DRAFT EIA / EMP FOR
PROPOSED ROUGH STONE & GRAVEL QUARRY
CATEGORY B1 - CLUSTER (CLUSTER AREA – 8.91.30 Ha.)

(Submitted for Public Hearing as per the provisions of EIA Notification 2006 & its amendments thereof)

APPROVED TOR Lr.No.SEIAA-TN/F.No.9767/SEAC/ToR-1448/2023 Dated: 09.05.2023

PROPOSED QUARRY LEASE DETAILS	
SURVEY NOS	181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4
VILLAGE	KEELNAICKENPALAYAM
TALUK	VEMBAKKAM
DISTRICT	TIRUVANNAMALAI
EXTENT	4.10.30 Ha
PROPOSED PRODUCTION FOR FIVE YEARS	4,71,330M^3 OF ROUGH STONE, 57,622M^3 OF WEATHERED ROCK 60,678M^3 OF GRAVEL FORMATION
LAND	PATTA LAND

(Sector No. 1(a) (Sector no.1 as per NABET)
Category of the Project: B1 Cluster Mining, Total Cluster Area – 8.91.30 Ha
Baseline Monitoring Period – March to May 2023

APPLICANT

THIRU A.V. SARATHY

S/o. C.VARATHAN,

No:34, R-1, Vellore Main road, Arcot Taluk,Vellore District.

ORGANIZATION

M/s. GLOBAL MINING SOLUTIONS

(NABET ACCREDITED & ISO 9001 CERTIFIED CONSULTANT)

PLOT NO. 6, SF NO. 13/2, A2, VS CITY, RC CHETTYPATTY, KOTTAMETTUPATTY, OMALUR, SALEM, TAMIL NADU – 636 455

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

JULY -2023

AMENDMENT PAGE

SL	Page No.	Section / Clause / Para / Line (as Applicable)	Date of Amendment	Amendment Made	Reasons of amendment	Signature of Person Authorizing Amendment
1						
2						
3						
4						
5						
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7						
8						
9						
10						

ACKNOWLEDGEMENT

M/s. Global Mining Solutions, Salem is very much thankful to Thiru.A.V. Sarathy, Lessee for the confidence and trust placed on the organization for carrying out Environmental Impact Assessment (EIA) study for the proposed Rough Stone & Gravel Quarry over a cluster area of 8.91.30 Ha at Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu and formulating the Environmental Management Plan (EMP). We also gratefully acknowledge the cooperation and assistance provided by concerned government authorities for collection of secondary information for the preparation of EIA/EMP report. Our sincere thanks to the local people of Keelnaickenpalayam Village and the nearby villages for their whole hearted cooperation and constant involvement during the entire field study without which the study would not have been possible.

For: M/s. Global Mining Solutions

(M.Prabhu)

Managing Director

UNDERTAKING

In Line with MoEF OM no. J – 11013/41/2006-IA.II (I) dated 5th October 2011, we hereby give our undertaking for owning the content and information in the EIA/EMP report submitted for EC of the proposed Rough Stone & Gravel Quarry over a cluster area of 8.91.30 Ha at Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

For Global Mining Solutions

Name: Manikandan
EIA Coordinator – Mining Of Minerals
Global Mining Solutions

M. MANIKANDAN
M. Manikandan
EIA CO-ORDINATOR
GLOBAL MINING SOLUTIONS
SALEM

UNDERTAKING

In Line with MOEF OM no. J-11013/41/2006-IA.II (1) dated 4th Aug 2009 and its Amendments, we hereby confirm that all Terms of Reference issued by Ministry of Environment, Forest and Climate Change vide Letter No: .SEIAA-TN/F.No.9767/SEAC/ToR-1448/2023, dated: 09.05.2023 for preparation of EIA/EMP report for the proposed Stone & Gravel Quarry over a cluster area of 8.91.30 Ha at Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu, for the production of 4,71,330 Cu.m of Rough Stone, 57,622 Cu.m of Weathered Rock and 60,678 Cu.m of Gravel from the proposed lease area and the details has been complied in the EIA/EMP report is factually correct.

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

For Global Mining Solutions

Name: Manikandan
EIA Coordinator – Mining Of Minerals
Global Mining Solutions

M. MANIKANDAN
EIA CO-ORDINATOR
GLOBAL MINING SOLUTIONS
SALEM

QUALITY COUNCIL OF INDIA
Creating an Ecosystem for Quality

NABET

National Accreditation Board for Education and Training

NABET

Certificate of Accreditation

Global Mining Solutions

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

The organization is accredited as ***Category-B*** *under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations, Version 3: for preparing EIA-EMP reports in the following Sectors –*

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals-opencast mining only	1	1 (a) (i)	A

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

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

Sr. Director, NABET
Date: March 31, 2023

Certificate No.
NABET/EIA/2326/IA 0110

Valid up to
January 4, 2026

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

ANNEXURE - VII

Declaration by Experts contributing to the proposed Rough Stone & Gravel Quarry over a cluster area of 8.91.30 Ha at Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

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

EIA Coordinator Name: M. Manikandan

M. MANIKANDAN

Signature & Date

EIA CO-ORDINATOR
GLOBAL MINING SOLUTIONS
SALEM

Period of involvement: March 2023 to May 2023.

Contact information:

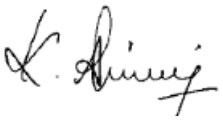
M/s Global Mining Solutions

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

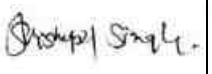
Kottamettupatty, Omalur,

Salem, Tamil Nadu – 636 455

S. No.	*Functional areas*	*Name of the expert/s*	*Involvement (period and task**)*	*Signature and Date*
1	*AP*	*Dhanalakshmi Ramanathan*	*Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation*	R. Dhanal

			measures for air pollution. *<u>Period: March 2023 to May 2023.</u>*	
2	*WP*	*Abirami Kaliaperumal*	*Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact.* *<u>Period: March 2023 to May 2023.</u>*	
3	*SHW*	*Ramadoss N*	*Assessment of waste generated from the project, suggested waste management practices.* *<u>Period: March 2023 to May 2023.</u>*	
4	*SE*	*Sarasvathy K*	*Baseline SE study. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan.* *<u>Period: March 2023 to May 2023.</u>*	

5	*EB*	*Saravanan S*	*Baseline data collection of related to ecology of the area.* *<u>Period: March 2023 to May 2023.</u>*	
6	*HG*	*Ravinthiran N*	*Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area.* *<u>Period: March 2023 to May 2023.</u>*	
7	*AQ*	*Srilatha Thiruveedhula*	*Air quality modeling utilizing the area source model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures.* *<u>Period: March 2023 to May 2023.</u>*	
8	*NV*	*Dhanalakshmi Ramanathan*	*Ambient noise study of the area. Incremental noise generation due to quarry operation and impact of the noise due to the project.*	

			Period: March 2023 to May 2023.	
9	*LU*	*Dhanalakshmi Ramanathan*	*Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment.* *Period: March 2023 to May 2023.*	
10	*RH*	*S.V. Prashant*	*Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker.* *Period: March 2023 to May 2023.*	
11	*SC*	*Shisupal Sing*	*Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil.* *Period: March 2023 to May 2023.*	

12	*GEO*	*Valliappan Meyyappan*	*Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area.* *Period: March 2023 to May 2023.*	

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Annexure – 5	Monitoring Report for Air, Water, Noise & Soil
Annexure – 6	DFO Letter stating the presence of an eco-sensitive zone and sanctuary within a 10 km radius.
Annexure – 7	The Copy of Blasting Agreement

COMPLIANCE TO TERMS OF REFERENCE

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.9767/SEAC/ToR-1448/2023 Dated: 09.05.2023

To

Thiru. A.V. Sarathy,
S/o. C. Varathan,
No:34, R-1, Vellore Main road,
Arcot Taluk, Vellore District - 602 106.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough Stone and Gravel quarry lease over an extent of 4.10.30 Ha at S.F.Nos. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu by Thiru. A.V. Sarathy - 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/415846/2023, dated 25.01.2023
2. Your application submitted for Terms of Reference dated: 27.01.2023
3. Minutes of the 368th SEAC meeting held on 19.04.2023
4. Minutes of the 615th SEIAA meeting held on 08.05.2023 & 09.05.2023

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

The proponent, Thiru. A.V. Sarathy has submitted application for Terms of Reference (ToR) on 27.01.2023, in Form-I, Pre- Feasibility report for the Proposed Rough Stone and Gravel quarry

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lease over an extent of 4.10.30 Ha at S.F.Nos. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough stone & gravel quarry lease over an extent of 4.10.30Ha in SF.No. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4, Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu by Thiru. A.V. Sarathy – For Terms of Reference

The proposal was earlier placed in 368th meeting of SEAC held on 19.4.2023. The details of the project furnished by the proponent are available on the PARIVESH web portal (parivesh.nic.in).

The SEAC noted the following:

1. The project proponent, Thiru.A.V.Sarathy has applied seeking Terms of Reference for proposed Rough stone & gravel quarry lease over an Extent of 4.10.30Ha in SF.No. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District Tamil Nadu.
2. The project/activity is covered under category "B1" of Item 1 (a) "Mining of Minerals Projects" of the schedule to the EIA Notification,2006, as amended.
3. As per the precise area communication the lease period is for 5 years. The mining plan is for 5years. The production for 5 years shall not to exceed 471330 m^3 of Rough Stone, 57622 m^3 of weathered Rock & 60678m^3 of Gravel with the ultimate depth of 44m BGL.

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

1. The PP shall submit photographs of fencing, greenbelt and garland drain.
2. AD mines letter for the existing pit with details of earlier lease period and pit dimension.
3. The study on impact of the dust & other environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.
4. The Proponent shall furnish photographs of greenbelt, fencing and garland drain around the boundary of the proposed quarry.

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5. The proponent shall furnish a revised EMP budget for entire life of proposed mining.
6. The revised and corrected version of the Production & Development Plan shall be produced with showing the safety berm width of 2m is maintained for the bench height of 2m distinctly in the gravel formation and it shall be duly signed by the concerned QP & approved by the concerned AD (Geology & Mining).
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 prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease during the time of appraisal for obtaining the EC.
8. The Proponent shall submit a conceptual 'Slope Stability Plan' indicating the mitigating measures for the proposed quarry during the appraisal while obtaining the EC, as the depth of the proposed quarry working is extended beyond 30 m below ground level.
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.
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.
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.
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,
    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.

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g. If EC and CTO already obtained, the copy of the same shall be submitted.

h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.

13. 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).
14. The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,
15. The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the prosed quarry based on the volume of rock handled & area of excavation.
16. 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.
17. 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.
18. 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.
19. 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.
20. 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.

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21. 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.
22. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
23. 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.
24. 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.
25. 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.
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 on local transport infrastructure due to the Project should be indicated.
28. 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.
29. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
30. 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

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accordingly.

31. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
32. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
33. 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.
34. 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.
35. 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
36. 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.
37. 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.
38. 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.
39. 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.
40. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining

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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.

41. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
42. 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.
43. 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.
44. 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.
45. 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

List of Native Trees Suggested for Planting

1. ***Aegle marmelos*** – Vilvam
2. ***Adenaanthera pavonina*** - Manjadi
3. ***Albizia lebbeck*** – Vaagai
4. ***Albizia amara*** - Usil
5. ***Bauhinia purpurea*** - Mantharai
6. ***Bauhinia racemosa*** - Aathi
7. ***Bauhinia tomentosa*** – Iruvathi
8. ***Buchanania axillaris*** - Kattuma
9. ***Borassus flabellifer*** - Panai
10. ***Butea monosperma*** - Murukka maram
11. ***Bobax ceiba*** – Ilavu, Sevvilavu
12. ***Calophyllum inophyllum*** - Punnai
13. ***Cassia fistula*** - Sarakondrai
14. ***Cassia roxburghii***- Sengondrai

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15. ***Chloroxylon sweitenia*** - Purasa maram
16. ***Cochlospermum religiosum*** – Kongu, Manjal Ilavu
17. ***Cordia dichotoma*** – Mookuchali maram
18. ***Creteva adansonii*** – Mavalingum
19. ***Dillenia indica*** – Uva, Uzha
20. ***Dillenia pentagyna*** – Siru Uva, Sitruzha
21. ***Diospyros ebenum*** - Karungali
22. ***Diospyros chloroxylon*** – Vaganai
23. ***Ficus amplissima*** – Kal Itchi
24. ***Hibiscus tiliaceus*** – Aatru poovarasu
25. ***Hardwickia binata*** – Aacha
26. ***Holoptelia integrifolia*** - Aayili
27. ***Lannea coromandelica*** - Odhiam
28. ***Lagerstroemia speciosa*** - Poo Marudhu
29. ***Lepisanthus tetraphylla*** - Neikottai maram
30. ***Limonia acidissima*** - Vila maram
31. ***Litsea glutinosa*** –Pisin pattai
32. ***Madhuca longifolia*** - Illuppai
33. ***Manilkara hexandra*** – Ulakkai Paalai
34. ***Mimusops elengi*** - Magizha maram
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** - Vanni maram
44. **Pterocarpus marsupium** - Vengai
45. **Pterospermum canescens** – Vennangu, Tada
46. **Pterospermum xylocarpum** - Polavu

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47. **Puthranjiva roxburghii** – Puthranjivi
48. **Salvadora persica** – Ugaa Maram
49. **Sapindus emarginatus** - Manipungan, Soapu kai
50. **Saraca asoca** - Asoca
51. **Streblus asper** - Piraya maram
52. **Strychnos nuxvomica** – Yetti
53. **Strychnos potatorum** - Therthang Kottai
54. **Syzygium cumini** - Naval
55. **Terminalia bellerica** - Thandri
56. **Terminalia arjuna** - Ven marudhu
57. **Toona ciliate** – Sandhana vembu
58. **Thespesia populnea** - Puvarasu
59. **Walsuratrifoliata** – valsura
60. **Wrightia tinctoria** – Veppalai
61. **Pithecellobium dulce** – Kodukkapuli

Discussion by SEIAA and the Remarks:-

The proposal was placed in the 615th Authority meeting held on 08.05.2023 & 09.05.2023. The authority noted that this proposal was placed for appraisal in 368th SEAC meeting held on 19.04.2023. 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 conditions in addition to the conditions in **'Annexure B'** of this minutes.

1. The project proponent shall prepare mine closure plan considering mineable quantity of Topsoil, Weathered rock & mineral reject/waste. If any.
2. Copy of valid mining lease approval obtained from the competent Authority.
3. Copy of approved review of scheme of mining plan by the competent authority (Dept. of Geology and Mining / IBM).
4. 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.
5. 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.

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6. A letter from local Director, Agriculture Department stating that the area is not suitable for Agriculture.

Annexure 'B'

Cluster Management Committee

1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.
2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.
4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.
7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.

Impact study of mining

12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following

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a) Soil health & soil biological, physical land chemical features .
b) Climate change leading to Droughts, Floods etc.
c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
d) Possibilities of water contamination and impact on aquatic ecosystem health.
e) Agriculture, Forestry & Traditional practices.
f) Hydrothermal/Geothermal effect due to destruction in the Environment.
g) Bio-geochemical processes and its foot prints including environmental stress.
h) Sediment geochemistry in the surface streams.

Agriculture & Agro-Biodiversity

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

Forests

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

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Water Environment

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

Energy

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

Climate Change

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

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Mine Closure Plan

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

EMP

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

Risk Assessment

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

Disaster Management Plan

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

Others

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

A. STANDARD TERMS OF REFERENCE

1) Year-wise production details since 1994 should be given, clearly stating the highest production

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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 /

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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

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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

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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

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(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

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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.

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i) As per the circular no. J-11011/618/2010-IA.II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.

j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.

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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 is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.

b. All documents may be properly referenced with index, page numbers and continuous page numbering.

c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.

d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.

e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website http://www.moef.nic.in/ may be referred.

- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
- The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
- The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

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Copy to:

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

2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
3. The Chairman, 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 - 110 003.
6. The District Collector, Tiruvannamalai District.
7. Stock File.

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POINT WISE COMPLIANCE OF TOR CONDITIONS

S.No	TOR Points	Reply	Page No
A. ToR in Addition to Standard ToR			
1	The PP shall submit photographs of fencing, greenbelt and garland drain.	Complied.	-
2	AD mines letter for the existing pit with details of earlier lease period and pit dimension.	Not Applicable This project is a proposed new quarry lease, not an existing project.	-
3	The study on impact of the dust & other environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.	There is no rose flowers cultivation within 1 km radius of the project area. However, the impact due to Quarry operation is site-specific and it will be minimized at source level.	-
4	The Proponent shall furnish photographs of green belt, fencing and garland drain around the boundary of the proposed quarry.	It will be incorporated in the final Environmental Impact Assessment (EIA) / Environmental Management Plan (EMP) Report.	-
5	The proponent shall furnish a revised EMP budget for entire life of proposed mining.	Complied. Revised EMP budget has been incorporated in Chapter 10.	205
6	The revised and corrected version of the Production & Development Plan shall be produced with showing the safety berm width of 2m is maintained for the bench height of 2m distinctly in the gravel formation and it shall be duly signed by the concerned QP & approved by the concerned AD (Geology & Mining).	The safety berm specification has been maintained as per DGMS guidelines.	-
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 prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease during the time of appraisal for obtaining the EC.	This is a proposed project. No mining has been carried out in this lease area so far by the proponent.	-

8	The Proponent shall submit a conceptual 'Slope Stability Plan' indicating the mitigating measures for the proposed quarry during the appraisal while obtaining the EC, as the depth of the proposed quarry working is extended beyond 30 m below ground level.	The general Slope Stability Plan are detailed in Section 7.6. However, detailed slope stability study will be carried out after commencement of the mining operation while reach mine depth after 25 m.	197
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 l96l such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	It will be incorporated in the final Environmental Impact Assessment (EIA) / Environmental Management Plan (EMP) Report.	-
10	The PP shall present a conceptual design for carrying out only controlled blasting operations 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.	The control measures for reducing ground vibration due to blasting is provided in Section 4.2.5.3 of Chapter 4.	172
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 evidence,	This proposed quarry is the only one being advocated for, with no other existing quarries.	-
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, 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.	Not Applicable This is a proposed project. No mining has been carried out in this lease area so far by the proponent.	-

	f. Name of the person already mined in that leases area. g. If EC and CTO already obtained, the copy of the same shall be submitted. h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.		
13	All corner coordinates of the mine lease are4 superimposed on a High- Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Project coordinates superimposed in satellite imagery and given as Figure No – 2.7 in Chapter – 2. The geology and geomorphology map are provided in Figure No.3.13, 3.14, Chapter 3. The Lithology map and Soil map are provided under Figure No. 3.15, 3.9, Chapter-3. The 10km Radius Index plan showing buffer zone is given in Figure No.3.1 & Figure 3.2 in Chapter – 3.	99 143 & 144 145 & 129 106 & 107
14	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,	Under Process	-
15	The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 196l for the prosed quarry based on the volume of rock handled & area of excavation.	The revised manpower with statutory and competent persons has been given in section 2.10.4 of chapter 2.	95
16	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.	Under Process	-
17	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	The Geological Resources and Mineable reserves are provided in Section 2.7 of Chapter 2. The process description and technology used are provided in section 2.8. The year wise production plan is provided in section 2.8.5 of Chapter 2.	89 90 92

		The various anticipated impacts and its mitigation measures due to this proposed project are detailed in Chapter 4.	154
18	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.	The organization chart is provided as Figure No.10.1, Chapter-10.	203
19	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 I 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	Two rivers are passing on the North and South East side (Palar River – 5.8 km North & Cheyyar River – 6.4 km South East). Vegavati river is situated at a distance of 8.7 km in North side. A detailed hydrogeological report will be included in the final EIA/EMP report.	198
20	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline environmental data collected from March to May 2023 for air, water (surface and ground water), soil, noise, and flora and fauna within a 10 km radius are detailed in Chapter 3. The cumulative impact of traffic survey is provided in Section 7.4.3 of Chapter 7.	104 196
21	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	The details of other quarries located in 500m radius of the project is provided in Annexure-3. Cumulative Impact study is detailed under section 7.4, Chapter-. The identification of impact due to air, water, health impacts etc. has been given in Chapter-4. The environmental	190, 154 & 201

	Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	management plan has been provided elaborately in Chapter-10.	
22	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	The runoff water during rainy season will be collected in the bottom quarry through proper drainage pattern and the collected water will be used for plantation and dust suppression during dry season.	-
23	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.	The land use of the study area is described in Section 3.6.6 of Chapter 3. Section 4.2.1, Chapter 4, provides the land-use pattern at present and at the end of the quarrying period. The anticipated impacts on the land environment and the mitigation measures are detailed in section 4.2.1 of Chapter 4.	134 & 155
24	Details of the land for storage of overburden/waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	Not Applicable There is no waste generation anticipated in this quarry operation.	-
25	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.	Not Applicable	-
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 falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc.	160

		To manage surface runoff, a garland drain will be constructed around the quarry and connected to a settling pond with silt traps. The clear supernatant water from the settling pond will be directed to downstream users. The Rainwater harvesting Plan is provided in section 4.2.3.4, Chapter-4.	
27	Impact on local transport infrastructure due to the project should be indicated.	Since the production is very less, only few trucks of 5/10T will be used for transport. The effect of transport on local transport will be negligible.	-
28	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.	The details of flora in the core zone and the buffer zone are provided in section 3.6.7.	136
29	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Details of Mine Closure Plan is provided under section 7.5, Chapter-7.	197 & 102
30	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 SEIAAJSEAC with regard to the office Memorandum of MoEF& cc accordingly.	A draft Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) are being prepared for the purpose of conducting a Public Hearing. This condition will be complied with after the Public Hearing.	-
31	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.	It will be complied	-
32	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.	It will be complied	-
33	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.	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.6.7, Chapter 3.	136

34	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.	In the lease area, safety barrier 7.5m is left as safety zone. A greenbelt/plantation covering an area of 0.40 hectares will be established all along the lease area i.e. safety boundary to enhance vegetative growth and aesthetics.	-
35	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.	Agreed	-
36	A Disaster Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Disaster Management plan are detailed in section 7.3, Chapter 7.	188
37	A Risk Assessment and Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Risk assessment and Management plan are detailed in section 7.2, chapter 7.	184
38	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	Occupational Health Impacts and its mitigation measures are detailed in section 4.4.8 of Chapter 4.	177

	measures with required facilities proposed in the mining area may be detailed		
39	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 of the socio economic survey conducted in the buffer zone has been provided in Para 3.6.13, Chapter-3. Public health facilities will be further aimed to be developed through CER activities wherein periodic health checkups, medical camps for the locals will be conducted. The PP has proposed CER amount of Rs. 5.0 Lakhs.	146
40	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.	Details of the socio economic survey conducted in the buffer zone has been provided in Para 3.6.13, Chapter-3.	146
41	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	There is no litigation pending against the project.	-
42	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	The proposed project will benefit this region by providing employment opportunities, improving per capita income for local people, and enhancing social welfare facilities such as education, health, and infrastructure. It will also provide direct employment to approximately 27 people. By carrying out socio-economic development activities, local community development is expected. To this end, the proponent has planned to allocate Rs.5.0 Lakhs for various activities under CER.	-
43	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	This is a proposed project, and the proponent has not conducted any mining in this lease area so far.	-

	previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.		
44	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.	It will be incorporated in the final Environmental Impact Assessment (EIA) / Environmental Management Plan (EMP) Report.	-
45	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, 19g6.	Agreed	-
Additional Conditions stipulated by SEIAA – TN			
1	The project proponent shall prepare mine closure plan considering mineable quantity of Topsoil. Weathered rock & mineral reject/waste. If any.	There is no waste anticipated in this rough stone and gravel Quarry. The entire quarried minerals will be utilized.	-
2	Copy of valid mining lease approval obtained from the competent Authority.	Under Process	-
3	Copy of approved review of scheme of mining plan by the competent authority (Dept. of Geology and Mining / IBM).	The project proponent has prepared mining plan under rule 19(l),41 &42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Deputy Director, Dept. of Geology & Mining, Tiruvannamalai vide RC.NO.144/kanimam/2022 dated 06.01.2023. The approval letter along with approved plan is enclosed as Annexure – 2.	-
4	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	Complied, There are no historical places, schools, cemeteries, temples, bird sanctuaries, and wildlife sanctuaries within 500 metres of the proposed project area. In this regard, the project proponent has received an official letter from the Village Administrative Officer, Keelnaickenpalayam village, dated 17.01.2023.The letter copy enclosed as Annexure – 4.	-

5	The DFO letter stating that the proximity distance of Reserve Forests, protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of25 km from the proposed site.	Complied, Letter from DFO stating the distance of the Eco sensitive zone and sanctuary vide Letter No. 8212/2022, Dated 16.09.2022. Enclosed in Annexure – 6.	-
6	A letter from local Director, Agriculture Department stating that the area is not suitable for Agriculture.	A letter from the agricultural department will be obtained.	-
Annexure 'B'			
Cluster Management Committee			
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	There are three quarries (2 Existing + 1 Proposed), including the present proposed quarries, within a 500-metre radius. The proponent will take the initiative to form a cluster management committee once environmental clearance is obtained for this quarry.	-
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, water sprinkling, tree plantation, blasting etc.,	Agreed. It will be complied.	-
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Agreed. The list of members of the committee formed will be submitted to ad/mines after obtaining Environmental Clearance.	-
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Agreed. Details of the Operation plan for cluster mining operations will be submitted once we get environmental clearance for all three quarries proposed in the cluster area.	-
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Risk management plan for the individual quarry is given in this report. As far as cluster working condition is concerned, once the committee is formed, risk management as a cluster including inundation of clusters and the evacuation plan will be elaborated.	184
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the	Environmental policy for the cluster will be framed by the cluster management committee and the policy will be in accordance with EPA Act, 1986 and its	-

	law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	amendments, guidelines by MoEF&CC/SEIAA and other regulatory bodies. This policy will be displayed in the quarry.	
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed. It will be complied as mentioned in the Point No.4	-
8	The committee shall furnish the Emergency Management plan within the cluster'	Agreed. It will be complied as mentioned in the Point No.4	-
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Agreed. It will be complied as mentioned in the Point No.4	-
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	Agreed. It will be complied as mentioned in the Point No.4	-
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Agreed. It will be complied as mentioned in the Point No.4	-
Impact study of mines			
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following		
a	Soil health & soil biological, physical land chemical features.	Complied. The details are given in Chapter 3 of the Draft EIA report.	129
b	Climate change leading to Droughts, Floods etc.	The proposed quarry is a very small scale Opencast Semi-Mechanized mining method and the anticipated impacts to the climate change, droughts, floods, etc. will be very marginal.	-
c	Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.		-
d	Possibilities of water contamination and impact on aquatic ecosystem health.	The total water requirement is 3.5 KLD. It will be outsourced from the nearby villages. So no impact in the project area due to water usage. The wastewater generation in the form of runoff water during rainy season will be collected in the bottom quarry through proper drainage pattern and the collected water will be used for plantation and dust suppression during dry season. However, there is no wastewater discharge from this quarry is being anticipated. So, possibilities of	-

		water contamination and impact on aquatic ecosystem health is not envisaged.	
e	Agriculture, Forestry & Traditional practices.	There are no Agriculture, forest area and traditional practices within the project area. However, there are some agricultural land around the project site. It may be affected due to the quarry operation as such dust particles sedimentation in the agricultural land. It will be controlled at the source level by proper dust supression as such wet drilling, controlled blasting and water sprinkling on the project roads and project surrounding roads. As per Air Quality Modelling, the impact of the air quality limited to 400m radius. So, there is no impact for the Agriculture, Forestry & Traditional practices located within 10km radius.	-
f	Hydrothermal/Geothermal effect due to destruction in the Environment.	The proposed quarry operation is Opencast Semi-Mechanized operation with drilling, blasting, excavation, loading and transportation. So the effect of Hydrothermal/Geothermal is not envisaged.	-
g	Bio-geochemical processes and its foot prints including environmental stress.	This is a simple mining operation, so bio-geochemical processes are not envisaged.	-
h	Sediment geochemistry in the surface streams.	A canal passing on northern side of the S.F.No.181/2, for which 50 m safety distance maintained. The Palar River is situated 5.8 km to the north and Cheyyar river at 6.4 km in southeast direction. Vegavati river is situated at a distance of 8.7 km in northern side of the project. Palar river and Cheyyar river control the drainage pattern of the area.	-
Agriculture & Agrobiodiversity			
13	impacts on surrounding agricultural fields around the proposed mining Area.	Agreed. It is described in the point no. 12 (e) of this ToR Compliance Annexure-B	-

14	impacts on soil flora & vegetation around the project site.	Complied. The details are given in Chapter 3.	157
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Complied. The details are given in Chapter 3.	
16	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	Complied. The details are given in Chapter 3.	174
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The detailed action plan has been described in the EMP (Chapter 10) for the sustainable management for the project area and its surroundings.	201
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Complied. The details are given in Chapter 4.	174
Forests			
19	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife	There is no reserved forest located in the buffer zone. The fauna commonly found in the core and buffer zone is given in Chapter 3.	-
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna	Complied. The details are given in Chapter 3.	174
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Not Applicable. This is a dry barren land.	-
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	There is no protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways located in the buffer zone.	-
Water Environment			
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within I km (radius) so as to assess the impacts on	Two rivers are passing on the North and South East side (Palar River – 5.8 km North & Cheyyar River – 6.4 km South East). Vegavati river is situated at a distance of 8.7 km in North side. A	198

	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.	detailed hydrogeological report will be included in the final EIA/EMP report.	
24	Erosion Control measures.	There is no waste generation (OB) in this quarry has been envisaged. However, there may be erosion due the rainy season and that is limited within quarry area. The control measures are explained in Chapter 4.	157
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas	Complied. The study details are incorporated in Chapter 3. Anticipated impacts and its mitigation measures are detailed in Chapter 4.	117 & 158
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	There is no wastewater generation from this Quarry, so this is not applicable.	-
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment by the activities.	Section 4.2.1, Chapter 4, provides the land-use pattern at present and at the end of the quarrying period. The post mining land use plan showing afforestation and water body is shown in Figure No- 2.10.	155 & 102
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts	The Flora and Fauna study covering 10 km radius are detailed in section 3.6.7 of chapter 3. Mamandur Cave – 3.3 km in West direction. However, the impacts anticipated with respect to the environment of the project area is very negligible and it will be minimized within the project area. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area.	136
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Agreed	-

