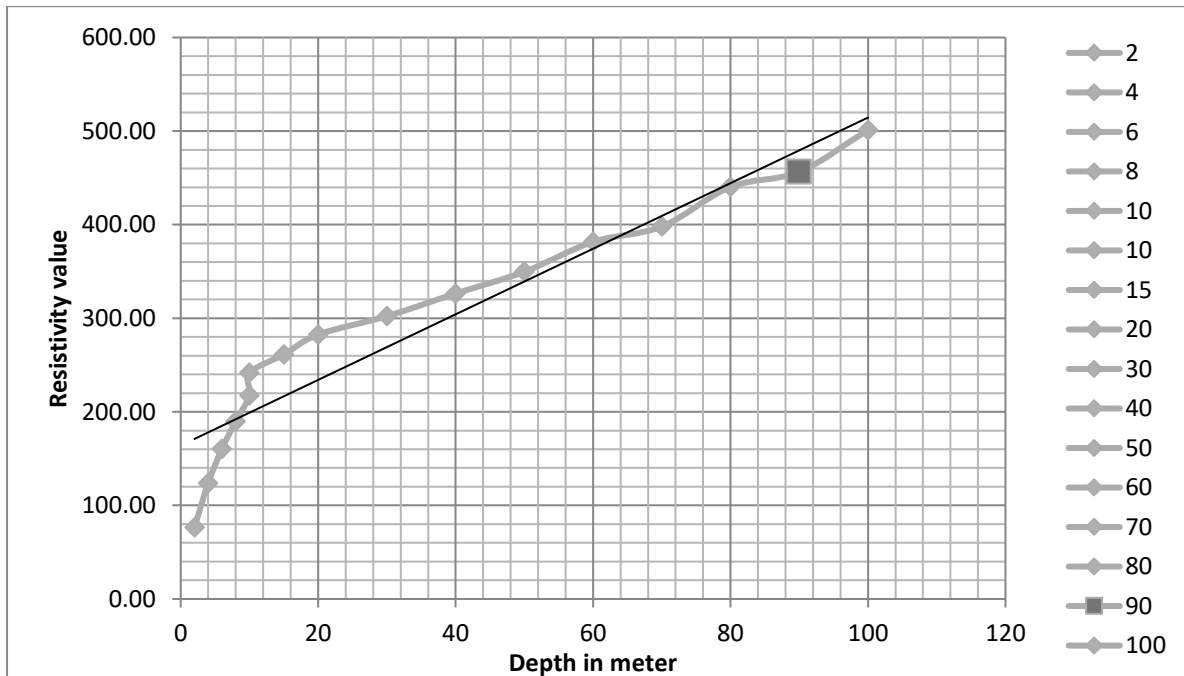
Mobile: +91 - 94433 56539

E-Mail: infogeoexploration@gmail.com



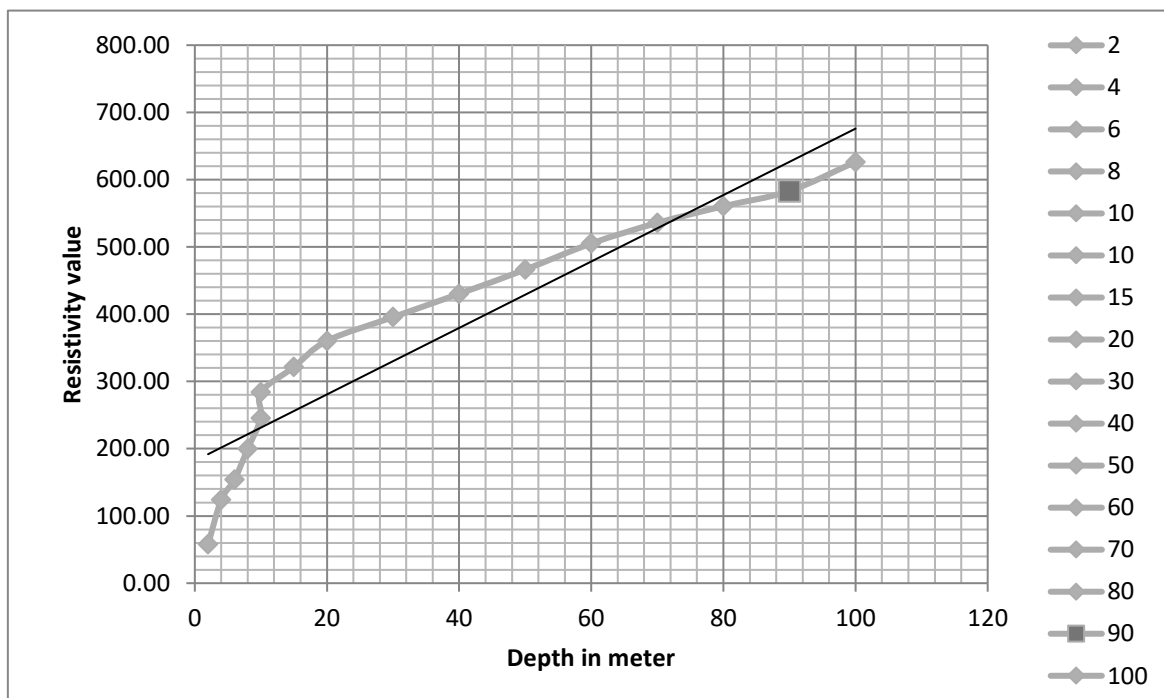
Geophysical Data and graph Diagram.

| STATION-1 | | | | | |
|-----------|------|------|---------|-------|--------|
| S.No | Ab/2 | Mn/2 | K | R | Rho |
| 1 | 2 | 1 | 4.71 | 16.23 | 76.40 |
| 2 | 4 | 1 | 23.55 | 5.26 | 123.87 |
| 3 | 6 | 1 | 54.95 | 2.92 | 160.45 |
| 4 | 8 | 1 | 98.91 | 1.91 | 189.91 |
| 5 | 10 | 1 | 155.45 | 1.38 | 217.63 |
| 6 | 10 | 5 | 23.55 | 10.25 | 241.62 |
| 7 | 15 | 5 | 62.80 | 4.16 | 261.25 |
| 8 | 20 | 5 | 117.75 | 2.40 | 282.60 |
| 9 | 30 | 5 | 274.75 | 1.10 | 302.23 |
| 10 | 40 | 5 | 494.55 | 0.65 | 326.40 |
| 11 | 50 | 5 | 777.15 | 0.43 | 349.72 |
| 12 | 60 | 5 | 1122.55 | 0.34 | 381.67 |
| 13 | 70 | 5 | 1530.75 | 0.26 | 398.00 |
| 14 | 80 | 5 | 2001.75 | 0.22 | 440.39 |
| 15 | 90 | 5 | 2535.55 | 0.16 | 456.40 |
| 16 | 100 | 5 | 3132.15 | 0.16 | 501.14 |



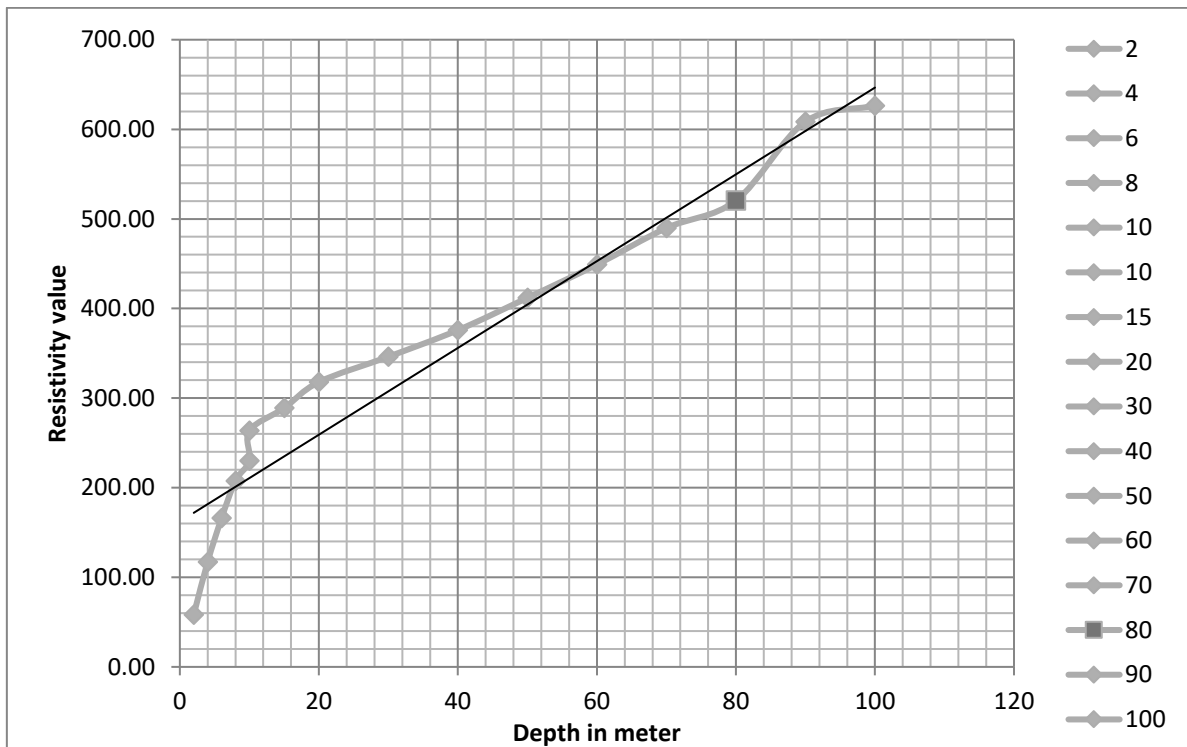
P.P.S

| Station-2 | | | | | |
|-----------|------|------|---------|-------|--------|
| S.No | Ab/2 | Mn/2 | K | R | Rho |
| 1 | 2 | 1 | 4.71 | 12.24 | 57.74 |
| 2 | 4 | 1 | 23.55 | 5.26 | 123.87 |
| 3 | 6 | 1 | 54.95 | 2.80 | 153.86 |
| 4 | 8 | 1 | 98.91 | 2.01 | 199.80 |
| 5 | 10 | 1 | 155.45 | 1.58 | 245.61 |
| 6 | 10 | 5 | 23.55 | 12.05 | 284.01 |
| 7 | 15 | 5 | 62.80 | 5.10 | 321.54 |
| 8 | 20 | 5 | 117.75 | 3.05 | 360.32 |
| 9 | 30 | 5 | 274.75 | 1.44 | 395.64 |
| 10 | 40 | 5 | 494.55 | 0.87 | 430.26 |
| 11 | 50 | 5 | 777.15 | 0.61 | 466.29 |
| 12 | 60 | 5 | 1122.55 | 0.45 | 505.15 |
| 13 | 70 | 5 | 1530.75 | 0.35 | 535.76 |
| 14 | 80 | 5 | 2001.75 | 0.27 | 560.49 |
| 15 | 90 | 5 | 2535.55 | 0.22 | 583.18 |
| 16 | 100 | 5 | 3132.15 | 0.20 | 626.43 |



P.P.S

| STATION-3 | | | | | |
|-----------|------|------|---------|-------|--------|
| S.No | Ab/2 | Mn/2 | K | R | Rho |
| 1 | 2 | 1 | 4.71 | 12.32 | 58.22 |
| 2 | 4 | 1 | 23.55 | 4.95 | 117.28 |
| 3 | 6 | 1 | 54.95 | 3.02 | 165.95 |
| 4 | 8 | 1 | 98.91 | 2.12 | 207.71 |
| 5 | 10 | 1 | 155.45 | 1.47 | 230.07 |
| 6 | 10 | 5 | 23.55 | 11.21 | 263.76 |
| 7 | 15 | 5 | 62.80 | 4.61 | 288.88 |
| 8 | 20 | 5 | 117.75 | 2.70 | 317.93 |
| 9 | 30 | 5 | 274.75 | 1.26 | 346.19 |
| 10 | 40 | 5 | 494.55 | 0.73 | 375.86 |
| 11 | 50 | 5 | 777.15 | 0.54 | 411.89 |
| 12 | 60 | 5 | 1122.55 | 0.40 | 449.02 |
| 13 | 70 | 5 | 1530.75 | 0.31 | 489.84 |
| 14 | 80 | 5 | 2001.75 | 0.26 | 520.46 |
| 15 | 90 | 5 | 2535.55 | 0.24 | 608.53 |
| 16 | 100 | 5 | 3132.15 | 0.20 | 626.43 |



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Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), Tamil Nadu)

To,

The owner
GANESAN S A COIMBATORE
Pachapalayam sultur -641402

Subject: Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/TN/MIN/56383/2020 dated 20 May 2022. The particulars of the environmental clearance granted to the project are as below.

| | |
|--|--|
| 1. EC Identification No. | EC24B001TN199243 |
| 2. File No. | 7833 |
| 3. Project Type | New |
| 4. Category | B1 |
| 5. Project/Activity including Schedule No. | 1(a) Mining of minerals |
| 6. Name of Project | S.A.Ganesan Rough Stone and Gravel Quarry S.F. No. 273/2A and 281/2 over an extent of 2.03.0 ha in Pachapalayam Village, Sultur Taluk, Coimbatore District |
| 7. Name of Company/Organization | GANESAN S A COIMBATORE |
| 8. Location of Project | Tamil Nadu |
| 9. TOR Date | 16 Dec 2020 |

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 12/03/2024

(e-signed)
A R Rahul Nadh IAS
Member Secretary
SEIAA - (Tamil Nadu)

Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH. Please quote identification number in all future correspondence.

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THIRU. A.R. RAHUL NADH, I.A.S.
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr.No. SEIAA-TN/F.No.7833/1(a)/EC. No:6290/2024, dated: 15.02.2024

Sir/Madam,

Sub: SEIAA-TN – Proposed Rough Stone and Gravel quarry over an extent of 2.03.0 Ha at S.F.Nos. 273/2A & 281/2 of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu by Thiru. S.G. Aakash Arumugam (Legal Heir), S/o. Late. S.A. Ganesan (applicant) under project category - "B" and Schedule S.No. 1(a) – Issue of Environmental Clearance – Regarding.

- Ref:** 1. ToR issued vide Lr No.SEIAA-TN/F.No.7833/SEAC/ToR-828/2020
Dated:16.12.2020
2. Public Hearing conducted on 24.11.2021
 3. Online Proposal No. SIA/TN/MIN/56383/2020, Dated: 26.01.2022
 4. Project proponent submitted EIA Report to SEIAA-TN on 31.01.2022
 5. Minutes of the 269th SEAC meeting held on 05.05.2022
 6. Proponent reply dated: 21.11.2023
 7. Minutes of the 429th SEAC meeting held on 13.12.2023
 8. Minutes of the 686th SEIAA meeting held on 08.01.2024
 9. Minutes of the 691st SEIAA meeting held on 06.02.2024
 10. Minutes of the 697th SEIAA meeting held on 15.02.2024

Details of Minor Mineral Activity:-

This has reference to your application 3rd & 4th cited. The proposal is for obtaining Environmental Clearance for mining / quarrying of minor minerals based on the particulars furnished in your application as shown below.

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SEIAA-TN**

| Sl. No | Salient Features of the Proposal | |
|--------|---|--|
| 1. | Name of the Owner/Firm | Thiru. S.G. Aakash Arumugam (Legal Heir), S/o. Late. S.A. Ganesan (applicant) No.12/4C, Arima Nagar, Kalangal Road, Sulur, Coimbatore South – 641 402. |
| 2. | Type of quarrying | Rough Stone and Gravel |
| 3. | S.F Nos. of the quarry site | 273/2A & 281/2 |
| 4. | Village in which situated | Pachapalayam |
| 5. | Taluk in which situated | Sulur |
| 6. | District in which situated | Coimbatore |
| 7. | Extent of quarry (in ha.) | 2.03.0 Ha |
| 8. | Latitude & Longitude of all corners of the quarry site | 10°54'17.95"N to 10°54'22.27"N 77°04'09.23"E to 77°04'20.36"E |
| 9. | Topo Sheet No. | 58-F/01 |
| 10. | Type of mining | Opencast Mechanized Mining |
| 11. | Period of Current Mine Plan | 5 years |
| 12. | Production (Quantity in m ³) | 1,22,815 m ³ of Rough Stone and 6576 m ³ of Gravel |
| 13. | Depth of Quarrying | 33m below ground level (3m Gravel + 30m Rough Stone) |
| 14. | Depth of water table | 60m-65m below ground level |
| 15. | Man Power requirement per day: | 21 Nos. |
| 16. | Water requirement: | 4.2 KLD |
| | i) Drinking Water & Domestic Purpose | 0.75 KLD |
| | ii) Dust suppression | 2.7 KLD |
| | iii) Green belt | 0.75 KLD |
| 17. | Power requirement | TNEB 1,06,236 Liters of HSD |
| 18. | Precise area communication approved by the District Collector with date | Na.Ka.No. 181/Kanimam/2019, dated: 19.10.2019 |


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| | | |
|-----|--|--|
| 19. | Mining Plan approved by the Assistant Director (i/c) / Joint Director, Dept. of Geology and Mining with date | Rc.No.181/Mines/2019, dated: 02.12.2019 |
| 20. | 500m cluster letter issued by the Assistant Director (i/c) / Joint Director, Dept. of Geology and Mining with date | Rc.181/Mines/2017, dated: 27.02.2020 |
| 21. | VAO certificate regarding structures within 300m radius | Letter dated 26.12.2019 |
| 22. | ToR details | Lr No.SEIAA-TN/F.No.7833/SEAC/ToR-828/2020 Dated:16.12.2020 |
| 23. | Public hearing details | 24.11.2021 |
| 24. | EIA report submitted on | 31.01.2022 |
| 25. | Project Cost (excluding EMP cost) | Rs. 38,09,300/- |
| 26. | EMP cost (in Rs. Lakh) | Capital Cost – Rs. 25,04,100/- Recurring Cost – Rs. 12,94,369/- |
| 27. | CER cost (in Rs. Lakh) | Rs. 5,00,000/- |

Validity:

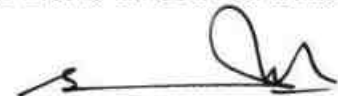
This Environmental Clearance is accorded for the quantity of 1,22,815 m³ of Rough Stone and 6576 m³ of Gravel up to the ultimate depth of 33m below ground level (3m Gravel + 30m Rough Stone) and the annual peak production should not exceed 32,650 m³ of Rough Stone (1st year) and 3840 m³ of Gravel (3rd year).

The Environmental Clearance issued is valid as per the approved mine plan period and as per MoEF&CC's notification S.O.1533(E) dated 14.09.2006 and S.O. 1807(E) dated 12.04.2022.

AFFIDAVIT FURNISHED BY THE PROPONENT

The Proponent has furnished affidavit in stamp paper attested by the Notary stating that I, Thiru. S.G. Aakash Arumugam, Legal heir of Thiru. S.A. Ganesan, S/o. Late. S.A. Ganesan, residing at No.12/4C, Arima Nagar, Sulur, Coimbatore District, Tamil Nadu State – 641 402, solemnly declare and sincerely affirm that:

I have applied for getting Environment Clearance to SEIAA, Tamil Nadu State for quarrying of Rough Stone and Gravel Quarry over an extent of 2.03.0 ha of Patta Land in



**MEMBER SECRETARY
SEIAA-TN**

S.F. Nos. 273/2A and 281/2 of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State.

1. I swear to state and confirm that within 10km area of the quarry site, I have applied for environment clearance, none of the following is situated:
 - a. Protected areas notified under the wild life (Protection) Act, 1972,
 - b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act, 1974,
 - c. Eco-Sensitive areas as notified.
 - d. Interstate Boundary
2. I will spend the amount of Rs. 5 Lakhs towards Corporate Environment Responsibility (Revised CER) for the following activities to the Government Girls Higher Secondary School, Sulur, Coimbatore District.

| Sl. No. | Description | Cost break up |
|--------------|---|-------------------|
| 1 | Construction of Toilet with its maintenance | 5,00,000/- |
| 2 | Providing Tables & benches to the school | |
| 3 | Providing Smart TV to the School | |
| 4 | Providing environment related books to the students | |
| 5 | Plantation along the School Boundary @ 100 Nos | |
| TOTAL | | |

3. The total area of following quarries located within 500m radius from the periphery of my quarry site details as shown below:

(i) Existing Quarries:

| S. No. | Name of the Owner | Village & S.F. No | Extent in Hects. | Lease Period | Remarks |
|--------|-------------------|---|------------------|-----------------------------|---------|
| 1. | K. Chinnasamy | Pachapalayam 282/1B (P) | 1.73.0 | 06.12.2017 to 05.12.2022 | - |
| 2. | R. Senthilkumar | Pachapalayam 285/3 286/2 | 3.15.0 | 11.11.2017 to 10.11.2022 | - |
| 3 | T. Ragupathi | Pachapalayam 273/1B 273/2B 273/3E(P) 274/1A 274/2A | 2.62.0 | 03.01.2019 to 02.01.2024 | - |
| 4 | B. Sakthivel | Pachapalayam 280/1(P) 280/2 (P) | 1.34.5 | 06.06.2016 to 05.06.2021 | - |

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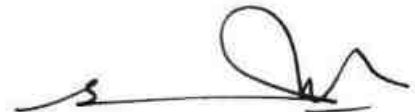
(ii) Proposed Quarries

| S. No. | Name of the Owner | Village & S.F. No | Extent in Hects. |
|--------|-------------------|---------------------------------|------------------|
| 1. | Thiru.S.A.Ganesan | Pachapalayam 273/2A 281/2 | 2.03.00 |

(iii) Lease Expired and Abandoned Quarries:

| S. No. | Name of the Owner | Village & S.F. No | Extent in Hects. | Lease Period |
|--------|-------------------|----------------------------------|------------------|-----------------------------|
| 1 | M. Murali Krishan | Pachapalayam 281/1 286/1B4 | 2.30.0 | 02.06.2014 to 01.06.2018 |
| 2 | B. Sakthivel | Pachapalayam 285/1B1 | 1.72.5 | 08.08.2012 to 07.08.2016 |
| 3 | V. Gobalakrishnan | Pachapalayam 282/2A2 | 1.28.5 | 02.06.2014 to 01.06.2018 |
| 4 | S.A.Ganesan | Pachapalayam 273/3C 272/3B | 1.92.0 | 19.07.2007 to 18.07.2012 |

4. There will not be hindrance or disturbance to the people living during quarrying activities and transportation of the mineral.
5. There is no approved habitation within 300m radius from the periphery of my quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the laborers working in my quarry site.
8. The existing road from the main road to quarry is in good condition and the same is being maintained and utilized for Transportation of Rough stone.
9. I will not engage any child labor in my quarry site and I aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided to all the laborers working in my quarry.
11. No permanent structures, temples etc., are located within 500m radius from the periphery of my quarry.