30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The nearest Water bodies covering an area of 10 km radius are mentioned in Table 3.1 of Chapter 3. A canal passing on northern side of the S.F.No.181/2, for which 50 m safety distance maintained. Mitigation Measures for Water Environment are detailed in section 4.2.3 of Chapter 4. The mining area consists of hard compact rock, hence no major water seepage is expected from the periphery. The ultimate pit depth of mining is 44 m. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.	-
Energy			
31	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilize the Energy shall be furnished	Complied. The details are described in Chapter 4.	154
Climate Change			
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Only the best equipment will be used, and it will be properly and regularly maintained. Regular vehicular emission tests will be conducted on the transport vehicles to ensure minimal carbon emissions. To further reduce carbon emissions, a good greenbelt plan has been planned.	-
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.		-
Mine Closure Plan			
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Complied. Mine Closure Plan has been incorporated in the approved Mining Plan and the same is incorporated in the Chapter 4&7.	155 &197
EMP			
35	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire	Complied. The details are described in Chapter 10.	201

	mine lease period as per precise area communication order issued.		
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	The capital cost of Rs. 23,71,280/- and the recurring cost of Rs. 34,08,367/- have been allocated under the EMP budget.	-
Risk Assessment			
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Risk assessment and Management plan are detailed in section 7.2, chapter 7.	184
Disaster Management Plan			
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid,/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	Disaster Management plan are detailed in section 7.3, Chapter 7.	188
Others			
39	The project Proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.	There are no historical places, schools, cemeteries, temples, bird sanctuaries, and wildlife sanctuaries within 500 metres of the proposed project area. In this regard, the project proponent has received an official letter from the Village Administrative Officer, Keelnaickenpalayam village, dated 17.01.2023.The letter copy enclosed as Annexure – 4.	-
40	As per the MoEF& cc office memorandum F.No.z2-6512017-tA.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. It will be complied in the Final EIA/EMP report.	-

41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	Complied. The PP has framed detail solid waste management system for the project are and the same will be executed by proper awareness and sign boards. The sign boards will be in two language i.e., Vernacular language (Tamil) and common language (English). The plastic waste generation is very negligible and it will be collected from the source level in specific dustbin and disposed through the municipal bins.	-
C. Standard ToR			
1	Year-wise production details since I 994 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 r994 came into force. w.r.t. the highest production achieved prior to 1994	Not applicable. This is a New Proposal for Quarrying Rough Stone and Gravel.	-
2	A copy of the document in support of the fact that the proponent is the rightful lessee of the mine should be given.	This proposed project area is classified as Patta land jointly registered in the name of Thiru. Sarathy and Thiru. Ruthrasekar vide patta no. 452, the applicant has obtained consent from pattadar (Annexure IV & VII of Mine Plan Report).	-
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. All documents including approved mine plan, EIA and Public Hearing are compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and is in the name of the lessee.	-
4	All comer 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).	Project area is superimposed on Satellite imagery is enclosed in Figure No.3.2. Project area boundary coordinates superimposed on Toposheet & Surface Features around the project area covering 10km radius – Figure No. 3.1 to 3.3. Geology map of the project area covering 10km radius - Figure No. 3.13. Geomorphology Map of	106 to 108, 143 & 144.

		the Study Area covering 10 km radius – Figure No. 3.14.	
5	Information should be provided in Survey of India Topo sheet in l:50,000 scare 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.	The following map in 1:50,000 Scale: Geology map of the project area covering 10km radius – Figure No. 3.13. Geomorphology Map of the Study Area covering 10 km radius – Figure No. 3.14.	143 & 144.
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.	(a) Precise Area Communication: The Project Proponent has obtained Precise Area Communication from the Deputy Director, Department of Geology and Mining, Tiruvannamalai, vide RC.NO. 144/kanimam/2022dated 21.12.2022. The letter copy enclosed as Annexure – 1. (b) Mining Plan Approval: The project proponent has prepared mining plan under rule L9(l),41 &42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Deputy Director, Dept. of Geology & Mining, Tiruvannamalai vide RC.NO.144/kanimam/2022 dated 06.01.2023. The approval letter along with approved plan is enclosed as Annexure – 2.	-
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 /	The proponent will frame a well-planned environmental policy. Its details are provided under Section 10.1, Chapter-10. Monitoring Mechanism is detailed under Section .10.3.	201 & 204

	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.	Various risks likely to arise due to mining activities are detailed under section 7.2, Chapter-7. This being an opencast mine, subsidence is not applicable. The impact due to ground vibrations due to blasting is given in para 4.2.5.3, Chapter-4.	184 & 172
9	The study area will comprise of l0 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.	-
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.	The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.6.6.1 0f Chapter-3. The land use pattern at present and at the end of the quarrying period has been provided in Table 4.1, Chapter-4. The Conceptual plan of mine lease area is shown in Figure No- 2.10.	134, 154 & 102
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.	There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved.	-
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. ln 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	There is no Forest Land involved in the proposed project area. The proposed project area is a patta land. Approved Mining Plan is enclosed in Annexure – 2.	-

	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.	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.	NIL within 10 km radius.	-
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.	The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.	-
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within l0 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	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made. The details are furnished in section 3.6.7.	136

	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 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.	Not Applicable	-
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).	Not Applicable	-
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	The mining activities will be carried out within the mine lease area only. The entire mine lease area of 4.10.30 Ha is a patta land. There is no population within the ML area. Hence, the question of R& R does not arise.	-

	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 of2009, water quality, noise revel, 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.	Baseline Data were collected for One Season (Summer Season) March – May 2023 as per CPCB Notification and MoEF & CC Guidelines and Detailed in Chapter -. 3.	104
23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. lt 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.	Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD view and Detailed in Section 4.2.4.3. Air Quality Modelling For Cluster are detailed in section 7.4.2.1 of Chapter 7.	165 & 193
24	The water requirement for the Project, its availability and source should be	The total water requirement for the project is 3.5 KLD. The required water	158

	furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	will be procured from outside agencies initially and later rainwater harvested in the mine pit shall be used other than drinking purpose. Water Balance diagram is presented in Figure No – 4.1.	
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis.	-
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.	Rain water will be diverted into working area by constructing drains to store and use for dust suppression and greenbelt development. Details are presented in section 4.2.3.4. The total water requirement for the project will be 3.5 KLD comprising Drinking 1.0 KLD, Dust suppression 1.5 KLD, Greenbelt 1.0 KLD. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for the same is shown in Figure No 4.1.	160 to 158
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 Environment including Surface Water and Ground Water are discussed in Section 4.2.3.	158
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-ali4 shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground water Authority for	The quarrying activity will not intersect ground water table as quarrying is proposed upto a depth of 44 m bgl and water table is found at a depth of 55- 60 m BGL.	-

	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.	A canal passing on northern side of the S.F.No.181/2, for which 50 m safety distance maintained.	-
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.	Site Elevation above MSL: 104 m from MSL Ultimate Depth: 44 m bgl (from 104 m RL to 60 m RL) Ground water: 55 & 58 m BGL.	-
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.	Greenbelt Development Plan & Recommended Species proposed for Greenbelt Development are detailed in Section 4.2.6.5.) 0.40 hectares of land are allotted for greenbelt development.	175
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	This is a small quarry and the production is very less. 4 Nos. of 5T/10T tippers will be used for transport. The trips will be minimum. Hence no major impact on transport is expected	-

	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.	Temporary Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in Section 2.10.5 of Chapter 2.	95
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.	At the conceptual stage the quarried-out land will be fenced and lower benches will be allowed to collect rain water to act as a temporary reservoir and Greenbelt development will be carried out on the top bench, unutilized areas and haul roads. Mine closure plan is detailed in Section 2.9 of Chapter 2.	93
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 of occupational health and safety aspects are given under the Section 4.4.8 & Section 10.3.	177 & 205
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.	No Public Health Implications anticipated due to this project. Details of CER and CSR are discussed under Chapter No. 8,	199
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.	This project provides employment to 27 people directly. Local people will be hired for unskilled labour. Through CSR, nearby schools, hospitals will be benefitted. For CSR, INR 5.0 Lakh is allocated. Based on the demand of the people during public hearing, further funds will be allocated, if necessary.	-

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.	Environmental Management plan details are given in Chapter 10.	201
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.	During public hearing process, the opinions and demands of the people will be noted. The replies and commitment made by the proponent along with time bound action plan wherever applicable will be provided in Final EIA/EMP report.	-
40	Details of litigation pending against the project, if any, with direction /order paced by any Court of Law against the Project should be given.	There is no litigation pending against the project.	-
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.	**Project Cost** is Rs. 96,11,800/- **CER Cost** is Rs.5.0/- lakhs **EMP Cost** Capital Cost is Rs. 30,16,280/- Recurring Cost is Rs. 12,51,442/-	-
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Disaster management plan are provided under section 7.3 of Chapter-7.	188
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.	Detailed in Chapter 8.	199
44			
A	Executive Summary of the EIA/EMP Report	Yes, Enclosed	
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.	Yes, Complied	-
D	Project Proponent shall enclose all the analysis/testing reports of water, air, soil,	Baseline monitoring results are detailed in Chapter 3. Original Baseline	104

	noise etc. using the MoEF&CC/ NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project,	monitoring reports will be made available during appraisal of the project.	
E	Where the documents provided are in a language other than English, an English translation should be provided.	Yes, complied	-
F	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Yes, complied	-
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- l 1013/41/2006-IA.11 0) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	Noted & Agreed	-
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-l l0l I161812010-1A.ll (l) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance 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.	Yes, Complied	-

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 and Geological Plan – Figure No. 2.8.	100

1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

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.

Rough Stone and Gravel are the major requirements for construction industry. This EIA report is prepared by considering Cumulative load of all proposed & existing quarries located within 500 m radius of the project area.

This EIA Report is prepared for Thiru. A.V. Sarathy Rough Stone & Gravel Quarry over an extent of 4.10.30 Ha. patta lands in S.F. No. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu in compliance with ToR obtained vide Lr.No.SEIAA-TN/F.No.9767/SEAC/ToR-1448/2023, dated: 09.05.2023.

This proposed project is 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.

This cluster includes the two existing Quarries and one proposed Quarry. The existing and proposed quarries located within 500m radius are detailed in below Table.

Table – 1.1 Cluster Mines Details

Sl. No	Extent	Proponent	Status of lease
1	2.06.0 Ha	Mr.K. Devaraj	Existing
2	2.75.0 Ha	Tvl.NRM sons Blue Metals	
3	4.10.30 Ha	Mr. A.V. Sarathy	Proposed
4	3.51.5 Ha	Mr. L.Sudhakar	Abandoned
Total extent is 8.91.30 Ha including this proposed project and excluding Abandoned quarry			

As such Common EIA for the 3 projects falling in the cluster with assessment of impacts and EMP separately is carried out. Cumulative impact study has been carried out and furnished in Para 7.4, Chapter-7. Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016. Satellite image of Quarries in Cluster is shown in Fig 1.1.

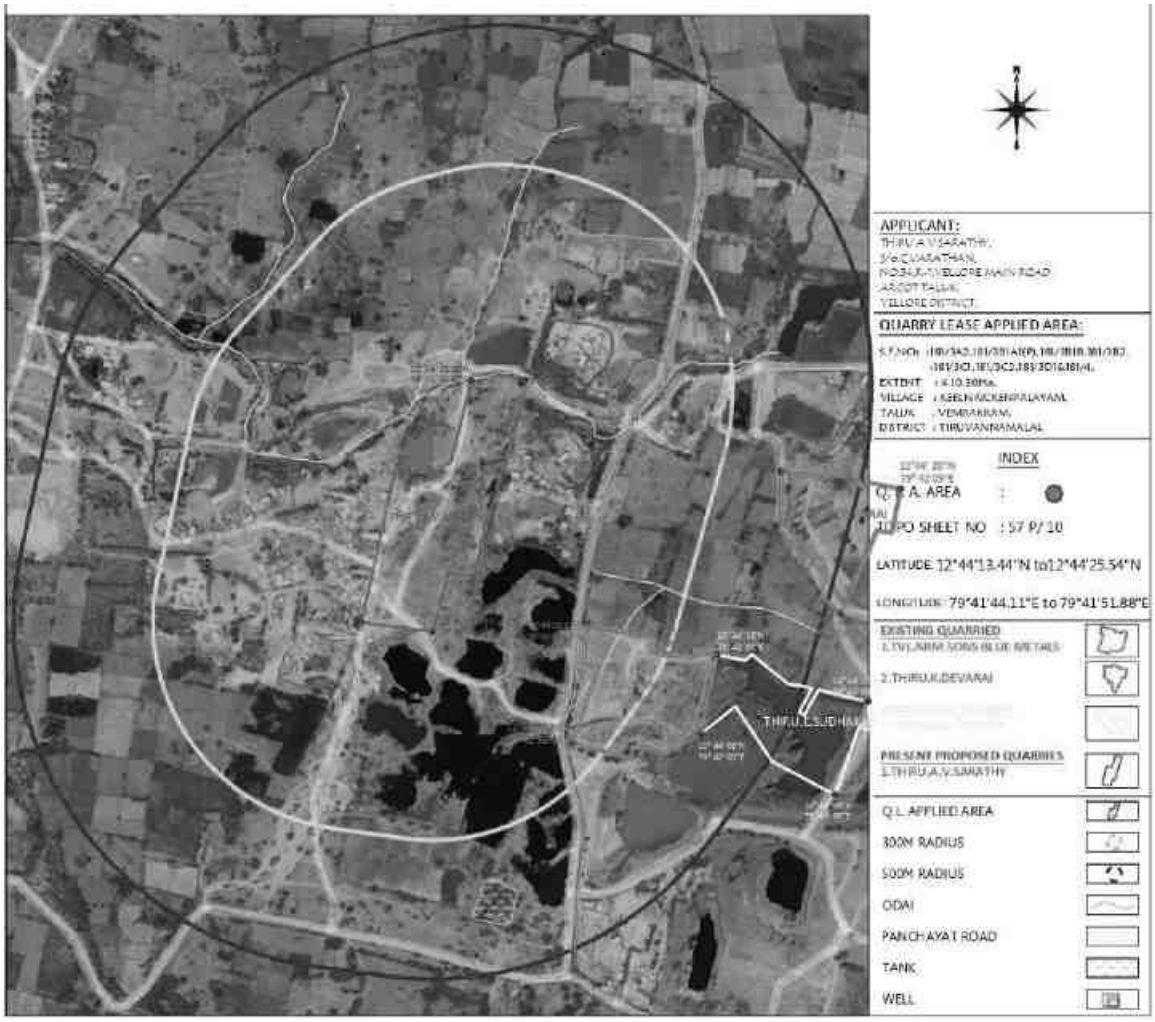

Figure 2.1 Satellite Image showing cluster quarries

1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

1.2.1 IDENTIFICATION OF PROJECT

Table -1.2 Project Identification

Name of the Project	Thiru. A.V. Sarathy Rough Stone & Gravel Quarry
S.F No.	181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4
Location of the Project	Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu
Extent	4.10.30 Ha.
Type of Land	Patta Land

1.2.2 IDENTIFICATION OF PROJECT PROPONENT

Table -1.3- Details of Project Proponent

Name of the Project Proponent	Thiru.A.V. Sarathy
Communication address	S/o. C. Varathan No-34, R-1, Vellore Main Road, Arcot Taluk, Vellore District
	avsarathy23@gmail.com
Mobile No.	6382207708

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 semi Mechanized Mining Method by jack hammer drilling, slurry blasting by forming 5.0

m bench height and 5.0 m bench width. Excavator and tippers are proposed for Loading and transportation.

1.3.2 NATURE OF THE PROJECT

Sector	1(a) Non-Coal Mining
Type	Fresh Project
Category	B1 (Cluster Situation)
Mineral	Minor mineral of Rough Stone and Gravel

1.3.3 LOCATION OF PROJECT

The proposed Quarry lease area is situated at S.F.Nos. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4, Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu . The area lies in the north latitude of **12°44'13.44"N to 12°44’25.54"N** and eastern longitude of **79°41'44.11"E to 79°41'51.88"E.** Location of the proposed project is shown in Figure 2.1 and the satellite imagery of the project site is shown in Figure 2.4.

1.4 IMPORTANCE OF THE PROJECT TO THE REGION

Gravel and Rough stone will continue to be a staple in construction, decoration and industry for years to come. As recycling picks up, mining and quarries may slow down, but we will always need rough stone in general construction and industry.

Natural gravel is often used in walkways, driveways and decorative hardscaping for several reasons.

1.5 REGULATORY COMPLIANCES

Understanding of the applicable environmental legislative framework is crucial for understanding the scope of the EIA study. With respect to prevention and control of environmental pollution, the following Acts and Rules of MoEF&CC (Ministry of Environment Forests and Climate Change), GoI (Government of India) govern the proposed project. The applicable environmental legislation for the proposed mining project is detailed below,

- Environment protection Act, 1986
- EIA Notication, 2006 & Subsequent amendments
- Water Pollution (Prevension & Control) Act, 1974
- Air Pollution (Prevention & Control) Act, 1981
- Noise Pollution (Regulation 7 Control) Rules, 2000
- Mines Act,1952
- Tamil Nadu Minor Mineral Concession Rules, 1959
- Mines and Minerals (development and regulation) Act,1957
- Minor Minerals Conservation and Development Amendment Rules 2018
- State Minor Mineral Concession Rules (GMMCR), 2017
- Explosive Act ,1884
- Explosive Rules,2008
- Hazardous and other Wastes (management and Transboundry Movement) Rules, 2016
- Batteries (Management and Handling) Rules 2010
- Solid Waste Management Rule 2016

1.5.1PRESENT LEGAL STATUS

Table 1.4 – Present Legal Status

Description	Issuing Authority	Status	Letter Number	Date	Reference
Precise Area Communication	Deputy Director, Dep. Of Geology & Mining, Tiruvannamalai	Received	RC.NO. 144/kanimam/2022	21.12.2022	Annexure – 1
Mine Plan Approval	Deputy Director, Dep. Of Geology & Mining, Tiruvannamalai	Approved	RC.NO.144/kanimam/2022	06.01.2023	Annexure – 2
District Survey Report	Collector, Assistant Director, Geology & Mining	Authenticated	As per S.O.3611(E),dated 25.07.2018	-	-
Details of other leases within 500m radius	Deputy Director, Dep. Of Geology & Mining, Tiruvannamalai	Obtained	RC.NO. 144/kanimam/2022	06.01.2023	Annexure – 3
NOC for features within 500 m radius	VAO, Keelnaickenpalayam	Obtained	-	17.01.2023	Annexure – 4

1.5.2 SCREENING

As per the Environmental Impact Assessment (EIA) Notification dated 14th September 2006 and its subsequent amendments the proposed quarry mining project falls under 'Category B1(Cluster Situation)', which requires Environmental Clearance from the State Environmental Impact Assessment Authority (SEIAA). The project proponent has appointed M/s. Global Mining Solutions, Salem, who are accredited by the National Accreditation Board for Education and Training (NABET), Quality Council of India (QCI), New Delhi, under the registration number NABET/EIA/2326/IA 0110. Their role is to carry out an Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) study in compliance with the Ministry of Environment, Forest and Climate Change (MoEF & CC) requirements.

1.5.3 SCOPE OF THE STUDY

In line with the prescribed Terms of Reference (TOR), the area comprising 10 km radius around the proposed mine lease boundary is considered as the study area. The EIA/EMP report has been prepared following the generic structure specified in the EIA Notification 2006. The detailed studies have been conducted as per prescribed Standard TOR issued by SEIAA, TamilNadu vide Lr.No.SEIAA-TN/F.No.9767/SEAC/ToR-1448/2023, dated: 09.05.2023.The point wise compliance for the ToR has been incorporated in this EIA/EMP report.

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 this applied project area. 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 Period of March to May 2023 for various environmental components so as to assess the anticipated impacts due the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to this proposed project.

The scope of study broadly covered as below,

- Literature review and collection of secondary data relevant to the study area.
- Establish the baseline environmental aspects in and around the proposed project covering 10 km radius.
- Identify various existing pollution loads due to various mining activities.
- Predict incremental levels of pollutants in the study area due to the proposed operations.
- Establishing and analyzing demographic profile including sex ratio, literacy rate, SC/ST, workers classification, land use categorization, etc in the project influenced area

- Evaluate the predicted impacts on various environmental attributes in the study area by using scientifically developed and widely accepted environmental impact assessment methodologies.
- Prepare an Environment Management Plan (EMP) outlining the measures for improving the environmental quality and identify critical environmental attributes that are required to be monitored in the post-project scenario.
- To assess the impacts on human settlement in the project influence area Socio-Economic Assessment
- Cumulative impact assessment for the quarries in cluster.

1.6 NEED AND JUSTIFICATION OF THE PROJECT

- Proposed mining project will fulfill the local market requirement for real estate and infrastructure industry. This project will also provide employment to local people helping them earn livelihood.
- Employment generated consequent to the mining activity in the project will be benefit local and rural population and will have multiplier effects on local economy.
- The Project will give tremendous boosts to the local and regional economy benefiting the population.
- The social benefits arising out of this proposal can be expressed in terms of increase in the standards of living of local population, educational opportunities, training and development of skills etc.

1.7 STRUCTURE OF THE REPORT

As per the new guidelines of the MoEF & CC the report has been divided into the following chapters and presented as follows:

1. Introduction

This chapter describes the profile of the project proponent, name and contact address with email, project consultants, the purpose of the project, brief

description of the project, applicable environmental regulations, objectives and methodology for EIA studies etc.

2. Project Description

This chapter gives a brief description of the project such as the type of project, need for the project, its location, approachability, layout, etc of the proposed project, the project implementation schedule, estimated cost of development etc

3. Description of the Environment

This chapter presents details of the baseline environmental status for microclimate, air quality, noise, water quality (surface and ground), soil quality, flora, fauna and socioeconomic status etc.

4. Anticipated Environmental Impacts & Mitigation Measures

This chapter discusses the possible sources of pollution and environmental impacts due to the project during operation phases and suggests the mitigation measures.

5. Analysis of Alternatives (Site And Technology)

This chapter discusses the analysis of the various alternatives for the technology as well as the site and gives the selection of the most feasible alternative.

6. Environmental Monitoring Program

This chapter discusses the details about the environmental monitoring program during operation phases. The technical aspects of monitoring the effectiveness of mitigation measures are covered in this chapter.

7. Additional Studies

This chapter covers information about the additional studies conducted for this project such as the Risk Analysis, Emergency Response and Disaster Management Plan.

8. Project Benefits

This chapter presents the benefits from this project

9. Environmental Management Plan

This chapter deals with the EM for the proposed sand mining projects and indicates the measures proposed to minimize the likely impacts on the environment during and operation phases and budgetary allocation for the same.

10. Summary and Conclusion

This chapter deals with the overall justification for implementation of the project and explanation of how, adverse effects have been mitigated.

11. Disclosure of Consultant

This chapter deals with the details of consultants engaged and the NABET accreditation details of environmental consultants.

****

2.0 PROJECT DESCRIPTION

2.1 TYPE OF THE PROJECT

The proposed activity is the extraction of Rough Stone and Gravel by open cast semi mechanized mining method.

This project proposed to produce 4,71,330m3 of Rough Stone, 57,622m3 of Weathered Rock and 60,678m3 of gravel formation and for the period of 5 years with ultimate depth upto 44m.

2.2 LOCATION OF THE PROJECT

This is a Rough Stone and Gravel Quarry located in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State. The area lies in the north latitude of **12°44'13.44"N to 12°44’25.54"N** and eastern longitude of **79°41'44.11"E to 79°41'51.88"E and toposheet number 57 P/9,10,13 & 14.** Location of the proposed project is shown in Figure 2.1 the satellite imagery of the project site is shown in Figure 2.4.

This proposed project area is classified as Patta land jointly registered in the name of Thiru. Sarathy and Thiru. Ruthrasekar vide patta no. 452, the applicant has obtained consent from pattadar (Annexure IV & VII of Mine Plan Report) & does not fall within 10 km radius of any Eco – sensitive zone, Wild life Sanctuary, National Park, Tiger Reserve, Elephant Corridor and Biosphere Reserves. The M.L area details are presented in below Table.

Table 2.1 Mine Lease Area and its Ownership

Village	Survey No.	Patta No	Area in Ha.	Ownership
Keelnaickenpalayam	181/3A2	452	0.93.52	Patta land jointly registered in the name of Thiru. Sarathy and Thiru. Ruthrasekar vide patta no. 452, the applicant has obtained consent from pattadar (Annexure IV & VII of Mine Plan Report)
	181/3B1A1(P)		0.48.78	
	181/3B1B		0.20.00	
	181/3B2		0.17.00	
	181/3C1		0.83.12	
	181/3C2		0.32.38	
	181/3D1		0.83.12	
	181/4		0.32.38	
Total Area			4.10.30	

Table 2.2 Site Connectivity

Nearest Roadway	The Nearest National Highway (NH-48) Chennai – Krishnagiri which is about 15.0Km on the Northern side of the area. The State Highway (SH-116) Kanchipuram – Vandavasi is about 2.7Km on Southern side of the area.
Nearest Village	Valavandal - 700m – NW Girijapuram - 1.3km - NE Bagavandapuram - 1.7Km – SE Narasamangalam - 1.8Km-SW
Nearest Railway	Kanchipuram – Chengalpattu line - 10.5Km on the Northeastern side of the area.
Nearest Airport	Chennai – 59.0 Km – NE

Table 2.3 Boundary Coordinates of the Project

Corners	Co- ordinates	
	Latitude	Longitude
1	12° 44' 13.89'N	79° 41' 44.11"E
2	12° 44' 21.18'N	79° 41' 45.73"E
3	12° 44' 20.82'N	79° 41' 47.40"E
4	12° 44' 21.41'N	79° 41' 48.39"E
5	12° 44' 25.16'N	79° 41' 49.37"E
6	12° 44' 25.54'N	79° 41' 50.74"E
7	12° 44' 25.19'N	79° 41' 51.88"E
8	12° 44' 24.42'N	79° 41' 51.87"E
9	12° 44' 16.09'N	79° 41' 49.47"E
10	12° 44' 16.15'N	79° 41' 48.24"E
11	12° 44' 13.44'N	79° 41' 47.49"E

2.3 LAND USE PATTERN OF THE PROJECT AREA

The entire project site is Patta land jointly registered in the name of Thiru. Sarathy and Thiru. Ruthrasekar vide patta no. 452, the applicant has obtained consent from pattadar (Annexure IV & VII of Mine Plan Report). The land use pattern of the mine lease area as of today and conceptual stage given in Table No. 2.4.

Table 2.4 Land use pattern of the Project area

Description	Present Area in Ha.	Area at the end of life of Quarry in Ha.
Quarrying pit	NIL	3.10.00
Infrastructure	NIL	0.02.00
Roads	NIL	0.02.00
Greenbelt	NIL	0.40.00
Unutilized	4.10.30	0.56.30
Total	4.10.30	4.10.30

A canal passing on northern side of the S.F.No.181/2, for which 50 m safety distance maintained.

2.4 SIZE AND MAGNITUDE OF THE OPERATION

The proposed activity is the extraction of Rough Stone and Gravel by open cast semi mechanized mining method over an extent of 4.10.30 Ha and to produce 4,71,330m3 of Rough Stone,57,622m3 of Weathered Rock and 60,678m3 of gravel formation for the period of 5 years with ultimate depth upto 44 m. The details of geological and mineable reserves in the lease area has been provided below in the subsequent sub section.

2.5 TOPOGRAPHY AND DRAINAGE

The area applied for quarry lease is exhibits almost plain topography covered by Gravel formation. The massive Charnockite formation is noticed below 2m (Avg) Gravel and 2m weathered rock formation and sloping towards Southeastern side of the area, the altitude of the area is above 104m (maximum) from MSL. No major river is found nearby the applied area.

2.6 GEOLOGY

2.6.1 REGIONAL GEOLOGY

The geology of the district is mainly underlain by the rocks belonging to hard crystalline rock masses of Archaean age. The Archaean rocks in this area are represented by rocks of eastern ghat complex comprising Charnockites, Migmatite complex of composite gneiss. The entire area is covered by metamorphic crystalline rocks of Charnockite, composite gneiss of Archaean age. These rocks are highly metamorphosed and have been subjected to sever folding, crushing and faulting. Charnockites group is occupied by North and Southern part of the Tondiar River Basin. The other rock type is encountered by composite granitic gneiss of epidote hornblende biotite gneiss and hornblende biotite gneiss are occupy in the middle portion of the basin. Charnockite group occupies the high ground as well as plain and it is poorly weathered and jointed. They are generally black grey to dark grey in colour medium to coarse grained texture, and generally massive and un-foliated. A gneissic rock occurs as linear bands in the middle portion of the area and is highly migmatised. Mostly, micaceous with bands of granites, pegmatites, quartz veins and the rock are well foliated. The Hornblende biotite gneiss forms the country rock of the area and epidote hornblende gneiss (Proterozic age) occurs as small isolated outcrops. The crystalline formations are Charnockite; Granitic Gneiss of Archean ages have been intruded by dolerite dykes and pegmatite veins. These rocks are highly metamorphosed and have been subjected to very severe folding, crushing and faulting. The crystalline rocks are subjected to tectonic activities under various orogenic cycles resulting in the development of secondary structures such as joints, fissures and cleavages.

2.6.2 LOCAL GEOLOGY

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

and calc-gneisses. The younger formations are Quartz veins and pegmatite. The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high- grade metamorphic rock.

The strike of the Charnockite formation is $N45^0W$ – $S45^0E$ with dipping towards $NE70^0$. The general geological succession of the area is given as under.

Age	Rock Formation
Recent to Sub recent	Alluvium, Gravel
Archaean	Charnockite
Archaean	Peninsular Gneiss and Calc Gneiss

2.7 RESOURCES AND RESERVES

The Resources and Reserves of Rough Stone and Gravel were calculated based on Cross-Section Method to cover the maximum lease area.

Table 2.5 Available Geological Resources

Geological Resources	Rough Stone	Gravel	Weathered Rock
	16,35,960m^3	81,798m^3	81,798m^3

2.7.1 MINEABLE RESERVES

The mineable reserves are calculated by considering bench formation and leaving 7.5 m (Safety Barrier all around the applied area) and 50 m (Canal in northern side) safety distance in applied lease areas.

Table 2.6 – Available Mineable Reserves

Mineable Reserves	Rough Stone	Gravel	Weathered Rock
	4,71,330m^3	**60,678m^3**	**57,622m^3**

2.8 PROCESS DESCRIPTION AND TECHNOLOGY

2.8.1 PROCESS DESCRIPTON

The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough stone to the needy buyers. The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.

- Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy buyers.
- Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting.
- The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators.

The process diagram is provided in Figure 2.8. The Geological and production plan and cross section for the 5 years period and conceptual plan and conceptual cross section is given in Figure No. 2.8 to Figure No. 2.12.

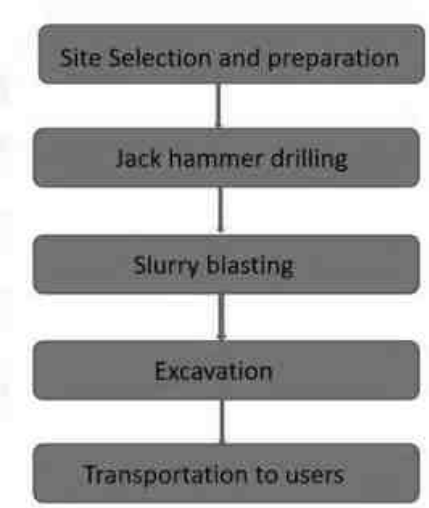

Figure 2.1 Process Flow Diagram

Table 2.7 – Machinery Details

S.NO	Name of the Equipment	Capacity	Requirement
1	Excavator with Rock breaker attachment	0.90 m3	1
2	compressor	400 psi	3
3	jack hammer	1.2m to 6m	10
4	Tipper	5/10 T	4

2.8.2 DRILLING AND BLASTING PARAMETERS

Drilling and Blasting will be carried out as per parameters given below,

Diameter of the hole	32-36 mm
Spacing	0.6m
Depth	1 to 1.5 m
Burden of hole	0.6m
Pattern of hole	Zigzag
Inclination of hole	70^0 from horizontal
Number of holes	272
Powder factor	6Ts/Kg of Explosives
Total explosive required	136Kg slurry Explosives
Charge / hole	0.5Kg
Blasting time	12-2 Pm

2.8.3 TYPE OF EXPLOSIVE

Slurry explosive is proposed for shattering and heaving effect for removal of rough stone. No deep hole drilling or primary blasting is proposed. The Project Proponent have agreement with A.R. Enterprises to carry out the blasting operation for the proposed quarry. The Blasting Agreement is enclosed as Annexure – 7.

2.8.4 STORAGE OF EXPLOSIVES

No proposal for storage of explosives within the project area, the applicant will engage authorized explosive agency to carry out the blasting and it will be

supervised by competent and statutory foreman / mines manager as per DGMS guidelines.

2.8.5 PRODUCTION SCHEDULE

The year wise production schedule upto lease period of 5 years is given below, the year wise production is given in Figure 2.9.

Table 2.8 Year wise Production Plan

Year	Rough stone in m^3	Gravel in m^3	Weathered Rock in m^3
I	94050	44802	42862
II	94800	15876	14760
III	94500	-	-
IV	94260	-	-
V	93720	-	-
Total	**471330**	**60678**	**57622**

2.8.6 DISPOSAL OF WASTE

There is no waste anticipated in this rough stone and gravel Quarry. The entire quarried minerals will be utilized.

2.9 CONCEPTUAL MINING PLAN / FINAL MINE CLOSURE PLAN

Conceptual mining plan is prepared with an object of five years of systematic development of bench layouts, selection of ultimate pit limit, depth of quarrying, ultimate pit slope, 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. Conceptual cross section and mine closure plan is given in 2.11 & 2.12.

Table 2.9 - Ultimate Pit Dimension

Pit	Length in m (Max)	Width in m (Max.)	Depth in m (Max.)
I	313	99	44

- At the end of life of mine, the excavated mine pit / void of 3.10.0 Ha. 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 (0.40.0 Ha.) will be developed along the safety barrier and top benches and 0.04 ha are approach road and Infrastructure.
- Remaining 0.56.30 ha. of land will be covered with vegetation.

2.10 PROJECT REQUIREMENT

2.10.1 WATER REQUIREMENT AND SOURCE

The total water requirement estimated for the quarry is 3.5 KLD. The required water will be procured from outside agencies initially and later rainwater harvested in the mine pit shall be used other than drinking purpose.

Table 2.10 Details of Water requirement

Activity	Water Requirement in KLD
Drinking & Domestic	1.0
Dust Suppression	1.5
Greenbelt Development	1.0
Total	3.5

2.10.2 POWER REQUIREMENT

All the equipment will be diesel operated. No electricity is needed for mining operation. The minimum power requirement for office, etc will be met from state grid.

2.10.3 FUEL REQUIREMENT

High speed Diesel (HSD) will be used for mining machineries.

i) For Gravel

Per hour excavator will consume	10 liters /hr
Per hour excavator will excavate	100 m3 of top gravel
For 60,678m3	60,678/100

	= 607
So, Diesel consumption	=607 X 10 litres
	=6070 litres of HSD

ii) For Rough Stone

Per hour excavator will consume	16 liters /hr
Per hour excavator will excavate	50 m3 of Rough Stone
For 4,71,330m3	4,71,330/50 = 9427
So, Diesel consumption	=9427 X 16 litres
	=1,50,832 litres of HSD

iii) For Weathered Rock

Per hour excavator will consume	10 liters /hr
Per hour excavator will excavate	100 m3 of Weathered Rock
For 57,622m3	57,622/100 = 577
So, Diesel consumption	=577 X 10 litres
	=5770 litres of HSD

The Total fuel consumption is around 1,62,672 litres of HSD for the entire period of life (5 years).

2.10.4 EMPLOYMENT GENERATION

The project will provide employment opportunities totally to 27 persons directly and 30 indirectly.

Skilled	Operator	10 Nos
	Mechanic	1 No
	Mines Manager	1 No
	Fore Man / Mate	1 No
Semi-Skilled	Driver	4 Nos
Unskilled	Labours	10 Nos
Total		**27 Nos**

2.10.5 INFRASTRUCTURE REQUIREMENT

This is a proposed project. Site services like mine office, first aid room, toilets etc. will be provided as semi-permanent structures.

2.10.6 PROJECT COST

The total project cost of this Rough stone and Gravel Quarry is Rs. 96,11,800/-.

2.10.7 PROJECT IMPLEMENTATION SCHEDULE

The proponent proposes to implement the production immediately after obtaining all the statutory approvals. The commercial operation will commence after the grant of Environmental Clearance. CTO and CTE 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.

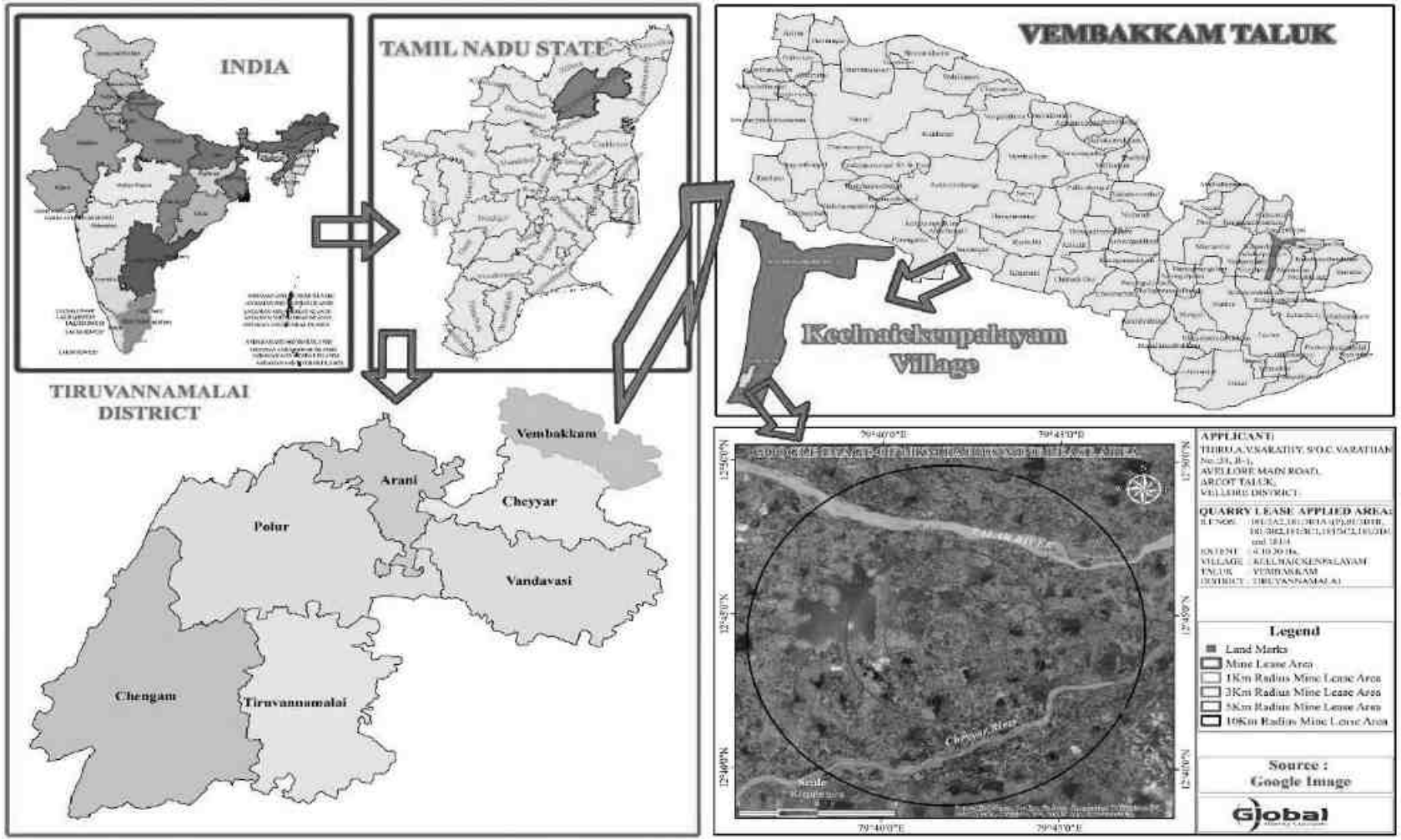

Figure 2.2 Location Map

Figure 2.3 Key Map showing Connectivity of the project

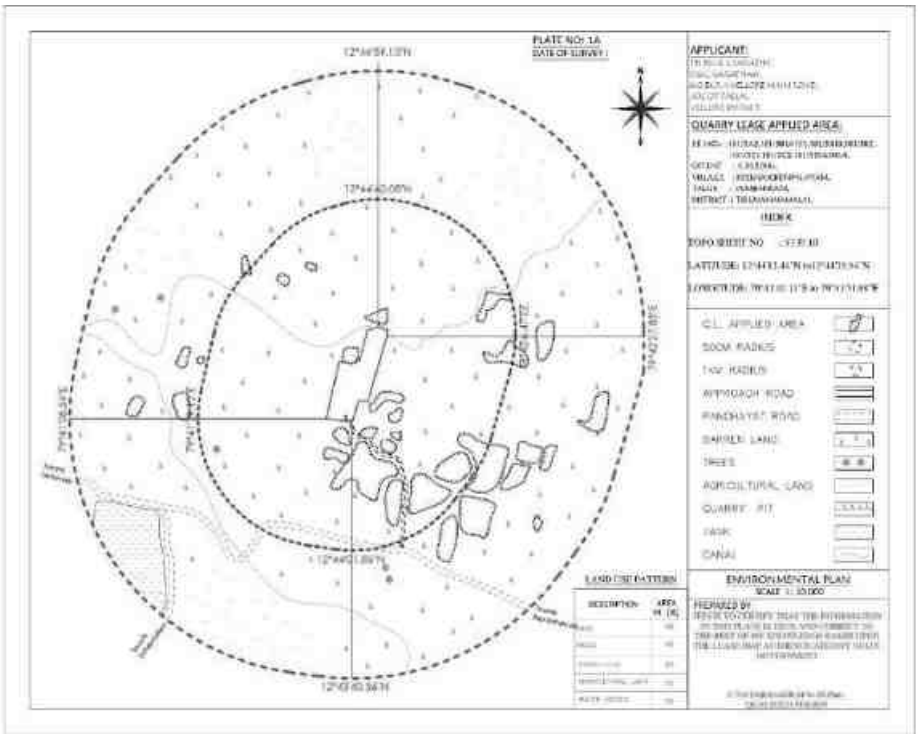

Figure 2.4 Surrounding Features of the project area

Figure 2.5 Lease Plan

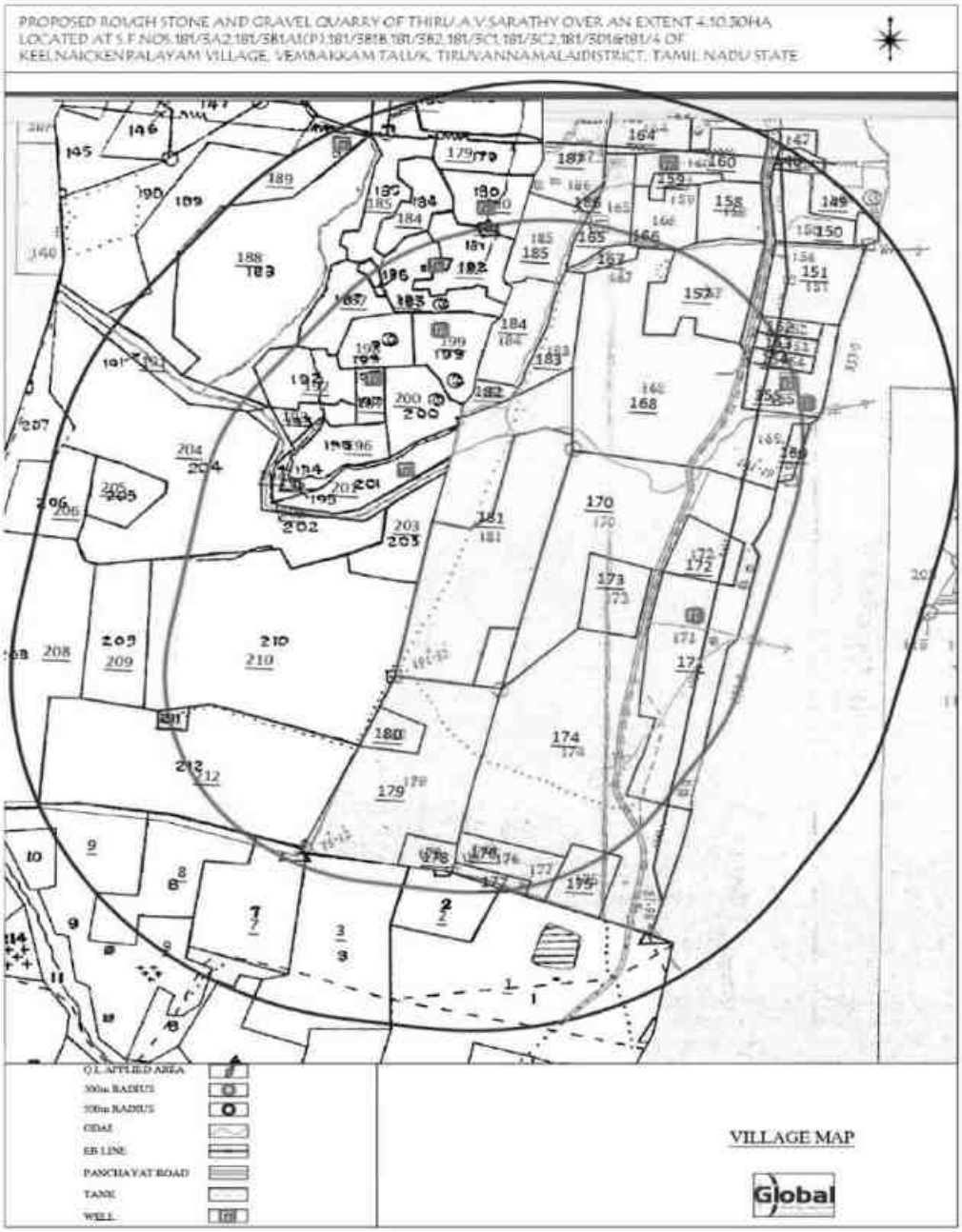

Figure 2.6 Village Map

Corners	Co- ordinates	
	Latitude	Longitude
1	12° 44' 13.89'N	79° 41' 44.11"E
2	12° 44' 21.18'N	79° 41' 45.73"E
3	12° 44' 20.82'N	79° 41' 47.40"E
4	12° 44' 21.41'N	79° 41' 48.39"E
5	12° 44' 25.16'N	79° 41' 49.37"E
6	12° 44' 25.54'N	79° 41' 50.74"E
7	12° 44' 25.19'N	79° 41' 51.88"E
8	12° 44' 24.42'N	79° 41' 51.87"E
9	12° 44' 16.09'N	79° 41' 49.47"E
10	12° 44' 16.15'N	79° 41' 48.24"E
11	12° 44' 13.44'N	79° 41' 47.49"E

Figure 2.7 Google image showing Corner Coordinates of the project site

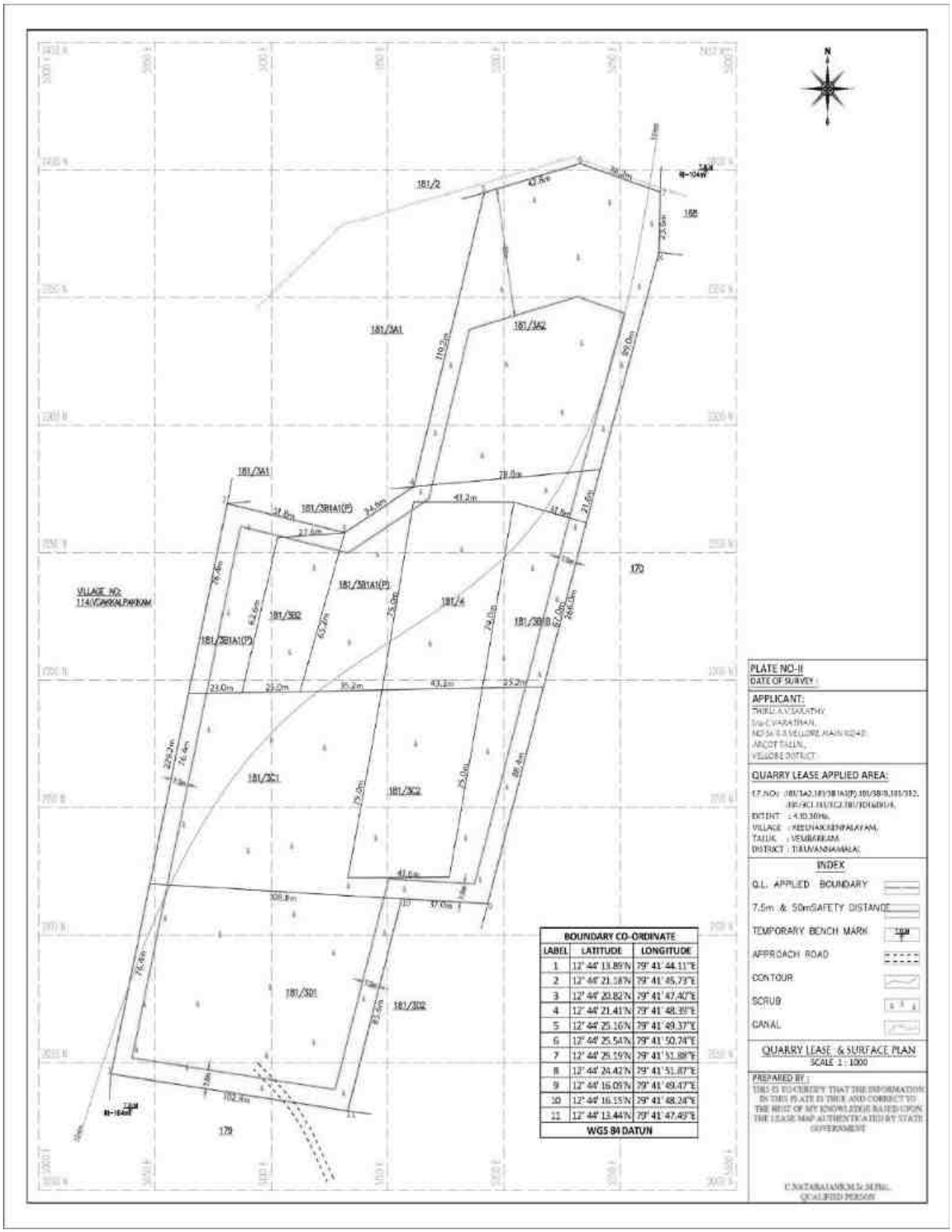

Figure 2.8 Surface Plan

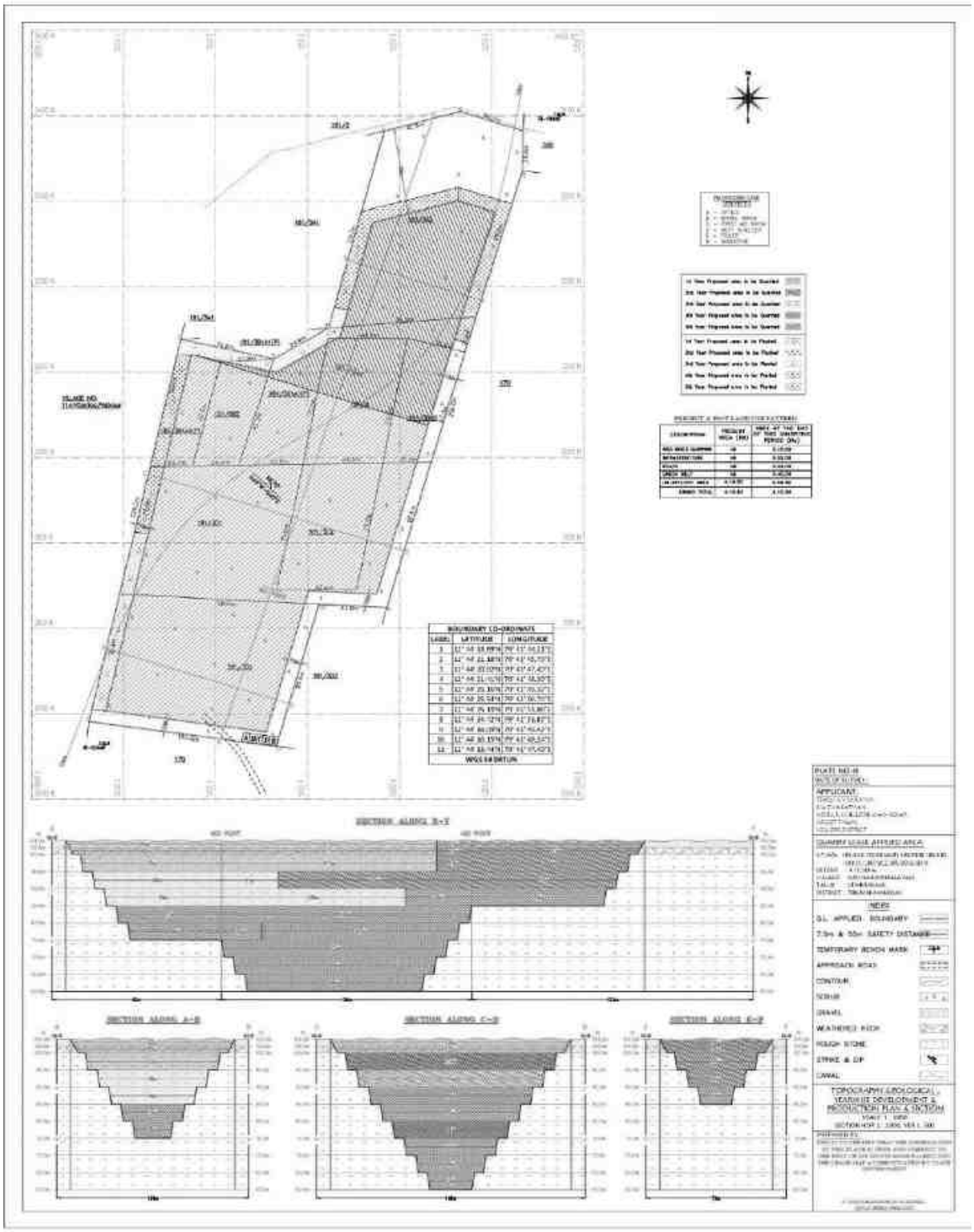

Figure 2.9 Year wise Production Plan and Sections

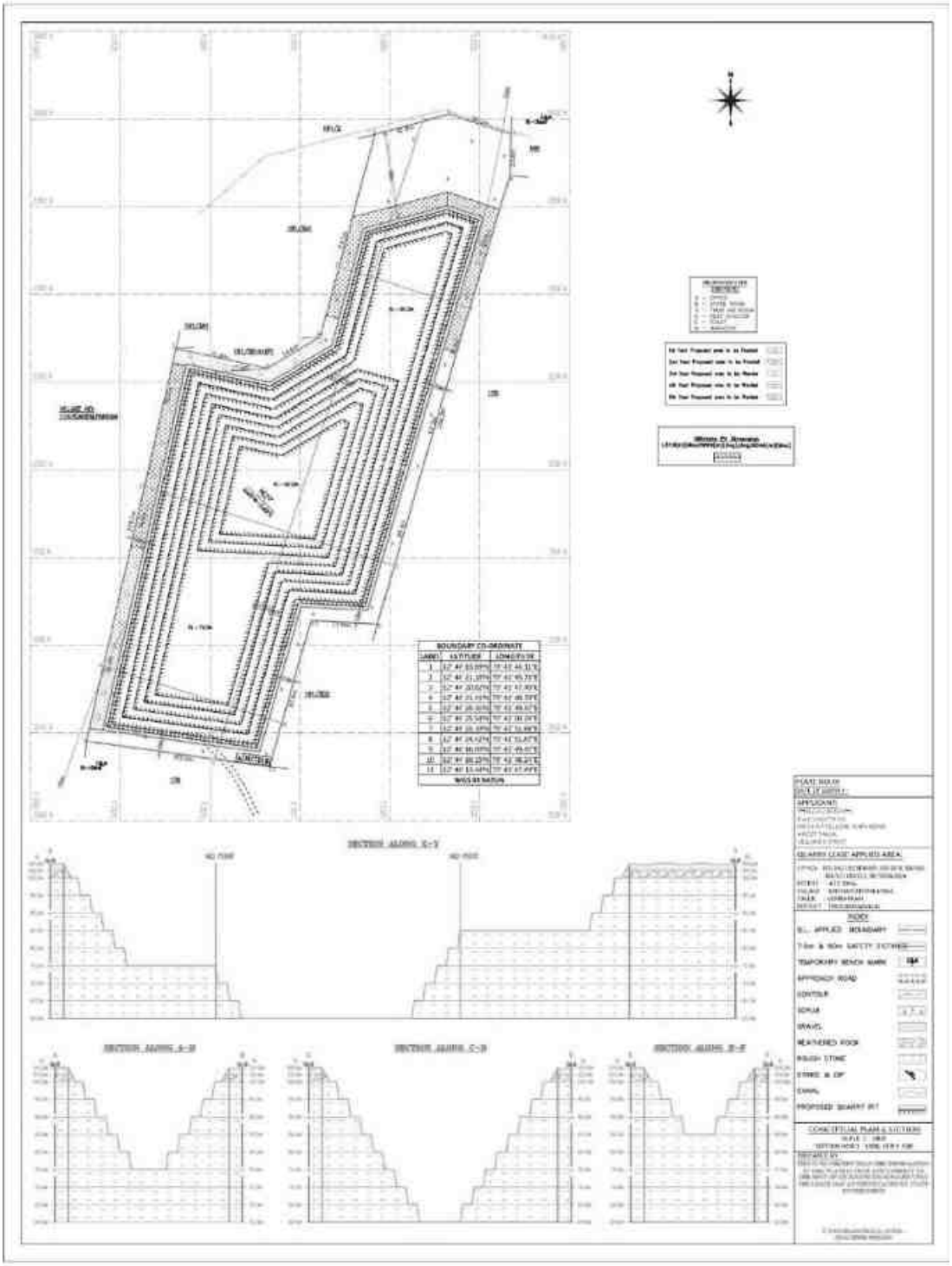

Figure 2.10 Conceptual Plan and Sections

3.0 DESCRIPTION OF THE ENVIRONMENT

3.1 INTRODUCTION

As a precursor for the prediction of various types of environmental impacts likely to arise due to implementation of the project, it is essential to establish the baseline environmental setting of the project. Details of the baseline environmental parameters are required for decision making for the project design, implementation and operation from the environmental point of views. The data is to be generated through primary data collection (direct monitoring) and secondary sources (published data).

This chapter describes the environmental baseline data of core zone and surrounding areas of the project. The environmental baseline data includes the physical environment (comprising climate & meteorology, air, water, Noise and land components), biological environment and socio-economic environment, which may get affected due to the this proposed project.

3.2 STUDY AREA

The study area has been divided into two zones, namely, core and buffer zones. Core zone is considered as the total lease area of mine lease, while buffer zone encompasses an area of 10 km radius distance from the periphery of core zone. This chapter incorporates the description of existing environmental status in an area encompassed within 10 km radius from the boundary of mine lease. The environmental data for the following Environmental components were collected in the study area:

- Micro-meteorological monitoring in one of the representative locations.
- Ambient air quality study comprising gaseous, particulate matter at 5 different locations.
- Water quality analysis in 5 different locations.
- Noise levels monitoring in 5 different locations

- Soil quality analysis in 3 locations.
- Flora & Fauna status.
- Land use & Land Cover.
- Hydrological study.
- Socio-economic survey.

3.3 STUDY PERIOD

The above-mentioned studies have been carried out systematically and meticulously as per relevant IS codes, CPCB, MoEF&CC guidelines during March to May 2023.

3.4 MONITORING LAB

The baseline information for air, water, noise, and soil was analysed by M/s. Swasti Enviro Solutions Pvt Ltd, # J-86, Bharathi Street, Pari Nagar, Jafferkhanpet, Ashok Nagar (Accreditated by NABL as ISO/IEC/17025:2017) between March and May of 2023.

3.5 ENVIRONMENTAL SETTINGS OF THE PROJECT

The Environmental settings of the project covering 10km radius of study area is given in Table 3.1. The study area map is given in Figure- 3.1 and satellite image showing 500 m radius is given in Figure 3.3.

Table 3.1 Environmental Settings of the Study Area – 10 km radius

S.NO	Particulars	Description
1.	Latitude & Longitude	Latitude: 12°44'13.44"N to12°44'25.54"N Longitude: 79°41'44.11"E to 79°41'51.88"E
2.	The altitude of the area	104 m from MSL
3.	Topography	Plain Terrain
4.	Land use of M.L. area	Barren Patta Land
5.	Extent of the Lease area	4.10.30 Ha.
6.	Nearest Highway	The National Highway (NH-48) Chennai – Krishnagiri - 15.0Km - N.