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REVISED EMP BUDGET

| Mitigation Measure | Provision for Implementation | Capital | Recurring |
|--|---|---------|-----------|
| Compaction, gradation and drainage on both sides for Haulage Road | Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare | 20300 | 20300 |
| Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers | Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring | 800000 | 50000 |
| Muffle blasting – To control fly rocks during blasting | Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts | 0 | 5000 |
| Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit | Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance - 3 Units | 75000 | 7500 |
| No overloading of trucks/tippers/tractors | Manual Monitoring through Security guard | 0 | 5000 |
| Stone carrying trucks will be covered by tarpaulin | Monitoring if trucks will be covered by tarpaulin | 0 | 10000 |
| Enforcing speed limits of 20 km/hr within ML area | Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 2 Units | 10000 | 500 |
| Regular monitoring of exhaust fumes as per RTO norms | Monitoring of Exhaust Fumes by Manual Labour | 0 | 5000 |
| Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area | Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare | 0 | 40600 |
| Installing wheel wash system near gate of quarry | Installation + Maintenance + Supervision | 50000 | 20000 |
| Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals. | Provision made in Operating Cost | 0 | 0 |
| Oiling & greasing of Transport vehicles and HEMM at regular interval will be done | Provision made in Operating Cost | 0 | 0 |
| Adequate silencers will be | Provision made in Operating Cost | 0 | 0 |



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SEIAA-TN**

| | | | |
|--|---|--------|--------|
| provided in all the diesel engines of vehicles. | | | |
| It will be ensured that all transportation vehicles carry a fitness certificate. | Provision made in Operating Cost | 0 | 0 |
| Safety tools and implements that are required will be kept adequately near blasting site at the time of charging. | Provision made in OHS part | 0 | 0 |
| Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting. | Provision made in Operating Cost | 0 | 0 |
| Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured. | Blowing Whistle by Mining Mate / Blaster / Competent Person | 0 | 0 |
| Provision for Portable blaster shed | Installation of Portable blasting shelter | 50000 | 2000 |
| NONEL Blasting will be practiced to control Ground vibration and fly rocks | Rs. 30/- per 6 Tonnes of Blasted Material | 0 | 160809 |
| Waste management (Spent Oil, Grease etc.,) | Provision for domestic waste collection and disposal through authorized agency | 5000 | 20000 |
| | Installation of dust bins | 5000 | 2000 |
| Bio toilets will be made available outside mine lease on the land of owner itself | Provision made in Operating Cost | 0 | 0 |
| Progressive Closure Activity - Surface Runoff management | Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum | 20300 | 5000 |
| Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned. | Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum | 406000 | 10000 |
| Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 1220 Trees - (390 Inside Lease Area & 830 Outside Lease Area) | Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per | 78000 | 11700 |


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SEIAA-TN

| | | | |
|--|---|---------|-------|
| | plant maintenance (recurring) | | |
| | Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring) | 249000 | 24900 |
| Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year | Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year | 82260 | 0 |
| Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A | The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site | 1113291 | 0 |
| Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN | Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions | 10000 | 1000 |
| Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions | Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms | 0 | 50000 |
| Workers will be provided with Personal Protective Equipment's | Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 21 Employees | 84000 | 21000 |
| Health check up for workers will be provisioned | IME & PME Health check up @ Rs. 1000/- per employee | 0 | 21000 |
| First aid facility will be provided | Provision of 2 Kits per Hectare @ Rs. 2000/- | 0 | 4060 |
| Mine will have safety precaution signages, boards. | Provision for signages and boards made | 10000 | 2000 |
| No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management | Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost | 101500 | 10000 |


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| | | | |
|--|---|----------------|----------------|
| Installation of CCTV cameras in the mines and mine entrance | Camera 4 Nos, DVR, Monitor with internet facility | 30000 | 5000 |
| Implementation as per Mining Plan and ensure safe quarry working | Mines Manager (1st Class / 2nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR, 1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate | 0 | 780000 |
| As per MoEF & CC OM 22-65/2017-IA.III Dated 25.02.2021 | Detailed Description in following slides and Budget allocation is included as per MoeEF & CC OM | 500000 | 0 |
| TOTAL | | 2504100 | 1294369 |

EMP BUDGET SUMMARY BREAKUP YEAR WISE

| Year | Total Cost |
|----------------------|---------------|
| 1 st Year | ₹ 37,98,469/- |
| 2 nd year | ₹ 13,59,087/- |
| 3 rd Year | ₹ 14,27,041/- |
| 4 th Year | ₹ 14,98,394/- |
| 5 th Year | ₹ 16,55,573/- |

I ensure to do all the social and Environment commitment as mentioned in the scheme of mining to the best of my knowledge.

DETAILS OF QUARRIES LOCATED WITHIN 500M RADIUS FROM THE PROPOSED QUARRY:

The Project Proponent has submitted a copy of the letter obtained from the Assistant Director (i/c) / Joint Director, Department of Geology and Mining, Coimbatore District in his letter Re.181/Mines/2017, dated: 27.02.2020 has stated that the details of other quarries within a radius 500m from the boundary of the proposed quarry site as follows:

i) Existing Quarries

| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease Period | Remarks |
|---------|-------------------|--------------------------------------|-----------------|-----------------------------|---------|
| 1. | K. Chinnasamy | Pachapalayam 282/1A 282/1B (P) | 1.73.0 | 06.12.2017 to 05.12.2022 | - |
| 2. | R.S.Senthilkumar | Pachapalayam 285/3 286/2 | 3.15.0 | 11.11.2017 to 10.11.2022 | - |


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SEIAA-TN**

| | | | | | |
|---|--------------|--|--------|-----------------------------|---|
| 3 | T. Ragupathi | Pachapalayam 273/1B 273/2B 273/3E (P) 274/1A 274/2A | 2.62.0 | 03.01.2019 to 02.01.2024 | - |
| 4 | B. Sakthivel | Pachapalayam 280/1 (P) 280/2 (P) | 1.34.5 | 06.06.2016 to 05.06.2021 | - |

ii) Expired Quarries

| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease Period | Remarks |
|---------|-------------------|----------------------------------|-----------------|-----------------------------|---------|
| 1. | M. Murali krishan | Pachapalayam 281/1 286/1B4 | 2.30.0 | 02.06.2014 to 01.06.2018 | - |
| 2. | B. Sakthivel | Pachapalayam 285/1B1 | 1.72.5 | 08.08.2012 to 07.08.2016 | - |

iii) Abandoned quarries

| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease Period | Remarks |
|---------|-------------------|----------------------------------|-----------------|-----------------------------|---------|
| 1. | V. Gobalakrishnan | Pachapalayam 282/2A2 | 1.28.5 | 02.06.2014 to 01.06.2018 | - |
| 2. | S.A. Ganesan | Pachapalayam 273/3C 272/3B | 1.92.0 | 19.07.2007 to 18.07.2012 | - |

iv) Proposed quarries

| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease Period | Remarks |
|---------|---------------------|---------------------------------|-----------------|--------------|--------------|
| 1 | Thiru. S.A. Ganesan | Pachapalayam 273/2A 281/2 | 2.03.0 | - | Subject Area |

v) Future Proposed quarries

| Sl. No. | Name of the Owner | Village & S.F.Nos. | Extent in Hect. | Lease Period | Remarks |
|-----------|-------------------|--------------------|-----------------|--------------|---------|
| ---NIL--- | | | | | |

DISCUSSION BY SEIAA AND THE REMARKS:-

The subject was placed in the 697th authority meeting held on 15.02.2024. After detailed discussion, the Authority noted as follows.



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SEIAA-TN**

1. Earlier, the subject was placed in the 686th authority meeting held on 08.01.2024. The authority noted that the subject was appraised in the 429th SEAC meeting held on 13.12.2023. SEAC has furnished its recommendations for granting Environmental Clearance subject to the conditions stated therein. After detailed discussions, the Authority decided to defer and decided to call for the following:

i. The Project Proponent is requested to withdraw the duplicate ToR proposal filed online (File No. 7635 and Online Proposal No. SIA/TN/MIN/54495/2020 dated: 07.07.2020). Only after consideration of the said duplicate ToR withdrawal request, the EC proposal (File No. 7833 and Online Proposal No. SIA/TN/MIN/56383/2020 dated: 26.01.2022) can be considered by the SEIAA. In this regard, the PP is requested to furnish justification for withdrawal of duplicate ToR proposal.

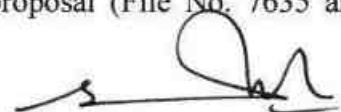
2. Subsequently, the proponent, S.G. Aakash Arumugam (Legal heir of S.A.Ganesan) vide letter dated.13.01.2024 has submitted a request to withdraw the initially filed ToR proposal (File No.7635) stating as follows:

".... Initially the application has submitted in the name of Thiru.S.A.Ganesan, Coimbatore for Terms of Reference vide online proposal no. SIA/TN/MIN/54495/2020 dated.07.07.2020 and Lr.No.SEIAA-TN/F.No.7635/2020 dated.13.07.2020. Later on, my father intended to withdraw the proposal due to administrative and financial reasons. Hence, he submitted the withdrawal request through offline mode.

After that my father has resubmitted the proposal for Terms of Reference to obtain Environmental Clearance for quarrying rough stone and gravel quarry over an extent of 2.03.0 Ha at S.F. No. 273/2A and 281/2 Pachapalayam Village, Sulur Taluk, Coimbatore District vide online proposal No.SIA/TN/MIN/56383/2020 dated.08.09.2020 (Lr.No.SEIAA-TN/F.No.7833/2020 dated.10.09.2020) under B1 category and obtained ToR vide Lr.No.SEIAA-TN/F.No.7833/SEAC/ToR-828/2020 dated.16.12.2020 for preparation of EIA Report...

..... In this connection, now I request your good office to kindly close my old ToR application (SEIAA F.No.7635/2020) and process the EC application (File No.7833/2020)..."

3. Regarding PP's withdrawal request of duplicate ToR proposal (File No. 7635 and




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SEIAA-TN**

Online Proposal No. SIA/TN/MIN/54495/2020), the subject was placed in 691st SEIAA meeting held on 06.02.2024. The authority, after detailed deliberations, decided to accept the withdrawal request of the proponent in the SEIAA F.No.7635 (SIA/TN/MIN/54495/2020). Further, the authority decided that the pending EC application, SEIAA F.No.7833 (SIA/TN/MIN/56383/2020) shall be processed.

In view of the above, the Authority taking into account the recommendations of SEAC and also the safety aspects and to ensure sustainable, scientific and systematic mining, decided to grant Environmental Clearance **for the quantity of 1,22,815 m³ of Rough Stone and 6576 m³ of Gravel up to the ultimate depth of 33m below ground level (3m Gravel + 30m Rough Stone) and the annual peak production should not exceed 32,650 m³ of Rough Stone (1st year) and 3840 m³ of Gravel (3rd year).** This is also subject to the conditions imposed by SEAC, normal conditions stipulated by MOEF&CC in addition to the following conditions and the conditions in Annexure 'A' of this minutes

1. Keeping in view of MoEF&CC's notification S.O.1533(E) dated.14.09.2006 and S.O. 1807(E) dated 12.04.2022, this Environmental Clearance is valid as per the approved mine plan period.
2. The EC granted is subject to review by District Collector, Mines Dept. and TNPCB on completion of every 5 years and also during the mine plan period, till the project life so as to review the EC conditions and to ensure that they have all been adhered to and implemented.
3. The project proponent shall submit a Certified Compliance Report obtained from IRO of MoEF&CC to the monitoring, regulatory and other concerned authorities including SEIAA, while seeking a renewal of the mining plan to cover the project life.
4. There should be regular monitoring of air quality, water quality, ground water level and noise quality and reports regarding the same should be submitted to TNPCB, SEIAA & IRO of MoEF&CC once in every 6 months.
5. The proponent shall strictly adhere to the mining plan and half yearly and annual returns shall be submitted to the Director of Geology and Mining Department with copy marked to TNPCB, SEIAA & IRO of MoEF&CC.
6. Biodiversity in and around the project area should be monitored frequently and detailed biodiversity report should be submitted every year to SEIAA & IRO of MoEF&CC.



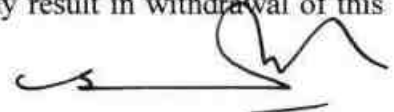
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7. The progressive and final mine closure plan including the green belt implementation and environmental norms should be strictly followed as per the EMP and as per the amount committed and approved in EC for EMP. Status of progressive mine closure and green belt implementation should be included in the half yearly compliance report submitted to TNPCB, SEIAA & IRO of MoEF&CC.
8. As per the OM vide F. No. IA3-22/1/2022-IA-III [E- 172624] Dated: 14.06.2022, the Project Proponents are directed to submit the six-monthly compliance on the environmental conditions prescribed in the prior environmental clearance letter(s) through newly developed compliance module in the PARIVESH Portal from the respective login.
9. The amount allocated for EMP should be kept in a separate account and both the capital and recurring expenditures should be done year wise for the works identified, approved and as committed. The work & expenditure made under EMP should be elaborated in the bi-annual compliance report submitted and also should be brought to the notice of concerned authorities during inspections.

Annexure 'A'

a) EC Compliance

1. The Environmental Clearance is accorded based on the assurance from the project proponent that there will be full and effective implementation of all the undertakings given in the Application Form, Pre-feasibility Report, mitigation measures as assured in the Environmental Impact Assessment/ Environment Management Plan and the mining features including Progressive Mine Closure Plan as submitted with the application.
2. All the conditions as presented by the proponent in the PPT during SEAC appraisal should be addressed in Full.
3. The proponent shall submit Compliance Reports on the status of compliance of the stipulated EC conditions including results of monitored data. It shall be sent to the respective Regional Office of Ministry of Environment, Forests and Climate Change, Govt. of India and also to the Office of State Environment Impact Assessment Authority (SEIAA).
4. Concealing the factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this



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clearance and attract action under the provisions of Environment (Protection) Act, 1986.

b) Applicable Regulatory Frameworks

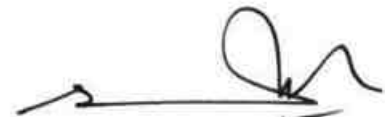
5. The project proponent shall strictly adhere to the provisions of Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002, Biological diversity Rules, 2004 & TN Forest Act, 1882 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter

c) Safe mining Practices

6. The AD/DD, Dept. of Geology & Mining shall ensure operation of the proposed quarry after the submission slope stability study conducted through the reputed research & Academic Institutions such as NIRM, IITs, NITS Anna University, and any CSIR Laboratories etc.
7. The AD/DD, Dept. of Geology & Mining & Director General of Mine safety shall ensure strict compliance and implementation of bench wise recommendations/action plans as recommended in the scientific slope stability study of the reputed research & Academic Institutions as a safety precautionary measure to avoid untoward accidents during mining operation.
8. A minimum buffer distance specified as per existing rules and statutory orders shall be maintained from the boundary of the quarry to the nearest dwelling unit or other structures, and from forest boundaries or any other ecologically sensitive and archeologically important areas or the specific distance specified by SEIAA in EC as per the recommendations of SEAC depending on specific local conditions.

d) Water Environment – Protection and mitigation measures

9. The proponent shall ensure that the activity does not disturb the water bodies and natural flow of surface and groundwater, nor cause any pollution, to water sources in the area.



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SEIAA-TN**

10. The proponent shall ensure that the activities do not impact the water bodies/wells in the neighboring open wells and bore wells. The proponent shall ensure that the activities do not in any way affect the water quantity and quality in the open wells and bore wells in the vicinity or impact the water table and levels. The proponent shall ensure that the activities do not disturb the river flow, nor affect the Odai, Water bodies, Dams in the vicinity.
11. Water level in the nearest dug well in the downstream side of the quarry should be monitored regularly and included in the Compliance Report.
12. Quality of water discharged from the quarry should be monitored regularly as per the norms of State Pollution Control Board and included in the Compliance Report.
13. Rain Water Harvesting facility should be installed as per the prevailing provisions of TNMBR/TNCDBR, unless otherwise specified. Maximum possible solar energy generation and utilization shall be ensured as an essential part of the project.
14. Regular monitoring of flow rates and water quality upstream and downstream of the springs and perennial nallahs flowing in and around the mine lease area shall be carried out and reported in the compliance reports to SEIAA.
15. Regular monitoring of ground water level and water quality shall be carried out around the mine area during mining operation. At any stage, if it is observed that ground water table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.
16. Garland drains and silt traps are to be provided in the slopes around the core area to channelize storm water. De-silting of Garland canal and silt traps have to be attended on a daily basis. A labour has to be specifically assigned for the purpose. The proponent shall ensure the quality of the discharging storm water as per the General Effluent Discharge Standards of CPCB.

e) **Air Environment – Protection and mitigation measures**

17. The activity should not result in CO₂ release and temperature rise and add to micro climate alternations.
18. The proponent shall ensure that the activities undertaken do not result in carbon emission, and temperature rise, in the area.



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SEIAA-TN**

19. The proponent shall ensure that Monitoring is carried out with reference to the quantum of particulate matter during excavation; blasting; material transport and also from cutting waste dumps and haul roads.

f) Soil Environment – Protection and mitigation measures

20. The proponent shall ensure that the operations do not result in loss of soil biological properties and nutrients.

21. The proponent shall ensure that activity does not deplete the indigenous soil seed bank and disturb the mycorrhizal fungi, soil organism, soil community nor result in eutrophication of soil and water.

22. The activities should not disturb the soil properties and seed and plant growth. Soil amendments as required to be carried out, to improve soil health.

23. Bio remediation using microorganisms should be carried out to restore the soil environment to enable carbon sequestration.

24. The proponent shall ensure that the mine restoration is done using mycorrhizal VAM, vermin-composting, Biofertilizers to ensure soil health and biodiversity conservation.

25. The proponent shall ensure that the topsoil is protected and used in planting activities in the area.

26. The proponent shall ensure that topsoil to be utilized for site restoration and Green belt alone within the proposed area.

27. The top soil shall be temporarily stored at earmarked place (s) and used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. At critical points, use of geotextile shall be undertaken for stabilization of the dump. Protective wall or gabions should be made around the dump to prevent erosion / flow of sediments during rains. The entire excavated area shall be backfilled.

28. Activities should not result in invasion of site by exotic and alien plant and animal species and disturb the native biodiversity and soil micro flora and fauna.

g) Noise Environment – Protection and mitigation measures

29. The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.



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SEIAA-TN**

30. The sound at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Hence, the PP shall ensure that the biological clock of the villages are not disturbed because of the mining activity.

h) Biodiversity - Protection and mitigation measures

31. The proponent should ensure that there is no disturbance to the agriculture plantations, social forestry plantations, waste lands, forests, sanctuary or national parks. There should be no impact on the land, water, soil and biological environment and other natural resources due to the mining activities.

32. No trees in the area should be removed and all the trees numbered and protected. In case trees fall within the proposed quarry site the trees may be transplanted in the Greenbelt zone. The proponent shall ensure that the activities in no way result in disturbance to forest and trees in vicinity. The proponent shall ensure that the activity does not disturb the movement of grazing animals and free ranging wildlife. The proponent shall ensure that the activity does not disturb the biodiversity, the flora & fauna in the ecosystem. The proponent shall ensure that the activity does not result in invasion by invasive alien species. The proponent shall ensure that the activities do not disturb the resident and migratory birds. The proponent shall ensure that the activities do not disturb the vegetation and wildlife in the adjoining reserve forests and areas around.

33. The proponent shall ensure that the activities do not disturb the agro biodiversity and agro farms. Actions to be taken to promote agroforestry, mixed plants to support biodiversity conservation in the mine restoration effort.

34. The proponent shall ensure that all mitigation measures listed in the EIA/EMP are taken to protect the biodiversity and natural resources in the area.

35. The proponent shall ensure that the activities do not impact green lands/grazing fields of all types surrounding the mine lease area which are food source for the grazing cattle.

i) Climate Change

36. The project activity should not in any way impact the climate and lead to a rise in temperature.



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SEIAA-TN**

37. There should be least disturbance to landscape resulting in land use change, contamination and alteration of soil profiles leading to Climate Change.
38. Intensive mining activity should not add to temperature rise and global warming.
39. Operations should not result in GHG releases and extra power consumption leading to Climate Change.
40. Mining through operational efficiency, better electrification, energy use, solar usage, use of renewable energy should try to decarbonize the operations.
41. Mining Operation should not result in droughts, floods and water stress, and shortages, affecting water security both on site and in the vicinity.
42. Mining should not result in water loss from evaporation, leaks and wastage and should support to improve the ground water.
43. Mining activity should be flood proof with designs and the drainage, pumping techniques shall ensure climate-proofing and socio-economic wellbeing in the area and vicinity.

j) Reserve Forests & Protected Areas

44. The activities should provide nature based support and solutions for forest protection and wildlife conservation.
45. The project activities should not result in forest fires, encroachments or create forest fragmentation and disruption of forest corridors.
46. There should be no disturbance to the freshwater flow from the forest impacting the water table and wetlands.
47. The project proponent should support all activities of the forest department in creating awareness to local communities on forest conservation.
48. The project activities should not alter the geodiversity and geological heritage of the area.
49. The activities should not result in temperature rise due to increased fossil fuels usage disrupting the behaviour of wildlife and flora.
50. The activities should support and recognise the rights and roles of indigenous people and local communities and also support sustainable development.
51. The project activities should support the use of renewables for carbon capture and carbon storage in the project site and forest surrounds.



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SEIAA-TN**

52. The project activities should not result in changes in forest structure, habitats and genetic diversity within forests.

k) Green Belt Development

53. The proponent shall ensure that in the green belt development more indigenous trees species (Appendix as per the SEAC Minutes) are planted.

54. The proponent shall ensure the area is restored and rehabilitated with native trees as recommended in SEAC Minutes (in Appendix).

l) Workers and their protection

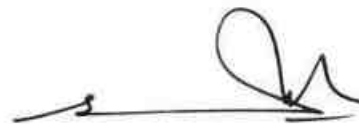
55. The project proponent is responsible for implementing all the provisions of labour laws applicable from time to time to quarrying /Mining operations. The workers on the site should be provided with on-site accommodation or facilities at a suitable boarding place, protective equipment such as ear muffs, helmet, etc.

56. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.

57. The workers shall be employed for working in the mines and the working hours and the wages shall be implemented/enforced as per the Mines Act, 1952.

m) Transportation

58. No Transportation of the minerals shall be allowed in case of roads passing through villages/ habitations. In such cases, PP shall construct a bypass road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers.



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59. The Main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other areas of dust generation like crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipments like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.

n) Storage of wastes

60. The project proponent shall store/dump the waste generated within the earmarked area of the project site for mine closure as per the approved mining plan.

o) CER/EMP

61. The CER should be fully Implemented and fact reflected in the Half-yearly compliance report.

62. The EMP shall also be implemented in consultation with local self-government institutions & Govt. departments.

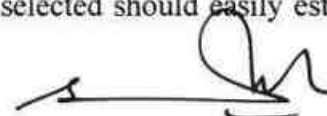
63. The follow-up action on the implementation of CER Shall be included in the compliance report.

p) Directions for Reclamation of mine sites

64. The mining closure plan should strictly adhere to appropriate soil rehabilitation measures to ensure ecological stability of the area. Reclamation/Restoration of the mine site should ensure that the Geotechnical, physical, chemical properties are sustainable that the soil structure composition is buildup, during the process of restoration.

65. The proponent shall ensure that the mine closure plan is followed as per the mining plan and the mine restoration should be done with native species, and site restored to near original status. The proponent shall ensure that the area is ecologically restored to conserve the ecosystems and ensure flow of goods and services.

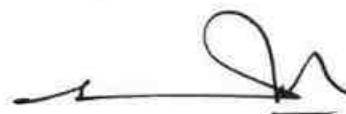
66. A crucial factor for success of reclamation site is to select sustainable species to enable develop a self-sustaining eco system. Species selected should easily establish,



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SEIAA-TN**

grow rapidly, and possess good crown and preferably be native species. Species to be planted in the boundary of project site should be un palatable for cattle's/ goats and should have proven capacity to add leaf-litter to soil and decompose. The species planted should be adaptable to the site conditions. Should be preferably pioneer species, deciduous in nature to allow maximum leaf-litter, have deep root system, fix atmospheric nitrogen and improve soil productivity. Species selected should have the ability to tolerate altered pit and toxicity of and site. They should be capable of meeting requirement of local people in regard to fuel fodder and should be able to attract bird, bees and butterflies. The species should be planted in mixed association.

67. For mining area reclamation plot culture experiments to be done to identify/ determine suitable species for the site.
68. Top soil with a mix of beneficial microbes (Bacteria/Fungi) to be used for reclamation of mine spoils. AM Fungi (Arbuscular mycorrhizal fungi), plant growth promoting Rhizo Bacteria and nitrogen fixing bacteria to be utilized.
69. Soil and moisture conservation and water harvesting structures to be used where ever possible for early amelioration and restoration of site.
70. Top soil is most important for successful rehabilitation of mined sites. Topsoil contains majority of seeds and plant propagation, soil microorganism, Organic matter and plant nutrients. Wherever possible the topsoil should be immediately used in the area of the for land form reconstruction, to pre mining conditions.
71. Over burdens may be analyzed and tested for soil characteristics and used in the site for revegetation. Wherever possible seeds, rhizome, bulbs, etc of pioneering spices should be collected, preserved and used in restoring the site.
72. Native grasses seeds may be used as colonizers and soil binders, to prevent erosion and allow diverse self- sustaining plant communities to establish. Grasses may offer superior tolerance to drought, and climatic stresses.
73. Reclamation involves planned topographical reconstruction of site. Care to be taken to minimize erosion and runoff. Topsoils should have necessary physical, chemicals, ecological, properties and therefore should be stored with precautions and utilized for reclamation process. Stocked topsoil should be stabilized using grasses to protect from wind. Seeds of various indigenous and local species may be broad casted after topsoil and treated overburden are spread.

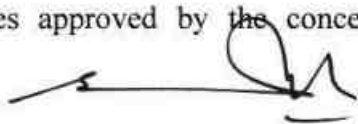


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74. Alkaline soils, acidic soils, Saline soils should be suitably treated/amended using green manure, mulches, farmyard manure to increase organic carbon. The efforts should be taken to landscape and use the land post mining. The EMP and mine closure plan should provide adequate budget for re-establishing the site to pre-mining conditions. Effective steps should be taken for utilization of over burden. Mine waste to be used for backfilling, reclamation, restoration, and rehabilitation of the terrain without affecting the drainage and water regimes. The rate of rehabilitation should be similar to rate of mining. The land disturbed should be reshaped for long term use. Mining should be as far as possible be eco-friendly. Integration of rehabilitation strategies with mining plan will enable speedy restoration.
75. Efforts should to taken to aesthetically improve the mine site. Generally, there are two approaches to restoration i.e Ecological approach which allows tolerant species to establish following the succession process allowing pioneer species to establish. The other approach i.e plantation approach is with selected native species are planted. A blend of both methods may be used to restore the site by adding soil humus and mycorrhiza.
76. Action taken for restoration of the site should be specifically mentioned in the EC compliances.

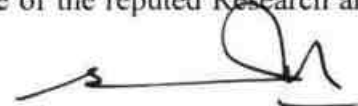
CONDITIONS IMPOSED BY SEAC:

- 1) The prior Environmental Clearance granted for this mining project shall be valid for the project life including production value as laid down in the mining plan approved and renewed by competent authority, from time to time, subject to a maximum of thirty years, whichever is earlier, vide MoEF&CC Notification S.O. 1807(E) dated 12.04.2022.
- 2) The Project Proponent shall plant 1000 Nos. of tree samplings in the proposed quarry site.
- 3) The PP shall mark the DGPS reference pillars painted with blue & white colour indicating the safety barrier of 7.5 m to be left under the Rule 13 (1) of MCDR, 1988 within the lease boundary and protective bunds, before obtaining the CTO from the TNPCB.
- 4) The PP shall not employ any external agency for carrying out the blasting operation and he shall also install the temporary magazines approved by the concerned


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licensing authority before the execution of the lease. for storing the authorized explosives & detonators separately in accordance with the Explosive Rules, 2008.

- 5) **Since the windmill structures are situated within a radial distance of 500 m**, the PP shall carry out the scientific studies **within a period of six months** from the commencement of quarrying operations with prior permission from the DMS/Chennai Region, to design the controlled blast parameters for reducing the blast-induced ground/air- vibrations and eliminating the fly rock from the blasting operations carried out in the quarry, by involving anyone of these reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB, AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance without any deviation.
- 6) The PP shall furnish an affidavit indicating the Standard Operating Procedures (SoP) for carrying out the 'Best Mining Practices' in the areas of drilling, blasting excavation, transportation, and green belt development, in securing the safety of the persons living within a radial distance of 500 m (danger zone) to the concerned AD (Mines) at the time of lease execution.
- 7) The PP shall not carry out the deep hole larger diameter blasting and the secondary blasting of oversize fragments /boulders during the life of the lease period.
- 8) Considering the village/highway roads are located within 300m from the lease boundary, the PP shall carry out the small scale blasting involving 30 to 40 holes in a round at a time with keeping the total aggregate explosive charge/round is limited to 2 kg only in accordance with the provisions of MMR 1961.
- 9) The PP shall only carry out the NONEL-based (or) Electronic Detonator based blasting operation for controlling the environmental impacts with keeping the windmill in mind.
- 10) However, for the safety of the persons employed in the quarry, the PP shall carry out the scientific studies to assess the slope stability of the working benches and existing quarry walls within a period of six months from the commencement of mining operations **for evaluating the slope stabilization & protective measures while designing the proposed benches**, by involving any one of the reputed Research and



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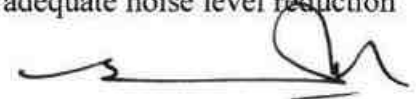
Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB, AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance without any deviation.

- 11) As accepted by the Project Proponent the CER cost of **Rs. 5 Lakhs** and the amount shall be spent for the activities as committed towards Government Higher Secondary School, Pachapalayam Village, Sulur Taluk, Coimbatore District, before obtaining CTO from TNPCB.
- 12) The PP shall inform send the 'Notice of Opening' of the quarry to the Director of Mines Safety, Chennai Region before obtaining the CTO from the TNPCB.
- 13) The Project Proponent shall abide by the annual production scheduled specified in the approved mining plan and if any deviation is observed, it will render the Project Proponent liable for legal action in accordance with Environment and Mining Laws.
- 14) The proponent shall appoint the statutory competent persons relevant to the proposed quarry size as per the provisions of Mines Act 1952 and Metalliferous Mines Regulations, 1961, as amended from time to time.
- 15) Within a period one month from the execution of lease deed, the PP shall ensure that the persons deployed in the quarry including all the contractual employees/truck drivers shall undergo initial/periodical training in the DGMS approved GVTC situated in Trichy / Salem / Hosur.
- 16) The PP shall construct a garland drain of size, gradient and length around the proposed quarry incorporating garland canal, silt traps, siltation pond and outflow channel connecting to a natural drain should be provided prior to the commencement of mining. Garland drain, silt-traps, siltation ponds and outflow channel should be desilted periodically and geo-tagged photographs of the process should be included in the HYCR.
- 17) Monitoring of drainage water should be carried out at different seasons by an NABL accredited lab and clear water should only be discharged into the natural stream. Geo-tagged photographs of the drainage and sampling site should be submitted along with HYCR.



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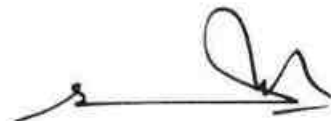
- 18) The proponent shall install the 'S3 (or) G2' type of fencing all around the boundary of the proposed working quarry with gates for entry/exit before the commencement of the operation as recommended in the DGMS Circular. 11/1959 and shall furnish the photographs showing the same before obtaining the CTO from TNPCB.
- 19) The Proponent shall submit a conceptual 'Slope Stability Action Plan' incorporating the benches & accessible haul road approved by the concerned AD (Mines) for the proposed quarry to the DEE/TNPCB at the time of obtaining the CTO.
- 20) The PP shall ensure that the persons employed in the quarry whether permanent, temporary or contractual are undergoing the initial/periodical medical examination in the DGMS approved OHS Clinics/Hospitals as per the DGMS Circular No. 01 of 2011 before they are engaged in mining activities.
- 21) The PP shall ensure that the persons employed in the quarry whether permanent, temporary or contractual are provided with adequate PPEs before engaged in mining operations.
- 22) The PP shall meticulously carry out the mitigation measures as spelt out in the approved EMP.
- 23) Proper barriers to reduce noise level and dust pollution should be established by providing greenbelt along the boundary of the quarrying site and suitable working methodology should be adopted by considering the wind direction.
- 24) The Project Proponent shall ensure that the funds earmarked for environmental protection measures are kept in a separate bank account and should not be diverted for other purposes. Year-wise expenditure should be included in the HYCR.
- 25) The Project Proponent shall send a copy of the EC to the concerned Panchayat/local body.
- 26) Perennial maintenance of haulage road/village / Panchayat Road shall be done by the project proponent as required, in coordination with the concerned Govt. Authority.
- 27) Perennial sprinkling arrangements shall be in place on the haulage road for fugitive dust suppression. Fugitive emission measurements should be carried out during the mining operation at regular intervals and submit the consolidated report to TNPCB once in six months.
- 28) The Proponent shall ensure that the noise level is monitored during mining operation at the project site for all the machineries deployed and adequate noise level reduction



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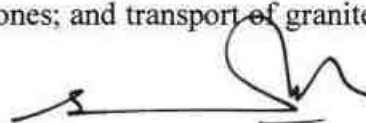
measures are undertaken accordingly. The report on the periodic monitoring shall be included in the HYCR.

- 29) Proper barriers to reduce noise level and dust pollution should be established by providing greenbelt along the boundary of the quarrying site and suitable working methodology to be adopted by considering the wind direction.
- 30) 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. 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.
- 31) Taller/one year old saplings raised in appropriate size of bags (preferably eco-friendly bags) should be planted in proper spacing 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.
- 32) **Noise and Vibration Related:** (i) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs, (ii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone.
- 33) The PP shall carry out maximum of only one round of controlled blast per day, restricted to the maximum of 30 to 40 number of holes per round with maintaining maximum charge per delay in such a manner that the blast-induced ground vibration level (Peak Particle Velocity) measured in the houses/structures located at a distance of 500 m shall not exceed 2.0 mm/s and no fly rock shall travel beyond 20 m from the site of blasting.
- 34) The PP shall also ensure that the blasting operations are not carried out on a 'day after day' basis and a minimum 24 hours break should be observed between blasting days to reduce the environmental impacts effectively.



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SEIAA-TN

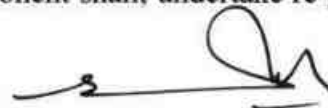
- 35) If 'Deep-hole large diameter drilling and blasting' is required, then the PP shall obtain special permission from DGMS.
- 36) The PP shall ensure that the blasting operations shall be carried out during a prescribed time interval with a prior notice to the habitations situated around the proposed quarry after having posted the sentries/guards adequately to confirm the non-exposure of public within the danger zone of 500 m from the boundary of the quarry. The PP shall use the jack hammer drill machine fitted with the dust extractor for the drilling operations such that the fugitive dust is controlled effectively at the source.
- 37) The PP shall ensure that the blasting operations are carried out by the blaster/Mine Mate/Mine Foreman employed by him in accordance with the provisions of MMR 1961 and it shall not be carried out by the persons other than the above statutory personnel.
- 38) The proponent shall undertake in a phased manner restoration, reclamation and rehabilitation of lands affected by the quarrying operations and shall complete this work before the conclusion of such operations as per the Environmental Management Plan & the approved Mine Closure Plan.
- 39) Ground water quality monitoring should be conducted once in every six months and the report should be submitted to TNPCB.
- 40) The operation of the quarry should not affect the agricultural activities & water bodies near the project site and a 50 m safety distance from water body should be maintained without carrying any activity. The proponent shall take appropriate measures for "Silt Management" and prepare a SOP for periodical de-siltation indicating the possible silt content and size in case of any agricultural land exists around the quarry.
- 41) The proponent shall provide sedimentation tank / settling tank with adequate capacity for runoff management.
- 42) The proponent shall ensure that the transportation of the quarried granite stones shall not cause any hindrance to the Village people/Existing Village Road and shall take adequate safety precautionary measures while the vehicles are passing through the schools / hospital. The Project Proponent shall ensure that the road may not be damaged due to transportation of the quarried granite stones; and transport of granite



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stones will be as per IRC Guidelines with respect to complying with traffic congestion and density.

- 43) To ensure safety measures along the boundary of the quarry site, security guards are to be posted during the entire period of the mining operation.
- 44) The Project Proponent shall comply with the provisions of the Mines Act, 1952, MMR 1961 and Mines Rules 1955 for ensuring safety, health and welfare of the people working in the mines and the surrounding habitants.
- 45) The project proponent shall ensure that the provisions of the MMDR Act, 1957 & the MCDR 2017 and Tamilnadu Minor Mineral Concession Rules 1959 are complied by carrying out the quarrying operations in a skillful, scientific and systematic manner keeping in view proper safety of the labour, structure and the public and public works located in that vicinity of the quarrying area and in a manner to preserve the environment and ecology of the area.
- 46) The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be informed to the District AD/DD (Geology and Mining) District Environmental Engineer (TNPCB) and the Director of Mines Safety (DMS), Chennai Region by the proponent without fail.
- 47) The Project Proponent shall abide by the annual production scheduled specified in the approved mining plan and if any deviation is observed, it will render the Project Proponent liable for legal action in accordance with Environment and Mining Laws.
- 48) All the conditions imposed by the Assistant/Deputy Director, Geology & Mining, concerned District in the mining plan approval letter and the Precise area communication letter issued by concerned District Collector should be strictly followed.
- 49) That the grant of this E.C. is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time-being in force, rests with the project proponent.
- 50) As per the directions contained in the OM F.No.22-34/2018-IA.III dated 16th January 2020 issued by MoEFCC, the Project Proponent shall, undertake re-grassing



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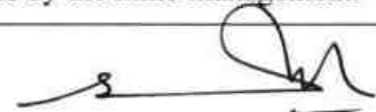
the mining area and any other area which may have been disturbed due to his mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. The compliance of this direction shall be included in the Half Yearly Compliance Report which will be monitored by SEAC at regular intervals.

51) The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.

52) 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 adhere to the EMP as committed.

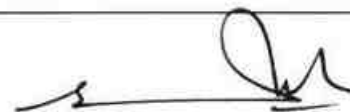
ANNEXURE

| SPECIAL MITIGATION MEASURES FOR THE QUARRIES LOCATED IN CLOSE PROXIMITY TO THE WINDMILLS | | |
|---|---|---|
| Sl. No | Existing (or) Virgin Quarry | |
| | Wind Mills located at a distance of 150 m to 300 m | Wind Mills located beyond 300 m Up to 500 m |
| 1. | Appointment of I/II Class Mines Manager Certificate of Competency under MMR 1961. | Appointment of I/II Class Mines Manager Certificate of Competency under MMR 1961. |
| 2. | Special precautions are to be taken during blasting within danger zone such as posting guards, etc. | Blast design parameters should be mentioned in mining plan/scheme, and may be reviewed by a competent mining engineer. |
| 3. | Blast design parameters should be mentioned in mining plan/scheme. | MCPD and total charge should be fixed such that it should not exceed 1.3 kg and 26.50 kg respectively. |
| 4. | The recommendations of scientific organisation need to be incorporated in the mining plan/scheme before its approval. | Fresh scientific study may be conducted if mine management wants to increase the MCPD and total explosive charge above the quantity of 1.30 kg and 26.50 kg respectively. Continuous monitoring using seismograph should also be done in such cases by the mine management. |



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| | | |
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| 5. | Engagement of blasting in-charge having Diploma/Degree in mining engineering for day-to-day blasting. | Engagement of blasting in-charge having Diploma/Degree in mining engineering for day-to-day blasting. |
| 6. | Training of the blasting crew on controlled blasting practices before engaged in operation. | Training of the blasting crew on controlled blasting practices before engaged in operation. |
| 7. | Submission of monthly report on blast design pattern and detailed explosive consumption as well as volume of rock excavation to a statutory body viz. DGMS, DMG, PESO or SPCB. | Submission of monthly report on blast design pattern and detailed explosive consumption as well as volume of rock excavation to a statutory body viz. DGMS, DMG, SPCB. Report of recorded ground vibration need to be added in monthly report. |
| 8. | Report of recorded ground vibration need to be added in monthly report which shall be sent to all the statutory body viz. DGMS, DMG, SPCB. | Report of recorded ground vibration need to be added in monthly report which shall be sent to all the statutory body viz. DGMS, DMG, SPCB. |
| 9. | Small diameter emulsion cartridge of 25 mm diameter (125 gm weight per cartridge) shall be used. However, ANFO explosives may also be used as main explosive charge. | Small diameter emulsion cartridge of 25 mm diameter (125 gm weight per cartridge) shall be used. However, ANFO explosives may also be used as main explosive charge. |
| 10. | Electronic (or) Non-electric detonators (Nonel) shall be used in all the blasts for in-hole explosive initiation and surface hole-to-hole firing. | Non-electric detonators (Nonel) shall be used in all the blasts for in-hole explosive initiation and surface hole-to-hole firing. |
| 11. | Max. number of holes in a round: 30. | Max. number of holes in a round: 40 to 60. |



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Appendix -I

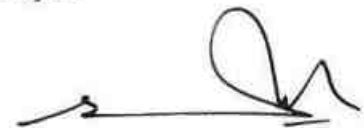
List of Native Trees Suggested for Planting

1. *Aeglemarmelos*-Vilvam
2. *Adenaantherapavonina*-Manjadi
3. *Albizialebbeck*-Vaagai
4. *Albiziaamara*-Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa*-Iruvathi
8. *Buchananiaaillaris*-Kattuma
9. *Borassusflabellifer*- Panai
10. *Buteamonosperma* - Murukkamaram
11. *Bobaxceiba*- Ilavu, Sevvilavu
12. *Calophylluminophyllum* - Punnai
13. *Cassia fistula*- Sarakondrai
14. *Cassia roxburghii*- Sengondrai
15. *Chloroxylonsweitenia* - Purasamaram
16. *Cochlospermumreligiosum*- Kongu, Manjalllavu
17. *Cordiadichotoma*- Mookuchalimaram
18. *Cretevaadansonii*-Mavalingum
19. *Dilleniaindica*- Uva, Uzha
20. *Dilleniapentagyna*- SiruUva, Sitruzha
21. *Diospyrosebenum*- Karungali
22. *Diospyroschloroxylon*- Vaganai
23. *Ficusamplissima*- Kalltchi
24. *Hibiscus tiliaceous*-Aatrupoovarasu
25. *Hardwickiabinata*- Aacha
26. *Holopteliaintegrifolia*-Aayili
27. *Lanneacoromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthustetraphylla*- Neikottaimaram
30. *Limoniaacidissima* - Vila maram



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31. *Litsea glutinosa*–Pisinpattai
32. *Madhucal longifolia* - Illuppai
33. *Manilkara hexandra*–Ulakkai Paalai
34. *Mimusops elengi* - Magizhamaram
35. *Mitragyna parvifolia* - Kadambu
36. *Morinda pubescens*–Nuna
37. *Morinda citrifolia*– Vellai Nuna
38. *Phoenix sylvestre*-Eachai
39. *Pongamia pinnata*–Pungam
40. *Premna mollissima*– Munnai
41. *Premna serratifolia*– Narumunnai
42. *Premna tomentosa*-Purangai Naari, Pudanga Naari
43. *Prosopis cinerea* - Vannimaram
44. *Pterocarpus marsupium* - Vengai
45. *Pterospermum canescens*–Vennangu, Tada
46. *Pterospermum xylocarpum* - Polavu
47. *Puthranjiva roxburghii*–Puthranjivi
48. *Salvadora persica*– Ugaamaram
49. *Sapindus emarginatus*- Manipungan, Soapukai
50. *Saraca asoca* - Asoca
51. *Streblus asper*- Pirayamaram
52. *Strychnos nuxvomica*–Yetti
53. *Strychnos potatorum* - Therthang Kottai
54. *Syzygium cumini* - Naval
55. *Terminalia bellerica*- Thandri
56. *Terminalia arjuna*- Venmarudhu
57. *Toona ciliata* – Sandhanavembu
58. *Thespesia populnea*- Puvarasu
59. *Walsura trifoliata*–valsura
60. *Wrightia tinctoria*- Veppalai
61. *Pithecellobium dulce* – Kodukkapuli



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Appendix-II

Display Board

(Size 6' x5' with Blue Background and White Letters)

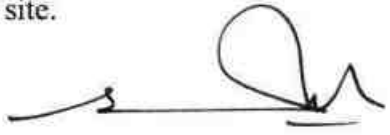
| | |
|---|--|
| அறிவிப்பு | |
| காவிரியாறு குளிர் மின்சாரப்பலகையை கட்டுத்தலும் அறங்காட்சி மூலம் நடத்தலும்க்கு உட்பட்ட கல்பாக்கம் பகுதி மீட்டர் சேமிப்பகம் கட்டுத்தலும் அறங்காட்சி மீட்டர் வரை செயல்படுத்தலாக உள்ளது. | |
| பணியை பற்றி விரிவாக வெளியிடக்கூடிய கணக்கு திட்டம் | குவார்டியன் என்வொய்ன்மன்ட் அபர்டி மேல் அமைக்க வேண்டும். காலகாலத்திற்கு கட்டும் தரவரம்பு திட்டமிடும் மீட்டர்கள் கட்டும் இடங்களை குறிக்க வேண்டும். கார்ட்டில் மாசு ஏற்படாதவாறு கண்காணிக்க வேண்டிய செயற்கை காலகால வேண்டும். |
| நடவடிக்கை முடிந்தபின்னர் வெளியிடும் கணக்கின் விவரங்கள் | காலகால வேலையை மாசுமலிவாக மாசு ஏற்படாத அளவிற்கு தளவாங்க முடிவாக தளவாங்க வேண்டும். காலகால வேலையை காலகால வேலையை குறிப்பிட்டு விவரமாக இரண்டாம் அளவிற்கும் திட்டி மாசுமலிவாக மாசு ஏற்படாதவாறு குவார்டியன் என்வொய்ன்மன்ட் அபர்டி கட்டத்தியான பணியை பற்றி விரிவாக அறங்காட்சி மீட்டர் வேண்டும். |
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STANDARD CONDITIONS

Part-A: Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.