		The State Highway (SH-116) Kanchipuram – Vandavasi - 2.7Km - S.
7.	Nearest Railway Station	Kanchipuram – Chengalpattu line - 10.5Km, N.
8.	Nearest airport	Chennai – 59.0 Km – NE
9.	Nearest Village	Valavandal - 700m – NW Girijapuram - 1.3km - NE Bagavandapuram - 1.7Km – SE Narasamangalam - 1.8Km-SW
10.	Water Bodies	**Core Zone** A canal passing on northern side of the S.F. No. 181/2 for which 50m safety distance maintained. **Buffer Zone** Canal – 2.1 km, N Canal – 5.8 km, (SE) Mamandur Tank – 3.7 km, W Palar River- 5.8 km, N Cheyyar River – 6.4km, (SE) Vegavati River – 8.7 km, N
11.	Historical Places/Places of Tourist/ Archeological site	Mamandur Cave – 3.3 km, W
12.	Environmental Sensitive areas, Protected areas , National Park/ Wildlife Sanctuaries/Biosphere Reserves/Tiger Reserves/Migratory Corridors; Migratory routes etc	NIL within 10 km radius
13	Other Industries	Other than few rough stone quarries & crusher, there are no other industries in the nearby region.
14	Seismic Zone	Zone II
15	Reserved/Protected Forest	NIL within 10 km radius
16	Interstate boundary	NIL

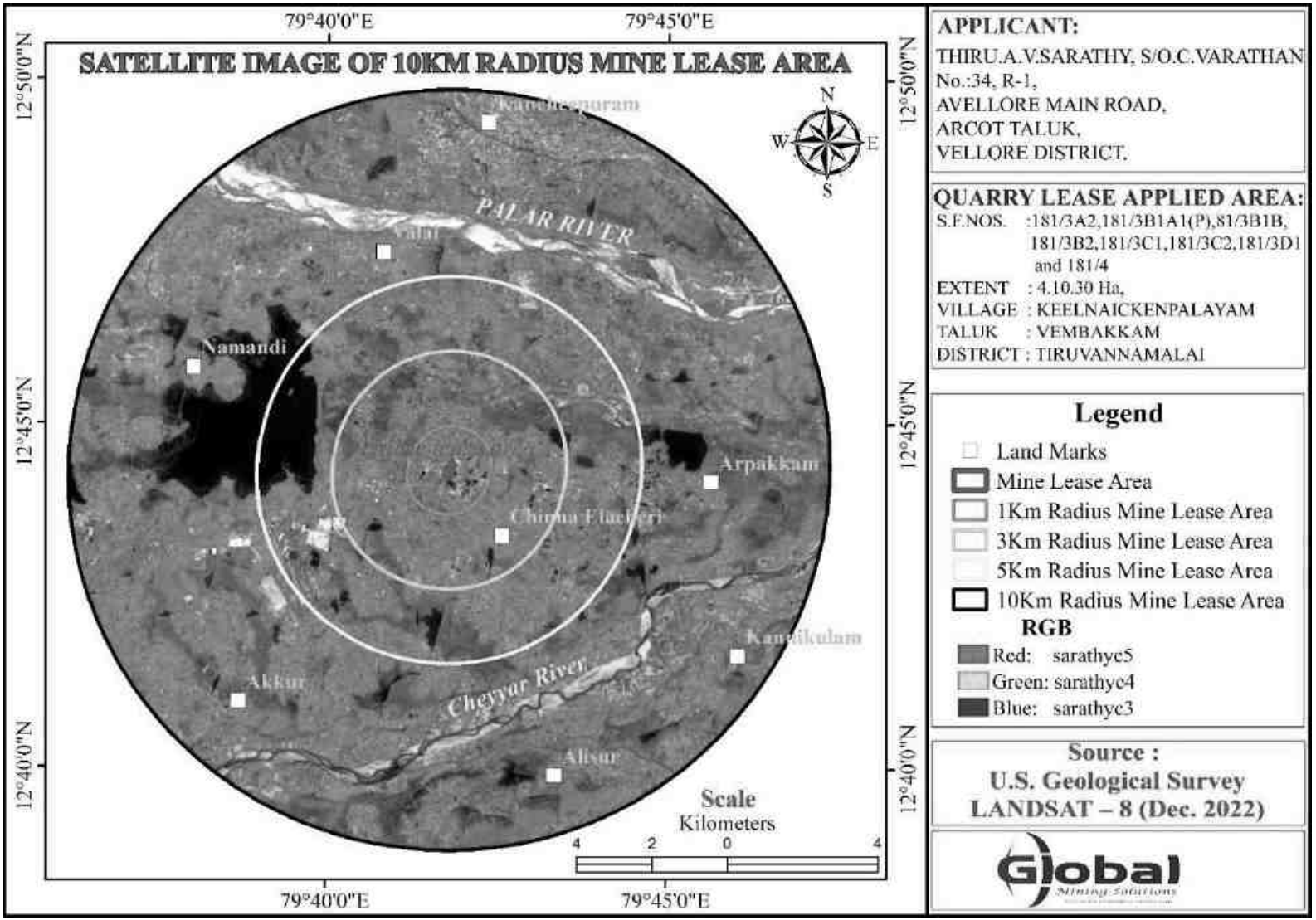

Figure 3.1 Satellite Image of the Study Area

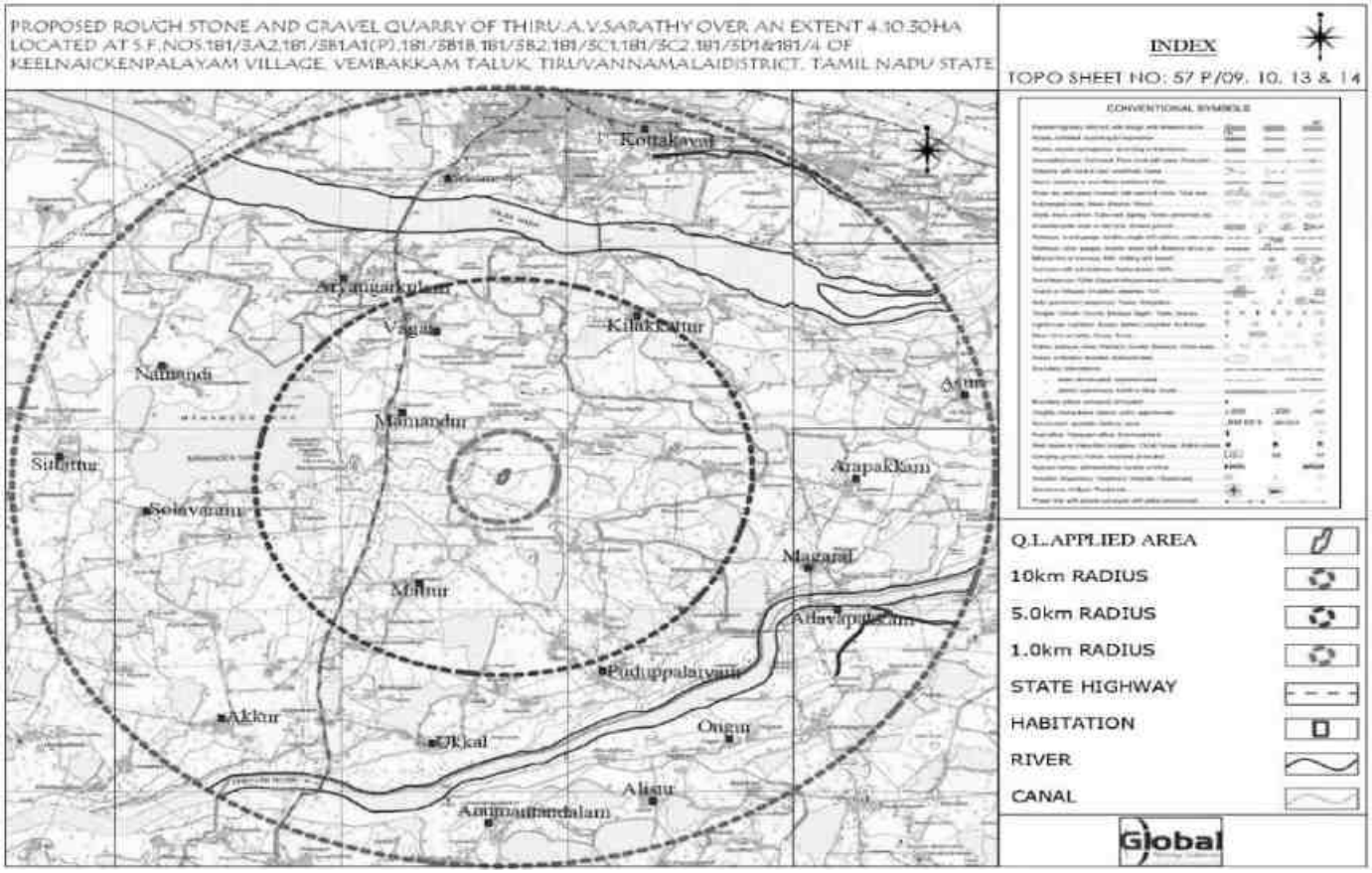

Figure 3.2 Topo map Showing Study Area

Figure 3. 3 Satellite Image showing 500 m radius

3.6 EXISTING ENVIRONMENTAL SCENARIO

3.6.1 MICRO- METEOROLOGY

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.

3.6.1.1 CLIMATE AND RAINFALL DATA

Tiruvannamalai has a tropical climate. The summers are much rainier than the winters in Tiruvannamalai. This location is classified as Aw by Köppen and Geiger (Aw, or the tropical wet and dry climate, also known as the savanna climate, where there is an extended dry season during the winter. During the wet season, rainfall is less than 1000mm, occurring mainly in the summertime). The average annual temperature is 27.4 °C | 81.3 °F in Tiruvannamalai. The district receives rainfall from North East and South West monsoons.

Table 3.2 Rainfall Data

Actual Rainfall in mm					Normal Rainfall in mm
2017	2018	2019	2020	2021	
1251.3	799.2	1071.9	1034.5	1592.2	985

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.

Table 3.3 Meteorological Data Recorded at Site

25	Parameters		March 23	April 23	May 23
1.	Temperature (0C)	Min	19	24	25
		Max.	40	43	45
		Avg	28	31	33
2.	Relative Humidity (%)	Avg	65	60	59
3.	Wind Speed (km/h)	Min	0	17	1
		Max	28	33	38

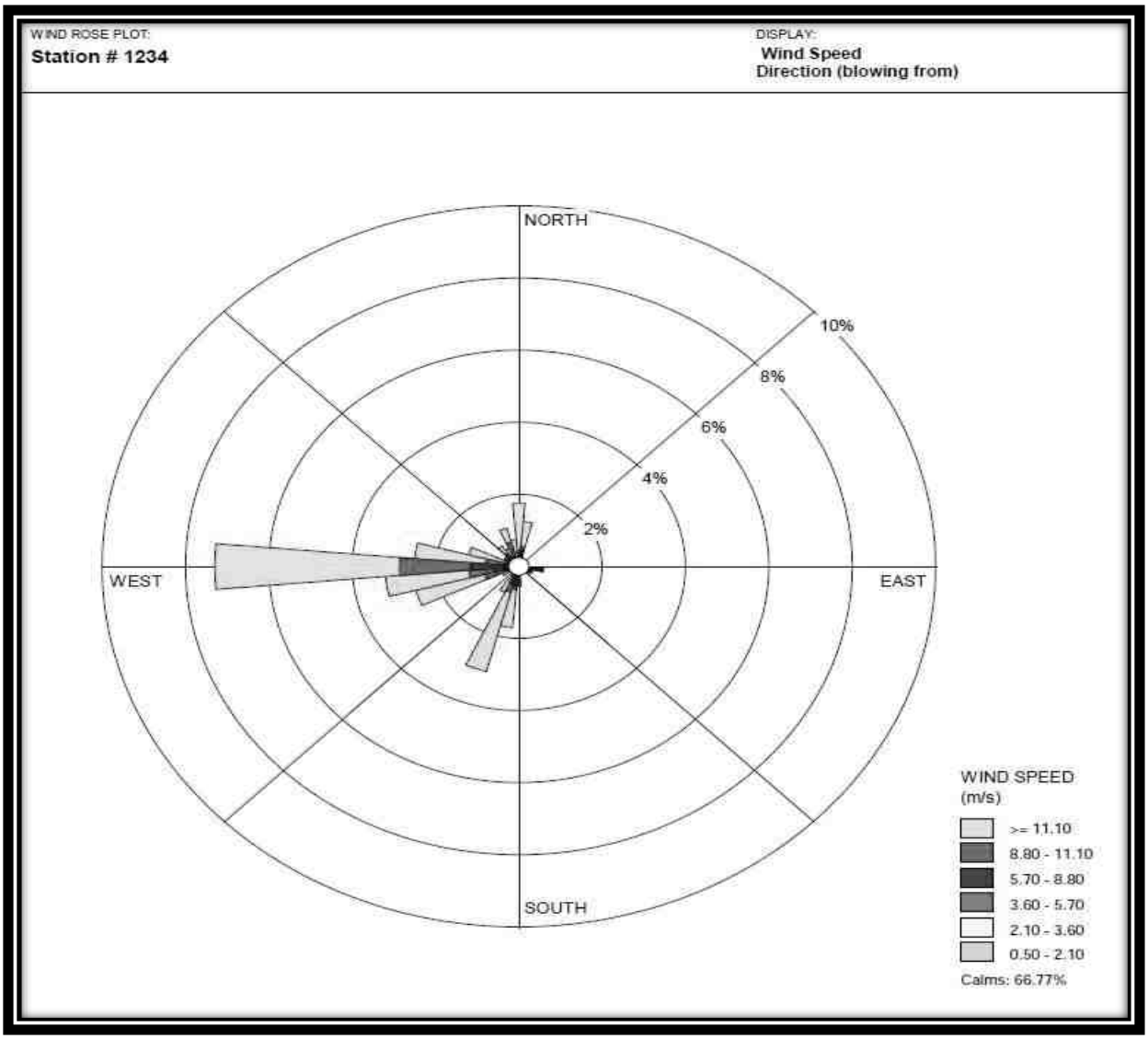

Figure 3.4 Wind Rose Diagram (March – May 2023)

3.6.2 AIR ENVIRONMENT

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.,

3.6.2.1 SAMPLING & ANALYTICAL TECHNIQUES

Table 3.4 Methodology for Air Quality Monitoring

Parameter	Method
PM2.5	Gravimetric Method Beta -attenuation Method
PM10	Gravimetric Method Beta -attenuation Method
SO2	IS-5182 Part II (Improved West & Gaeke method)
NOx	IS-5182 Part II (Jacob & Hochheiser modified method)

3.6.2.2 FREQUENCY AND PARAMETERS FOR SAMPLING

Ambient air quality monitoring has been carried out with a frequency of two samples per week at five (5) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March to May, 2023. The baseline data of ambient air has been generated for PM10, PM2.5, Sulphur Dioxide (SO2), Nitrogen Dioxide (NO2) and Carbon Monoxide 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 1.8 to 2.2 m 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.

3.6.2.3 AMBIENT AIR QUALITY MONITORING STATIONS

Five (5) monitoring stations were set up in the study area as depicted in Figure 3.5 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

Table 3.5 – Ambient Air Quality Monitoring Locations

S.NO	Location Code	Monitoring Locations	Latitude and longitude
1	A1	Within Mine Lease area	12°44'18.80"N & 79°41'47.40”E
2	A2	Girijapuram	12°44'54.96"N & 79°42'28.06”E
3	A3	Valavandal	12°44'41.33"N & 79°41'31.98”E
4	A4	Bhagavanthapuram	12°43'27.34"N & 79°42'26.53”E
5	A5	Narasamangalam	12°43'25.50"N & 79°41'10.44”E

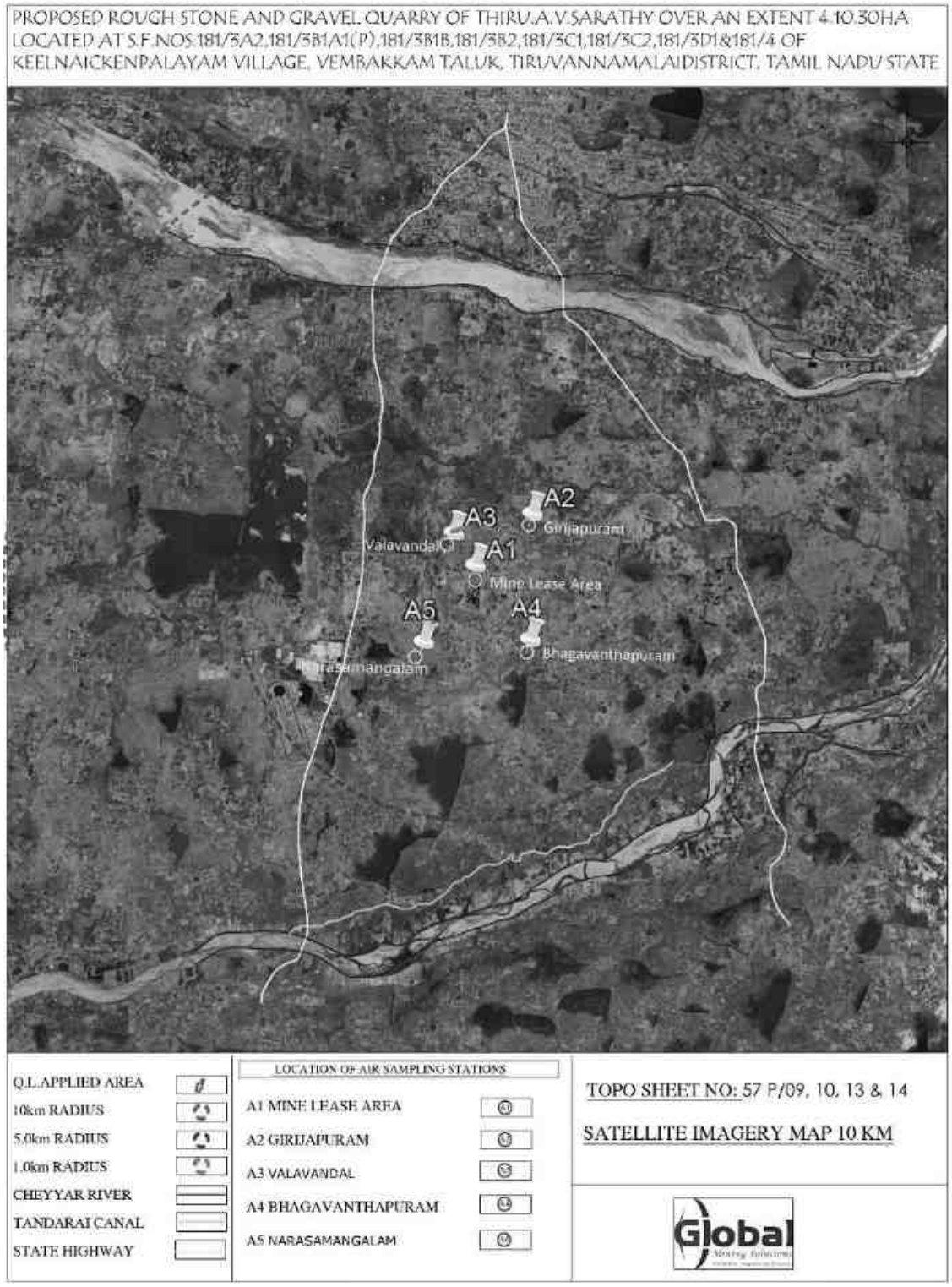

Figure 3.5 Ambient Air Quality Monitoring Locations

Table 3.6 Ambient Air Quality Data

		Ambient Air Quality									All Value in µg/m3		
	Parameters	PM10			PM2.5			SO2			NO2		
S.NO	Locations	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
1	A1-Mine Lease Area	58.5	67.5	76.1	25.6	29.6	33.4	5.7	6.7	7.6	8.8	12.1	15.1
2	A2-Girijapuram	48.2	52.6	57.2	22	24.1	26.2	4.4	5.6	6.9	6.4	8.6	11.3
3	A3- Valavandal	49.5	54.0	58.8	23.2	25.3	27.5	4.3	5.5	6.7	6.5	9.0	12.1
4	A4- Bhagavanthapuram	47.9	52.0	56.8	21.4	23.3	25.5	4.4	5.0	5.9	6.2	8.5	11.3
5	A5- Narasamangalam	50.2	54.7	60.2	23.4	25.6	28.3	4.7	5.7	6.7	6.3	8.9	11.7
6	**CPCB NAAQS 2009**	**100**			**60**			**80**			**80**		

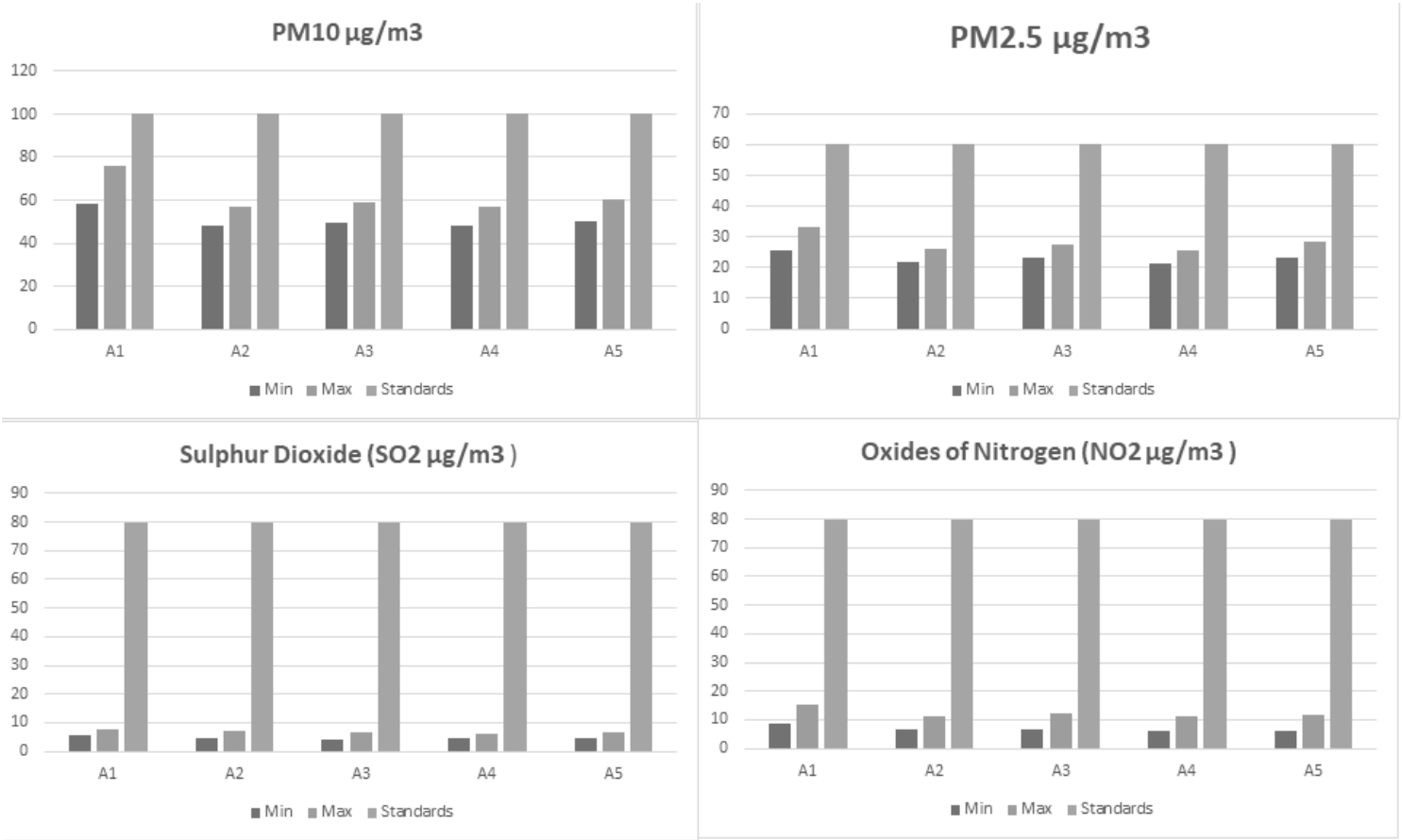

Figure –3.6 - Graphical Representation of Air Quality Data

3.6.2.4 DISCUSSION

From the table it is seen that, in the ambient air, the PM10 values were in the range of 47.9 – 76.1 µg/m3. PM2.5 values were in the range of 21.4 – 33.4 µg/m3. SO2 levels were ranging from 4.4 – 7.6 µg/m3. NO2 levels were ranging from 6.2 – 15.1 µg/m3. While comparing with the NAAQ Norms laid by MoEF, all monitored values of PM10, PM2.5, SO2, NO2 & CO were found to be well within the prescribed standards. The CO values in the all locations found to be below detectable limit (DL – 1144 µg/m3).

3.6.3 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 standard guidelines issued by CPCB for analysis.

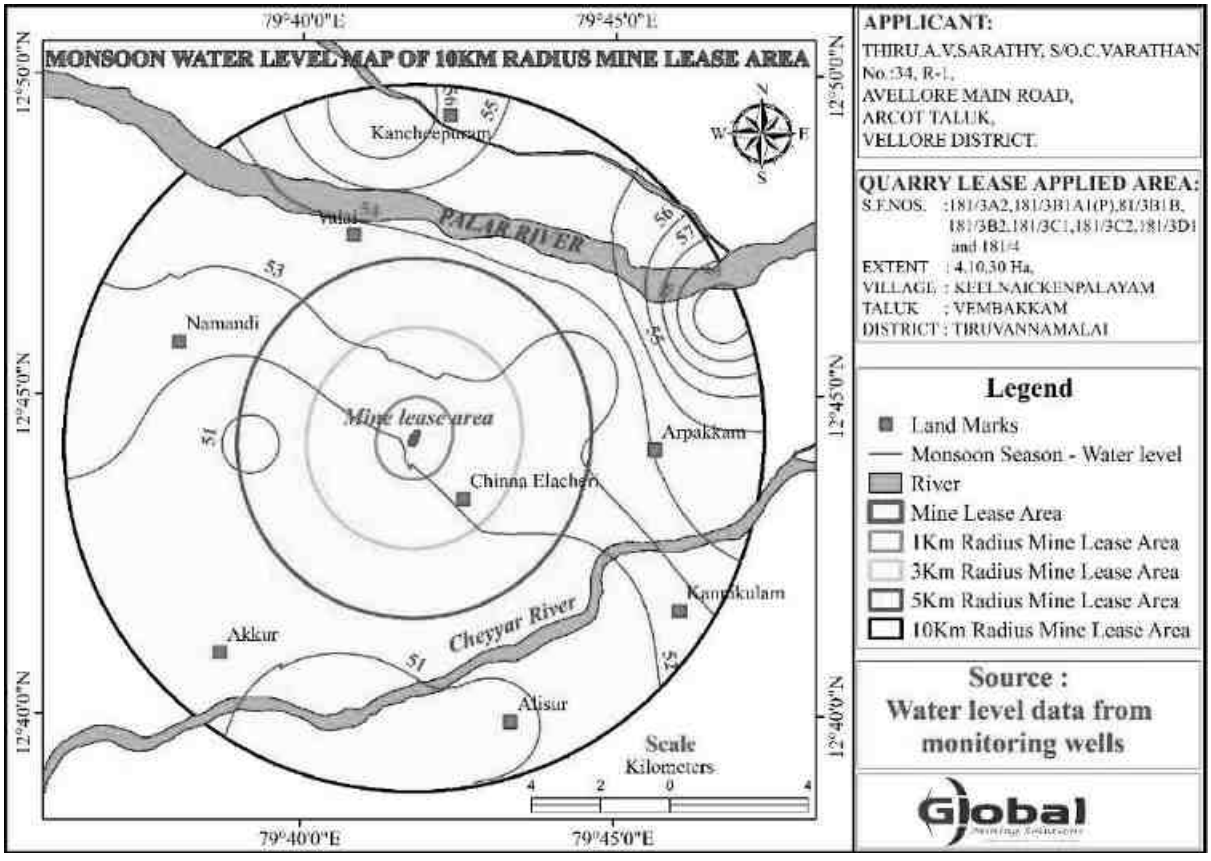

Figure 3.7 – Monsoon Water Level of the Study Area

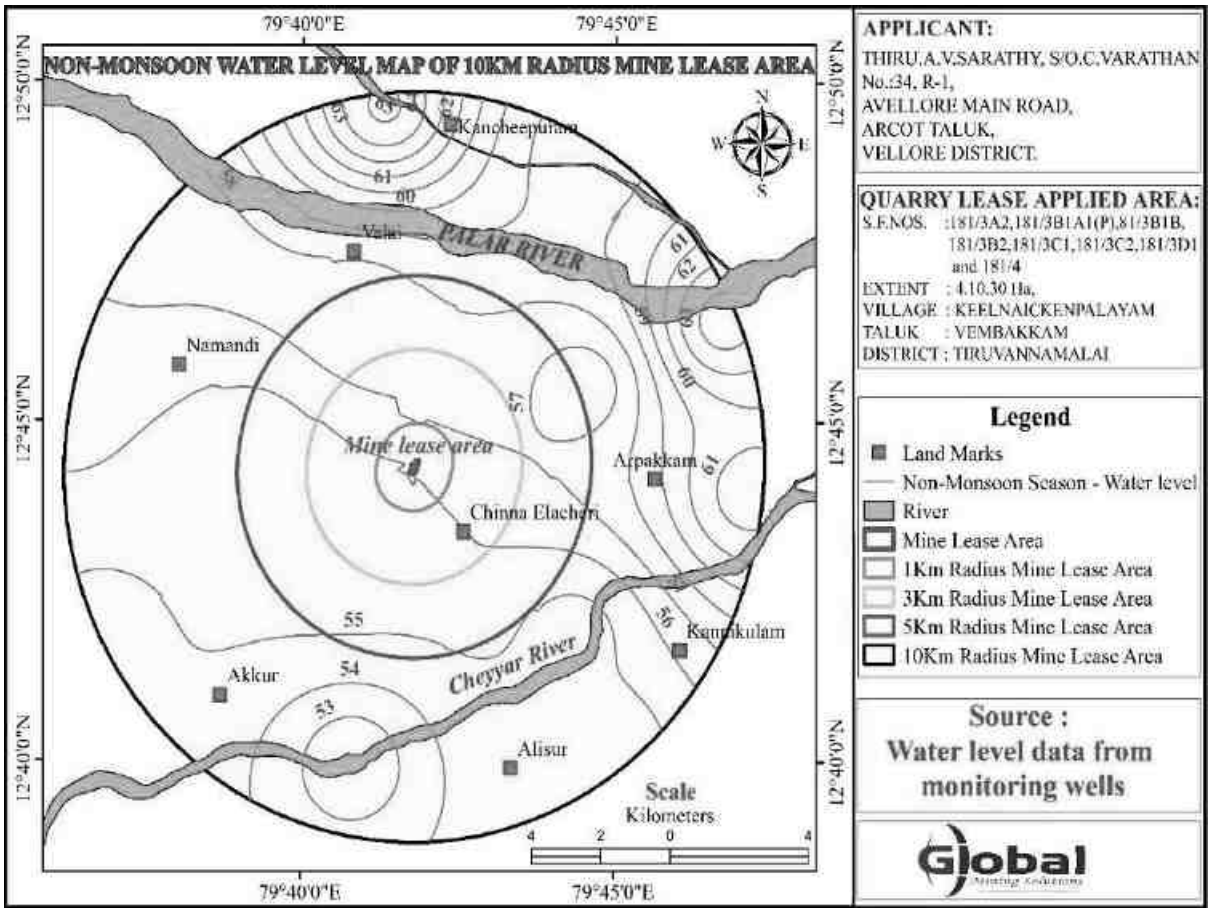

Figure 3.6 – Non Monsoon Water Level of the Study Area

3.6.3.1 METHODOLOGY

Reconnaissance survey was undertaken and monitoring locations were selected based on:

- Location of the major water bodies
- Location of project site, their water intake and effluent disposal locations
- Likely areas that can represent baseline conditions
- The water samples were collected and were analyzed for physical, chemical, and biological characteristics as per guidelines issued by IS code No.10500/2012.

3.6.3.2 SURFACE WATER

Two rivers are passing on the North and South East side (Palar River – 5.8 km North & Cheyyar River – 6.4 km South East). Vegavati river is situated at a distance of 8.7 km in North side. The area is studded with few tanks that serve as the source for agriculture and also their surplus feeds adjoining tanks. The rainfall over the area is moderate, the rainwater storage in open wells, trenches is in practice over the area and the stored water acts as source of freshwater.

3.6.3.3 GROUND WATER

The district is underlain by both porous and fissured formations, Unconsolidated & Semi-consolidated formations and Weathered, Fissured and fractured crystalline rocks constitute the important aquifer systems in the Tiruvannamalai region. Ground water occurs under phreatic to semi-confined conditions in these formations and is being developed by means of dug wells and filter points. Proterozoic formation is the basement rocks which consist of quartzite, crystalline limestone, calcgranulite, hornblende – biotite gneiss, charnockite or pyroxene granulite, granite and pegmatite. Weathered, a fissured cracks, shear zones and joints in the basement rock act as a good groundwater potential zone in the study

area. The study area falls in the Vembakkam block which is categorized as safe zone as per G.O (MS) No 113 dated 09.06.2016.

3.6.3.4 SAMPLING LOCATIONS

Two (2) surface water samples and Five (5) 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 ground water. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012. The water sampling locations are given in Table 3.7 and shown as Figure 3.7.

Table 3.7 Water Sampling Locations

S.NO	Location Code	Monitoring Locations	Latitude and longitude
Surface Water			
1	SW1	Cheyyar river	12°41'28.33"N & 79°44'28.64”E
2	SW2	Valathottam village tank	12°46'54.30"N & 79°42'24.12”E
Ground Water			
1	GW1	Mine Lease Area	12°44'18.80"N & 79°41'47.40”E
2	GW2	Girijapuram	12°44'54.96"N & 79°42'28.06”E
3	GW3	Narasamangalam	12°43'25.50"N & 79°41'10.44”E
4	GW4	Bhagavanthapuram	12°43'27.34"N & 79°42'26.53”E
5	GW5	Valavandal	12°44'41.33"N & 79°41'31.98”E

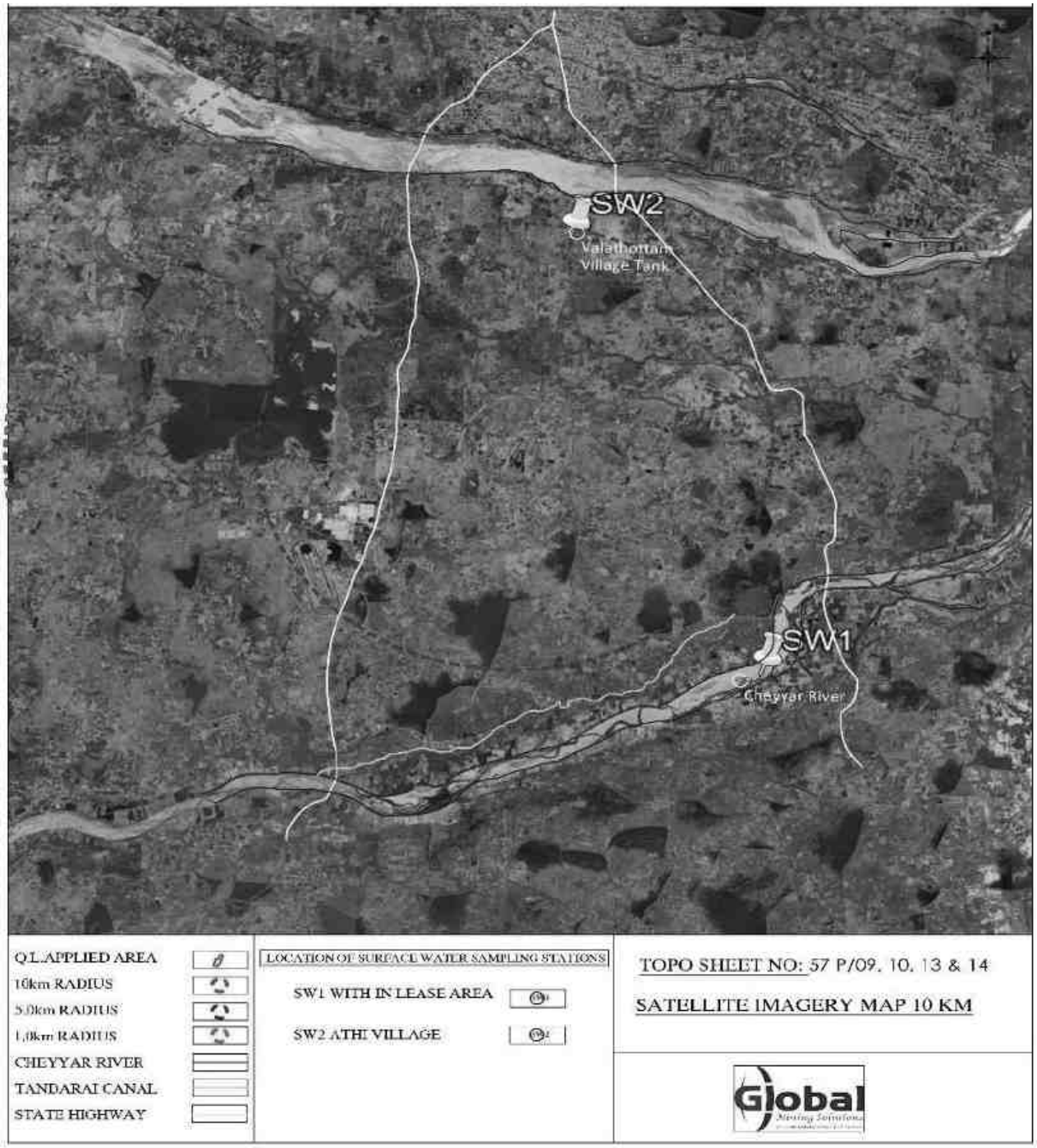

Figure 3.7 (a) – Surface Water Monitoring Locations

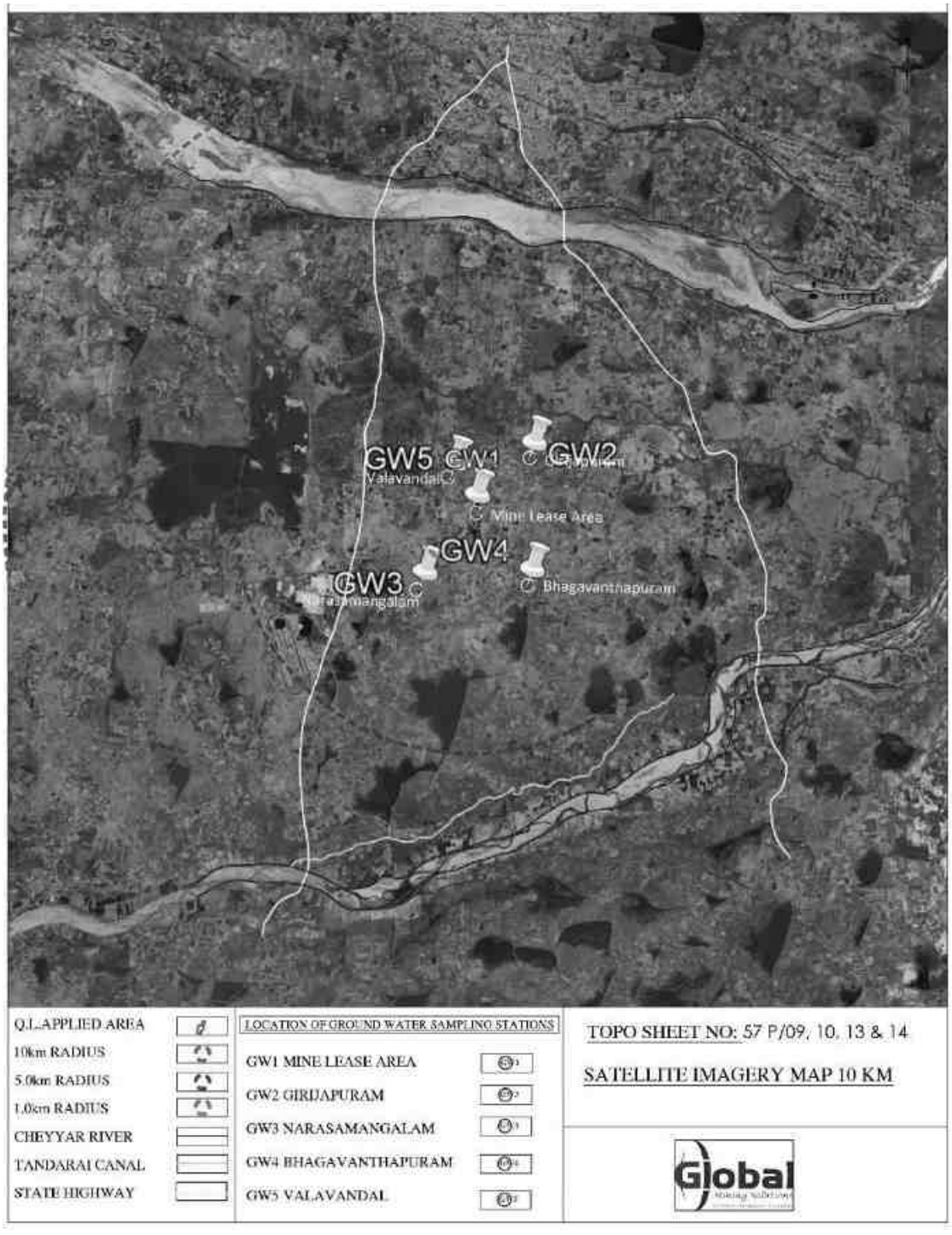

Figure 3.7 (b) – Ground Water Monitoring Locations

Table 3.8 – Ground Water Analysis Results

Parameter	GW1	GW2	GW3	GW4	GW5	Standards as Per IS 10500: 2012	
						Acceptable Limits	Permissible Limits
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	<1	<1	<1	<1.0	<1	1	5
pH at 25 ˚C	7.64	7.38	7.81	7.57	7.63	6.5- 8.5	No Relaxation
Electrical Conductivity	916	1120	1915	864	1345	-	-
Total Dissolved Solids	550	675	1150	520	810	500	2000
Total hardness as $CaCO_3$	312	448	255	276	492	200	600
Calcium as Ca	84.8	123.0	51.2	53.6	99.6	75	200
Magnesium as Mg	24.0	33.6	30.5	34.1	58.3	30.0	100
Calcium as $CaCO_3$	212	308	128.0	134	249.0	-	-
Magnesium as $CaCO_3$	100.0	140.0	127.0	142.0	243	-	-
Total alkalinity as $CaCO_3$	230	280	398	154	210	200	600
Chloride as Cl^-	84.5	124	384	138.0	243.0	250	1000
Free Residual chlorine as Cl^-	BDL(D.L-0.2)	BDL(D.L-0.2)	BDL (D.L - 0.2)	BDL(D.L-0.2)	BDL(D.L-0.2)	0.2	1
Sulphates as SO_4^{2-}	184.0	156.0	310.0	98.6	202.0	200	400
Iron as Fe	0.05	BDL(DL-0.01)	0.04	BDL(DL-0.01)	BDL(DL-0.01)	0.3	No Relaxation
Nitrate as NO_3	0.26	2.02	2.36	2.34	2.69	45	No Relaxation
Fluoride as F	0.29	0.31	0.19	0.18	0.36	1	1.5
Manganese as Mn	BDL(D.L-0.05)	BDL(D.L-0.05)	BDL (D.L - 0.05)	BDL(D.L-0.05)	BDL(D.L-0.05)	0.1	0.3

Table 3.9 Surface Water Analysis Results

Parameter	SW1	SW2	CPCB Designated Best Use	
			Acceptable Limits	Permissible Limits
Odour	Disagreeable	Agreeable	Agreeable	Agreeable
Turbidity	<1	<1	2	5
pH at 25 ˚C	7.7	7.9	6.5- 8.5	No Relaxation
Electrical Conductivity	950	980	-	-
Total Dissolved Solids	500	713	500	2000
Total hardness as $CaCO_3$	256	382	200	600
Calcium as Ca	61.7	102	75	200
Magnesium as Mg	32.2	40.4	30.0	100
Calcium as $CaCO_3$	184	263	-	-
Magnesium as $CaCO_3$	86	124	-	-
Total alkalinity as $CaCO_3$	222	281	200	600
Chloride as Cl^-	63	85	250	1000
Free Residual chlorine as Cl^-	BDL(D.L-0.2)	BDL(D.L-0.2)	0.2	1
Sulphates as SO_4^{2-}	42	61	200	400
Iron as Fe	0.18	0.21	0.3	No Relaxation
Nitrate as NO_3	21.7	29.3	45	No Relaxation
Fluoride as F	0.48	0.52	1	1.5
Manganese as Mn	BDL(D.L-0.05)	BDL(D.L-0.05)	0.1	0.3

3.6.3.5 DISCUSSION

Surface Water

The pH varied from 7.7 to 7.9 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH). Total Dissolved Solids varied from 500 to 713 mg/l. Chloride varied between 63 mg/l and 85mg/l. Nitrates varied from 21.7 to 29.3mg/l, while sulphates varied from 42 to 61 mg/l.

Ground Water

Suitability of ground water for drinking/irrigation/industrial purposes is determined keeping in view the effects of various chemical constituents present in water as required human use, plant use. Though many ions are very essential for the growth of plants and human body but when present in excess, have an adverse effect on health and growth.

As Per the data it has been observed that the pH value varies from 7.38 – 7.81, Chlorides Ranges From 84.5 - 243 mg/l, Sulphates value found to be between 98.6 - 202 mg/l, Fluoride Ranges low in lease area i.e. 0.18 – 2.69, Hardness varies from 255 - 492 mg/l, and Total dissolved solid 520 - 1150 mg/l. The ground water has been analyzed as per IS10500: 2012 and found to be suitable for drinking purpose. So the results of chemical and bacteriological analysis of water samples are classified under good class for drinking purpose with respect to total dissolved solids. Total hardness of the samples ranged from soft to moderately hard waters and can be fairly used for drinking. Regular ground water monitoring is suggested as the quality of ground water may fluctuate with groundwater consumption and seasonal variations.

3.6.4 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.

3.6.4.1 SAMPLING LOCATIONS

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at five (5) locations. The noise level of monitoring locations were carried out by covering 10 km radius of the project area. A noise monitoring methodology was chosen such that it best suited the purpose and objectives of the study. The noise monitoring locations are given in Figure 3.8 and in below table.

Table 3.10 Noise Monitoring Locations

S.NO	Location Code	Monitoring Locations	Latitude and longitude
1	N1	Within Mine Lease area	12°44'18.80"N & 79°41'47.40”E
2	N2	Girijapuram	12°44'54.96"N & 79°42'28.06”E
3	N3	Valavandal	12°44'41.33"N & 79°41'31.98”E
4	N4	Bhagavanthapuram	12°43'27.34"N & 79°42'26.53”E
5	N5	Narasamangalam	12°43'25.50"N & 79°41'10.44”E

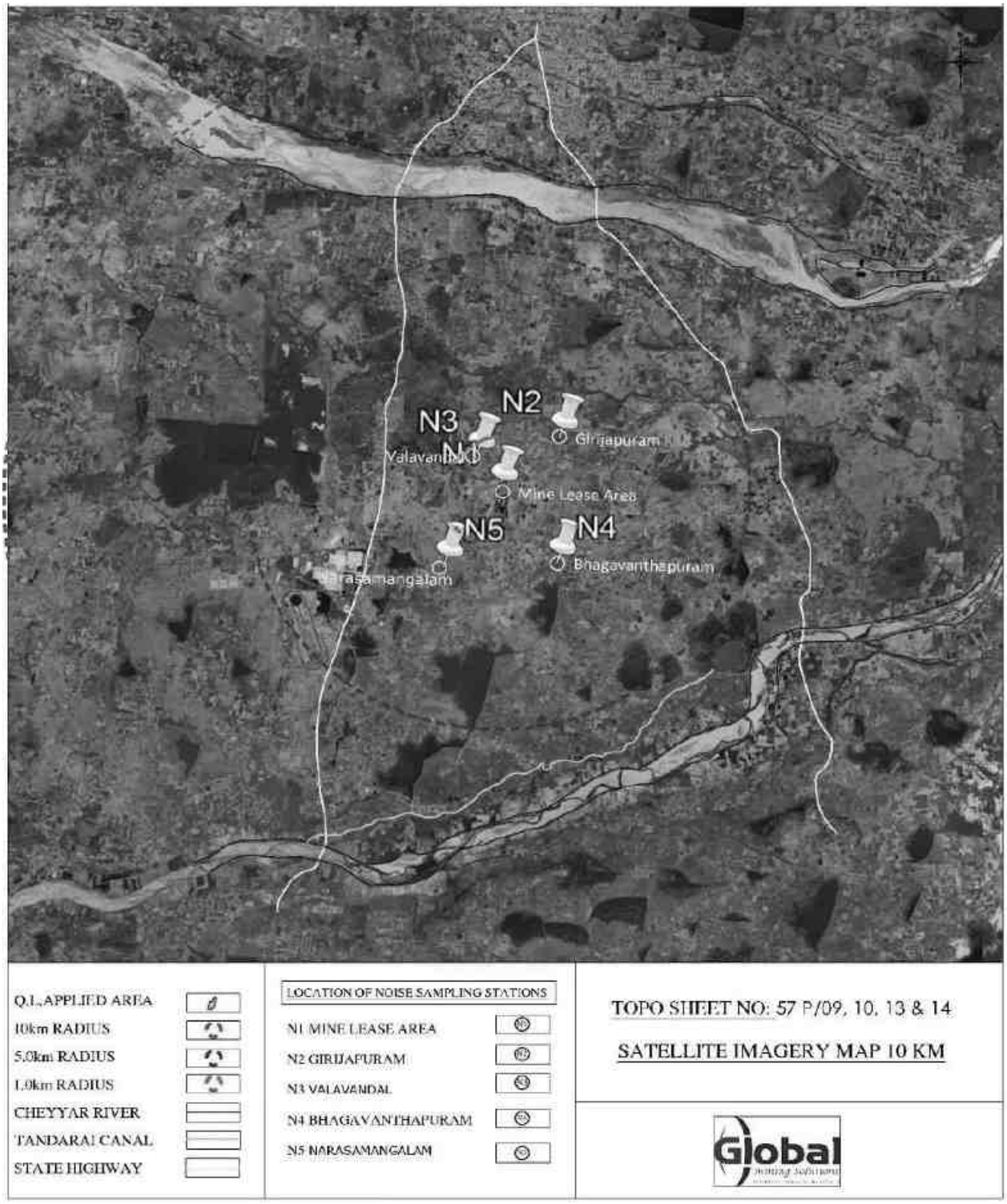

Figure 3.8 Noise Monitoring Location

3.6.4.2 METHOD OF MONITORING

Noise levels were measured using sound level meter manufactured by (Model No - SL4001, Make - Lutron). Sound Pressure Level (SPL) measurements were measured at all locations where ambient air quality monitored; one reading for every hour was taken for 24 hours.

3.6.4.3 NOISE MONITORING RESULT

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 3.11.

Table 3.11 Noise Monitoring Result

Monitoring Location	N1	N2	N3	N4	N5
DAY EQUIVALENT	51.3	47.7	48	45.5	49.1
NIGHT EQUIVALENT	40.4	41.0	45.3	41.6	41.7
DAY & NIGHT EQUIVALENT	49.8	46.4	47.3	44.6	47.7
Limits as per MoEF&CC					
Day equivalent - 55 dB (A); Night equivalent - 45 dB (A); Work zone Exposure in 8 hr - 90 dB (A)					

3.6.4.4 DISCUSSION

From the table it is observed that the day Equivalent Noise (Leq-d) level were ranging from 45.5 to 51.3 dB(A) and Night Equivalent Noise (Leq-n) level were ranging from 40.4 to 45.3 (A). Day and Night Equivalent Noise (Leq-n) level were ranging from 44.6 to 49.8 dB(A). While comparing with the MoEF Norm of 55 dB(A) for day time and 45 dB(A) for night time in Residential areas, the monitored ambient noise levels are within the limit values.

After commencement of mine operation the anticipated noise level will be 52 dB – 65 dB in the N1 location. (Project Site). It is very negligible and within the prescribed standards of MoEF & CC and DGMS.

3.6.5 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 analyzed for different parameters. The locations of the monitoring sites are detailed in Table 3.12 and Figure 3.10. The soil type of the study area are detailed below.

Sl.No.	Soil Type	Area in Sq.km
1	Calcareous black soil	189.65
2	Clayey soil	23.06
3	Red loamy Soil	110.94

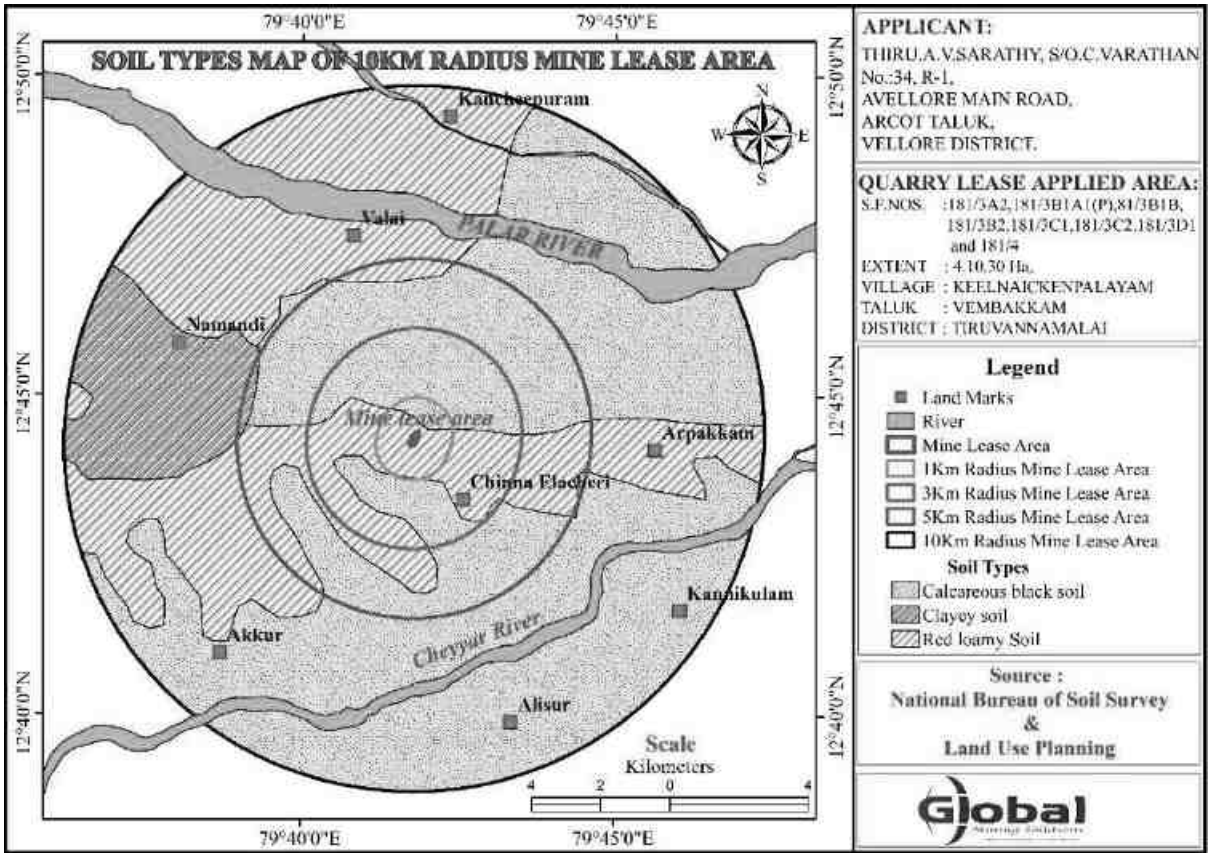

Figure 3.9 - Soil Map of the Study Area

3.6.5.1 MONITORING LOCATIONS

Soil samples were collected from 3 locations to assess the soil quality in and around the mines. Soil samples collected using sampling augers and field capacity apparatus.

Table 3.12 – Soil Sampling Locations

S.No	Location Code	Monitoring Locations	Latitude and longitude
1	S1	Within Mine Lease area	12°44'18.80"N & 79°41'47.40”E
2	S2	Girijapuram	12°44'54.96"N & 79°42'28.06”E
3	S3	Valavandal	12°44'41.33"N & 79°41'31.98”E

3.6.5.2 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. Three 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.

Composite grab samples of the topsoil were collected by specified depth, and mixed to provide a representative sample for analysis. They were stored in airtight Polythene bags and analyzed at the laboratory.

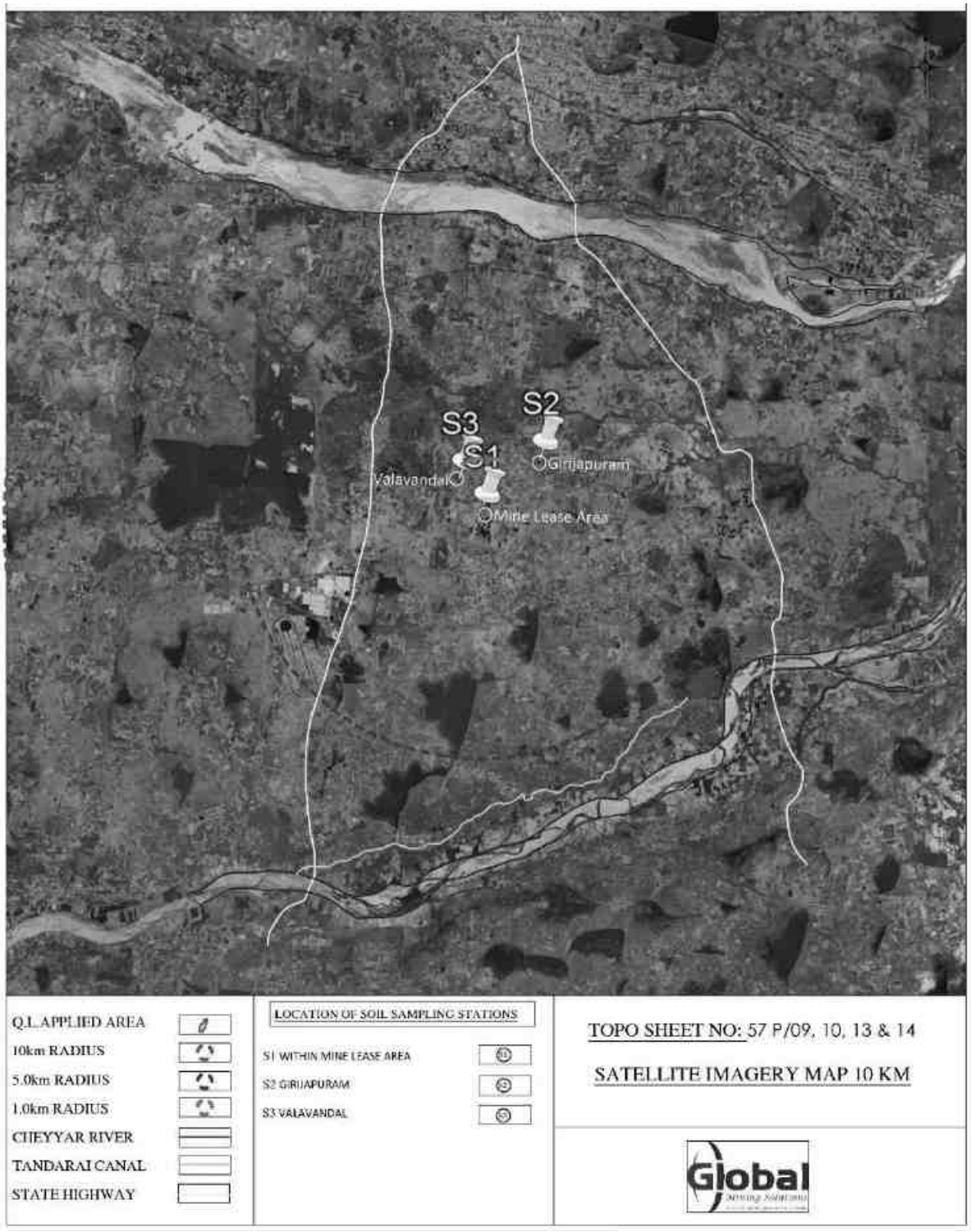

Figure 3.10 - Soil Sampling Stations

3.6.5.3 SOIL TESTING RESULT

Results of the soil samples show that the pH values were found to be 6.56 to 7.52 and Electrical Conductivity values were ranging between 65.2 – 96.4 µmhos/cm. Soils are generally Silt Loam. Organic matter values were ranging between 0.66 – 0.75 %. Total Nitrogen values were ranging between 170 – 210 mg/kg. Phosphorus values were ranging between 0.57 – 1.56 µg/g. Potassium values were ranging between 360 – 635 mg/kg. Sodium values were ranging between 121 – 675 mg/kg. Total Sulphur values were observed to be BDL. The soil quality data for the 3 samples collected and analyzed are provided in Table no – 3.6.