2. Mining activity should be reviewed by the District Collector after three years and decide for further extension.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.



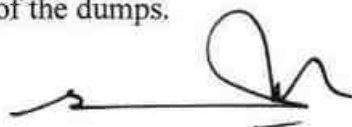
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4. The project proponent shall comply the conditions laid down in the Section V. Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. **A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.**
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 50mts. from any civil structure shall be kept from the periphery of any excavation area.
14. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
15. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
16. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
17. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.



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18. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
19. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF&CC, GoI on 16.11.2009.
20. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
- i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
21. The following measures are to be implemented to reduce Noise Pollution
- i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
 - v. All noise generating machinery the compressor, generator to be enclosed in acoustic enclosure so as to reduce noise in working area.
22. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF&CC, GoI to control noise to the prescribed levels.
23. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
24. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
25. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
26. The following measures are to be adopted to control erosion of dumps:-
- i. Retention/ toe walls shall be provided at the foot of the dumps.




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SEIAA-TN

- ii. Worked out slopes are to be stabilized by planting appropriate shrub / grass species on the slopes.
27. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous & other wastes (Management, and Trans Boundary Movement) Rules, 2016 and its amendments thereof to the recyclers authorized by TNPCB.
28. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
29. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
30. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
31. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
32. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
33. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.



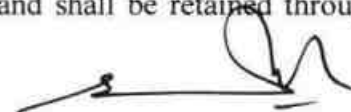
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SEIAA-TN

34. It shall be ensured that the total extent of nearby quarries (existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 5 hectares within the mining lease period of this application.
35. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 300m radius from the periphery of the quarry site.
36. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF&CC, GOI.
37. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF&CC, GOI.
38. Bunds to be provided at the boundary of the project site.
39. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
40. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
41. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
42. The Project Proponent shall provide solar lighting system to the nearby villages.
43. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
44. Safety equipments to be provided to all the employees.
45. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai.
46. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
47. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.



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SEIAA-TN

48. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
49. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
50. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
51. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
52. The Proponent shall ensure that the project activity including blasting, mining transportation etc should in no way have adverse impact to the other forests, such as reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.
53. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 3m height.
54. The fugitive emissions should be monitored during the mining activity and should be reported to TNPCB once in a month and the operation of the quarry should no way impact the agriculture activity & water bodies near the project site.
55. All the commitment made by the project proponent in the proposal shall be strictly followed.
56. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
57. All required sanitary and hygienic measures should be in place before starting construction activities and they have to be maintained throughout the construction phase.
58. The company shall stress upon the preventive aspects of occupational health.
59. A separate environment and safety management cell with qualified staff shall be set up before commissioning of construction activities and shall be retained throughout



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the lifetime of the industry, for implementation of the stipulated environmental safeguards.

60. A scientific site/ ecological rehabilitation and restoration plan on long term basis should be drawn to carryout restoration with native species and Bio diversity.
61. The Green/Blue plan should guide the restoration of the site. The rehabilitation/restoration plan should be submitted to SEIAA-TN within one month. If applicable.
62. The existing water bodies should not be disturbed to ensure sustainable environment for aquatic life forms.
63. The proponent should completely implement all environmental pollution control measures as detailed in the EIA report and in the additional report.
64. Avenue plantation wherever needed has to be carried out along the route for dust suppression.
65. The green belt developed for the prevention of dust pollution should not form a part of the larger green belt development envisaged in the EIA report.
66. Regular monitoring and check up for pulmonary and carcinogenic diseases to be carried out regularly, not only for the workers involved in the mines but also to the people in the villages adjoining the mines. Interaction with the Primary Health Centre & district medical officer should be on regular basis to monitor the incidence of the diseases if any and to provide suitable medical facility for the patients.
67. Monitoring of well water levels and water quality of the wells in the locations furnished in the EIA report shall be done during pre-monsoon and post monsoon period and results submitted to the Regional Office of MoEF, Chennai and SEIAA.
68. Monitoring of water quality and air quality in and around the project site in the selected monitoring points as mentioned in the EIA report shall be continued regularly involving Academic Institutions.
69. Hydro geological study including infiltration test shall be conducted by any reputed agency to estimate leachate quantity.
70. Regular medical check-up for mine workers and nearby residents around the project site involving community medical centre/NIMH shall be conducted.
71. As per norms, the health study should be conducted through competent/approved health organization and report submitted for one year.



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SEIAA-TN

72. The effective safe guard measures shall be provided to control particulate dust level in critical areas, transfer points and haul road within the mine area.
73. NOC from the State GWA for drawing ground water shall be obtained, if ground water table is intersected.
74. Green belt shall be provided as per norms of MoEF&CC, GOI, in consultation with local DFO.
75. All the recommendations made in the EIA report of the project shall be effectively implemented.
76. A booklet containing the Dos and Don'ts shall be prepared in vernacular languages for the use of the mine engineers/ managers and the workers to ensure that all necessary environmental, safety and health measures are undertaken.
77. All the environmental protection measures and safeguards as recommended in the EIA report shall be complied with.
78. Hydro geological study of the area shall be reviewed annually and report submitted to the Authority. No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the operation of the Mining activity.
79. A separate Environmental Management Cell equipped with full fledged laboratory facilities to carry out the various Environmental Management and Monitoring functions shall be set up under the control of a Senior Executive.
80. The project proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF at Chennai, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; RSPM, SO₂, NO_x or critical sector parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

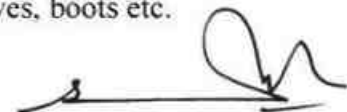
Part B: General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent from the TNPC Board before commencing the activity.



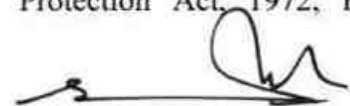
**MEMBER SECRETARY
SEIAA-TN**

3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.



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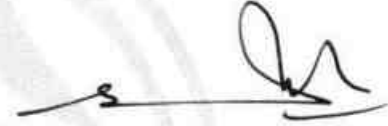
13. Workers / labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter / modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this Environmental Clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest



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Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India / Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.

22. Any other conditions stipulated by other Statutory / Government authorities shall be complied.
23. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
24. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect / not in order at a later date the Environmental Clearance issued to the project will be deemed to be revoked / cancelled.



**MEMBER SECRETARY
SEIAA-TN**

Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Additional Chief Secretary to Government, Environment, Climate Change and Forests Department, Tamil Nadu.
3. The Additional Chief Secretary to Government, Industries, Investment Promotion & Commerce Department, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, TNPC Board, 76, Mount Salai, Guindy, Chennai-32.
7. The District Collector, Coimbatore District.
8. The Commissioner of Geology and Mines, Guindy, Chennai-32.
9. Assistant Director, Department of Geology & Mining, Coimbatore District.
10. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
11. File Copy.

Signature Not Verified

Digitally signed by: A F Rahul Nadh
IAS
Designation: Member Secretary
Date and Time: 3/12/2024 8:39:20 PM
Page 44 of 44

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/001 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sular Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/001 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ 1 – CORE ZONE - Project Area - 10°54'25.78"N 77°04'08.34"E | | |

| Date | Period. hrs | PM10(µg/m3) | PM2.5(µg/m3) | SO2 (µg/m3) | NO2 (µg/m3) | O3 (µg/m3) | NH3 (µg/m3) | CO (mg/ m3) |
|----------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|
| 01.03.2023 | 7:00-7:00 | 23.3 | 46.4 | 8.3 | 27.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 02.03.2023 | 7:15-7:15 | 22.2 | 46.8 | 7.5 | 24.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 08.03.2023 | 7:00-7:00 | 23.8 | 44.7 | 7.8 | 25.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 09.03.2023 | 7:15-7:15 | 22.5 | 45.8 | 8.0 | 24.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 15.03.2023 | 7:00-7:00 | 23.8 | 45.5 | 8.4 | 24.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 16.03.2023 | 7:15-7:15 | 23.1 | 45.8 | 7.6 | 22.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 22.03.2023 | 7:00-7:00 | 24.8 | 45.3 | 9.0 | 23.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 23.03.2023 | 7:15-7:15 | 23.1 | 46.2 | 9.8 | 24.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 29.03.2023 | 7:00-7:00 | 23.9 | 44.8 | 9.5 | 23.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 30.03.2023 | 7:15-7:15 | 23.6 | 45.2 | 8.6 | 24.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 05.04.2023 | 7:00-7:00 | 24.0 | 46.2 | 9.3 | 26.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 06.04.2023 | 7:15-7:15 | 23.9 | 46.5 | 8.5 | 25.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 12.04.2023 | 7:00-7:00 | 22.9 | 46.2 | 8.1 | 24.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 13.04.2023 | 7:15-7:15 | 22.1 | 45.2 | 7.4 | 23.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 19.04.2023 | 7:00-7:00 | 23.8 | 45.1 | 7.7 | 22.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 20.04.2023 | 7:15-7:15 | 23.9 | 46.4 | 6.1 | 21.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 26.04.2023 | 7:00-7:00 | 24.5 | 45.0 | 6.9 | 23.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 27.04.2023 | 7:15-7:15 | 24.3 | 46.9 | 6.4 | 22.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 03.05.2023 | 7:00-7:00 | 23.4 | 45.8 | 7.7 | 21.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 04.05.2023 | 7:15-7:15 | 23.7 | 45.4 | 8.6 | 23.0 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 10.05.2023 | 7:00-7:00 | 23.8 | 46.2 | 9.1 | 24.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 11.05.2023 | 7:15-7:15 | 24.2 | 45.0 | 8.5 | 22.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 17.05.2023 | 7:00-7:00 | 23.4 | 46.0 | 7.7 | 23.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 18.05.2023 | 7:15-7:15 | 24.1 | 45.3 | 7.5 | 22.0 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 24.05.2023 | 7:00-7:00 | 24.5 | 45.8 | 8.6 | 23.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 25.05.2023 | 7:15-7:15 | 24.8 | 46.2 | 8.4 | 21.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| NAAQ* Standard | | <100 | <60 | <80 | <80 | <100 | <400 | <4 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by



Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/001 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/001 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ 1 – CORE ZONE - Project Area - 10°54'25.78"N 77°04'08.34"E | | |

| Date | Period. hrs | SPM ($\mu\text{g}/\text{m}^3$) | As (ng/m^3) | C6H6 ($\mu\text{g}/\text{m}^3$) | BaP (ng/m^3) | Pb ($\mu\text{g}/\text{m}^3$) | Ni (ng/m^3) |
|----------------|-------------|----------------------------------|-------------------------------|-----------------------------------|--------------------------------|---------------------------------|-------------------------------|
| 01.03.2023 | 7:00-7:00 | 62.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 02.03.2023 | 7:15-7:15 | 64.0 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 08.03.2023 | 7:00-7:00 | 65.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 09.03.2023 | 7:15-7:15 | 61.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 15.03.2023 | 7:00-7:00 | 63.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 16.03.2023 | 7:15-7:15 | 63.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 22.03.2023 | 7:00-7:00 | 64.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 23.03.2023 | 7:15-7:15 | 64.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 29.03.2023 | 7:00-7:00 | 63.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 30.03.2023 | 7:15-7:15 | 63.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 05.04.2023 | 7:00-7:00 | 63.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 06.04.2023 | 7:15-7:15 | 64.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 12.04.2023 | 7:00-7:00 | 65.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 13.04.2023 | 7:15-7:15 | 65.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 19.04.2023 | 7:00-7:00 | 66.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 20.04.2023 | 7:15-7:15 | 66.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 26.04.2023 | 7:00-7:00 | 66.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 27.04.2023 | 7:15-7:15 | 67.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 03.05.2023 | 7:00-7:00 | 60.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 04.05.2023 | 7:15-7:15 | 62.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 10.05.2023 | 7:00-7:00 | 61.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 11.05.2023 | 7:15-7:15 | 63.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 17.05.2023 | 7:00-7:00 | 63.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 18.05.2023 | 7:15-7:15 | 62.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 24.05.2023 | 7:00-7:00 | 64.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 25.05.2023 | 7:15-7:15 | 64.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| NAAQ* Standard | | <200 | 6 | 5 | 1 | 1 | 20 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by



Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/002 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/002 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ 2 – Core zone – Near Project Area - 10°54'6.80"N 77° 3'58.64"E | | |

| Date | Period. hrs | PM10(µg/m3) | PM2.5(µg/m3) | SO2 (µg/m3) | NO2 (µg/m3) | O3 (µg/m3) | NH3 (µg/m3) | CO (mg/ m3) |
|----------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|
| 01.03.2023 | 7:00-7:00 | 45.1 | 21.9 | 8.7 | 20.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 02.03.2023 | 7:15-7:15 | 42.9 | 21.5 | 8.5 | 19.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 08.03.2023 | 7:00-7:00 | 42.5 | 22.2 | 8.0 | 20.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 09.03.2023 | 7:15-7:15 | 41.8 | 20.4 | 8.6 | 21.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 15.03.2023 | 7:00-7:00 | 43.0 | 21.1 | 8.4 | 21.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 16.03.2023 | 7:15-7:15 | 43.0 | 22.1 | 8.4 | 20.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 22.03.2023 | 7:00-7:00 | 42.5 | 21.4 | 8.5 | 21.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 23.03.2023 | 7:15-7:15 | 41.5 | 21.6 | 8.4 | 19.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 29.03.2023 | 7:00-7:00 | 42.0 | 20.5 | 8.1 | 18.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 30.03.2023 | 7:15-7:15 | 43.6 | 22.3 | 8.3 | 19.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 05.04.2023 | 7:00-7:00 | 45.4 | 21.5 | 9.2 | 18.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 06.04.2023 | 7:15-7:15 | 44.2 | 21.4 | 8.6 | 19.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 12.04.2023 | 7:00-7:00 | 45.1 | 22.7 | 8.9 | 22.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 13.04.2023 | 7:15-7:15 | 43.7 | 22.8 | 8.8 | 20.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 19.04.2023 | 7:00-7:00 | 41.9 | 21.3 | 8.6 | 21.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 20.04.2023 | 7:15-7:15 | 42.8 | 20.4 | 8.5 | 22.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 26.04.2023 | 7:00-7:00 | 42.9 | 21.4 | 8.9 | 23.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 27.04.2023 | 7:15-7:15 | 44.1 | 22.1 | 9.0 | 19.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 03.05.2023 | 7:00-7:00 | 45.2 | 22.4 | 8.6 | 18.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 04.05.2023 | 7:15-7:15 | 44.6 | 22.5 | 8.4 | 18.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 10.05.2023 | 7:00-7:00 | 42.0 | 21.3 | 9.4 | 19.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 11.05.2023 | 7:15-7:15 | 45.3 | 20.5 | 8.7 | 20.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 17.05.2023 | 7:00-7:00 | 44.7 | 20.3 | 8.6 | 21.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 18.05.2023 | 7:15-7:15 | 42.2 | 21.1 | 8.7 | 22.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 24.05.2023 | 7:00-7:00 | 43.3 | 22.5 | 8.2 | 20.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 25.05.2023 | 7:15-7:15 | 41.0 | 21.2 | 8.0 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| NAAQ* Standard | | <100 | <60 | <80 | <80 | <100 | <400 | <4 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by



Authorised Signatory

A-17

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/002 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/002 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ 2 – Core zone – Near Project Area - 10°54'6.80"N 77° 3'58.64"E | | |

| Date | Period. hrs | SPM (µg/m ³) | As (ng/m ³) | C6H6 (µg/m ³) | BaP (ng/m ³) | Pb (µg/m ³) | Ni (ng/m ³) |
|----------------|-------------|--------------------------|-------------------------|---------------------------|--------------------------|-------------------------|-------------------------|
| 01.03.2023 | 7:00-7:00 | 65.0 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 02.03.2023 | 7:15-7:15 | 64.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 08.03.2023 | 7:00-7:00 | 63.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 09.03.2023 | 7:15-7:15 | 61.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 15.03.2023 | 7:00-7:00 | 60.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 16.03.2023 | 7:15-7:15 | 62.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 22.03.2023 | 7:00-7:00 | 63.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 23.03.2023 | 7:15-7:15 | 64.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 29.03.2023 | 7:00-7:00 | 60.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 30.03.2023 | 7:15-7:15 | 62.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 05.04.2023 | 7:00-7:00 | 68.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 06.04.2023 | 7:15-7:15 | 66.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 12.04.2023 | 7:00-7:00 | 66.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 13.04.2023 | 7:15-7:15 | 65.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 19.04.2023 | 7:00-7:00 | 66.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 20.04.2023 | 7:15-7:15 | 69.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 26.04.2023 | 7:00-7:00 | 66.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 27.04.2023 | 7:15-7:15 | 64.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 03.05.2023 | 7:00-7:00 | 68.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 04.05.2023 | 7:15-7:15 | 60.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 10.05.2023 | 7:00-7:00 | 62.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 11.05.2023 | 7:15-7:15 | 64.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 17.05.2023 | 7:00-7:00 | 65.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 18.05.2023 | 7:15-7:15 | 64.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 24.05.2023 | 7:00-7:00 | 63.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 25.05.2023 | 7:15-7:15 | 62.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| NAAQ* Standard | | <200 | 6 | 5 | 1 | 1 | 20 |

Note: BDL: Below Detection Limit ;DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****



Verified by

[Signature]

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/003 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/003 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ3 – Chettipalayam - 10°54'37.41"N 77° 2'20.12"E | | |

| Date | Period. hrs | PM10(µg/m3) | PM2.5(µg/m3) | SO2 (µg/m3) | NO2 (µg/m3) | O3 (µg/m3) | NH3 (µg/m3) | CO (mg/ m3) |
|----------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|
| 01.03.2023 | 7:00-7:00 | 42.9 | 22.3 | 6.7 | 21.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 02.03.2023 | 7:15-7:15 | 44.3 | 22.2 | 6.5 | 22.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 08.03.2023 | 7:00-7:00 | 43.2 | 21.2 | 6.7 | 23.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 09.03.2023 | 7:15-7:15 | 42.5 | 21.2 | 6.4 | 19.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 15.03.2023 | 7:00-7:00 | 40.6 | 21.1 | 6.3 | 18.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 16.03.2023 | 7:15-7:15 | 41.2 | 20.4 | 5.3 | 18.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 22.03.2023 | 7:00-7:00 | 44.5 | 21.3 | 5.2 | 20.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 23.03.2023 | 7:15-7:15 | 45.1 | 22.4 | 6.9 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 29.03.2023 | 7:00-7:00 | 44.1 | 22.0 | 5.2 | 21.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 30.03.2023 | 7:15-7:15 | 43.1 | 22.0 | 6.5 | 23.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 05.04.2023 | 7:00-7:00 | 40.4 | 22.5 | 5.8 | 22.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 06.04.2023 | 7:15-7:15 | 42.5 | 22.5 | 6.7 | 21.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 12.04.2023 | 7:00-7:00 | 44.1 | 23.8 | 6.5 | 24.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 13.04.2023 | 7:15-7:15 | 43.0 | 24.3 | 6.2 | 24.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 19.04.2023 | 7:00-7:00 | 45.1 | 25.4 | 6.5 | 23.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 20.04.2023 | 7:15-7:15 | 44.4 | 26.3 | 7.2 | 22.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 26.04.2023 | 7:00-7:00 | 43.5 | 22.4 | 7.5 | 24.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 27.04.2023 | 7:15-7:15 | 41.3 | 21.4 | 7.7 | 23.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 03.05.2023 | 7:00-7:00 | 40.5 | 22.4 | 6.4 | 22.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 04.05.2023 | 7:15-7:15 | 42.6 | 20.2 | 6.6 | 22.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 10.05.2023 | 7:00-7:00 | 43.6 | 21.5 | 6.7 | 22.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 11.05.2023 | 7:15-7:15 | 44.2 | 22.5 | 6.8 | 23.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 17.05.2023 | 7:00-7:00 | 45.2 | 22.4 | 5.4 | 22.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 18.05.2023 | 7:15-7:15 | 44.1 | 22.7 | 5.4 | 22.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 24.05.2023 | 7:00-7:00 | 43.1 | 20.1 | 6.6 | 22.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 25.05.2023 | 7:15-7:15 | 42.1 | 21.1 | 6.8 | 23.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| NAAQ* Standard | | <100 | <60 | <80 | <80 | <100 | <400 | <4 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by



Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/003 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/003 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ3 – Chettipalayam - 10°54'37.41"N 77° 2'20.12"E | | |

| Date | Period. hrs | SPM (µg/m ³) | As (ng/m ³) | C6H6 (µg/m ³) | BaP (ng/m ³) | Pb (µg/m ³) | Ni (ng/m ³) |
|----------------|-------------|--------------------------|-------------------------|---------------------------|--------------------------|-------------------------|-------------------------|
| 01.03.2023 | 7:00-7:00 | 63.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 02.03.2023 | 7:15-7:15 | 62.0 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 08.03.2023 | 7:00-7:00 | 60.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 09.03.2023 | 7:15-7:15 | 68.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 15.03.2023 | 7:00-7:00 | 65.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 16.03.2023 | 7:15-7:15 | 64.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 22.03.2023 | 7:00-7:00 | 62.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 23.03.2023 | 7:15-7:15 | 60.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 29.03.2023 | 7:00-7:00 | 63.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 30.03.2023 | 7:15-7:15 | 66.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 05.04.2023 | 7:00-7:00 | 64.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 06.04.2023 | 7:15-7:15 | 68.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 12.04.2023 | 7:00-7:00 | 60.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 13.04.2023 | 7:15-7:15 | 62.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 19.04.2023 | 7:00-7:00 | 61.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 20.04.2023 | 7:15-7:15 | 60.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 26.04.2023 | 7:00-7:00 | 62.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 27.04.2023 | 7:15-7:15 | 61.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 03.05.2023 | 7:00-7:00 | 62.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 04.05.2023 | 7:15-7:15 | 67.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 10.05.2023 | 7:00-7:00 | 68.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 11.05.2023 | 7:15-7:15 | 66.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 17.05.2023 | 7:00-7:00 | 65.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 18.05.2023 | 7:15-7:15 | 68.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 24.05.2023 | 7:00-7:00 | 60.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 25.05.2023 | 7:15-7:15 | 62.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| NAAQ* Standard | | <200 | 6 | 5 | 1 | 1 | 20 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****



Verified by

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/004 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/004 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ4 – Edayapalayam - 10°55'16.54"N 77° 6'30.52"E | | |

| Date | Period. hrs | PM10(µg/m3) | PM2.5(µg/m3) | SO2 (µg/m3) | NO2 (µg/m3) | O3 (µg/m3) | NH3 (µg/m3) | CO (mg/ m3) |
|----------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|
| 01.03.2023 | 7:00-7:00 | 48.0 | 22.3 | 7.4 | 19.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 02.03.2023 | 7:15-7:15 | 47.0 | 22.5 | 7.3 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 08.03.2023 | 7:00-7:00 | 42.4 | 21.6 | 7.9 | 22.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 09.03.2023 | 7:15-7:15 | 45.9 | 20.2 | 7.3 | 22.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 15.03.2023 | 7:00-7:00 | 45.4 | 21.9 | 8.6 | 23.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 16.03.2023 | 7:15-7:15 | 44.0 | 22.7 | 8.5 | 21.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 22.03.2023 | 7:00-7:00 | 47.1 | 21.5 | 7.6 | 20.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 23.03.2023 | 7:15-7:15 | 47.2 | 22.1 | 7.5 | 18.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 29.03.2023 | 7:00-7:00 | 44.5 | 22.1 | 7.6 | 19.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 30.03.2023 | 7:15-7:15 | 44.9 | 22.6 | 7.3 | 21.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 05.04.2023 | 7:00-7:00 | 49.2 | 22.1 | 8.1 | 20.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 06.04.2023 | 7:15-7:15 | 49.0 | 21.5 | 8.8 | 22.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 12.04.2023 | 7:00-7:00 | 48.4 | 22.2 | 7.7 | 21.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 13.04.2023 | 7:15-7:15 | 47.8 | 23.3 | 6.5 | 19.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 19.04.2023 | 7:00-7:00 | 48.2 | 22.1 | 9.1 | 20.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 20.04.2023 | 7:15-7:15 | 44.9 | 22.2 | 8.6 | 19.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 26.04.2023 | 7:00-7:00 | 45.5 | 20.8 | 8.6 | 22.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 27.04.2023 | 7:15-7:15 | 46.2 | 20.4 | 7.5 | 22.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 03.05.2023 | 7:00-7:00 | 45.4 | 22.3 | 8.9 | 23.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 04.05.2023 | 7:15-7:15 | 44.2 | 21.5 | 8.3 | 20.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 10.05.2023 | 7:00-7:00 | 45.0 | 22.2 | 8.4 | 20.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 11.05.2023 | 7:15-7:15 | 46.0 | 21.0 | 8.6 | 22.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 17.05.2023 | 7:00-7:00 | 46.5 | 21.7 | 8.2 | 22.0 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 18.05.2023 | 7:15-7:15 | 46.9 | 21.1 | 7.8 | 20.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 24.05.2023 | 7:00-7:00 | 45.2 | 22.1 | 8.8 | 21.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 25.05.2023 | 7:15-7:15 | 44.1 | 21.5 | 8.2 | 22.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| NAAQ* Standard | | <100 | <60 | <80 | <80 | <100 | <400 | <4 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by



Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/004 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/004 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ4 – Edayapalayam - 10°55'16.54"N 77° 6'30.52"E | | |

| Date | Period. hrs | SPM (µg/m ³) | As (ng/m ³) | C6H6 (µg/m ³) | BaP (ng/m ³) | Pb (µg/m ³) | Ni (ng/m ³) |
|----------------|-------------|--------------------------|-------------------------|---------------------------|--------------------------|-------------------------|-------------------------|
| 01.03.2023 | 7:00-7:00 | 63.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 02.03.2023 | 7:15-7:15 | 62.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 08.03.2023 | 7:00-7:00 | 62.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 09.03.2023 | 7:15-7:15 | 61.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 15.03.2023 | 7:00-7:00 | 60.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 16.03.2023 | 7:15-7:15 | 68.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 22.03.2023 | 7:00-7:00 | 67.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 23.03.2023 | 7:15-7:15 | 65.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 29.03.2023 | 7:00-7:00 | 64.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 30.03.2023 | 7:15-7:15 | 63.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 05.04.2023 | 7:00-7:00 | 61.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 06.04.2023 | 7:15-7:15 | 60.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 12.04.2023 | 7:00-7:00 | 62.0 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 13.04.2023 | 7:15-7:15 | 64.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 19.04.2023 | 7:00-7:00 | 68.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 20.04.2023 | 7:15-7:15 | 60.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 26.04.2023 | 7:00-7:00 | 62.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 27.04.2023 | 7:15-7:15 | 63.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 03.05.2023 | 7:00-7:00 | 60.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 04.05.2023 | 7:15-7:15 | 63.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 10.05.2023 | 7:00-7:00 | 62.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 11.05.2023 | 7:15-7:15 | 60.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 17.05.2023 | 7:00-7:00 | 62.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 18.05.2023 | 7:15-7:15 | 61.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 24.05.2023 | 7:00-7:00 | 68.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 25.05.2023 | 7:15-7:15 | 68.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| NAAQ* Standard | | <200 | 6 | 5 | 1 | 1 | 20 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****



Verified by

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/005 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/005 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ5 – Karacherry - 10°52'18.87"N 77° 3'39.99"E | | |

| Date | Period. hrs | PM10(µg/m3) | PM2.5(µg/m3) | SO2 (µg/m3) | NO2 (µg/m3) | O3 (µg/m3) | NH3 (µg/m3) | CO (mg/ m3) |
|----------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|
| 01.03.2023 | 7:00-7:00 | 44.2 | 20.5 | 8.6 | 20.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 02.03.2023 | 7:15-7:15 | 41.6 | 22.8 | 8.5 | 22.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 08.03.2023 | 7:00-7:00 | 42.6 | 20.2 | 7.9 | 22.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 09.03.2023 | 7:15-7:15 | 43.3 | 21.4 | 8.5 | 24.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 15.03.2023 | 7:00-7:00 | 42.5 | 22.6 | 8.4 | 25.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 16.03.2023 | 7:15-7:15 | 41.0 | 21.3 | 8.5 | 24.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 22.03.2023 | 7:00-7:00 | 41.5 | 21.1 | 7.6 | 22.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 23.03.2023 | 7:15-7:15 | 42.5 | 21.7 | 7.8 | 20.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 29.03.2023 | 7:00-7:00 | 45.3 | 23.2 | 8.4 | 21.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 30.03.2023 | 7:15-7:15 | 44.3 | 22.7 | 8.5 | 22.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 05.04.2023 | 7:00-7:00 | 43.6 | 22.8 | 7.8 | 20.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 06.04.2023 | 7:15-7:15 | 42.9 | 21.8 | 7.7 | 22.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 12.04.2023 | 7:00-7:00 | 42.1 | 22.2 | 7.9 | 21.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 13.04.2023 | 7:15-7:15 | 41.9 | 22.5 | 8.1 | 20.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 19.04.2023 | 7:00-7:00 | 41.3 | 21.2 | 7.7 | 21.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 20.04.2023 | 7:15-7:15 | 42.1 | 22.2 | 8.0 | 22.0 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 26.04.2023 | 7:00-7:00 | 39.9 | 21.9 | 8.2 | 22.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 27.04.2023 | 7:15-7:15 | 40.6 | 21.8 | 8.5 | 19.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 03.05.2023 | 7:00-7:00 | 40.4 | 20.3 | 7.6 | 18.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 04.05.2023 | 7:15-7:15 | 42.4 | 21.9 | 7.8 | 21.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 10.05.2023 | 7:00-7:00 | 40.1 | 21.6 | 7.7 | 21.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 11.05.2023 | 7:15-7:15 | 40.9 | 20.7 | 9.2 | 20.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 17.05.2023 | 7:00-7:00 | 41.8 | 21.6 | 7.8 | 19.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 18.05.2023 | 7:15-7:15 | 40.1 | 21.7 | 7.9 | 21.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 24.05.2023 | 7:00-7:00 | 41.5 | 21.4 | 7.6 | 21.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 25.05.2023 | 7:15-7:15 | 41.6 | 20.6 | 8.9 | 19.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| NAAQ* Standard | | <100 | <60 | <80 | <80 | <100 | <400 | <4 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by



Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/005 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/005 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ5 – Karacherry - 10°52'18.87"N 77° 3'39.99"E | | |

| Date | Period. hrs | SPM (µg/m ³) | As (ng/m ³) | C6H6 (µg/m ³) | BaP (ng/m ³) | Pb (µg/m ³) | Ni (ng/m ³) |
|----------------|-------------|--------------------------|-------------------------|---------------------------|--------------------------|-------------------------|-------------------------|
| 01.03.2023 | 7:00-7:00 | 68.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 02.03.2023 | 7:15-7:15 | 69.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 08.03.2023 | 7:00-7:00 | 67.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 09.03.2023 | 7:15-7:15 | 68.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 15.03.2023 | 7:00-7:00 | 68.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 16.03.2023 | 7:15-7:15 | 66.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 22.03.2023 | 7:00-7:00 | 63.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 23.03.2023 | 7:15-7:15 | 62.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 29.03.2023 | 7:00-7:00 | 62.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 30.03.2023 | 7:15-7:15 | 64.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 05.04.2023 | 7:00-7:00 | 62.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 06.04.2023 | 7:15-7:15 | 63.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 12.04.2023 | 7:00-7:00 | 68.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 13.04.2023 | 7:15-7:15 | 69.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 19.04.2023 | 7:00-7:00 | 68.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 20.04.2023 | 7:15-7:15 | 68.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 26.04.2023 | 7:00-7:00 | 68.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 27.04.2023 | 7:15-7:15 | 69.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 03.05.2023 | 7:00-7:00 | 69.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 04.05.2023 | 7:15-7:15 | 69.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 10.05.2023 | 7:00-7:00 | 68.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 11.05.2023 | 7:15-7:15 | 68.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 17.05.2023 | 7:00-7:00 | 69.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 18.05.2023 | 7:15-7:15 | 69.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 24.05.2023 | 7:00-7:00 | 68.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 25.05.2023 | 7:15-7:15 | 67.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| NAAQ* Standard | | <200 | 6 | 5 | 1 | 1 | 20 |

Note: BDL: Below Detection Limit ;DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****



Verified by

Authorised Signatory

Name: Santhosh Kumar A
 Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/006 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/006 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ 6 – Panapatti- 10°52'35.83"N 77° 5'56.31"E | | |

| Date | Period. hrs | PM10(µg/m3) | PM2.5(µg/m3) | SO2 (µg/m3) | NO2 (µg/m3) | O3 (µg/m3) | NH3 (µg/m3) | CO (mg/ m3) |
|----------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|
| 01.03.2023 | 7:00-7:00 | 45.2 | 22.1 | 6.7 | 21.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 02.03.2023 | 7:15-7:15 | 43.9 | 22.0 | 6.5 | 20.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 08.03.2023 | 7:00-7:00 | 44.9 | 22.8 | 6.1 | 21.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 09.03.2023 | 7:15-7:15 | 43.8 | 22.0 | 6.6 | 22.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 15.03.2023 | 7:00-7:00 | 43.5 | 22.3 | 6.3 | 19.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 16.03.2023 | 7:15-7:15 | 43.8 | 22.7 | 5.4 | 19.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 22.03.2023 | 7:00-7:00 | 43.1 | 21.6 | 6.5 | 21.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 23.03.2023 | 7:15-7:15 | 43.0 | 22.1 | 6.7 | 20.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 29.03.2023 | 7:00-7:00 | 44.7 | 22.6 | 7.5 | 20.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 30.03.2023 | 7:15-7:15 | 42.6 | 21.5 | 6.8 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 05.04.2023 | 7:00-7:00 | 42.0 | 22.0 | 5.6 | 20.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 06.04.2023 | 7:15-7:15 | 43.6 | 22.4 | 7.4 | 22.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 12.04.2023 | 7:00-7:00 | 43.0 | 22.2 | 6.9 | 22.0 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 13.04.2023 | 7:15-7:15 | 44.6 | 21.7 | 6.8 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 19.04.2023 | 7:00-7:00 | 42.4 | 21.8 | 7.3 | 20.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 20.04.2023 | 7:15-7:15 | 42.7 | 21.9 | 7.6 | 22.0 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 26.04.2023 | 7:00-7:00 | 43.5 | 22.4 | 7.1 | 21.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 27.04.2023 | 7:15-7:15 | 44.3 | 22.7 | 7.5 | 21.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 03.05.2023 | 7:00-7:00 | 42.6 | 21.2 | 8.2 | 23.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 04.05.2023 | 7:15-7:15 | 42.9 | 21.9 | 7.3 | 22.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 10.05.2023 | 7:00-7:00 | 43.0 | 22.8 | 6.9 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 11.05.2023 | 7:15-7:15 | 44.6 | 21.8 | 6.2 | 22.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 17.05.2023 | 7:00-7:00 | 43.1 | 22.2 | 7.4 | 21.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 18.05.2023 | 7:15-7:15 | 42.1 | 20.7 | 7.0 | 21.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 24.05.2023 | 7:00-7:00 | 42.2 | 21.5 | 7.3 | 21.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 25.05.2023 | 7:15-7:15 | 43.5 | 22.4 | 7.4 | 22.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| NAAQ* Standard | | <100 | <60 | <80 | <80 | <100 | <400 | <4 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by




Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/006 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/006 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ 6 – Panapatti- 10°52'35.83"N 77° 5'56.31"E | | |

| Date | Period. hrs | SPM (µg/m ³) | As (ng/m ³) | C6H6 (µg/m ³) | BaP (ng/m ³) | Pb (µg/m ³) | Ni (ng/m ³) |
|----------------|-------------|--------------------------|-------------------------|---------------------------|--------------------------|-------------------------|-------------------------|
| 01.03.2023 | 7:00-7:00 | 65.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 02.03.2023 | 7:15-7:15 | 62.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 08.03.2023 | 7:00-7:00 | 63.0 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 09.03.2023 | 7:15-7:15 | 62.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 15.03.2023 | 7:00-7:00 | 68.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 16.03.2023 | 7:15-7:15 | 68.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 22.03.2023 | 7:00-7:00 | 63.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 23.03.2023 | 7:15-7:15 | 62.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 29.03.2023 | 7:00-7:00 | 61.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 30.03.2023 | 7:15-7:15 | 67.0 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 05.04.2023 | 7:00-7:00 | 63.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 06.04.2023 | 7:15-7:15 | 62.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 12.04.2023 | 7:00-7:00 | 61.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 13.04.2023 | 7:15-7:15 | 68.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 19.04.2023 | 7:00-7:00 | 66.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 20.04.2023 | 7:15-7:15 | 65.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 26.04.2023 | 7:00-7:00 | 64.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 27.04.2023 | 7:15-7:15 | 64.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 03.05.2023 | 7:00-7:00 | 65.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 04.05.2023 | 7:15-7:15 | 63.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 10.05.2023 | 7:00-7:00 | 64.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 11.05.2023 | 7:15-7:15 | 67.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 17.05.2023 | 7:00-7:00 | 70.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 18.05.2023 | 7:15-7:15 | 72.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 24.05.2023 | 7:00-7:00 | 73.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 25.05.2023 | 7:15-7:15 | 75.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| NAAQ* Standard | | <200 | 6 | 5 | 1 | 1 | 20 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****



Verified by

Authorised Signatory

A-17

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/007 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/007 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ7 – Kallapalayam -10°57'3.71"N 77° 4'38.09"E | | |

| Date | Period. hrs | PM10(µg/m3) | PM2.5(µg/m3) | SO2 (µg/m3) | NO2 (µg/m3) | O3 (µg/m3) | NH3 (µg/m3) | CO (mg/ m3) |
|----------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|
| 01.03.2023 | 7:00-7:00 | 44.8 | 22.6 | 7.3 | 19.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 02.03.2023 | 7:15-7:15 | 45.2 | 24.1 | 7.7 | 20.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 08.03.2023 | 7:00-7:00 | 43.1 | 24.2 | 7.5 | 18.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 09.03.2023 | 7:15-7:15 | 44.8 | 24.7 | 8.5 | 20.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 15.03.2023 | 7:00-7:00 | 47.3 | 23.1 | 9.5 | 21.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 16.03.2023 | 7:15-7:15 | 48.1 | 23.5 | 9.3 | 22.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 22.03.2023 | 7:00-7:00 | 43.1 | 22.7 | 8.5 | 19.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 23.03.2023 | 7:15-7:15 | 43.9 | 24.1 | 6.6 | 18.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 29.03.2023 | 7:00-7:00 | 43.2 | 23.6 | 7.8 | 17.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 30.03.2023 | 7:15-7:15 | 44.4 | 23.5 | 8.6 | 20.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 05.04.2023 | 7:00-7:00 | 45.1 | 23.5 | 7.3 | 21.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 06.04.2023 | 7:15-7:15 | 46.1 | 24.5 | 7.1 | 18.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 12.04.2023 | 7:00-7:00 | 42.5 | 24.2 | 7.3 | 22.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 13.04.2023 | 7:15-7:15 | 45.2 | 24.4 | 6.8 | 22.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 19.04.2023 | 7:00-7:00 | 43.8 | 23.1 | 6.6 | 20.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 20.04.2023 | 7:15-7:15 | 45.6 | 24.0 | 8.1 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 26.04.2023 | 7:00-7:00 | 46.1 | 24.2 | 7.4 | 22.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 27.04.2023 | 7:15-7:15 | 46.3 | 24.8 | 6.2 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 03.05.2023 | 7:00-7:00 | 43.2 | 23.5 | 7.3 | 20.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 04.05.2023 | 7:15-7:15 | 42.9 | 24.3 | 7.9 | 19.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 10.05.2023 | 7:00-7:00 | 43.2 | 24.5 | 8.4 | 22.7 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 11.05.2023 | 7:15-7:15 | 44.2 | 23.4 | 7.6 | 19.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 17.05.2023 | 7:00-7:00 | 45.8 | 24.5 | 7.4 | 19.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 18.05.2023 | 7:15-7:15 | 46.6 | 25.3 | 8.1 | 20.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 24.05.2023 | 7:00-7:00 | 48.6 | 24.0 | 6.5 | 21.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 25.05.2023 | 7:15-7:15 | 45.1 | 23.4 | 6.4 | 22.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| NAAQ* Standard | | <100 | <60 | <80 | <80 | <100 | <400 | <4 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by