Table 3.14 - Soil Testing Result

Parameter	Units	S1	S2	S3
PH		6.56	7.05	7.52
EC	µmhos/cm	81.6	96.4	65.2
DRY MATTER	%	96.33	97.25	95.48
WATER CONTENT	%	3.67	2.75	4.52
ORGANIC MATTER	%	0.72	0.75	0.66
SOIL TEXTURE		Loam	Silty Clay Loam	LOAM
Grain Size Distribution				
SAND	%	46.89	20.33	47.64
SILT	%	36.57	40.24	30.26
CLAY	%	16.54	39.43	22.10
PHOSPHORUS	mg/kg	1.56	1.36	0.57
SODIUM	mg/kg	630	675	121
POTASSIUM	mg/kg	425	360	635
KJELDHAL NITROGEN	mg/kg	210	170	180
SULPHUR	%	BDL(D.L - 0.02)	BDL(D.L - 0.02)	BDL(D.L - 0.02)
Water Holding Capacity	%	3.5	3.1	3.6
Porosity	%	17.2	18.2	17.8

3.6.6 LAND ENVIRONMENT

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

3.6.6.1 LAND USE PATTERN OF THE PROJECT AREA

The present and the post mining land use pattern is shown below.

Table 3.15 Land use pattern of the project site

Description	Present Area in Ha.	Area at the end of life of Quarry in Ha.
Quarrying pit	NIL	3.10.00
Infrastructure	NIL	0.02.00
Roads	NIL	0.02.00
Greenbelt	NIL	0.40.00
Unutilized	4.10.30	0.56.30
Total	**4.10.30**	**4.10.30**

- At the end of life of mine, the excavated mine pit / void of 3.10.0 Ha. 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 (0.40.0 Ha.) will be developed along the safety barrier and top benches and 0.04 ha are approach road and Infrastructure.
- Remaining 0.56.30 ha. of land will be covered with vegetation.

3.6.6.2 LAND USE PATTERN OF THE STUDY AREA

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. The land use map of the study area is given in Figure 3.11.

Table 3.16 Land use pattern of the Study area of 10 km radius

Sl.No.	LULC_CLASS	Area in Sq.km	Percentage (%)
1	Agriculture/Plantation	217.40	67.17
2	Settlement	20.40	6.30
3	Fallow land	9.39	2.90
4	Land with scrub	7.12	2.20
5	Land without scrub	1.14	0.35
6	Mining process	2.57	0.79
7	Water bodies	65.64	20.28
Total		**323.65**	**100**

Source : Survey of India Toposheet and Landsat Satellite Imagery

From above table it is inferred that the majority of the land in the study area is agriculture (67.17 %) followed by water bodies (20.28).

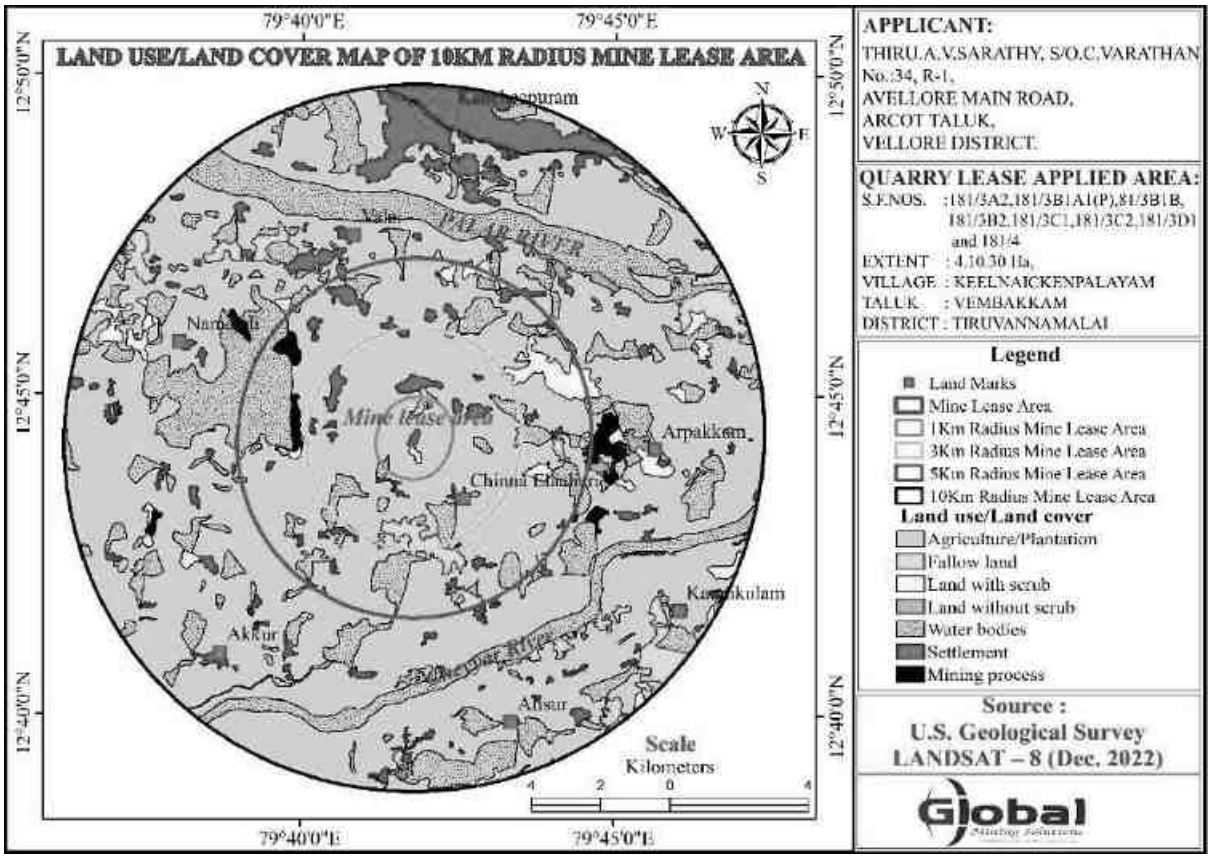

Figure 3.11 Land use map of the study area

3.6.7 BIOLOGICAL ENVIRONMENT

Study of the biological environment of any area comprises of well-planned ecological survey for the floristic and faunal composition of the areas through various scientifically planned techniques. Accordingly, the ecological survey for the proposed Rough stone and gravel quarry area including core and buffer zone were carried out to identify various species occurring in the area.

3.6.7.1 FLORA

An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological (Terrestrial and Aquatic Ecosystems) conditions. The objective of the survey is as follows:

- Generate existing data from field observations of various terrestrial floristic occurrences.
- Collect secondary data from Government records as well as through discussion with Forest officials, knowledgeable public etc.,
- Compare the data with authentic past records to identify changes, if any.
- Identify the impact of project operations on the biological aspects.

To accomplish the above objectives, a general ecological survey covering an area of 10 km radius was conducted. The locations were identified for phyto-sociological aspects to assess the current status.

3.6.7.2 FLORISTIC COMPOSITION IN CORE ZONE

The lease area is a non- forest, private land with scrub and thorny bushes. In the core zone, there are no trees.

3.6.7.3 FLORISTIC SCENARIO IN BUFFER ZONE AREA

The present report gives the review of published secondary data and the results of field sampling conducted during March to May 2023 and there are no forest

blocks in study area. The detailed ecological assessment of the study area has been carried out and are presented in below Table.

Table 3.17 List of Flora

S.NO	Scientific Name	Family	Local Name
GRASS			
1	*Arundo donax*	Poaceae	Common needle, grass
2	*Dendrocalamus strictus*	Poaceae	Kalamungil
3	*Heteropogon contorlus*	Poaceae	Oosipullu
TREES			
1	*Citrus limon*	Rutaceae	Lemon
2	*Ficus benghalensis*	Moraceae	Krishna Fig, Krishna's
3	*Thespesia lampas*	Malvaceae	Common mallow,kattupparuthi
4	*Musa paradisiaca*	Musaceae	Plantain, vazhai
5	*Azadirachta indica*	Meliaceae	Veppai,
6	*Psidium gujava*	Myrtaceae	Guava
7	*Syzygium cumini*	Myrtaceae	Nagai
8	*Adina cordifolia*	Rubiaceae	Manjakadambu
9	*Acacia chundra*	Fabaceae	
10	*Erythrina indica*	Fabaceae	Mullu murungai
11	*Euphorbia antiquorum*	Euphorbiaceae	Kalli
12	*Ailanthus excelsa*	Simaroubaceae	Perumaram
13	*Pongamia pinnata*	Fabaceae	Indian beech, pungam
14	*Acacia leucophloea*	Mimosaceae	Velvelam
15	*Morinda tinctorial*	Rubiaceae	Nuna
16	*Dalbergia sissoo*	Fabaceae	nukkam totakatti
17	*Erythrina variegate*	Fabaceae	Kalyana murungai
18	*Borassus flabellifer*	Arecaceae	Palmyra palm
19	*Thespesia lampas*	Malvaceae	Common mallow,kattupparuthi
20	*Lannea coromandelica*	Anacardiaceae	Indian Ash Tree, Moya, Wodier
21	*Samanea saman*	Mimosodeae	Thoongumoonjj maram
22	*Prosopis juliflora*	Fabaceae	Algaroba, Mesquite
23	*Eucalyptus globulus*	Mytaceae	Blue gum
24	*Tamarindus indica*	Caesalpiniaceae	Puli
25	*Dalbergia paniculate*	Fabaceae	Porapachalai
26	*Cocus nucifera*	Arecaceae	Coconut,thennai
27	*Delonix regia*	Caesalpiniaceae	Flame Tree, Royal Poinciana

28	*musa paradisiaca*	Musaceae	Plantain, vazhai
29	*Albizia lebbeck*	Mimosaceae	Siridam
30	*Punica granatum*	Lythraceae	Pomegranate, mathulai
31	*Tectona grandis*	Lamiaceae	Teak
32	*Acacia ferruginea*	Fabaceae	Parambai
HERBS			
1	*Datura metal*	Solanaceae	Thom, apple
2	*Boerhavia diffusa*	Nyctaginaceae	Red hogweed, Tar Vine
3	*Zea mays*	Poaceae	Maize, Corn
4	*Thespesia populnea*	Malvaceae	Indian tulip tree poovarasu
5	*Agave Americana*	Agavaceae	Anaikathalai
6	*Vemonia cinereal*	Asteraceae	Purplefleabane, mookuthipoondu
7	*Partheniumhysterophorus*	Asteraceae	Congress grass
8	*Amaranthus viridis*	Amaranthaceae	kuppai-k-kirai
9	*Acalypha indica*	Euphorbiaceae	koli-p-puntu, kuppai-meni
10	*Chloris dolichostachya*	Poaceae	Finger grass, kuruthupillu
11	*Vemonia cinereal*	Asteraceae	Purplefleabane, mookuthipoondu
12	*Ocimum americanum*	Lamiaceae	Hoary basil, nai thulasi
13	*Abutilon indicum*	Malvaceae	Country Mallow, Tutti Herb
14	*Tribulus terrestris*	Zygophyllaceae	Puncture vine, nerunji
15	*Agave angustifolia*	Asparagaceae	Caribbean agave
16	*Croton saparsiflorus*	Euphorbiaceae	Reilpoondu
17	*Cynodon dactylon*	Poaceae	Bermuda, grass, arugampul
18	*Blumea lacera*	Asteraceae	Kattumullangi
19	*Achchyranthes aspera*	Amaranthaceae	Prickly chaff flower
20	*Aerva lanata*	Amaranthaceae	ciru-pula,ulinai
21	*Vinca rosea*	Apocynaceae	Nithyakalyani
22	*Agave angustifolia*	Asparagaceae	Caribbean agave
23	*Ocimum sanctum*	Lamiaceae	Holy basil, thulasi
24	*Amaranthus spinosus*	Amaranthaceae	Mullukkeerai
25	*Capsicum frutescens*	Solanaceae	Tezpur Chilli
26	*Agave sisalana Perrine*	Agavaceae	Sisal Agave, agave
27	*Amaranthus viridis*	Amaranthaceae	kuppai-k-kirai
28	*Aloe vera*	Liliaceae	Kathalai

29	*Croton saparsiflorus*	Euphorbiaceae	Reilpoondu
30	*Thespesia populnea*	Malvaceae	Indian tulip tree poovarasu
SHRUBS			
1	*Canna indica*	Cannaceae	Indian Shot, Wild canna
2	*Vitex negundo.*	Verbenaceae	Nocchi
3	*Tabernaemontana coronarial*	Apocynaceae	Nandiyarvattam
4	*Cassia auriculate*	Fabaceae	Aavarampoo
5	*Calotropis gigantea R.Br.*	Fabaceae	Tuvarai
6	*Lantana camara*	Verbenaceae	Unnichedi
7	*Ricinus communis*	Euphorbiaceae	Castor bean plant
8	*Carica papaya*	Caricaceae	Pappali
9	*Jatropha glandulifera*	Euphorbiaceae	Kaatuamanakku
10	*Gossyplum arboretum*	Malvaceae	Cotton, paruthi
11	*Solanum trilobatum*	Solanaceae	Thoodhuvalai
12	*Lawsonia inermis*	Lythraceae	Henna, maruthondri
13	*Argemone Mexicana*	Papaveraceae	Prickly poppy, kudiyotti
14	*Solanum torvum*	Solanaceae	Sundaikkai
15	*Capparis sepiaria*	Capparaceae	Karindu
CLIMBERS			
1	*Cucurbita pepo*	Cucurbitaceae	Parangi
2	*Cissus quadrangularis*	Vitaceae	Perandai
3	*Pergularia daemia*	Asclepiadaceae	Uttamani
4	*Abrus precatorius*	Fabaceae	Coral bead
5	*Ipomea hederifolia*	Convolvulaceae	Kanavali kkodi

3.6.7.4 LIST OF FAUNA

The list of fauna within the study area is given in Table No – 3.18.

Table 3.18 List of Fauna

S.No	Common name	Scientific name	Family	IUCN / WPA schedule
MAMMALS				
1	Indian Palm squirrel	Funambulus palmarum	Squirrel	IV
2	Hare	Lepus nigricollis	Leporids	IV
3	House rat	Rattus rattus	Murids	IV
4	Mannuli paambu	Eryx johni	Boidae	-

5	Indian Grey Mongoose	Herpestes edwardsii	Mongoose	IV
6	Field mouse	Rattus norvegicus	Murids	IV
7	Rusty spotted Cat	Felis rubiginosa	Felidae	IV
REPTILES				
1	Common Garden lizard	Calotes versicolor	Agamid lizards	IV
2	Rough tailed Sand boa	Gongylophis conicus	Boidae	IV
3	Indian Cobra	Naja naja	elapid snakes	II
4	Indian mud turtle	Lissemys punctate	Softshell turtles	IV
5	Common Green Snake	Passerita mycterizaris	Colubrid Snakes	IV
6	Common rat snake	Ptyas mucosus	Colubrid Snakes	II
BIRDS				
1	Grey Partridge	Francolinus pondicerianus	Phasianidae	IV
2	Indian Ring Dove	Streptopelia decaocto	Pigeons and doves	IV
3	Red collared dove	Streptopelia tranquebarica	Pigeons and doves	IV
4	Astur badius	Shikra	Accipitridae	IV
5	Black Drongo	Dicrurus macrocerus	Drongos	IV
6	House Sparrow	Passer domesticus	Sparrow	IV
7	Weaver bird	Ploceus Philippines	Ploceidae	IV
8	Rose Ringed Parakeet	Psittacula krameria	Parrots	IV
9	Little egret	Egretta garzetta	Heron	IV
10	Redvented BulBul	Pycnonotus cafer	Bulbul	IV
FISH				
1	Common carp	Cyprirus earpio	Minnows and Carps	IV
2	Tilapia	Oreochromis mossambicus	Cichlid	IV
3	Carplet	Amblypharyngodon Sp	Cyprinidae	IV
4	Trout	Chela sp	-	IV
5	Punctatus	Ophiocephalus	Snakehead	IV

The core zone of the area is patta dry – barren land, No forest land is involved in the project area. The proposed quarry area is covered by thorny bushes. There is no Wild Life Sanctuary or National Park within the study area of 10km. 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. Hence this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

3.6.8 TOPOGRAPHY

The area applied for quarry lease is exhibits almost plain topography covered by Gravel formation. The massive Charnockite formation is noticed below 2m (Avg) Gravel and 2m weathered rock formation and sloping towards Southeastern side of the area, the altitude of the area is above 104m (maximum) from MSL.

3.6.9 DRAINAGE PATTERN OF THE AREA

The Palar River is situated 5.8 km to the north and Cheyyar river at 6.4 km in southeast direction. Vegavati river is situated at a distance of 8.7 km in northern side of the project. Palar river in the north and Cheyyar in the south control the drainage pattern of the area. All the rivers are ephemeral in nature and run off is generated in heavy rainfall period only. The area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The drainage map of the study area is given in Figure 3.12.

3.6.10 GEOMORPHOLOGY

Predominantly the buffer zone is dominated by Shallow & Moderately Buried Pediplan, and it is the same category that the lease area also falls under. Geomorphology of the study area is detailed below. The geomorphology of the study area is given in Figure 3.14.

Sl.No.	Geomorphology	Area in Sq.km
1	Channel bar	27.84
2	Linear Ridge/ Dyke	0.43
3	Moderately buried Pedipla	116.32
4	Pediment	5.83
5	Shallow alluvial plain	5.85
6	Shallow Flood Plain	44.98
7	Shallow buried Pediplain	122.40

3.6.11 GEOLOGY

The regional geology of the study area is shown below in Figure 3.13. The type of rock formation in the core and buffer zone is composed of Charnockite Gneissic complex and Migmatite Gneiss. The lease area falls under Charnockite Gneissic complex category. The geology of the study area is detailed below.

Sl.No.	Geology	Area in Sq.km
1	Charnockite	181.08
2	Fluvial	18.99
3	Khaki green Shale	4.10
4	Migmatite-Gneiss	16.64
5	River	20.87
6	Sandstone and Shales	81.98

3.6.12 LITHOLOGY

The study area is mainly dominated by Argillaccous and Sandstone, Granite and Granite Gneiss. lithology of Core & Buffer Zone map is given in Figure 3.15. Lithology of the study area is detailed below.

Sl.No.	Lithology	Area in Sq.km
1	Argillaceous and clacareous sandstone	102.27
2	Granite	173.26
3	Granitoid gneiss	7.64
4	Limestone with Calcareous Shale	3.80
5	Sand and silt	34.22
6	Ultramafic rocks	4.03

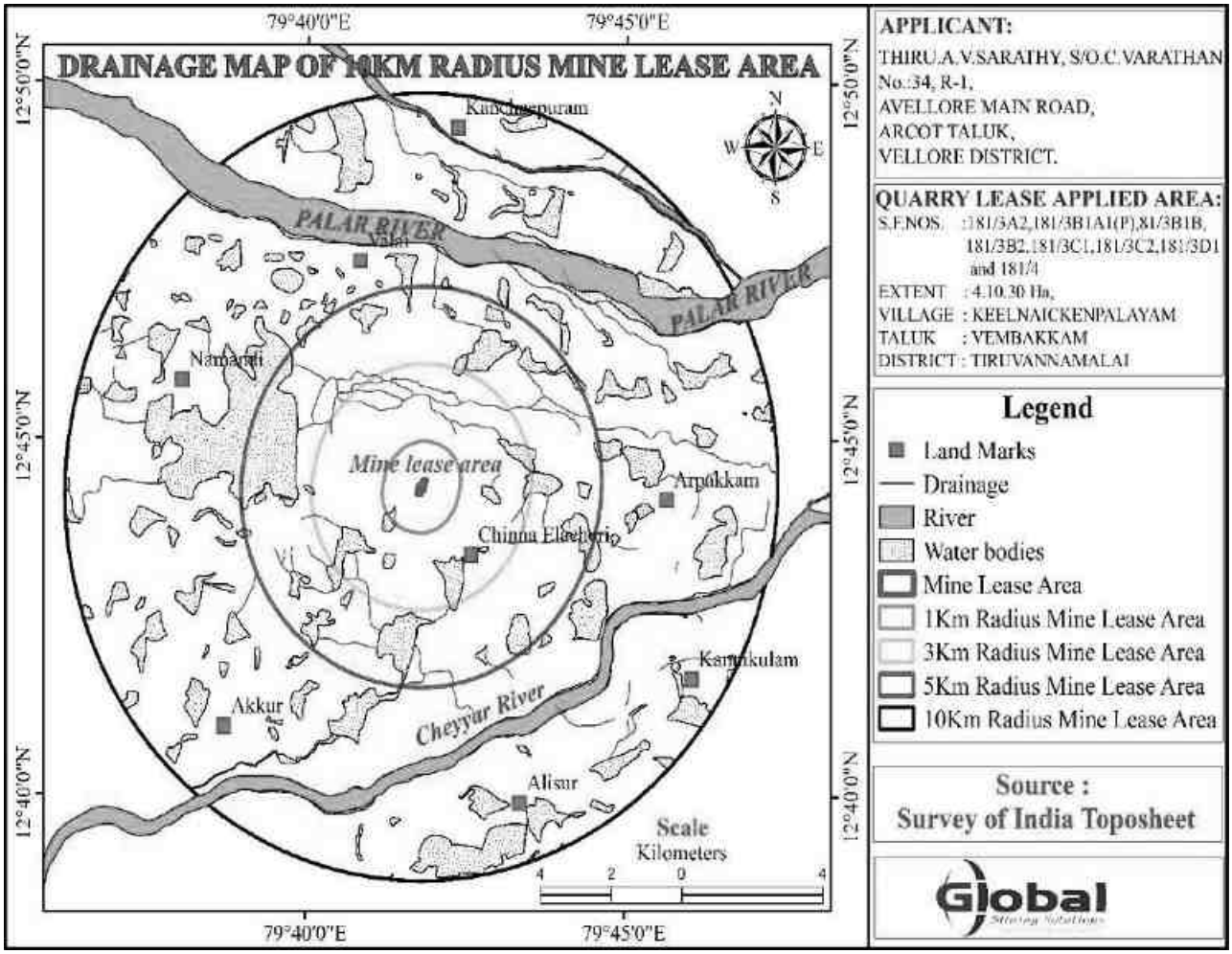

Figure 3.12 Drainage map of the study area

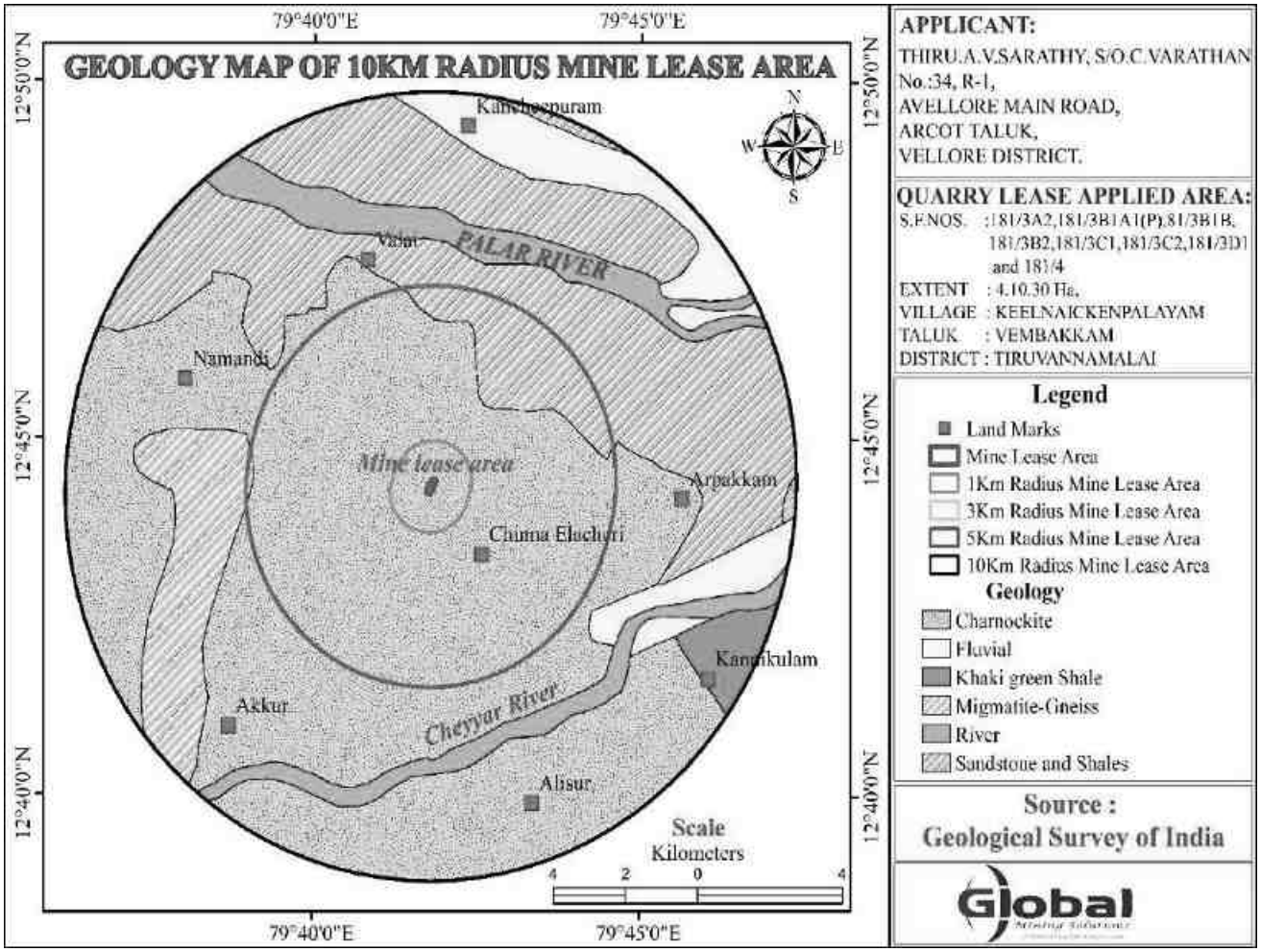

Figure 3.13 Geology map of the study area

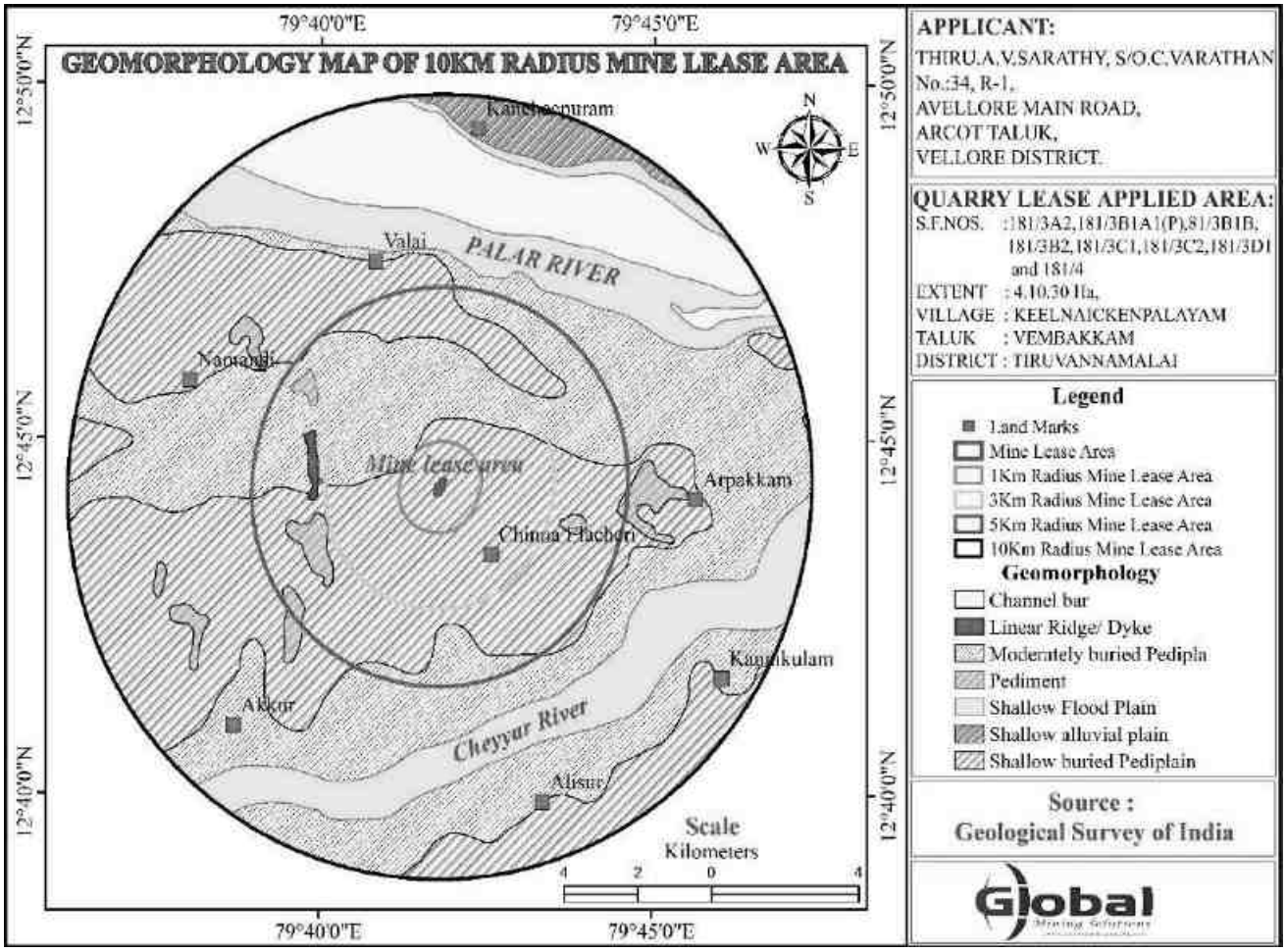

Figure 3.14 Geomorphology map of the study area

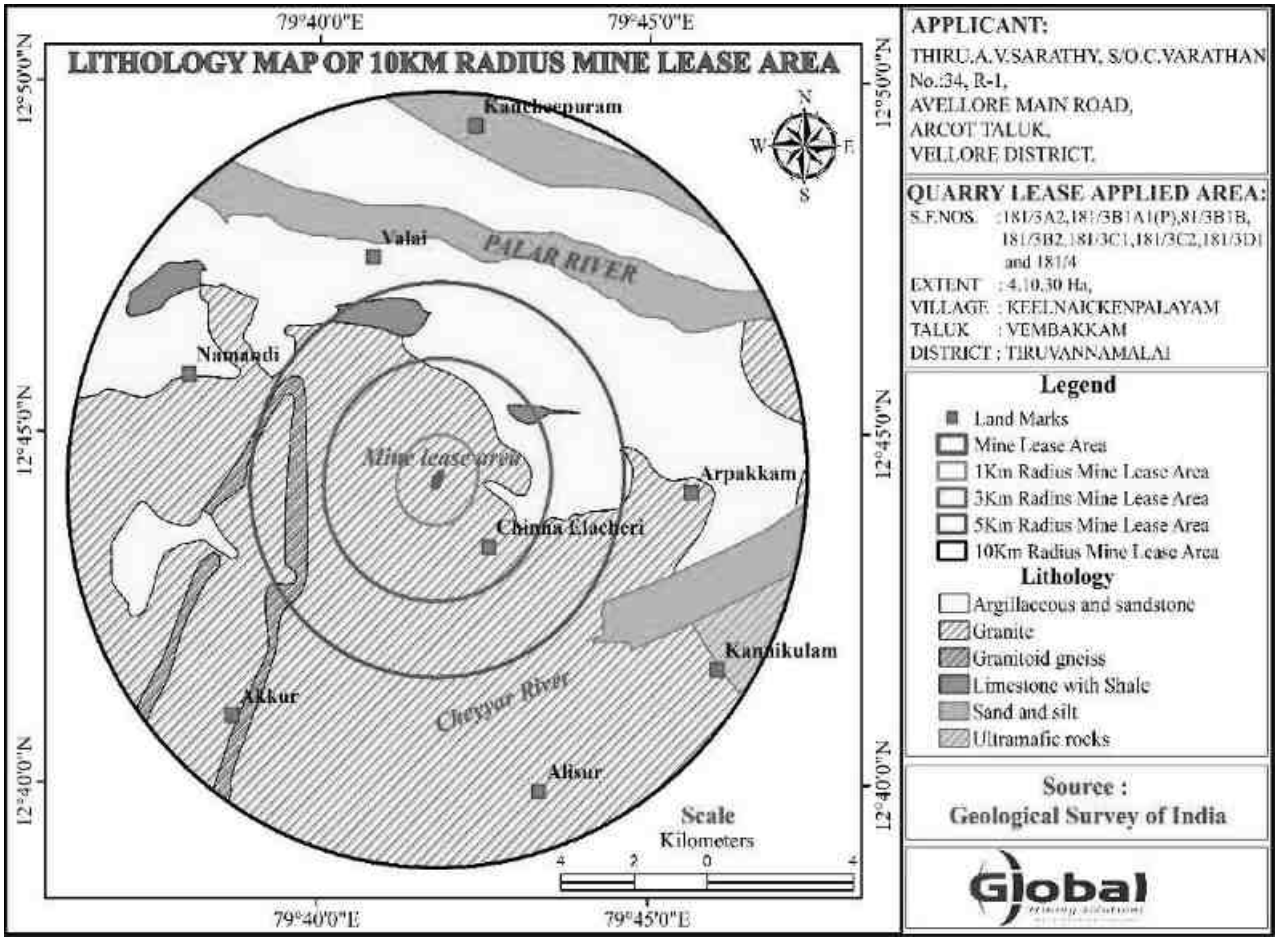

Figure 3.15 Lithology map of the study area

3.6.13 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.

3.6.13.1 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.

3.6.13.2 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

3.6.13.3 TIRUVANNAMALAI DISTRICT

The total population of this district 2464875 comprising 1235889 Men and 1228986 women as per 2011 census. The urban population is 494945 constituting 20 % of the total Population, the remaining 80% ie.1969930 is rural population. The density of the population is 399 per sq.km. The total literate among male are 909803 and that of female are 717010.

Table 3.19 - Population and Occupation details of Tiruvannamalai District

S.NO	Particulars	Unit in ('000)	Percent
1	Total Population	2464875	
	Male	1235688	50.12
	Female	1230277	49.87
2.	Occupation		
	Total workers	10,64,783	
	Main workers (Agriculture)	8,29,944	77.94
	Marginal workers (Allied sectors)	2,34,839	22.06

From the above table, it could be noted that the total population of the district was 2464875 out of which male and female accounted 50.12 and 49.87 per cent respectively. Further it could be seen that most of the workers were dependent on agriculture (77.94 per cent). The marginal workers were found to be in allied sectors only.

The district population is 2,464,875 in 2011 as against 2,186,125 in 2001. The decadal growth rate of the population in the district is 12.75 percent. The density of the population in the district is 473 persons per sq.km in 2011, as against 424 in 2001 which is due to the increased population. The urban population is 494945 constituting 20 % of the total Population, the remaining 80% ie.1969930 is rural population. SC population is 565329, ST Population is 90954.

Tiruvannamalai District Decade of Changes/Growth in demographic profile

S.NO	Indicators	2001	2011
1	Population	2,186,125	2,464,875
2	Decennial growth(percent)	7.01	12.75
3	Density of population per sq.km	424	473
4	Urban population(percent)	NA	20.08
5	Sex ratio	995	994
6	Percentage of 0-6 years old	11.95	11.06

Tiruvannamalai stands 13th in population among the district's Tamil Nadu in 2011, as against 15th in position in 2001. The district has 79.9 percent of its population living in rural areas and 20.08 percent living in urban areas, and the district has four municipalities. The percentage variation since the previous census is 10.48 in rural and 23.85 in urban areas. It shows that the increase of urban population is comparatively at a faster rate than the rural population.

Basic Amenities

A better network of physical infrastructure facilities (well-built roads, rail links, irrigation, power and telecommunication, information technology, market-network and social infrastructure support, viz. health and education, water and sanitation, veterinary services and co-operative) is essential for development of the rural economy. All basic amenities Education (higher education, colleges, universities, Medical college, Transport facilities, Railway station, Bus station area available

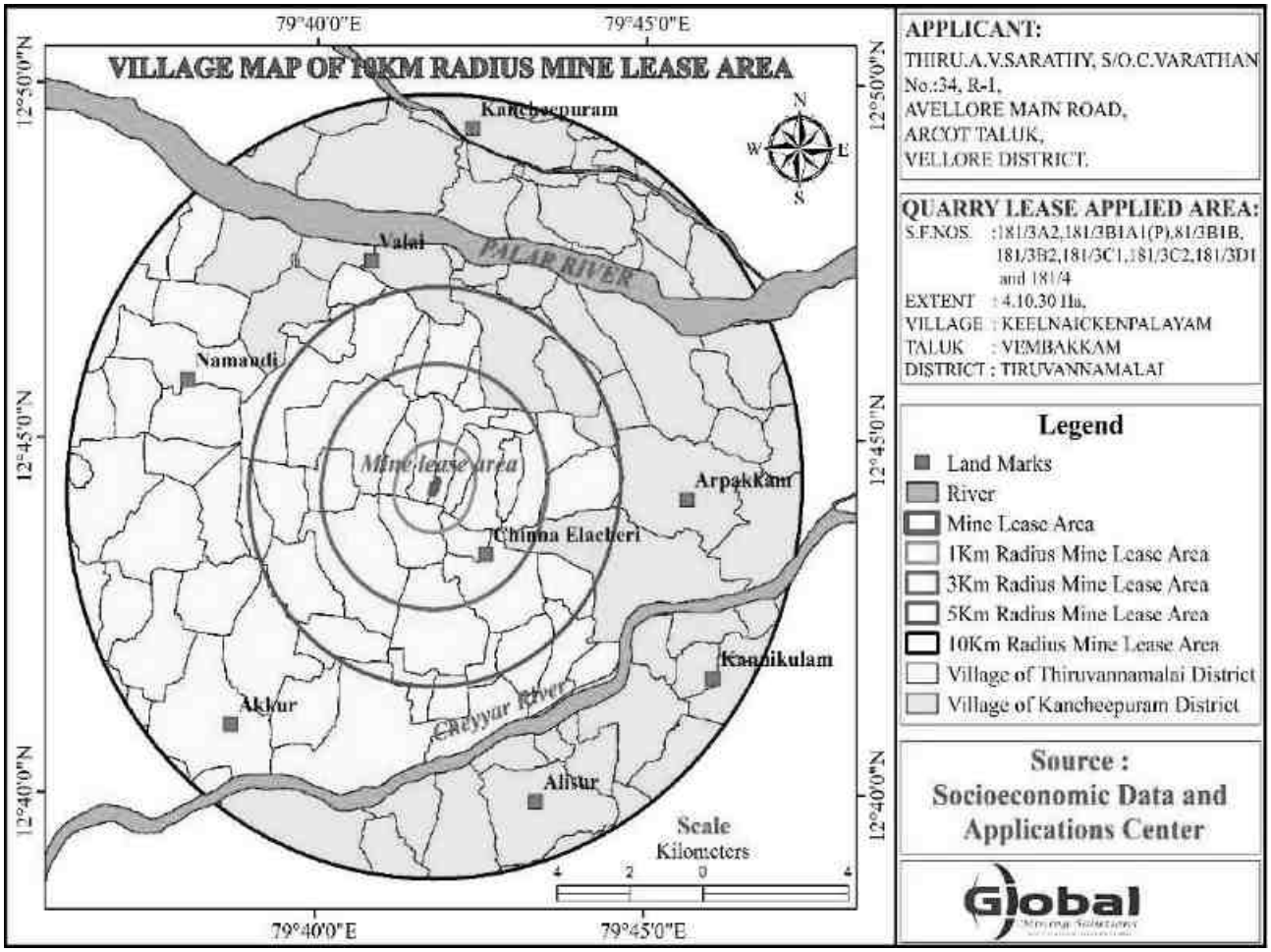

Figure 3.16 Village Map of the Study Area

Table 3.20 - Social, Economic and Demographic Profile of the Study Area

S. NO	Name	Household	Population	Male Population	Female Population	P_SC	ST Population	literatesPopulation	literate - Male	literate - Female	Total workers	Workers - Male	Workers - Female	Main workers	MAIN WORKers - Male	Main workers - Female
1	Vadakalpakkam	291	1222	628	594	605	46	826	483	343	736	388	348	508	295	213
2	Kizhnaickanpalayam	141	544	264	280	283	0	351	193	158	391	198	193	101	62	39
3	Mamandur	1021	4287	2155	2132	390	6	2939	1679	1260	2491	1367	1124	1745	1021	724
4	Kuranganilmuttam	187	702	365	337	573	6	490	289	201	450	247	203	450	247	203
5	Narasamangalam	392	1703	856	847	7	95	1045	613	432	978	547	431	947	540	407
6	Dusi (CT)	1384	5577	2811	2766	73	49	3706	2047	1659	2653	1694	959	2324	1601	723
7	Chellaperumpulimedu	130	545	277	268	5	0	320	194	126	249	148	101	247	147	100
8	Vallivagai	592	2543	1260	1283	879	0	1831	991	840	1481	819	662	1445	807	638
9	Vadakalpakkam	291	1222	628	594	605	46	826	483	343	736	388	348	508	295	213
10	Girijapuram	61	243	122	121	0	0	155	91	64	156	75	81	148	73	75
11	Menallur	363	1444	711	733	650	0	947	508	439	584	418	166	458	323	135
12	Poonaithangal	80	277	132	145	0	0	209	112	97	108	89	19	99	82	17
13	Kundiyanthandalam	170	703	351	352	381	0	472	262	210	254	200	54	97	76	21
14	Suruttal	304	1266	659	607	7	2	844	507	337	762	437	325	599	411	188
15	Chithalapakkam	145	589	284	305	9	0	298	170	128	277	160	117	138	108	30
16	Arasanipalai	287	1155	581	574	418	0	738	417	321	466	305	161	367	261	106
17	Kanikiluppai	187	771	380	391	618	0	517	285	232	476	240	236	469	238	231
18	Pallavaram	423	1743	865	878	384	25	1144	643	501	863	561	302	648	472	176
19	Abdullapuram	624	2594	1312	1282	463	0	2160	1132	1028	1100	763	337	1001	729	272
20	Punnai	194	707	338	369	264	14	485	269	216	496	244	252	464	224	240
21	Arasanipalai	287	1155	581	574	418	0	738	417	321	466	305	161	367	261	106
22	Ukkamperumbakkam	293	1243	597	646	558	58	872	464	408	544	360	184	239	188	51
23	Kallathur	352	1499	776	723	57	990	806	464	342	658	425	233	132	116	16
24	Vedal	508	2092	1036	1056	359	102	1503	840	663	1279	718	561	1260	714	546

25	Vada Mavanthal	456	1930	972	958	228	33	1334	760	574	868	561	307	683	436	247
26	Thalikkal	136	525	245	280	282	0	340	182	158	256	132	124	24	17	7
27	Vellakulam	178	830	420	410	149	0	597	338	259	517	252	265	269	150	119
28	Pillanthangal	316	1308	653	655	253	16	818	464	354	543	316	227	245	199	46
29	Vada Mavanthal	456	1930	972	958	228	33	1334	760	574	868	561	307	683	436	247
30	Namandi	318	2031	1185	846	542	1	1431	946	485	781	431	350	777	430	347
31	Hariharapakkam	263	1094	565	529	0	0	559	332	227	687	367	320	663	360	303
32	Kanagampakkam	55	231	126	105	0	0	146	97	49	134	84	50	52	36	16
33	Thiruvadirayapuram	159	631	318	313	0	0	458	247	211	358	197	161	358	197	161
34	Kizhnelli	402	1580	783	797	265	0	852	502	350	979	542	437	860	484	376
35	Chithathur	657	2654	1284	1370	587	63	1640	889	751	1291	791	500	888	694	194
36	Solavaram	203	782	379	403	227	32	486	290	196	501	259	242	257	141	116
37	Perumpulimedu	153	565	288	277	0	0	386	226	160	324	176	148	260	163	97
38	Kunnavakkam	315	1259	643	616	670	18	849	487	362	557	352	205	473	310	163
39	Pandiyampakkam	248	937	484	453	356	7	664	374	290	488	299	189	466	286	180
40	Karanai	139	677	351	326	666	0	426	250	176	450	235	215	450	235	215
41	Akkur	754	2896	1454	1442	583	96	1948	1086	862	1480	845	635	1051	650	401
42	Mahajanampakkam	407	1707	892	815	745	0	1196	701	495	913	553	360	892	547	345
43	Koozhamandal	409	1750	882	868	99	0	1246	707	539	818	525	293	726	477	249
44	Ukkal	611	2434	1209	1225	384	33	1712	948	764	1413	784	629	1074	749	325
45	Nemili	135	585	301	284	286	10	338	197	141	315	183	132	263	155	108
46	Sirunallur	136	563	267	296	315	0	336	185	151	302	172	130	291	165	126
47	Pudupalayam	214	853	407	446	474	0	662	335	327	456	264	192	454	263	191
48	Arasanipalai	287	1155	581	574	418	0	738	417	321	466	305	161	367	261	106
49	Vayalathur	117	505	257	248	313	7	321	172	149	210	140	70	209	140	69

50	Punnai	194	707	338	369	264	14	485	269	216	496	244	252	464	224	240
51	Chithalapakkam	145	589	284	305	9	0	298	170	128	277	160	117	138	108	30
52	Namandi	318	2031	1185	846	542	1	1431	946	485	781	431	350	777	430	347
53	Pillanthangal	316	1308	653	655	253	16	818	464	354	543	316	227	245	199	46
54	Kolivakkam	415	2010	1113	897	421	1	1391	867	524	585	429	156	535	402	133
55	Iyangarkulam	766	3012	1526	1486	301	11	2084	1164	920	1427	890	537	1259	846	413
56	Punjarasanthangal	350	1425	734	691	224	54	853	489	364	755	430	325	709	422	287
57	Valathottam	287	1182	592	590	391	0	796	443	353	615	380	235	607	374	233
58	Orikkai (CT)	3183	12638	6318	6320	2048	234	9482	5078	4404	4962	3542	1420	4049	3071	978
59	Vitchanthangal	254	1016	517	499	343	13	634	369	265	453	294	159	239	173	66
60	Thenambakkam (CT)	3473	13994	7070	6924	1862	258	9705	5255	4450	6103	4148	1955	4799	3496	1303
61	Kalur	786	3129	1560	1569	520	6	1945	1110	835	1563	981	582	1304	887	417
62	Koyambakkam	61	255	132	123	255	0	188	98	90	149	76	73	149	76	73
63	Asoor	323	1234	609	625	741	17	822	457	365	544	317	227	498	297	201
64	Nelveli	165	667	322	345	577	0	403	220	183	350	196	154	52	38	14
65	Arpakkam	731	2937	1475	1462	1626	320	1794	993	801	1269	819	450	1117	782	335
66	Kavanthandalam	461	1619	796	823	392	67	970	548	422	856	524	332	731	458	273
67	Karuveppampoondi	436	1652	846	806	844	19	1157	638	519	787	467	320	782	464	318
68	Ozhugarai	322	1240	613	627	488	0	697	415	282	544	355	189	392	273	119
69	Alisoor	461	1751	892	859	324	63	1093	627	466	970	601	369	961	599	362
70	Melpakkam	163	581	272	309	61	40	348	189	159	370	180	190	43	33	10
71	Hanumanthandalam	311	1278	625	653	248	30	817	481	336	689	388	301	424	341	83
72	Perunagar	1346	5499	2823	2676	2068	157	3466	1979	1487	2570	1604	966	1154	762	392
73	Silambakkam	114	461	244	217	0	11	270	173	97	197	144	53	194	142	52
	Total	**31612**	**129453**	**65426**	**64027**	**30878**	**3120**	**86986**	**48887**	**38099**	**62484**	**38338**	**24146**	**49118**	**32169**	**16949**

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4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 GENERAL

Environmental impacts both direct and indirect on various environmental attributes due to cluster quarries 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.

4.2 PROJECT SPECIFIC IMPACTS AND MITIGAION MEASURES

This is a proposed project and Semi – Mechanized Open Cast mining will be carried out to quarry out Rough Stone and Gravel. The identified impacts during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc., and the details of the same are elaborated in this chapter. The impact assessment is done for the peak production of the mine lease period and the entire area of quarry operation and can be construed as applicable for the entire lease period. 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.

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

- Land environment
- Soil environment
- Water Environment

- Air Environment
- Noise Environment
- Socio economic environment
- Biological Environment

The proposed mining activity is small and not likely to have any serious impacts on the existing environment of the area. However, the potential impacts of the proposed mining and related activities on various environmental parameters are discussed.

4.2.1 LAND ENVIRONMENT

4.2.1.1 ANTICIPATED IMPACT

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

The entire mine lease area of 4.10.30 Ha. is patta land. The project area of 3.54 Ha (except unutilized area - 7.5 m boundary barrier and 50m safety distance for canal) is proposed to be altered by effective quarrying operation such as excavation (3.10.0 Ha), Infrastructure (0.02 Ha), Road (0.02 Ha) and greenbelt (0.40.0 Ha). The ultimate depth of quarrying is proposed by formation of 1 pit with maximum depth of 44 m below the ground level and will not intersect the ground water table. The mine closure plan is given in 2.10. The present land use pattern and the post mining land use pattern is shown below.

Table 4.1 Land use pattern of the project site

Description	Present Area in Ha.	Area at the end of life of Quarry in Ha.
Quarrying pit	NIL	3.10.00
Infrastructure	NIL	0.02.00
Roads	NIL	0.02.00
Greenbelt	NIL	0.40.00
Unutilized	4.10.30	0.56.30
Total	**4.10.30**	**4.10.30**

A canal passing on northern side of the S.F.No.181/2, for which 50 m safety distance maintained.

- At the end of life of mine, the excavated mine pit / void of 3.10.0 Ha. 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 (0.40.0 Ha.) will be developed along the safety barrier and top benches and 0.04 ha are approach road and Infrastructure.
- Remaining 0.56.30 ha. of land will be covered with vegetation.

4.2.1.2 MITIGATION MEASURES

In the rough stone and gravel quarrying operation, land degradation is minimal. After completion of the quarrying operation, the land will be allowed to collect rainwater, this rough stone does not produce any toxic effluents in the form of solids, liquids, or gases.

It is a simple quarrying operation where 100% of stones will be removed systematically, according to the approved Mining Plan.

The periphery of the mining lease area will be converted to a greenbelt to prevent Noise and sound propagation to the nearby lands.

Entire mined out area will be properly fenced to prevent inadvertent entry of human and animals.

Since the entire material from the quarry face will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in this quarry. As such there will not be any wash out due to stock pile or waste dumps. To manage surface runoff, a 600-meter-long garland drain will be constructed around the quarry and connected to a settling pond with silt traps.

4.2.2 SOIL ENVIRONMENT

4.2.2.1 ANTICIPATED IMPACT

Mining activities often disrupt the existing environment as they involve disturbing the untouched earth materials. There is no top soil anticipated in this project, the surface consists of gravelly formation followed by Rough stone which is proposed to excavate completely during the quarrying operation, hence preservation of top soil does not exist. Erosion of top layer (gravel), extracted fine material can result in substantial sediment loading to surface waters and drainage ways. During rainy season surface run off may cause sedimentation in low lying areas.

4.2.2.2 MITIGATION MEASURES FOR SOIL EROSION AND SOIL CONSERVATION

- Runoff water will be collected in bottom of the quarry and used for plantation and dust suppression during dry season.no run off water will be discharged beyond lease area.
- Wet drilling and haul road water sprinkling will be carried out to minimise air born dust at source level, which may cause soil pollution due to sedimentation.
- Garland drains will be constructed around the project area with silt traps to control the soil erosion during rainy seasons.
- Greenbelt development (0.40.0 Ha.) all along the periphery of the project area (i.e., 7.5 m safety barrier) will ensure binding strength and minimizes soil erosion.
- Soil sampling will be carried out in the core zone for every season to ensure the soil quality is not affected due to the quarrying activities.

4.2.3 WATER ENVIRONMENT

4.2.3.1 ANTICIPATED IMPACT ON SURFACE AND GROUND WATER

The impact due to quarrying on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during quarrying process. The quarrying activity will not intersect ground water table as quarrying is proposed upto a depth of 44 m bgl and water table is found at a depth of 58m BGL.

A canal passing on northern side of the S.F.No.181/2, for which 50 m safety distance maintained.

No other water bodies close to the project site, The Palar River is situated 5.8 km to the north and Cheyyar river at 6.4 km in southeast direction. Vegavati river is situated at a distance of 8.7 km in northern side of the project. There is no proposal for discharging of wastewater outside the project area. There is no proposal for a rough stone processing or workshop within the project area, so no effluent is anticipated in the mine.

During rainy season rain water will be collected in the quarry pit and later used for greenbelt development and for the water sprinkling in the haul roads.

4.2.3.2 ANTICIPATED IMPACT DUE TO WATER USE IN MINE'S

The total water requirement for the project will be 3.5 KLD comprising Drinking 0.6 KLD, Dust suppression 1.5 KLD, Greenbelt 1.0 KLD and Domestic purpose 0.4 KLD. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for the same is shown in Figure No 4.1.

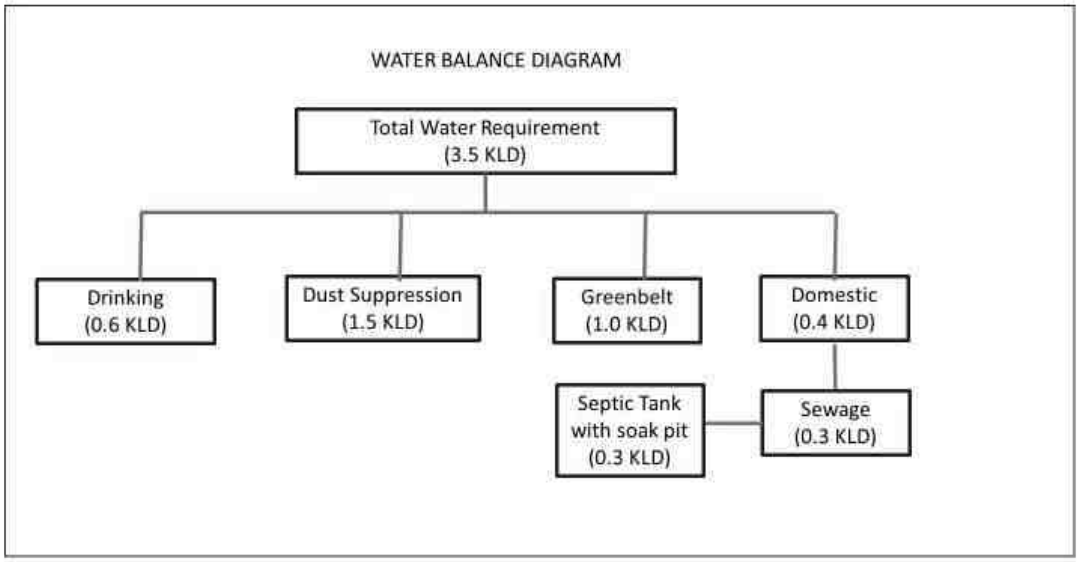

Figure 4.1 Water Balance Diagram

4.2.3.3 MITIGATION MEASURES

The following mitigation measures are suggested for water management

- Rainwater will be collected in lower part of the quarry pit by construction of garland drains to divert surface run-off and will be connected to setting tank of 6 m (l) x 6m (w) x 3m (d) to allow suspended solids to settle down if any. This collected water will act as a rain water harvesting system and will be used for dust suppression and greenbelt development.
- Regular water quality will be carried in nearby villages to ensure the water quality is not affected due to the quarrying activities.
- Domestic sewage from site office & urinals/latrines provided in project area will be discharged through septic tank followed by soak pit system.
- Only clear and settled water free from silt content will be used for dust suppression and greenbelt development.

- De-silting will be carried out before and immediately after the monsoon season and the settling tank and drains will be cleaned weekly, especially during monsoons.

4.2.3.4 RAINWATER HARVESTING PLAN

Since the lease proximate areas are with less water potential and the rainwater is the major source for replenishment of ground water, effective rainwater harvesting and other water augmentation measures are proposed in this project.

- Development of garland drain around the quarry connected to settling tank.
- Cleaning of drain periodically to prevent siltation
- The supernatant clear water from the settling pond will drain into the nearby channel on the eastern side of the lease.
- Utilizing the rainwater harvested in the mine pit to meet the water requirement of the project.

The average annual rainfall of the area is 900 mm. Taking into consideration of 0.35 as runoff co-efficient for mining area, the total quantity of rain water can be harvested per annum from the area has been tabulated as below.

Table 4.2 – Rainwater Harvesting Plan

S.NO	Rainwater Harvesting Area	Area in Sq.m	Average annual rainfall	Volume of harvestable quantity (Cum) of rain water per annum
1	Quarry Area	31000	0.9	9,765
2	Unutilized Area	5630	0.9	1773
Total Harvested Rainfall				**11,538**

Total surface water runoff is 11,538 Cum per Annum. 10% of this amount will be evaporated and rest 10,384 m3 will be recharged in the rain water harvesting pit.

The dimension of the rain water harvesting pond will be 40m x 20m x20m with capacity of 16000 cu.m. The rain water stored in the pond will be utilized for

plantation, dust suppression activities. The capacity of Rain water harvesting post will be sufficient to arrest the surface runoff from the lease area considering the highest amount of rain fall.

4.2.4 AIR ENVIRONMENT

The existing ambient air quality in the area has been described in Chapter-III. Opencast semi-mechanized mining, using jackhammer drilling, blasting, and excavation through an excavator, as well as mineral transport through tippers, will be carried out for the excavation of rough stone and gravel.

4.2.4.1 ANTICIPATED IMPACT

The proposed mining and allied operations may cause deterioration of air quality due to pollution arising from the project operation if prompt care is not taken. The principal sources of air pollution in general due to mining and allied activities will be:

The air-borne particulate matter generated by quarrying operations and transportation is mainly PM_{10} and PM2.5, and emissions of sulfur dioxide (SO_2) and oxides of nitrogen (NO_2) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

Furthermore, the loading, unloading, and transportation of rough stone and gravel, as well as wind erosion of the exposed area and movement of light vehicles, will cause pollution within a 500-meter radius of the project area due to quarrying activities. This has a cumulative impact on the ambient air environment around the project area.

4.2.4.2 MITIGATION MEASURES

The following measures will be adopted to control impact on the air quality due to mining operations in the lease area due to adoption of which, no major impact on air quality is envisaged due to this proposed opencast mining operation.

Table 4.3 Mitigative Measures for Air Environment

S.NO	Activity	Consequence	Mitigative Measures
1	Drilling	Dust Emission	Usage of wet drilling
			Covering of drill holes with wet cloth
			Usage of sharp drill bits for drilling of holes.
			Provision of dust mask to workers working at highly dust prone and affected areas.
2	Blasting	Prompt dust emission	Well-designed blasting parameter, effective stemming to achieve optimum breakage occurs without generating fines.
			Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
			Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
			Use of controlled blasting techniques with milli second delay detonators to keep the dust generation, noise as well as vibration level within the prescribed limits.
3	Excavation and Loading	Dust emission, Gaseous Emission	Proper maintenance of HEMM will be carried out to minimize dust and gaseous emission at the source level.
			Water sprinkling will be carried out at excavation and loading area.
			Imparting sufficient training to operators on safety and environmental parameters.
			Avoiding overloading of dumpers.
4	Transportation	Dust emission, Gaseous Emission	Regular wetting of transport road using mobile water tanker.

			Proper maintenance of haul road and other roads
			Avoiding overloading of tippers
			Covering of loaded tippers with tarpaulins during transportation
			Vehicular emissions will be controlled through regular and proper preventive maintenance only PUC valid vehicles will be used for transportation.
5	Greenbelt	Dust emission, Gaseous Emission	Development of greenbelt / barriers around mine in the safety zone and carrying out plantation within the lease area.
6	Occupation Health	Dust emanation, Gaseous Emission	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.

4.2.4.3 AIR QUALITY IMPACT PREDICTION

The AERMOD atmospheric dispersion modeling (AERMOD Cloud remote version) is used for assessment of incremental Ground level concentration (GLC) for the proposed production. Area source model taken into consideration taking into consideration of wet drilling and loading. Further line source model was taken into consideration for transportation through haul road. Baseline meteorological studies were conducted for the period of March to May 2023. The following sources are considered.

TABLE 4.4 Types of Source for Air Pollution in Mining

S. No.	Type of mining operation	Type of Source
1	Wet drilling	Point
2	Loading	Point
3	Transportation	Line

4.4.4.3.1 ARRIVING EMISSION FACTOR

Emission factor for PM_{10} for different activities are given below.