Authorised Signatory

A 17

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/007 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/007 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ7 – Kallapalayam -10°57'3.71"N 77° 4'38.09"E | | |

| Date | Period. hrs | SPM ($\mu\text{g}/\text{m}^3$) | As (ng/m^3) | C6H6 ($\mu\text{g}/\text{m}^3$) | BaP (ng/m^3) | Pb ($\mu\text{g}/\text{m}^3$) | Ni (ng/m^3) |
|----------------|-------------|----------------------------------|-------------------------------|-----------------------------------|--------------------------------|---------------------------------|-------------------------------|
| 01.03.2023 | 7:00-7:00 | 66.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 02.03.2023 | 7:15-7:15 | 68.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 08.03.2023 | 7:00-7:00 | 69.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 09.03.2023 | 7:15-7:15 | 68.9 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 15.03.2023 | 7:00-7:00 | 67.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 16.03.2023 | 7:15-7:15 | 68.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 22.03.2023 | 7:00-7:00 | 66.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 23.03.2023 | 7:15-7:15 | 67.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 29.03.2023 | 7:00-7:00 | 68.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 30.03.2023 | 7:15-7:15 | 68.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 05.04.2023 | 7:00-7:00 | 69.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 06.04.2023 | 7:15-7:15 | 68.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 12.04.2023 | 7:00-7:00 | 68.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 13.04.2023 | 7:15-7:15 | 65.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 19.04.2023 | 7:00-7:00 | 69.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 20.04.2023 | 7:15-7:15 | 69.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 26.04.2023 | 7:00-7:00 | 67.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 27.04.2023 | 7:15-7:15 | 65.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 03.05.2023 | 7:00-7:00 | 64.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 04.05.2023 | 7:15-7:15 | 67.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 10.05.2023 | 7:00-7:00 | 65.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 11.05.2023 | 7:15-7:15 | 68.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 17.05.2023 | 7:00-7:00 | 72.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 18.05.2023 | 7:15-7:15 | 70.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 24.05.2023 | 7:00-7:00 | 72.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 25.05.2023 | 7:15-7:15 | 70.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| NAAQ* Standard | | <200 | 6 | 5 | 1 | 1 | 20 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by

[Signature]



Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/008 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/008 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ8 –Okkilipalayam - 10°53'37.21"N 77° 1'10.69"E | | |

| Date | Period. hrs | PM10(µg/m3) | PM2.5(µg/m3) | SO2 (µg/m3) | NO2 (µg/m3) | O3 (µg/m3) | NH3 (µg/m3) | CO (mg/ m3) |
|----------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|
| 01.03.2023 | 7:00-7:00 | 22.1 | 45.2 | 6.3 | 22.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 02.03.2023 | 7:15-7:15 | 23.5 | 41.7 | 7.8 | 23.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 08.03.2023 | 7:00-7:00 | 21.4 | 45.2 | 6.6 | 22.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 09.03.2023 | 7:15-7:15 | 22.1 | 43.2 | 5.4 | 22.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 15.03.2023 | 7:00-7:00 | 22.5 | 43.6 | 5.9 | 24.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 16.03.2023 | 7:15-7:15 | 21.9 | 42.3 | 6.4 | 23.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 22.03.2023 | 7:00-7:00 | 23.7 | 41.6 | 6.8 | 21.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 23.03.2023 | 7:15-7:15 | 21.3 | 42.0 | 5.3 | 23.9 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 29.03.2023 | 7:00-7:00 | 22.5 | 42.9 | 5.4 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 30.03.2023 | 7:15-7:15 | 23.0 | 43.6 | 5.8 | 21.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 05.04.2023 | 7:00-7:00 | 21.8 | 42.1 | 5.4 | 23.8 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 06.04.2023 | 7:15-7:15 | 24.2 | 43.6 | 6.9 | 24.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 12.04.2023 | 7:00-7:00 | 22.5 | 41.5 | 5.2 | 22.0 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 13.04.2023 | 7:15-7:15 | 21.6 | 41.5 | 5.7 | 21.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 19.04.2023 | 7:00-7:00 | 22.4 | 42.4 | 5.3 | 23.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 20.04.2023 | 7:15-7:15 | 23.9 | 43.9 | 7.6 | 23.4 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 26.04.2023 | 7:00-7:00 | 21.4 | 41.4 | 8.5 | 22.0 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 27.04.2023 | 7:15-7:15 | 21.7 | 42.5 | 8.8 | 21.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 03.05.2023 | 7:00-7:00 | 22.1 | 43.5 | 7.2 | 22.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 04.05.2023 | 7:15-7:15 | 24.1 | 42.8 | 7.6 | 23.3 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 10.05.2023 | 7:00-7:00 | 21.4 | 41.6 | 8.6 | 20.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 11.05.2023 | 7:15-7:15 | 23.9 | 44.5 | 8.7 | 24.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 17.05.2023 | 7:00-7:00 | 21.4 | 43.8 | 7.5 | 24.6 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 18.05.2023 | 7:15-7:15 | 22.1 | 42.8 | 7.2 | 23.5 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 24.05.2023 | 7:00-7:00 | 23.4 | 43.7 | 8.5 | 25.2 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| 25.05.2023 | 7:15-7:15 | 21.1 | 42.8 | 8.7 | 24.1 | BDL(DL:5.0) | BDL(DL:1.0) | BDL(DL:1.14) |
| NAAQ* Standard | | <100 | <60 | <80 | <80 | <100 | <400 | <4 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****

Page 1 of 1

Verified by



Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|-------------------------|------------|
| Report No | EHS360/TR/2022-23/008 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 5182 | Sample Drawn by | Laboratory |
| Sample Name | Air | Sample Code | EHS360/008 |
| Sample Description | Ambient Air Quality Monitoring | Sample Condition | Good |
| Sampling Location | AAQ8 –Okkilpalayam - 10°53'37.21"N 77° 1'10.69"E | | |

| Date | Period. hrs | SPM (µg/m ³) | As (ng/m ³) | C6H6 (µg/m ³) | BaP (ng/m ³) | Pb (µg/m ³) | Ni (ng/m ³) |
|----------------|-------------|--------------------------|-------------------------|---------------------------|--------------------------|-------------------------|-------------------------|
| 01.03.2023 | 7:00-7:00 | 65.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 02.03.2023 | 7:15-7:15 | 62.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 08.03.2023 | 7:00-7:00 | 68.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 09.03.2023 | 7:15-7:15 | 67.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 15.03.2023 | 7:00-7:00 | 67.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 16.03.2023 | 7:15-7:15 | 67.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 22.03.2023 | 7:00-7:00 | 68.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 23.03.2023 | 7:15-7:15 | 68.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 29.03.2023 | 7:00-7:00 | 67.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 30.03.2023 | 7:15-7:15 | 66.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 05.04.2023 | 7:00-7:00 | 68.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 06.04.2023 | 7:15-7:15 | 67.8 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 12.04.2023 | 7:00-7:00 | 66.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 13.04.2023 | 7:15-7:15 | 69.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 19.04.2023 | 7:00-7:00 | 65.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 20.04.2023 | 7:15-7:15 | 67.4 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 26.04.2023 | 7:00-7:00 | 68.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 27.04.2023 | 7:15-7:15 | 69.3 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 03.05.2023 | 7:00-7:00 | 67.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 04.05.2023 | 7:15-7:15 | 66.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 10.05.2023 | 7:00-7:00 | 69.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 11.05.2023 | 7:15-7:15 | 68.2 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 17.05.2023 | 7:00-7:00 | 67.1 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 18.05.2023 | 7:15-7:15 | 66.6 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 24.05.2023 | 7:00-7:00 | 69.5 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| 25.05.2023 | 7:15-7:15 | 67.7 | BDL (DL:0.1) | BDL (DL:1.0) | BDL (DL:1.0) | BDL (DL:0.1) | BDL (DL:0.1) |
| NAAQ* Standard | | <200 | 6 | 5 | 1 | 1 | 20 |

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

*****End of Report*****



Verified by

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 009 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | IS 9989 | Sample Drawn by | Laboratory |
| Sample Name | Noise Level Monitoring | Sample Code | EHS360/ 009 |
| Sample Description | Ambient Noise | Sample Collected Date | 25.05.2023 |

| Location | N1 – Core Zone - 10°54'24.74"N 77° 4'5.33"E | | | N2 – Core Zone - 10°54'6.48"N 77° 3'58.02"E | | |
|--|---|-------|-------------|---|-------|-------------|
| Parameter | Min | Max | Result | Min | Max | Result |
| Time | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) |
| 06:00-07:00 | 38.7 | 44.2 | 42.3 | 33.3 | 40.1 | 37.9 |
| 07:00-08:00 | 36.3 | 42.5 | 40.4 | 36.1 | 46.6 | 44.0 |
| 08:00-09:00 | 40.8 | 45.8 | 44.0 | 37.5 | 46.2 | 43.7 |
| 09:00-10:00 | 41.7 | 48.2 | 46.1 | 37.0 | 47.8 | 45.1 |
| 10:00-11:00 | 42.5 | 47.3 | 45.5 | 38.0 | 45.2 | 43.0 |
| 11:00-12:00 | 44.0 | 45.2 | 44.6 | 38.4 | 47.1 | 44.6 |
| 12:00-13:00 | 40.9 | 45.5 | 43.8 | 34.9 | 43.4 | 41.0 |
| 13:00-14:00 | 43.3 | 45.9 | 44.8 | 37.1 | 48.2 | 45.5 |
| 14:00-15:00 | 41.7 | 42.8 | 42.3 | 36.2 | 43.7 | 41.4 |
| 15:00-16:00 | 39.8 | 40.1 | 40.0 | 35.8 | 46.1 | 43.5 |
| 16:00-17:00 | 35.1 | 38.7 | 37.3 | 31.6 | 38.4 | 36.2 |
| 17:00-18:00 | 35.4 | 39.7 | 38.1 | 32.3 | 40.7 | 38.3 |
| 18:00-19:00 | 34.6 | 45.0 | 42.4 | 34.2 | 42.9 | 40.4 |
| 19:00-20:00 | 38.2 | 45.6 | 43.3 | 31.2 | 39.7 | 37.3 |
| 20:00-21:00 | 35.3 | 43.9 | 41.5 | 36.7 | 45.8 | 43.3 |
| 21:00-22:00 | 39.5 | 45.2 | 43.2 | 32.5 | 40.8 | 38.4 |
| 22:00-23:00 | 35.3 | 38.2 | 37.0 | 35.3 | 43.1 | 40.8 |
| 23:00-00:00 | 32.6 | 37.5 | 35.7 | 34.0 | 42.5 | 40.1 |
| 00:00-01:00 | 33.4 | 38.6 | 36.7 | 32.9 | 40.7 | 38.4 |
| 01:00-02:00 | 31.3 | 34.3 | 33.1 | 32.4 | 42.8 | 40.2 |
| 02:00-03:00 | 32.7 | 37.0 | 35.4 | 33.6 | 41.1 | 38.8 |
| 03:00-04:00 | 32.2 | 36.5 | 34.9 | 34.5 | 38.2 | 36.7 |
| 04:00-05:00 | 32.4 | 35.5 | 34.2 | 34.0 | 40.7 | 38.5 |
| 05:00-06:00 | 33.4 | 34.5 | 34.0 | 35.4 | 39.5 | 37.9 |
| Result | Day Means | | 42.1 | Day Means | | 41.4 |
| | Night Means | | 35.1 | Night Means | | 38.9 |
| Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A) The Noise level in the above location exists within the permissible limits of CPCB. | | | | | | |

*****End of Report*****



Verified by

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 010 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | IS 9989 | Sample Drawn by | Laboratory |
| Sample Name | Noise Level Monitoring | Sample Code | EHS360/ 010 |
| Sample Description | Ambient Noise | Sample Collected Date | 25.05.2023 |

| Location | N3 – Chettipalayam - 10°54'37.18"N 77° 2'20.24"E | | | N4 – Edayapalayam - 10°55'16.54"N 77° 6'30.33"E | | |
|-------------|--|-------|-------------|---|-------|-------------|
| Parameter | Min | Max | Result | Min | Max | Result |
| Time | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) |
| 06:00-07:00 | 35.3 | 39.5 | 37.9 | 33.8 | 42.6 | 39.6 |
| 07:00-08:00 | 34.9 | 40.2 | 38.3 | 35.6 | 43.3 | 40.1 |
| 08:00-09:00 | 35.6 | 41.3 | 39.3 | 35.7 | 44.5 | 41.0 |
| 09:00-10:00 | 35.2 | 41.1 | 39.1 | 31.6 | 46.9 | 42.0 |
| 10:00-11:00 | 34.7 | 42.2 | 39.9 | 36.4 | 48.3 | 44.0 |
| 11:00-12:00 | 36.0 | 45.5 | 43.0 | 32.8 | 45.7 | 45.6 |
| 12:00-13:00 | 34.1 | 47.9 | 45.1 | 34.6 | 43.2 | 42.9 |
| 13:00-14:00 | 32.9 | 48.1 | 45.2 | 32.9 | 41.4 | 40.8 |
| 14:00-15:00 | 38.2 | 48.9 | 46.2 | 37.4 | 49.3 | 39.0 |
| 15:00-16:00 | 34.6 | 47.5 | 44.7 | 32.6 | 40.7 | 46.6 |
| 16:00-17:00 | 32.5 | 40.8 | 38.4 | 32.7 | 40.3 | 38.3 |
| 17:00-18:00 | 34.1 | 43.1 | 40.6 | 31.6 | 38.5 | 38.0 |
| 18:00-19:00 | 33.6 | 41.6 | 39.2 | 31.8 | 38.3 | 36.3 |
| 19:00-20:00 | 32.8 | 39.9 | 37.7 | 32.4 | 40.4 | 36.2 |
| 20:00-21:00 | 34.0 | 42.6 | 40.2 | 33.6 | 41.3 | 38.0 |
| 21:00-22:00 | 36.9 | 44.8 | 42.4 | 32.9 | 40.2 | 39.0 |
| 22:00-23:00 | 32.7 | 40.7 | 38.3 | 31.7 | 39.7 | 37.9 |
| 23:00-00:00 | 34.0 | 43.6 | 41.0 | 32.6 | 40.4 | 37.3 |
| 00:00-01:00 | 32.6 | 40.5 | 38.1 | 33.9 | 37.1 | 38.1 |
| 01:00-02:00 | 31.1 | 35.5 | 33.8 | 35.2 | 38.7 | 35.8 |
| 02:00-03:00 | 32.8 | 36.5 | 35.0 | 34.6 | 35.9 | 37.3 |
| 03:00-04:00 | 34.1 | 37.0 | 35.8 | 33.7 | 36.5 | 35.3 |
| 04:00-05:00 | 35.2 | 37.1 | 36.3 | 32.6 | 35.5 | 35.3 |
| 05:00-06:00 | 33.9 | 38.5 | 36.8 | 32.1 | 42.2 | 34.3 |
| Result | Day Means | | 40.9 | Day Means | | 40.3 |
| | Night Means | | 36.9 | Night Means | | 36.2 |

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

*****End of Report*****



Verified by

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|---|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 011 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | IS 9989 | Sample Drawn by | Laboratory |
| Sample Name | Noise Level Monitoring | Sample Code | EHS360/ 011 |
| Sample Description | Ambient Noise | Sample Collected Date | 25.05.2023 |

| Location | N5 – Karacherry - 10°52'18.61"N 77° 3'37.66"E | | | N6 – Panapatti - 10°52'36.01"N 77° 5'55.92"E | | |
|-------------|---|-------|-------------|--|-------|-------------|
| Parameter | Min | Max | Result | Min | Max | Result |
| Time | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) |
| 06:00-07:00 | 31.3 | 38.8 | 36.5 | 34.5 | 43.2 | 40.7 |
| 07:00-08:00 | 33.7 | 41.5 | 39.2 | 33.7 | 40.4 | 38.2 |
| 08:00-09:00 | 34.4 | 42.8 | 40.4 | 32.8 | 41.8 | 39.3 |
| 09:00-10:00 | 35.5 | 44.4 | 41.9 | 33.9 | 38.1 | 36.5 |
| 10:00-11:00 | 36.1 | 45 | 42.5 | 34.7 | 40.6 | 38.6 |
| 11:00-12:00 | 38.2 | 43.5 | 41.6 | 34.1 | 40.2 | 38.1 |
| 12:00-13:00 | 38.2 | 41.6 | 40.2 | 32.8 | 38.5 | 36.5 |
| 13:00-14:00 | 36.6 | 42.5 | 40.5 | 34.7 | 43.2 | 40.8 |
| 14:00-15:00 | 32.6 | 45.4 | 42.6 | 32.6 | 40.6 | 38.2 |
| 15:00-16:00 | 31.3 | 40.4 | 37.9 | 31.3 | 38.9 | 36.6 |
| 16:00-17:00 | 32.5 | 41.6 | 39.1 | 32.6 | 41.2 | 38.8 |
| 17:00-18:00 | 36.5 | 43.9 | 41.6 | 33.5 | 42.7 | 40.2 |
| 18:00-19:00 | 34.5 | 42.9 | 40.5 | 34.4 | 43.2 | 40.7 |
| 19:00-20:00 | 33.8 | 41.6 | 39.3 | 32.9 | 40.6 | 38.3 |
| 20:00-21:00 | 31.2 | 39.4 | 37.0 | 33.6 | 41.4 | 39.1 |
| 21:00-22:00 | 32.8 | 40.7 | 38.3 | 31.5 | 38.6 | 36.4 |
| 22:00-23:00 | 33.7 | 41.4 | 39.1 | 32.5 | 40.1 | 37.8 |
| 23:00-00:00 | 31.6 | 38.2 | 36.1 | 31.7 | 38.2 | 36.1 |
| 00:00-01:00 | 33.4 | 40.1 | 37.9 | 32.3 | 39.3 | 37.1 |
| 01:00-02:00 | 33.5 | 36.5 | 35.3 | 33.9 | 38.4 | 36.7 |
| 02:00-03:00 | 35.7 | 39.3 | 37.9 | 31.5 | 35.5 | 33.9 |
| 03:00-04:00 | 36.1 | 39 | 37.8 | 32.4 | 36.3 | 34.8 |
| 04:00-05:00 | 35.2 | 38.2 | 37.0 | 34.1 | 35.8 | 35.0 |
| 05:00-06:00 | 34.6 | 36.8 | 35.8 | 32.6 | 33.6 | 33.1 |
| Result | Day Means | | 39.9 | Day Means | | 38.5 |
| | Night Means | | 37.1 | Night Means | | 35.2 |

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

*****End of Report*****

Page 1 of 1

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Authorised Signatory

A-17

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|---------------------------|--|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 012 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sullur Taluk, Coimbatore District | | |
| Sampling Method | IS 9989 | Sample Drawn by | Laboratory |
| Sample Name | Noise Level Monitoring | Sample Code | EHS360/ 012 |
| Sample Description | Ambient Noise | Sample Collected Date | 25.05.2023 |

| Location | N7 - Kallapalayam - 10°57'3.85"N 77° 4'37.89"E | | | N8 – Okkilpalayam - 10°53'36.71"N 77° 1'10.94"E | | |
|-------------|--|-------|-------------|---|-------|-------------|
| Parameter | Min | Max | Result | Min | Max | Result |
| Time | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) |
| 06:00-07:00 | 36.5 | 38.6 | 37.7 | 37.7 | 39.8 | 38.9 |
| 07:00-08:00 | 37.2 | 39.2 | 38.3 | 36.2 | 38.6 | 37.6 |
| 08:00-09:00 | 35.2 | 37.2 | 36.3 | 35.5 | 37.2 | 36.4 |
| 09:00-10:00 | 36.6 | 38.8 | 37.8 | 36.6 | 38.6 | 37.7 |
| 10:00-11:00 | 33.2 | 35.6 | 34.6 | 37.1 | 39.2 | 38.3 |
| 11:00-12:00 | 37.3 | 39.1 | 38.3 | 36.2 | 38.4 | 37.4 |
| 12:00-13:00 | 30.2 | 35.5 | 33.6 | 34.5 | 36.1 | 35.4 |
| 13:00-14:00 | 32.6 | 35.6 | 34.4 | 35.2 | 37.6 | 36.6 |
| 14:00-15:00 | 33.5 | 36.2 | 35.1 | 36.2 | 39.2 | 38.0 |
| 15:00-16:00 | 34.2 | 38.2 | 36.6 | 33.2 | 36.5 | 35.2 |
| 16:00-17:00 | 33.1 | 36.2 | 34.9 | 35.1 | 39.8 | 38.1 |
| 17:00-18:00 | 33.5 | 38.2 | 36.5 | 36.2 | 38.2 | 37.3 |
| 18:00-19:00 | 34.5 | 37.7 | 36.4 | 34.5 | 37.1 | 36.0 |
| 19:00-20:00 | 34.2 | 38.6 | 36.9 | 32.6 | 38.6 | 36.6 |
| 20:00-21:00 | 35.6 | 38.4 | 37.2 | 35.6 | 37.4 | 36.6 |
| 21:00-22:00 | 33.6 | 34.2 | 33.9 | 36.6 | 39.5 | 38.3 |
| 22:00-23:00 | 31.2 | 36.2 | 34.4 | 35.1 | 38.2 | 36.9 |
| 23:00-00:00 | 30.2 | 35.6 | 33.7 | 35.6 | 38.9 | 37.6 |
| 00:00-01:00 | 32.1 | 35.2 | 33.9 | 34.2 | 37.6 | 36.2 |
| 01:00-02:00 | 31.2 | 33.6 | 32.6 | 33.8 | 35.6 | 34.8 |
| 02:00-03:00 | 33.2 | 37.3 | 35.7 | 32.1 | 38.6 | 36.5 |
| 03:00-04:00 | 30.6 | 38.9 | 36.5 | 33.2 | 36.5 | 35.2 |
| 04:00-05:00 | 30.4 | 39.8 | 37.3 | 31.2 | 35.5 | 33.9 |
| 05:00-06:00 | 31.2 | 36.6 | 34.7 | 34.2 | 38.6 | 36.9 |
| Result | Day Means | | 36.1 | Day Means | | 37.1 |
| | Night Means | | 34.9 | Night Means | | 35.9 |

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

*****End of Report*****



Verified by

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 013 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Soil | Sample Code | EHS360/ 013 |
| Sample Description | Soil 1 | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 KG | Sample Received On | 26.05.2023 |
| Sample Condition | Good | Test Commenced On | 26.05.2023 |
| Sampling Location | Soil – 1 – Core Zone - 10°54'24.94"N 77° 4'6.74"E | | |

| S.No | Test Parameters | Protocols | Results |
|------|-------------------------------|--|-----------------------|
| 01 | pH @ 25°C | IS 2720 Part 26 - 1987 | 8.25 |
| 02 | Conductivity @ 25°C | IS 14767 - 2000 (Reaff : 2016) | 730 µmhos/cm |
| 03 | Texture: | | |
| | Clay | Gravimetric Method | 31.3 % |
| | Sand | | 34.6 % |
| | Silt | | 34.1 % |
| 04 | Water Holding Capacity | By Gravimetric Method | 44.8 % |
| 05 | Bulk Density | By Cylindrical Method | 1.22 g/cm3 |
| 06 | Porosity | By Gravimetric Method | 40.3 % |
| 07 | Calcium as Ca | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 136 mg/kg |
| 08 | Magnesium as Mg | | 70.2 mg/kg |
| 09 | Manganese as Mn | | 14.7mg/kg |
| 10 | Zinc as Zn | | 1.0 mg/kg |
| 11 | Boron as B | | 0.85 mg/kg |
| 12 | Chloride as Cl | APHA 23rd Edn 2019 4500 Cl B | 41.7 mg/kg |
| 13 | Total Soluble Sulphate as SO4 | IS 2720 Part 27 : 1977 | 0.020 % |
| 14 | Potassium as K | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 18.5 mg/kg |
| 15 | Total Phosphorus as P | IS 10158 : 1982 (Reaff: 2019) | 2.1 mg/kg |
| 16 | Total Nitrogen as N | IS 14684 : 1999 (Reaff:2019) | 256 mg/kg |
| 17 | Cadmium as Cd | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | BDL (DL : 1.0 mg/kg) |
| 18 | Total Chromium as Cr | | BDL (DL : 1.0 mg/kg) |
| 19 | Copper as Cu | | BDL (DL : 1.0 mg/kg) |
| 20 | Lead as Pb | | 0.39 mg/kg |
| 21 | Iron as Fe | | 1.10 mg/kg |
| 22 | Organic Matter | IS : 2720 Part 22: 1972 | 1.95 % |
| 23 | Organic Carbon | IS : 2720 Part 22: 1972 | 1.13 % |
| 24 | Cation Exchange Capacity | USEPA 9080 – 1986 | 34.5 meq/100g of soil |

*****End of Report*****



Verified by

[Signature]

Authorised Signatory

[Signature]

Name : Santhosh Kumar A
Designation : Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 014 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Soil | Sample Code | EHS360/ 014 |
| Sample Description | Soil 2 | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 KG | Sample Received On | 26.05.2023 |
| Sample Condition | Good | Test Commenced On | 26.05.2023 |
| Sampling Location | Soil – 2 – Pachapalayam- 10°54'5.74"N 77° 3'53.48"E | | |

| S.No | Test Parameters | Protocols | Results |
|------|---|--|------------------------|
| 01 | pH @ 25°C | IS 2720 Part 26 - 1987 | 7.85 |
| 02 | Conductivity @ 25°C | IS 14767 - 2000 (Reaff : 2016) | 578 µmhos/cm |
| 03 | Texture : | | |
| | Clay | Gravimetric Method | 29.5 % |
| | Sand | | 32.5 % |
| | Silt | | 38.0% |
| 04 | Water Holding Capacity | By Gravimetric Method | 43.0 % |
| 05 | Bulk Density | By Cylindrical Method | 1.14 g/cm ³ |
| 06 | Porosity | By Gravimetric Method | 42.5 % |
| 07 | Calcium as Ca | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 126 mg/kg |
| 08 | Magnesium as Mg | | 53.5 mg/kg |
| 09 | Manganese as Mn | | 13.0 mg/kg |
| 10 | Zinc as Zn | | 0.7 mg/kg |
| 11 | Boron as B | | 0.95 mg/kg |
| 12 | Chloride as Cl | APHA 23rd Edn 2019 4500 Cl B | 129 mg/kg |
| 13 | Total Soluble Sulphate as SO ₄ | IS 2720 Part 27 : 1977 | 0.004 % |
| 14 | Potassium as K | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 33.8 mg/kg |
| 15 | Total Phosphorus as P | IS 10158 : 1982 (Reaff: 2019) | 3.0 mg/kg |
| 16 | Total Nitrogen as N | IS 14684 : 1999 (Reaff:2019) | 510 mg/kg |
| 17 | Cadmium as Cd | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | BDL (DL : 1.0 mg/kg) |
| 18 | Total Chromium as Cr | | BDL (DL : 1.0 mg/kg) |
| 19 | Copper as Cu | | BDL (DL : 1.0 mg/kg) |
| 20 | Lead as Pb | | 0.21 mg/kg |
| 21 | Iron as Fe | | 1.09 mg/kg |
| 22 | Organic Matter | IS : 2720 Part 22: 1972 | 2.89 % |
| 23 | Organic Carbon | IS : 2720 Part 22: 1972 | 1.67 % |
| 24 | Cation Exchange Capacity | USEPA 9080 – 1986 | 29.6 meq/100g of soil |

*****End of Report*****

Page 1 of 1

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[Signature]

Name : Santhosh Kumar A
Designation : Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 015 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Soil | Sample Code | EHS360/ 015 |
| Sample Description | Soil 3 | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 KG | Sample Received On | 26.05.2023 |
| Sample Condition | Good | Test Commenced On | 26.05.2023 |
| Sampling Location | Soil – 3 – Chettipalayam- 10°54'33.13"N 77° 2'26.60"E | | |

| S.No | Test Parameters | Protocols | Results |
|------|-------------------------------|--|-----------------------|
| 01 | pH @ 25°C | IS 2720 Part 26 - 1987 | 8.19 |
| 02 | Conductivity @ 25°C | IS 14767 - 2000 (Reaff : 2016) | 695 µmhos/cm |
| 03 | Texture : | | |
| | Clay | Gravimetric Method | 31.5 % |
| | Sand | | 34.6 % |
| | Silt | | 33.9 % |
| 04 | Water Holding Capacity | By Gravimetric Method | 40.8 % |
| 05 | Bulk Density | By Cylindrical Method | 0.99 g/cm3 |
| 06 | Porosity | By Gravimetric Method | 43.5 % |
| 07 | Calcium as Ca | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 116 mg/kg |
| 08 | Magnesium as Mg | | 59 mg/kg |
| 09 | Manganese as Mn | | 16.8 mg/kg |
| 10 | Zinc as Zn | | 3.9 mg/kg |
| 11 | Boron as B | | 1.1 mg/kg |
| 12 | Chloride as Cl | APHA 23rd Edn 2019 4500 Cl B | 96.4 mg/kg |
| 13 | Total Soluble Sulphate as SO4 | IS 2720 Part 27 : 1977 | 0.0015 % |
| 14 | Potassium as K | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 49 mg/kg |
| 15 | Total Phosphorus as P | IS 10158 : 1982 (Reaff: 2019) | 1.65 mg/kg |
| 16 | Total Nitrogen as N | IS 14684 : 1999 (Reaff:2019) | 638 mg/kg |
| 17 | Cadmium as Cd | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | BDL (DL : 1.0 mg/kg) |
| 18 | Total Chromium as Cr | | BDL (DL : 1.0 mg/kg) |
| 19 | Copper as Cu | | BDL (DL : 1.0 mg/kg) |
| 20 | Lead as Pb | | 0.62 mg/kg |
| 21 | Iron as Fe | | 1.13 mg/kg |
| 22 | Organic Matter | IS : 2720 Part 22: 1972 | 1.87 % |
| 23 | Organic Carbon | IS : 2720 Part 22: 1972 | 1.08 % |
| 24 | Cation Exchange Capacity | USEPA 9080 – 1986 | 40.6 meq/100g of soil |

*****End of Report*****



Verified by

Authorised Signatory

Name : Santhosh Kumar A
Designation : Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|--------------------------------|--|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 016 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sullur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Soil | Sample Code | EHS360/ 016 |
| Sample Description | Soil 4 | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 KG | Sample Received On | 26.05.2023 |
| Sample Condition | Good | Test Commenced On | 26.05.2023 |
| Sampling Location | Soil – 4 – Panapatti- 10°52'41.74"N 77° 5'58.95"E | | |

| S.No | Test Parameters | Protocols | Results |
|------|---|--|------------------------|
| 01 | pH @ 25°C | IS 2720 Part 26 - 1987 | 8.19 |
| 02 | Conductivity @ 25°C | IS 14767 - 2000 (Reaff : 2016) | 629 µmhos/cm |
| 03 | Texture : | | |
| | Clay | Gravimetric Method | 27.5 % |
| | Sand | | 29.6 % |
| | Silt | | 42.9 % |
| 04 | Water Holding Capacity | By Gravimetric Method | 40.0 % |
| 05 | Bulk Density | By Cylindrical Method | 1.13 g/cm ³ |
| 06 | Porosity | By Gravimetric Method | 39.8 % |
| 07 | Calcium as Ca | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 108.2 mg/kg |
| 08 | Magnesium as Mg | | 33.5 mg/kg |
| 09 | Manganese as Mn | | 18.6 mg/kg |
| 10 | Zinc as Zn | | 1.44 mg/kg |
| 11 | Boron as B | | 1.12 mg/kg |
| 12 | Chloride as Cl | APHA 23rd Edn 2019 4500 Cl B | 30.5 mg/kg |
| 13 | Total Soluble Sulphate as SO ₄ | IS 2720 Part 27 : 1977 | 0.063 % |
| 14 | Potassium as K | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 16.5 mg/kg |
| 15 | Total Phosphorus as P | IS 10158 : 1982 (Reaff: 2019) | 3.2 mg/kg |
| 16 | Total Nitrogen as N | IS 14684 : 1999 (Reaff:2019) | 374 mg/kg |
| 17 | Cadmium as Cd | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | BDL (DL : 1.0 mg/kg) |
| 18 | Total Chromium as Cr | | BDL (DL : 1.0 mg/kg) |
| 19 | Copper as Cu | | BDL (DL : 1.0 mg/kg) |
| 20 | Lead as Pb | | 0.35 mg/kg |
| 21 | Iron as Fe | | 0.92 mg/kg |
| 22 | Organic Matter | IS : 2720 Part 22: 1972 | 1.62 % |
| 23 | Organic Carbon | IS : 2720 Part 22: 1972 | 0.93% |
| 24 | Cation Exchange Capacity | USEPA 9080 – 1986 | 29.8 meq/100g of soil |

*****End of Report*****



Verified by

[Signature]

Authorised Signatory

[Signature]
Name : Santhosh Kumar A
Designation : Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 017 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Soil | Sample Code | EHS360/ 017 |
| Sample Description | Soil 5 | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 KG | Sample Received On | 26.05.2023 |
| Sample Condition | Good | Test Commenced On | 26.05.2023 |
| Sampling Location | Soil – 5 – Kallapalayam - 10°57'3.30"N 77° 4'38.23"E | | |

| S.No | Test Parameters | Protocols | Results |
|------|---|--|------------------------|
| 01 | pH @ 25°C | IS 2720 Part 26 - 1987 | 7.91 |
| 02 | Conductivity @ 25°C | IS 14767 - 2000 (Reaff : 2016) | 552 µmhos/cm |
| 03 | Texture : | | |
| | Clay | Gravimetric Method | 28.1 % |
| | Sand | | 31.8 % |
| | Silt | | 40.1 % |
| 04 | Water Holding Capacity | By Gravimetric Method | 40.6 % |
| 05 | Bulk Density | By Cylindrical Method | 1.13 g/cm ³ |
| 06 | Porosity | By Gravimetric Method | 40.2 % |
| 07 | Calcium as Ca | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 112 mg/kg |
| 08 | Magnesium as Mg | | 26.7 mg/kg |
| 09 | Manganese as Mn | | 19.3 mg/kg |
| 10 | Zinc as Zn | | 3.8 mg/kg |
| 11 | Boron as B | | 1.1 mg/kg |
| 12 | Chloride as Cl | APHA 23rd Edn 2019 4500 Cl B | 63.5 mg/kg |
| 13 | Total Soluble Sulphate as SO ₄ | IS 2720 Part 27 : 1977 | 0.006 % |
| 14 | Potassium as K | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 105 mg/kg |
| 15 | Total Phosphorus as P | IS 10158 : 1982 (Reaff: 2019) | 3.2 mg/kg |
| 16 | Total Nitrogen as N | IS 14684 : 1999 (Reaff:2019) | 568 mg/kg |
| 17 | Cadmium as Cd | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | BDL (DL : 1.0 mg/kg) |
| 18 | Total Chromium as Cr | | BDL (DL : 1.0 mg/kg) |
| 19 | Copper as Cu | | BDL (DL : 1.0 mg/kg) |
| 20 | Lead as Pb | | 0.49 mg/kg |
| 21 | Iron as Fe | | 1.38 mg/kg |
| 22 | Organic Matter | IS : 2720 Part 22: 1972 | 2.01 % |
| 23 | Organic Carbon | IS : 2720 Part 22: 1972 | 1.17 % |
| 24 | Cation Exchange Capacity | USEPA 9080 – 1986 | 42.4 meq/100g of soil |

*****End of Report*****



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A-17

Name : Santhosh Kumar A
Designation : Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|--|------------------------------|-------------|
| Report No | EHS360/TR/2022-23/ 018 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sullur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Soil | Sample Code | EHS360/ 018 |
| Sample Description | Soil 6 | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 KG | Sample Received On | 26.05.2023 |
| Sample Condition | Good | Test Commenced On | 26.05.2023 |
| Sampling Location | Soil – 6 – Okkilipalayam - 10°53'36.89"N 77° 1'11.02"E | | |

| S.No | Test Parameters | Protocols | Results |
|------|---|--|------------------------|
| 01 | pH @ 25°C | IS 2720 Part 26 - 1987 | 8.21 |
| 02 | Conductivity @ 25°C | IS 14767 - 2000 (Reaff : 2016) | 515 µmhos/cm |
| 03 | Texture : | | |
| | Clay | Gravimetric Method | 30.5 % |
| | Sand | | 35.0 % |
| | Silt | | 34.5 % |
| 04 | Water Holding Capacity | By Gravimetric Method | 40.5 % |
| 05 | Bulk Density | By Cylindrical Method | 1.10 g/cm ³ |
| 06 | Porosity | By Gravimetric Method | 41.8 % |
| 07 | Calcium as Ca | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 152.3 mg/kg |
| 08 | Magnesium as Mg | | 59.5 mg/kg |
| 09 | Manganese as Mn | | 26.5 mg/kg |
| 10 | Zinc as Zn | | 0.95 mg/kg |
| 11 | Boron as B | | 1.02 mg/kg |
| 12 | Chloride as Cl | APHA 23rd Edn 2019 4500 Cl B | 135 mg/kg |
| 13 | Total Soluble Sulphate as SO ₄ | IS 2720 Part 27 : 1977 | 0.004 % |
| 14 | Potassium as K | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | 23.4 mg/kg |
| 15 | Total Phosphorus as P | IS 10158 : 1982 (Reaff: 2019) | 3.0 mg/kg |
| 16 | Total Nitrogen as N | IS 14684 : 1999 (Reaff:2019) | 498 mg/kg |
| 17 | Cadmium as Cd | USEPA 3050 B – 1996 & USEPA 6010 C - 2000 | BDL (DL : 1.0 mg/kg) |
| 18 | Total Chromium as Cr | | BDL (DL : 1.0 mg/kg) |
| 19 | Copper as Cu | | BDL (DL : 1.0 mg/kg) |
| 20 | Lead as Pb | | 0.75 mg/kg |
| 21 | Iron as Fe | | 1.18 mg/kg |
| 22 | Organic Matter | IS : 2720 Part 22: 1972 | 2.21 % |
| 23 | Organic Carbon | IS : 2720 Part 22: 1972 | 1.28 % |
| 24 | Cation Exchange Capacity | USEPA 9080 – 1986 | 40.3 meq/100g of soil |

*****End of Report*****

Page 1 of 1

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A S K

Name : Santhosh Kumar A
Designation : Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/ 019 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/019 |
| Sample Description | Surface Water (SW-1) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Existing Quarry Pit Water - 10°54'15.74"N 77° 4'0.67"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-------|---------------------------------------|--|-------------------|
| | Discipline: Chemical | | |
| 1 | Colour | IS 3025 Part 4:1983 | 5 Hazen |
| 2 | Odour | IS 3025 Part 5:2018 | Agreeable |
| 3 | pH at 25°C | IS 3025 Part 11:1983 | 7.31 |
| 4 | Conductivity @ 25°C | IS 3025 Part 14:2013 | 895 µmhos/cm |
| 5 | Turbidity | IS 3025 Part 10:1984 | 6.0 NTU |
| 6 | Total Dissolved Solids | IS 3025 Part 16:1984 | 571 mg/l |
| 7 | Total Hardness as CaCO ₃ | IS 3025 Part 21:2009 | 129 mg/l |
| 8 | Calcium as Ca | IS 3025 Part 40:1991 | 25.9 mg/l |
| 9 | Magnesium as Mg | IS 3025 Part 46:1994 | 15.6 mg/l |
| 10 | Total Alkalinity as CaCO ₃ | IS 3025 Part 23:1986 | 146 mg/l |
| 11 | Chloride as Cl | IS 3025 Part 32:1988 | 88.0 mg/l |
| 12 | Sulphate as SO ₄ | IS 3025 Part 24:1986 | 29.6 mg/l |
| 13 | Iron as Fe | IS 3025 Part 53:2003 | 0.21 mg/l |
| 14 | Residual Free Chlorine | IS 3025 Part 26:1986 | BDL (DL:0.1 mg/l) |
| 15 | Fluoride as F | APHA 23 rd Edn. 2017:4500 F,D | 0.18 mg/l |
| 16 | Nitrate as NO ₃ | IS 3025 Part 34:1988 | 8.4 mg/l |

*****End of Report*****

Page 1 of 1

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Name: Santhosh Kumar A
Designation: Quality Manager

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TEST REPORT

| Report No | EHS360/TR/2022-23/019 | Report Date | 05.06.2023 |
|--------------------------------|---|---|----------------------|
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/019 |
| Sample Description | Surface Water (SW-1) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Existing Quarry Pit Water - 10°54'15.74"N 77° 4'0.67"E | | |
| S.No. | Parameters | Test Method | RESULTS |
| 17 | Copper as Cu | IS 3025 Part 65:2014 | BDL (DL:0.01 mg/l) |
| 18 | Manganese as Mn | IS 3025 Part 65:2014 | BDL (DL:0.02 mg/l) |
| 19 | Mercury as Hg | USEPA 200.8 | BDL (DL:0.0005 mg/l) |
| 20 | Cadmium as Cd | IS 3025 Part 65:2014 | BDL (DL:0.001 mg/l) |
| 21 | Selenium as Se | IS 3025 Part 65:2014 | BDL (DL:0.005 mg/l) |
| 22 | Aluminium as Al | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 23 | Lead as Pb | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 24 | Zinc as Zn | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 25 | Total Chromium as Cr | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.02 mg/l) |
| 26 | Boron as B | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 27 | Mineral Oil | IS 3025 Part 39-1991 (Reaff. 2019) | BDL(DL : 0.01 mg/l) |
| 28 | Phenolic compounds as C ₆ H ₅ OH | IS 3025 Part 43-1992(Reaff: 2019) | BDL (DL:0.0005 mg/l) |
| 29 | Anionic Detergents (as MBAS) | IS 13428 – 2005 (Reaff:2019) (Annex K) | BDL (DL:0.01 mg/l) |
| 30 | Cyanide as CN | IS 3025 Part 27-1986 (Reaff. 2019) | BDL (DL:0.01 mg/l) |
| 31 | BOD @ 27°C for 3 days | IS 3025 Part 44:1993 (Reaff:2019) | 11.6 mg/l |
| 32 | Chemical Oxygen Demand | IS 3025 Part 58:2006 (Reaff:2017) | 38 mg/l |
| 33 | Dissolved Oxygen | IS 3025 Part 38:1989 (Reaff:2019) | 5.0 mg/l |
| 34 | Barium as Ba | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL:0.05 mg/l) |
| 35 | Ammonia (as total ammonia-N) | IS 3025 Part 34-1988 (Reaff. 2019) | BDL (DL:0.01 mg/l) |
| 36 | Sulphide as H ₂ S | IS 3025 Part 29-1986 (Reaff: 2019) | BDL (DL:0.01 mg/l) |
| 37 | Molybdenum as Mo | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 38 | Total Arsenic as As | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 39 | Total Suspended Solids | IS 3025 Part 17 -1984 (Reaff:2017) | 11.2 mg/l |
| | Discipline: Biological | Group: Water | |
| 40 | Total Coliform | APHA 23 rd Edn. 2017:9221B | 590 MPN/100ml |
| 41 | <i>Escherichia coli</i> | APHA 23 rd Edn. 2017:9221F | 70 MPN/100ml |

*****End of Report*****

Page 1 of 1

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 Name: Santhosh Kumar A
 Designation: Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/020 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/020 |
| Sample Description | Surface Water (SW-2) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Pallapalayam Lake- 10°59'18.68"N 77° 4'25.61"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-------|---------------------------------------|--|-------------------|
| | Discipline: Chemical | | |
| 1 | Colour | IS 3025 Part 4:1983 | 10 Hazen |
| 2 | Odour | IS 3025 Part 5:2018 | Agreeable |
| 3 | pH at 25°C | IS 3025 Part 11:1983 | 7.58 |
| 4 | Conductivity @ 25°C | IS 3025 Part 14:2013 | 885 µmhos/cm |
| 5 | Turbidity | IS 3025 Part 10:1984 | 7.5 NTU |
| 6 | Total Dissolved Solids | IS 3025 Part 16:1984 | 570 mg/l |
| 7 | Total Hardness as CaCO ₃ | IS 3025 Part 21:2009 | 154 mg/l |
| 8 | Calcium as Ca | IS 3025 Part 40:1991 | 29.6 mg/l |
| 9 | Magnesium as Mg | IS 3025 Part 46:1994 | 18.4 mg/l |
| 10 | Total Alkalinity as CaCO ₃ | IS 3025 Part 23:1986 | 170 mg/l |
| 11 | Chloride as Cl | IS 3025 Part 32:1988 | 108 mg/l |
| 12 | Sulphate as SO ₄ | IS 3025 Part 24:1986 | 39.6 mg/l |
| 13 | Iron as Fe | IS 3025 Part 53:2003 | 0.21 mg/l |
| 14 | Residual Free Chlorine | IS 3025 Part 26:1986 | BDL (DL:0.1 mg/l) |
| 15 | Fluoride as F | APHA 23 rd Edn. 2017:4500 F,D | 0.30 mg/l |
| 16 | Nitrate as NO ₃ | IS 3025 Part 34:1988 | 6.8 mg/l |

*****End of Report*****

Page 1 of 1

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Name: Santhosh Kumar A
Designation: Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|---|----------------------|
| Report No | EHS360/TR/2022-23/020 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/020 |
| Sample Description | Surface Water (SW-2) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Kothavadi Lake - 10°48'40.88"N 77° 4'1.08"E | | |
| S.No. | Parameters | Test Method | RESULTS |
| 17 | Copper as Cu | IS 3025 Part 65:2014 | BDL (DL:0.01 mg/l) |
| 18 | Manganese as Mn | IS 3025 Part 65:2014 | BDL (DL:0.02 mg/l) |
| 19 | Mercury as Hg | USEPA 200.8 | BDL (DL:0.0005 mg/l) |
| 20 | Cadmium as Cd | IS 3025 Part 65:2014 | BDL (DL:0.001 mg/l) |
| 21 | Selenium as Se | IS 3025 Part 65:2014 | BDL (DL:0.005 mg/l) |
| 22 | Aluminium as Al | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 23 | Lead as Pb | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 24 | Zinc as Zn | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 25 | Total Chromium as Cr | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.02 mg/l) |
| 26 | Boron as B | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 27 | Mineral Oil | IS 3025 Part 39-1991 (Reaff. 2019) | BDL(DL : 0.01 mg/l) |
| 28 | Phenolic compounds as C ₆ H ₅ OH | IS 3025 Part 43-1992(Reaff: 2019) | BDL (DL:0.0005 mg/l) |
| 29 | Anionic Detergents (as MBAS) | IS 13428 – 2005 (Reaff:2019) (Annex K) | BDL (DL:0.01 mg/l) |
| 30 | Cyanide as CN | IS 3025 Part 27-1986 (Reaff. 2019) | BDL (DL:0.01 mg/l) |
| 31 | BOD @ 27°C for 3 days | IS 3025 Part 44:1993 (Reaff:2019) | 10.5 mg/l |
| 32 | Chemical Oxygen Demand | IS 3025 Part 58:2006 (Reaff:2017) | 32 mg/l |
| 33 | Dissolved Oxygen | IS 3025 Part 38:1989 (Reaff:2019) | 5.4 mg/l |
| 34 | Barium as Ba | IS 3025 Part 65:2014 (Reaff:2019) | 3.0 mg/l |
| 35 | Ammonia (as total ammonia-N) | IS 3025 Part 34-1988 (Reaff. 2019) | BDL (DL:0.01 mg/l) |
| 36 | Sulphide as H ₂ S | IS 3025 Part 29-1986 (Reaff: 2019) | BDL (DL:0.01 mg/l) |
| 37 | Molybdenum as Mo | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 38 | Total Arsenic as As | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 39 | Total Suspended Solids | IS 3025 Part 17 -1984 (Reaff:2017) | 7.4 mg/l |
| | Discipline: Biological | Group: Water | |
| 40 | Total Coliform | APHA 23 rd Edn. 2017:9221B | 845 MPN/100ml |
| 41 | <i>Escherichia coli</i> | APHA 23 rd Edn. 2017:9221F | 98 MPN/100ml |

*****End of Report*****

Page 1 of 1

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 Name: Santhosh Kumar A
 Designation: Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/ 021 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/021 |
| Sample Description | Ground Water (WW-1) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Near Project Area - 10°54'33.65"N 77° 3'53.87"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-----------------------------|---------------------------------------|--|-------------------|
| Discipline: Chemical | | | |
| 1 | Colour | IS 3025 Part 4:1983 | 5 |
| 2 | Odour | IS 3025 Part 5:2018 | Agreeable |
| 3 | pH at 25°C | IS 3025 Part 11:1983 | 7.49 |
| 4 | Conductivity @ 25°C | IS 3025 Part 14:2013 | 1214 µmhos/cm |
| 5 | Turbidity | IS 3025 Part 10:1984 | < 1 NTU |
| 6 | Total Dissolved Solids | IS 3025 Part 16:1984 | 789 mg/l |
| 7 | Total Hardness as CaCO ₃ | IS 3025 Part 21:2009 | 127.0mg/l |
| 8 | Calcium as Ca | IS 3025 Part 40:1991 | 26.2 mg/l |
| 9 | Magnesium as Mg | IS 3025 Part 46:1994 | 14.8 mg/l |
| 10 | Total Alkalinity as CaCO ₃ | IS 3025 Part 23:1986 | 137 mg/l |
| 11 | Chloride as Cl | IS 3025 Part 32:1988 | 114 mg/l |
| 12 | Sulphate as SO ₄ | IS 3025 Part 24:1986 | 32.8 mg/l |
| 13 | Iron as Fe | IS 3025 Part 53:2003 | 0.20 mg/l |
| 14 | Residual Free Chlorine | IS 3025 Part 26:1986 | BDL (DL:0.1 mg/l) |
| 15 | Fluoride as F | APHA 23 rd Edn. 2017:4500 F,D | 0.25 mg/l |
| 16 | Nitrate as NO ₃ | IS 3025 Part 34:1988 | 5.4 mg/l |

*****End of Report*****

Page 1 of 1

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Name: Santhosh Kumar A
Designation: Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/ 021 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/021 |
| Sample Description | Ground Water (WW-1) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Near Project Area - 10°48'34.91"N 77° 0'7.95"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-------|--|--|----------------------|
| 17 | Copper as Cu | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.01 mg/l) |
| 18 | Manganese as Mn | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 19 | Mercury as Hg | USEPA 200.8 | BDL (DL:0.0005 mg/l) |
| 20 | Cadmium as Cd | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.001 mg/l) |
| 21 | Selenium as Se | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 22 | Aluminium as Al | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 23 | Lead as Pb | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 24 | Zinc as Zn | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 25 | Total Chromium as Cr | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.02 mg/l) |
| 26 | Boron as B | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 27 | Mineral Oil | IS 3025 Part 39-1991 (Reaff. 2019) | BDL(DL : 0.01 mg/l) |
| 28 | Phenolic compounds as C ₆ H ₅ OH | IS 3025 Part 43-1992(Reaff: 2019) | BDL (DL:0.0005 mg/l) |
| 29 | Anionic Detergents (as MBAS) | IS 13428 – 2005 (Reaff:2019) (Annex K) | BDL (DL:0.01 mg/l) |
| 30 | Cyanide as CN | IS 3025 Part 27-1986 (Reaff. 2019) | BDL (DL:0.01 mg/l) |
| 31 | Barium as Ba | IS 3025 Part 44:1993 (Reaff:2019) | BDL(DL:0.05 mg/l) |
| 32 | Ammonia (as total ammonia-N) | IS 3025 Part 58:2006 (Reaff:2017) | BDL (DL:0.01 mg/l) |
| 33 | Sulphide as H ₂ S | IS 3025 Part 38:1989 (Reaff:2019) | BDL (DL:0.01 mg/l) |
| 34 | Molybdenum as Mo | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 35 | Total Arsenic as As | IS 3025 Part 34-1988 (Reaff. 2019) | BDL (DL:0.005 mg/l) |
| 36 | Total Suspended Solids | IS 3025 Part 29-1986 (Reaff: 2019) | BDL (DL:1.0 mg/l) |
| | Discipline: Biological | Group: Water | |
| 37 | Total Coliform | APHA 23 rd Edn. 2017:9221B | 70 MPN/100ml |
| 38 | <i>Escherichia coli</i> | APHA 23 rd Edn. 2017:9221F | < 1.8 MPN/100ml |

*****End of Report*****

Page 1 of 1

Verified by




Authorised Signatory

 Name: Santhosh Kumar A
 Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/ 023 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/023 |
| Sample Description | Ground Water (WW-2) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Panapatti - 10°52'41.07"N 77° 5'51.48"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-----------------------------|---------------------------------------|--|-------------------|
| Discipline: Chemical | | | |
| 1 | Colour | IS 3025 Part 4:1983 | 5 Hazen |
| 2 | Odour | IS 3025 Part 5:2018 | Agreeable |
| 3 | pH at 25°C | IS 3025 Part 11:1983 | 7.58 |
| 4 | Conductivity @ 25°C | IS 3025 Part 14:2013 | 1018 µmhos/cm |
| 5 | Turbidity | IS 3025 Part 10:1984 | 2.0 NTU |
| 6 | Total Dissolved Solids | IS 3025 Part 16:1984 | 658 mg/l |
| 7 | Total Hardness as CaCO ₃ | IS 3025 Part 21:2009 | 159 mg/l |
| 8 | Calcium as Ca | IS 3025 Part 40:1991 | 32.6 mg/l |
| 9 | Magnesium as Mg | IS 3025 Part 46:1994 | 19.0 mg/l |
| 10 | Total Alkalinity as CaCO ₃ | IS 3025 Part 23:1986 | 196 mg/l |
| 11 | Chloride as Cl | IS 3025 Part 32:1988 | 126 mg/l |
| 12 | Sulphate as SO ₄ | IS 3025 Part 24:1986 | 29.4 mg/l |
| 13 | Iron as Fe | IS 3025 Part 53:2003 | 0.20 mg/l |
| 14 | Residual Free Chlorine | IS 3025 Part 26:1986 | BDL (DL:0.1 mg/l) |
| 15 | Fluoride as F | APHA 23 rd Edn. 2017:4500 F,D | 0.4 mg/l |
| 16 | Nitrate as NO ₃ | IS 3025 Part 34:1988 | 4.8 mg/l |

*****End of Report*****

Page 1 of 1

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Authorised Signatory



Name: Santhosh Kumar A
Designation: Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/ 023 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/023 |
| Sample Description | Ground Water (WW-2) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Kallapuram - 10°50'1.49"N 76°59'8.86"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-------|--|--|----------------------|
| 17 | Copper as Cu | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.01 mg/l) |
| 18 | Manganese as Mn | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 19 | Mercury as Hg | USEPA 200.8 | BDL (DL:0.0005 mg/l) |
| 20 | Cadmium as Cd | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.001 mg/l) |
| 21 | Selenium as Se | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 22 | Aluminium as Al | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 23 | Lead as Pb | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 24 | Zinc as Zn | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 25 | Total Chromium as Cr | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.02 mg/l) |
| 26 | Boron as B | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 27 | Mineral Oil | IS 3025 Part 39-1991 (Reaff. 2019) | BDL(DL : 0.01 mg/l) |
| 28 | Phenolic compounds as C ₆ H ₅ OH | IS 3025 Part 43-1992(Reaff: 2019) | BDL (DL:0.0005 mg/l) |
| 29 | Anionic Detergents (as MBAS) | IS 13428 – 2005 (Reaff:2019) (Annex K) | BDL (DL:0.01 mg/l) |
| 30 | Cyanide as CN | IS 3025 Part 27-1986 (Reaff. 2019) | BDL (DL:0.01 mg/l) |
| 31 | Barium as Ba | IS 3025 Part 44:1993 (Reaff:2019) | BDL(DL:0.05 mg/l) |
| 32 | Ammonia (as total ammonia-N) | IS 3025 Part 58:2006 (Reaff:2017) | BDL (DL:0.01 mg/l) |
| 33 | Sulphide as H ₂ S | IS 3025 Part 38:1989 (Reaff:2019) | BDL (DL:0.01 mg/l) |
| 34 | Molybdenum as Mo | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 35 | Total Arsenic as As | IS 3025 Part 34-1988 (Reaff. 2019) | BDL (DL:0.005 mg/l) |
| 36 | Total Suspended Solids | IS 3025 Part 29-1986 (Reaff: 2019) | BDL (DL:1.0 mg/l) |
| | Discipline: Biological | Group: Water | |
| 37 | Total Coliform | APHA 23 rd Edn. 2017:9221B | 68 MPN/100ml |
| 38 | <i>Escherichia coli</i> | APHA 23 rd Edn. 2017:9221F | < 1.8 MPN/100ml |

*****End of Report*****

Page 1 of 1

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Authorised Signatory

 Name: Santhosh Kumar A
 Designation: Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/ 024 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Suler Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/024 |
| Sample Description | Ground Water (BW-1) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Near Project Area - 10°54'7.44"N 77° 4'8.81"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-----------------------------|---------------------------------------|--|-------------------|
| Discipline: Chemical | | | |
| 1 | Colour | IS 3025 Part 4:1983 | 5 Hazen |
| 2 | Odour | IS 3025 Part 5:2018 | Agreeable |
| 3 | pH at 25°C | IS 3025 Part 11:1983 | 7.36 |
| 4 | Conductivity @ 25°C | IS 3025 Part 14:2013 | 1128 µmhos/cm |
| 5 | Turbidity | IS 3025 Part 10:1984 | 2.5 NTU |
| 6 | Total Dissolved Solids | IS 3025 Part 16:1984 | 728 mg/l |
| 7 | Total Hardness as CaCO ₃ | IS 3025 Part 21:2009 | 166 mg/l |
| 8 | Calcium as Ca | IS 3025 Part 40:1991 | 33.8 mg/l |
| 9 | Magnesium as Mg | IS 3025 Part 46:1994 | 19.6 mg/l |
| 10 | Total Alkalinity as CaCO ₃ | IS 3025 Part 23:1986 | 142 mg/l |
| 11 | Chloride as Cl | IS 3025 Part 32:1988 | 88 mg/l |
| 12 | Sulphate as SO ₄ | IS 3025 Part 24:1986 | 39.4 mg/l |
| 13 | Iron as Fe | IS 3025 Part 53:2003 | 0.35 mg/l |
| 14 | Residual Free Chlorine | IS 3025 Part 26:1986 | BDL (DL:0.1 mg/l) |
| 15 | Fluoride as F | APHA 23 rd Edn. 2017:4500 F,D | 0.40 mg/l |
| 16 | Nitrate as NO ₃ | IS 3025 Part 34:1988 | 7.8 mg/l |

*****End of Report*****

Page 1 of 1

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Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/ 024 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/024 |
| Sample Description | Ground Water (BW-1) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Near Project Area - 10°54'7.44"N 77° 4'8.81"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-------|--|--|----------------------|
| 17 | Copper as Cu | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.01 mg/l) |
| 18 | Manganese as Mn | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 19 | Mercury as Hg | USEPA 200.8 | BDL (DL:0.0005 mg/l) |
| 20 | Cadmium as Cd | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.001 mg/l) |
| 21 | Selenium as Se | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 22 | Aluminium as Al | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 23 | Lead as Pb | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 24 | Zinc as Zn | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 25 | Total Chromium as Cr | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.02 mg/l) |
| 26 | Boron as B | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 27 | Mineral Oil | IS 3025 Part 39-1991 (Reaff. 2019) | BDL(DL : 0.01 mg/l) |
| 28 | Phenolic compounds as C ₆ H ₅ OH | IS 3025 Part 43-1992(Reaff: 2019) | BDL (DL:0.0005 mg/l) |
| 29 | Anionic Detergents (as MBAS) | IS 13428 – 2005 (Reaff:2019) (Annex K) | BDL (DL:0.01 mg/l) |
| 30 | Cyanide as CN | IS 3025 Part 27-1986 (Reaff. 2019) | BDL (DL:0.01 mg/l) |
| 31 | Barium as Ba | IS 3025 Part 44:1993 (Reaff:2019) | BDL(DL:0.05 mg/l) |
| 32 | Ammonia (as total ammonia-N) | IS 3025 Part 58:2006 (Reaff:2017) | BDL (DL:0.01 mg/l) |
| 33 | Sulphide as H ₂ S | IS 3025 Part 38:1989 (Reaff:2019) | BDL (DL:0.01 mg/l) |
| 34 | Molybdenum as Mo | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 35 | Total Arsenic as As | IS 3025 Part 34-1988 (Reaff. 2019) | BDL (DL:0.005 mg/l) |
| 36 | Total Suspended Solids | IS 3025 Part 29-1986 (Reaff: 2019) | BDL (DL:1.0 mg/l) |
| | Discipline: Biological | Group: Water | |
| 37 | Total Coliform | APHA 23 rd Edn. 2017:9221B | 95 MPN/100ml |
| 38 | <i>Escherichia coli</i> | APHA 23 rd Edn. 2017:9221F | < 1.8 MPN/100ml |

*****End of Report*****

Page 1 of 1

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Authorised Signatory

 Name: Santhosh Kumar A
 Designation: Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/ 025 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/025 |
| Sample Description | Ground Water (BW-2) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Okkilipalayam - 10°53'41.76"N 77° 1'4.78"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-----------------------------|---------------------------------------|--|-------------------|
| Discipline: Chemical | | | |
| 1 | Colour | IS 3025 Part 4:1983 | 5 Hazen |
| 2 | Odour | IS 3025 Part 5:2018 | Agreeable |
| 3 | pH at 25°C | IS 3025 Part 11:1983 | 7.68 |
| 4 | Conductivity @ 25°C | IS 3025 Part 14:2013 | 1085 µmhos/cm |
| 5 | Turbidity | IS 3025 Part 10:1984 | 6 NTU |
| 6 | Total Dissolved Solids | IS 3025 Part 16:1984 | 699 mg/l |
| 7 | Total Hardness as CaCO ₃ | IS 3025 Part 21:2009 | 148 mg/l |
| 8 | Calcium as Ca | IS 3025 Part 40:1991 | 28.2 mg/l |
| 9 | Magnesium as Mg | IS 3025 Part 46:1994 | 19.0 mg/l |
| 10 | Total Alkalinity as CaCO ₃ | IS 3025 Part 23:1986 | 130 mg/l |
| 11 | Chloride as Cl | IS 3025 Part 32:1988 | 121 mg/l |
| 12 | Sulphate as SO ₄ | IS 3025 Part 24:1986 | 40.6 mg/l |
| 13 | Iron as Fe | IS 3025 Part 53:2003 | 0.25 mg/l |
| 14 | Residual Free Chlorine | IS 3025 Part 26:1986 | BDL (DL:0.1 mg/l) |
| 15 | Fluoride as F | APHA 23 rd Edn. 2017:4500 F,D | 0.35 mg/l |
| 16 | Nitrate as NO ₃ | IS 3025 Part 34:1988 | 8.0 mg/l |

*****End of Report*****

Page 1 of 1

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Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

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TEST REPORT

| | | | |
|--------------------------------|---|------------------------------|------------|
| Report No | EHS360/TR/2022-23/ 025 | Report Date | 05.06.2023 |
| Site Location | M/s. Pachapalayam Rough Stone and Gravel Quarry S.F.Nos. 279/2C1B, 212/1A(P), Pachapalayam Village, Sulur Taluk, Coimbatore District | | |
| Sampling Method | SOP Method | Sample Drawn by | Laboratory |
| Sample Name | Water | Sample Code | EHS360/025 |
| Sample Description | Ground Water (BW-2) | Sample Collected Date | 25.05.2023 |
| Qty. of Sample Received | 2 Litres | Sample Received On | 26.05.2023 |
| Sample Condition | Fit for Analysis | Test Commenced On | 26.05.2023 |
| Sampling Location | Okkilpalayam - 10°53'41.76"N 77° 1'4.78"E | | |

| S.No. | Parameters | Test Method | RESULTS |
|-------|--|---|----------------------|
| 17 | Copper as Cu | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.01 mg/l) |
| 18 | Manganese as Mn | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 19 | Mercury as Hg | USEPA 200.8 | BDL (DL:0.0005 mg/l) |
| 20 | Cadmium as Cd | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.001 mg/l) |
| 21 | Selenium as Se | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 22 | Aluminium as Al | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 23 | Lead as Pb | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.005 mg/l) |
| 24 | Zinc as Zn | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 25 | Total Chromium as Cr | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.02 mg/l) |
| 26 | Boron as B | IS 3025 Part 65:2014 (Reaff:2019) | BDL(DL : 0.05 mg/l) |
| 27 | Mineral Oil | IS 3025 Part 39-1991 (Reaff. 2019) | BDL(DL : 0.01 mg/l) |
| 28 | Phenolic compounds as C ₆ H ₅ OH | IS 3025 Part 43-1992(Reaff: 2019) | BDL (DL:0.0005 mg/l) |
| 29 | Anionic Detergents (as MBAS) | IS 13428 – 2005 (Reaff:2019) (Annex K) | BDL (DL:0.01 mg/l) |
| 30 | Cyanide as CN | IS 3025 Part 27-1986 (Reaff. 2019) | BDL (DL:0.01 mg/l) |
| 31 | Barium as Ba | IS 3025 Part 44:1993 (Reaff:2019) | BDL(DL:0.05 mg/l) |
| 32 | Ammonia (as total ammonia-N) | IS 3025 Part 58:2006 (Reaff:2017) | BDL (DL:0.01 mg/l) |
| 33 | Sulphide as H ₂ S | IS 3025 Part 38:1989 (Reaff:2019) | BDL (DL:0.01 mg/l) |
| 34 | Molybdenum as Mo | IS 3025 Part 65:2014 (Reaff:2019) | BDL (DL:0.02 mg/l) |
| 35 | Total Arsenic as As | IS 3025 Part 34-1988 (Reaff. 2019) | BDL (DL:0.005 mg/l) |
| 36 | Total Suspended Solids | IS 3025 Part 29-1986 (Reaff: 2019) | BDL (DL:1.0 mg/l) |
| | Discipline: Biological | Group: Water | |
| 37 | Total Coliform | APHA 23 rd Edn. 2017:9221B | 95 MPN/100ml |
| 38 | <i>Escherichia coli</i> | APHA 23 rd Edn. 2017:9221F | < 1.8 MPN/100ml |

*****End of Report*****

Page 1 of 1

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Authorised Signatory

 Name: Santhosh Kumar A
 Designation: Quality Manager

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National Accreditation Board for Education and Training

Certificate of Accreditation

Geo Exploration & Mining Solutions, Salem

No. 17, Advaita Ashram Road, Fairlands, Salem – 636 004, Tamilnadu, India.

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

| S.No | Sector Description | Sector (as per) | | Cat. |
|------|---|-----------------|-----------|------|
| | | NABET | MoEFCC | |
| 1 | Mining of minerals opencast only | 1 | 1 (a) (i) | A |
| 2 | Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes | 31 | 7 (c) | B |
| 3 | Building and construction projects | 38 | 8(a) | B |

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Jan 06, 2023 and posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2684 dated Feb 20, 2023. The accreditation needs to be renewed before the expiry date by Geo Exploration & Mining Solutions, Salem following due process of assessment.



Sr. Director, NABET
Dated: Feb 20, 2023

Certificate No.
NABET/EIA/2225/RA 0276

Valid up to
August 06, 2025

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