TABLE 4.5 Emission Factors for Mining Activities

S. No.	Activity	Emission factor	Unit
1	Wet drilling	0.00008	lb/s
2	Ore loading	0.0014	Kg/t/s
3	Transportation	0.26	Kg/VKT

Source

1. Jose I. Huertas & Dumar A, Camacho & Maria E. Huertas, Standardized emissions inventory methodology for openpit mining areas, Environmental Science Pollution Research, 2012.

AP-42. U.S Environmental Protection Agency, Office of Air Quality Planning and Standards

4.4.4.3.2 EMISSIONS FROM THE PROPOSED PROJECT

The emissions from each activity after the application of control and mitigation measures like water sprinkling, proper maintenance of transport vehicles, etc., are given below.

TABLE 4.6 Pm 10 And Pm 2.5 Emission From Mining Activities

S. No.	Activity	PM10	PM2.5
1	Wet drilling	0.22	0.04
2	Ore loading	0.87	0.16
3	Transportation	0.23	0.05

4.4.4.3.3 MODEL INPUT DATA:

The air pollution modeling carried out represents the normal operating scenarios. As the project is a mining project the major source of pollution is particulate matter. The SOx and NOx emission will be very less only due to vehicular emission. So the pollutant taken for prediction of incremental concentration is particulate matter (PM 10 & PM 2.5). The predicted incremental Ground Level Concentrations (GLCs) for particulate matter is likely to be contributed by the proposed project. The average predicted 24 hr average concentration has been tabulated as below.

EMISSION ESTIMATION

The emission estimations for the activities are detailed below.

Table 4.7 - Area Emissions – Total Material handling (Gravel)

Quantity, TPA	89604
Operational Hours Per Year	2400
Activity Rate, t/hr.	37.335
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	5.2269
Area of influence, m^2	625

Uncontrolled emission rate g/s/m^2	0.0000023231
Controlled emission rate, PM10 g/s/m^2	0.0000002323
Controlled emission rate, PM2.5 g/s/m^2	0.000000098

Table 4.8 - Area Emissions – Total Material handling (Rough Stone)

Quantity, TPA	344155
Operational Hours Per Year	2400
Activity Rate, t/hr.	143.3979167
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	20.07570833
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000089225
Controlled emission rate, PM10 g/s/m^2	0.0000008923
Controlled emission rate, PM2.5 g/s/m^2	0.000000375

Table 4.9 - Line Source – Transport of Rough Stone from Pit to Boundary

Quantity, TPA	237000
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	23700
Lead length/trip, Km	0.4
Total VKT/Year	9480
Emission Kg/VKT	0.26
Total emission Kg/Year	2464.8
Uncontrolled emission rate g/s/m	1.426388889
Controlled emission rate, PM10 g/s/m	0.142638889
Controlled emission rate, PM2.5 g/s/m	0.059908333

Table 4.10 - Line Source – Transport of Gravel from Pit to Boundary

Quantity, TPA	89604
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	8960.4
Lead length/trip, Km	0.4
Total VKT/Year	3584.16
Emission Kg/VKT	0.26
Total emission Kg/Year	931.8816
Uncontrolled emission rate g/s/m	0.539283333
Controlled emission rate, PM10 g/s/m	0.053928333
Controlled emission rate, PM2.5 g/s/m	0.022649900

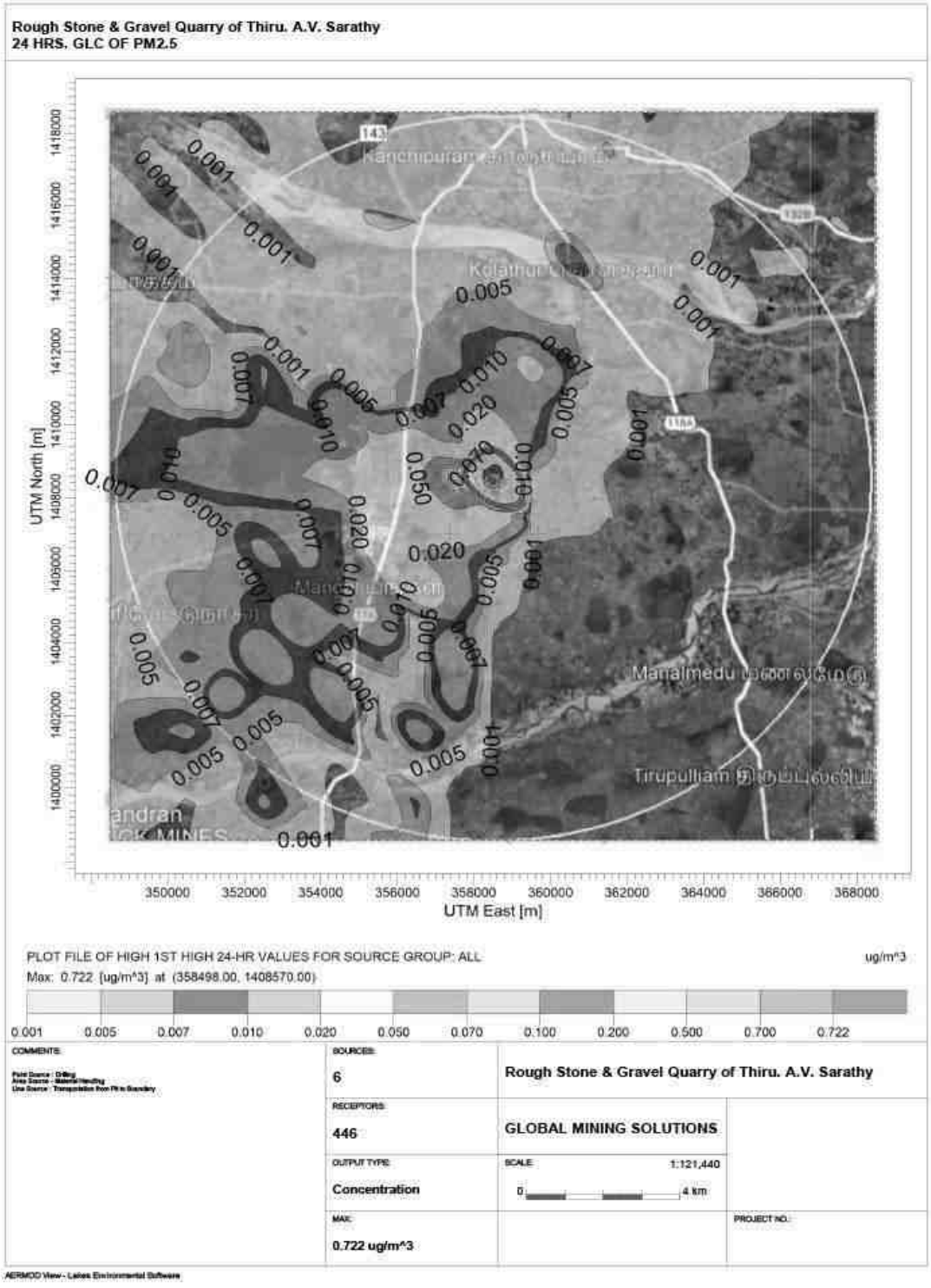

Figure 4.2 Isopleth of GLC Prediction for $PM_{2.5}$

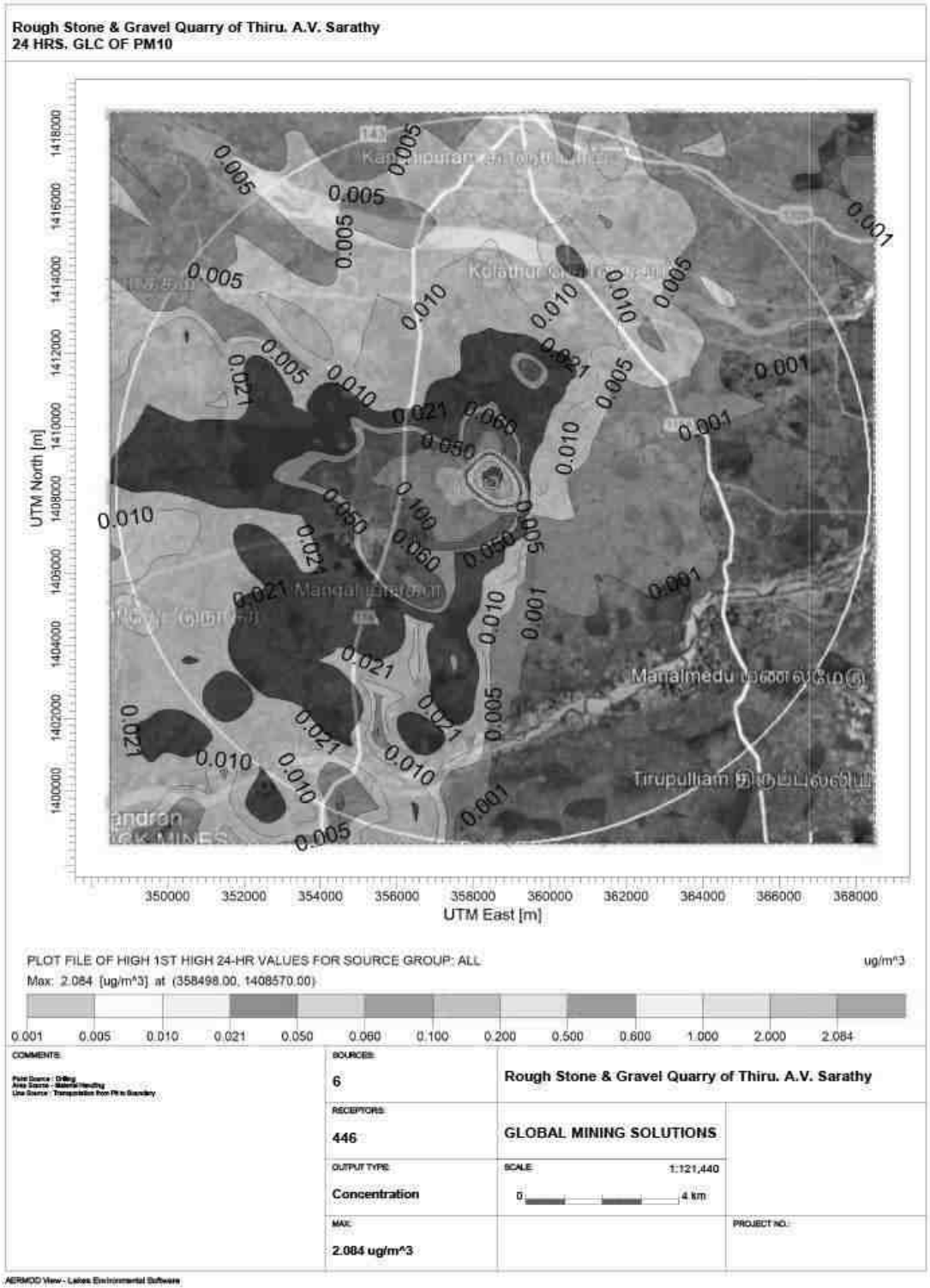

Figure 4.3 - Isopleth of GLC Prediction for PM10

4.4.4.3.4 PREDICTED AMBIENT AIR QUALITY:

The post project Concentrations of PM10, PM2.5, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 4.7 to 4.8.

Table4.11: Concentrations of PM $_{2.5}$ after Project Implementation

SL.No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m^3
1	Within Mine Lease area	33.4	<1.0	34.4	**60**
2	Girijapuram	26.2	<1.0	27.2	
2	Valavandal	27.5	<1.0	28.5	
3	Bhagavanthapuram	25.5	<1.0	26.5	
4	Narasamangalam	28.3	<1.0	29.3	

Table4.12: Concentrations of PM 10 after Project Implementation

SL.No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m3
1	Within Mine Lease area	76.1	2.0	78.1	**100**
2	Girijapuram	57.2	<1.0	58.2	
2	Valavandal	58.8	<1.0	59.8	
3	Bhagavanthapuram	56.8	<1.0	57.8	
4	Narasamangalam	60.2	<1.0	61.2	

The above report seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for PM_{10} are in the range of 57.8 µg/m^3 to 78.1 µg/m^3 and for $PM_{2.5}$ are in the range of 26.5 µg/m^3 to 34.4 µg/m^3 which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below.

- Wet drilling will be practiced in drilling operation.
- Water sprinkling will be done in haul roads & loading etc.
- The mines workers are provided with the dust masks.
- Three layer plantation in the safety zone.
- DG sets shall be periodically maintained as per manufacturer's specifications.

4.4.5 NOISE ENVIRONMENT

The ambient noise levels in the study area have been discussed in Chapter - III. The data shows that the existing noise levels are within statutory limits. The impact prediction and control measure for noise environment due to mining and allied activities is described below:

4.4.5.3 IMPACT DUE TO NOISE AND VIBRATION

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

Table 4.13 - The likely noise level in the lease area

SL.No	Source Name	Noise Level in dB (A)
1	Diesel generator	102
2	Excavator Operation	95
3	Trucks movement	95
4	Drilling	105
5	Blasting	120

4.4.5.4 MITIGATION MEASURES FOR NOISE CONTROL

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 are utilized for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will reduce noise;
- 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;
- Green Belt will be developed around the project areas 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 though training and awareness.
- Regular medical check–up and proper training to personnel to create awareness about adverse noise level effects

4.4.5.5 GROUND VIBRATION

The vibration due to blasting can cause damage to the nearby structures if appropriate technology and control measures are not adopted in the blasting operation. Fly rock is another possible damage causing outcome of blasting. There are many factors which influence fly rock during blasting. Most important of these factors are long explosive column with little stemming column, improper burden, loose material or pebbles near the holes and long water column in the hole.

Mitigative Measures

- Proper quantity of explosive, suitable stemming materials and appropriate delay system should be adopted to avoid overcharging and for safe blasting;
- Adequate safe distance from blasting should be maintained as per DGMS guidelines;
- Blasting shelter should be provided as per DGMS guidelines;
- Blasting operations shall be carried out only during day time;
- The charge per delay shall be minimized and preferably more number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity shall be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
- Blasting will be carried out under the supervision of statuary persons as approved by DGMS.
- A well-defined SOP will be framed under the leadership of top management and the same will be followed for each blasting.
- Regular PPV monitoring will be carried out to ensure PPV limits i.e., 0.5 mm/s.

4.4.6 BIOLOGICAL ENVIRONMENT

4.4.6.3 ANTICIPATED IMPACT

- The deforestation, soil degradation, water, air, and noise pollution caused by mining operations typically have a direct or indirect negative impact on the fauna and floral composition of the project region.
- Although impacts on important habitat components will happen on a local level, they would not be crucial for the life cycle requirements of the species as seen or anticipated on a regional level.
- Additionally, during the conceptual stage, the top bench's mined-out areas will be re-vegetated by planting native or local species, and the lower

benches will be converted into rainwater harvesting structures after the mining activities are finished, replacing habitat resources for fauna species in this area for a longer period of time.

4.4.6.4 MITIGATION MEASURES

- Necessary mitigative measures like dust suppression, proper maintenance of equipment's, roads will be carried out to prevent dust generation.
- There is no proposal to discharge any effluent into nearby water bodies.
- Surface runoff management structures like garland drain, settling pond, protective bund etc. as explained above will be constructed and as such there will not be any appreciable impact on surface water quality which in turn can affect the bio diversity of the area.
- Construction of barbed wire fencing all around the boundary to prevent falling of animals in the mine pits.

4.4.6.5 GREENBELT DEVELOPMENT PLAN

In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly in proposed mine lease area earmarked for plantation program as per Approved Mining Plan in different phases. This habitat improvement program would ensure the faunal species to re-colonize and improve the abundance status in the core zone. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area.

Table – 4.14 GREENBELT DEVELOPMENT PLAN

Year	No. of trees proposed to be planted	Survival %	Name of the Species	No. of trees expected to be grown
I	50	80%	Neem, Casuarina, Pongamia pinnata, etc.,	40
II	50	80%		40
III	50	80%		40
IV	50	80%		40
V	50	80%		40

Nearly 0.40 Ha. of area is proposed for Greenbelt development by planting 50 Nos of trees during every year and expected growth is around 40 Nos @ survival rate of 80%.

The objectives of the green belt cover will cover the following:

- Noise abatement.
- Reuse of waste water to the extent possible.
- Prevention of soil erosion.
- Ecological restoration.
- Aesthetic, biological and visual improvement of area due to improved vegetative and plantations cover.

4.4.7 SOCIO – ECONOMIC

From the primary Socio-economic survey & through secondary data available from established literature and census data 2011, it is found that there would be positive impact on Socio-economic condition of the nearby area. There is no habitation within 300 m of the proposed mining lease area. Therefore, no major impact is anticipated on the nearby habitation during the entire life of the mine. The entire lease area is in the proponent's possession. Hence, there are no habitations or hutments in the core zone area and no rehabilitation or resettlement problems will arise here.

The mining operations in the proposed mine will employ about 27 persons directly and 20 people on indirect basis through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise, which will provide raising income levels and standards of living in the area through various service related activities connected with the project operations as shown under.

- Project related logistical operations for transport of Rough Stone & Gravel, etc,

- Various trading services for consumer goods, spare parts, sundry items, etc.
- Contractual services connected with the project.
- Green belt and horticultural works in the project.
- Casual labor needs for various activities.

The State and the Central governments will also get benefited through financial revenues by way of royalty, tax etc from this project.

Mine management will contribute for the upliftment of these villages by conducting regular medical camps, assistance in developing necessary infrastructure facilities like maintenance of schools, village roads, drinking water supply, etc.

From above details, it is clear that the project operations will have highly beneficial positive impact in the area. However, towards the socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.5.0 Lakhs under Corporate Environmental Responsibility.

4.4.8 OCCUPATIONAL HEALTH AND SAFETY

Primary data collection through field survey conducted in the study area reveals that there is no reported incident of any occupational diseases in the area. Hazardous jobs like blasting, loading, etc. are planned to be executed safely and with all precautionary measures as prescribed in Metalliferrous Mines Regulations of 1961, so as to minimize hazards and incidences of health problems.

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

- Respiratory hazards
- Noise
- Explosive storage and handling

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

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

Occupational Health Survey

All the persons will undergo pre-employment and periodic medical examination as per DGMS and 12th National Mines Safety Council recommendation.

The PP will maintain occupational health history card for their Employees.

The PP will establish first aid station within project site.

Good Drinking Water specialty will be provided at the site level.

4.4.9 WASTE MANAGEMENT

4.4.9.3 SOLID WASTE

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

4.4.9.4 LIQUID WASTE

There is no process effluent generation from this mine. Hence no liquid waste is generated. Domestic wastewater i.e 0.3 KLD will be discharged in soak pit via septic tank.

4.4.9.5 HAZARDOUS WASTE MANAGEMENT

In this project the following management practices will be followed:

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

4.4.9.6 PLASTIC WASTE

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

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5.0 ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.1 ALTERNATE TECHNOLOGY

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

5.2 ALTERNATE SITE

The project is a mining project and will be operated within the lease grant area. So no alternate sites have been assessed. Since the resource (Rough stone and Gravel) is site-specific, the chosen location is the only site to carry out Rough Stone & Gravel quarry.

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6 ENVIRONMENTAL MONITORING PROGRAMME

6.1 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 CTE/CTO.

6.2 MONITORING MECHANISM

The PP will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level control, plantation programme, social development schemes, etc in the mine.

6.3 ENVIRONMENTAL MONITORING SCHEDULE AND FREQUENCY

The monitoring schedules are planned for systematic study of various pollution levels with respect to air and water qualities, noise levels, etc. to ensure that they conform to the standards laid down by Environmental Protection Act and various statutory Limits. However, based on the need and priority it may be suitably

modified / improved in consultation with local authorities. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints. The monitoring schedules to be adopted in this quarry are given below.

Table 6.1 Environmental Monitoring Schedule

S.NO	Environmental Attribute	Parameters to be monitored	Monitoring Locations	Frequency
1	Air Quality	Particulate Matter (PM2.5 and PM10), Sulphur dioxide (SO2), Oxides of Nitrogen (NO2), Respirable.	4 locations in the buffer zone and 2 work zone locations.	Once in season
2	Water Quality	General, Physical, and chemical parameters	Ground Water samples (around the project area) and Mine Pit water samples	Once in season
3	Hydrogeology	Water Levels	Nearby wells and Borewells	On yearly basis pre and post monsoon level
4	Noise	Leq. Lmax Lmin, Leq Day & Leq Night dB(A	Work zone locations and buffer zone villages	Once in Season
5	Vibration	Peak Particle Velocity	Mine periphery	Regular Interval
6	Soil	Physical and Chemical Characteristics	2 Locations (1 Core & 1 Buffer)	Once in Season.
7	Greenbelt	Maintenance	Within the lease area	Regular interval

6.4 BUDGET FOR IMPLEMENTAION

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and Monitoring work will be outsourced to external laboratory approved by NABL / MoEF. The capital and recurring cost required for the project are detailed in below table.

Table 6.2 - Environmental Management Plan Budget

Sl .No	Budget planned for	Capital Cost Amount (INR)	Recurring Cost/Annum Amount (INR)
1	Air Environment	11,61,030	2,84,030
2	Water Environment	11,500	5,000
3	Noise monitoring	50,000	2,000
4	Implementation of EC, Mining Plan & DGMS Condition	12,13,750	9,00412
5	Greenbelt Development	5,80,000	60,000
Total		**30,16,280**	**12,51,442**

6.5 SUBMISSION OF PERIODICAL REPORTS

The monitored data on air quality, water quality, noise levels and other environmental attributes will be periodically examined by the 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 – Six month EC compliance report
- TNPCB - Half yearly CTO Compliance report
- MOEF & CC & TNPCB – annual Environmental Statement Report. (Form – V)
- Annual Hazardous Waste Return(Form – IV)
- Department of Geology and Mining: quarterly, half yearly annual reports.

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7 ADDITIONAL STUDIES

The following Additional Studies were done as per items identified by project proponent and the regulatory authority.

- Public Consultation
- Risk Assessment
- Disaster Management Plan
- Cumulative Impact Study
- Mine Closure Plan
- Slope Stability Plan
- Hydrogeological Study

7.1 PUBLIC CONSULTATION

This draft EIA/EMP report will be exposed to public consultation as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.

7.2 RISK ASSESSMENT

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 person holding certificate of competency to manage a metalliferous mine granted by the DGMS. Factors of risks involved due to human induced activities in connection with this proposed mining & allied activity with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

Table 7.1 Risk Assessment and Control Measures

S.NO	Risk Factor	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. 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. Quarry operation will be done as per approved mining plan and other applicable statutory guidelines issued by DGMS, Dept. of Mining & Geology-TamilNadu. Handling of explosives, charging and firing shall be carried out under competent statutory persons. A comprehensive standard operating procedure (SOP) will be prepared as per DGMS guidelines and the same will be circulated to all the employees and it will be strictly followed in the all face of mining operation.
2	Drilling	Improper and unsafe practices. Due to high pressure of compressed air, hoses may burst. Drill Rod may break.	Safe operating procedure established for drilling (SOP) will be strictly followed. Only trained operators will be deployed.

			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. Drilling shall not be carried on simultaneously on the benches at places directly one above the other. Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. Drills unit shall be provided with wet drilling to ensure efficient working.
3	Blasting	Fly rock, ground vibration, Noise and dust. Improper charging, stemming & Blasting/ fining of blast holes. Vibration due to movement of vehicles.	Restrict maximum charge per delay as per approved mining plan. Proper blasting design with optimum spacing & burden, Charge per delay and stemming. SOP for Charging, Stemming & Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation. Shots are fired during day time only. Charging and firing shall be carried out in the same day. Siren will be done for each blasting. Blasting evacuation plan prepared and executed. The danger zone will be distinctly demarcated (by means of red flags).
5	Transportation	Potential hazards and unsafe workings contributing to accident and injuries. Overloading of material.	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

		While reversal & overtaking of vehicle. Operator of truck leaving his cabin when it is loaded.	audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition. Unauthorized person will not be allowed to operate or ride on the vehicle. Loading according to the vehicle capacity. Periodical maintenance of vehicles as per operator manual.
6	Natural calamities	Unexpected happenings	An emergency management plan will be prepared considering all possible national calamity and the same will be executed if any such situation occurs. Escape Routes will be provided to prevent inundation of storm water. Fire Extinguishers & Sand Buckets in the designated areas.
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.

7.3 DISASTER MANAGEMENT PLAN

This being a small rough stone project that too working in a safe area, no major disaster is expected after following all the statutory rules and regulations.

7.3.1 MODEL DISASTER MANAGEMENT PLAN

The lessee has formulated the disaster Management plan keeping all eventualities in mind.

The mining operation will be carried out under the direction of qualified mines manager and supervisors, based on the guidelines and directions of Directorate General of Mines Safety (DGMS) and Indian Bureau of Mines. Code of practice of different operations will be formulated to ensure safety of men and machines and to avoid various hazards mentioned above. Mine workers will be provided training on safe work practices. The following natural/ industrial hazards may occur during normal operation; slope failure at the mine faces; accident due to heavy equipment/ machinery.

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.

- 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.

7.3.2 OBJECTIVE OF DISASTER MANAGEMENT PLAN

The objective of disaster management plan is to identify mitigation measures to avoid hazards turning in to risk, the materials required for implementing the same, the personnel requirement and their roles and responsibilities, and the communication and operating procedures to be adopted in case of an emergency.

Communication System

The telephone numbers and addresses of mine sites in the vicinity, nearest fire station, police station, local hospital, electricity department, ambulance, and local public representatives and revenue officials shall be prepared and kept in custody of PP.

Facilities

The office shed will have provision of first aid centre to provide first aid in the event of an emergency. The office shed will also function as emergency control room. It will be provided with telephone and mobile phones, and a vehicle for emergency transport.

Personnel

The PP is responsible for overall supervision of the disaster management plan. He will be assisted by supervisors, in implementing the emergency management plan and procedures.

Operating Procedures

The operating procedures during emergencies are related communication to the immediate supervisor, who would relay the same to PP. The PP may assess the requirement of first aid, external assistance, transportation to nearby hospital contingent on the emergency. In the absence of mines manager, the senior most supervisor will be made responsible for disaster management.

7.4 CUMULATIVE IMPACT STUDY

There are two existing Quarries and 1 Abandoned quarry within a radius of 500 m from this proposed project area. The existing and proposed quarries situated within 500 m radius are presented in below Table 7.2 and the letter received from Dept. of Geology and Mining, Tiruvannamalai stating the quarries detail within 500m radius is enclosed in Annexure – 3.

Table 7.2 Details of Quarries within 500m radius

S.NO	Name and address of the lessee	Quarry Location	Extent in Ha.	Lease period
Existing Quarry				
1	Tvl.NRM Sons Blue Metals, 97A, Ottakuthar St, Mamallan Nagar, Kanchipuram District.	Kizhnaickenpalayam 171/9, 171/12 (Girijapuram) & &103/4, 103/5, 103/6 & 103/10	2.75.0	17.12.2021 to 16.12.2031
2	Thiru.K. Devaraj, S/O.T.Kanniyappan, No.105, Gandhisilai St, Lakshmipuram Village, Vempakkam Taluk, Tiruvannamalai District	Girijapuram 83/11F, 83/11G, 83/11H, 92/1B, 92/3A, 92/3B, 92/3C, 98/13A & 98/14A	2.06.0	15.10.2018 to 14.10.2023
Abandoned Quarry				
1	Thiru. L.Sudhakar, S/O, Loganathan, No.82, Palla Street, Agaram Village, Thenneri Post, Kancheepuram	Girijapuram 94/4, 95/2, 96/1, 103/11 & 103/12	3.51.5	14.09.2017 to 13.09.2022
Proposed Quarry				
1.	Thiru. A.V. Sarathy S/O, Varathan No-34, R-1, Vellore Main Road, Arcot Taluk, Vellore District	Keelnayackenpalayam 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4	4.10.30	Under Processing (This Project)
Total Mine Lease area in cluster (Excluding Abandoned Quarry)			**8.91.30**	**-**

As seen above, although the individual lease area of this project is less than 5 hectares, the existing Quarries (2 Nos) within a 500-meter radius, along with this subject project, add up to more than 5 hectares i.e. 8.91.30 Ha. A map showing the existing and proposed quarry located within 500m radius is given in Figure 1.1.

7.4.1 AIR ENVIRONMENT

The cumulative production load of existing and proposed Rough stone and gravel quarries within cluster is shown in below table.

Table 7. 3 Salient Features of Existing & Proposed Quarries

Description		P1	P2	P3
Name of the Quarry		Thiru.A.V. Sarathy	Tvl. N.R.M.Sons Blue Metals	Thiru.K. Devaraj
Geological Resources in m3	Rough stone	16,35,960	21, 33,360	2,57,400
	Gravel	81,798	53,926	17,160
	Weathered Rock	81,798	-	-
Mineable Reserves in m3	Rough stone	4,71,330	4, 94,295	64,550
	Gravel	60,678	42,488	11,468
	Weathered Rock	57,622	-	-
Production per day in m3	Rough stone	314	330	43
	Gravel	150	71	19
	Weathered Rock	143	-	-
Lorry Loads per day in Nos	Rough stone	32	55	7
	Gravel	15	12	3
	Weathered Rock	15	-	-
Employment in Nos		27	24	12
Proposed Depth in meters		44	47	43
Status of the quarry		Proposed	Existing	Existing

Based on the above production quantities the emissions due to various activities in all the 3 mines (2 Existing + 1 Proposed) includes various activities like ground preparation, excavation, handling and transport.

7.4.2.1 EMISSION ESTIMATION FROM CLUSTER

Table 7. 4 Incremental & Resultant GLC within cluster for $PM2_{.5}$

SL.No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Within Mine Lease area	33.4	<1.0	34.4	60
2	Girijapuram	26.2	<1.0	27.2	
2	Valavandal	27.5	<1.0	28.5	
3	Bhagavanthapuram	25.5	<1.0	26.5	
4	Narasamangalam	28.3	<1.0	29.3	

Table 7. 5 Incremental & Resultant GLC within cluster for PM_{10}

SL.No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Within Mine Lease area	76.1	6.65	82.75	100
2	Girijapuram	57.2	<1.0	58.2	
2	Valavandal	58.8	<1.0	59.8	
3	Bhagavanthapuram	56.8	<1.0	57.8	
4	Narasamangalam	60.2	<1.0	61.2	

The air quality modeling report for cluster seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for PM_{10} are in the range of 57.8 µg/m³ to 82.75 µg/m³ and for $PM_{2.5}$ are in the range of 26.5 µg/m³ to 34.4 µg/m³ which are within the statutory limits in each case.

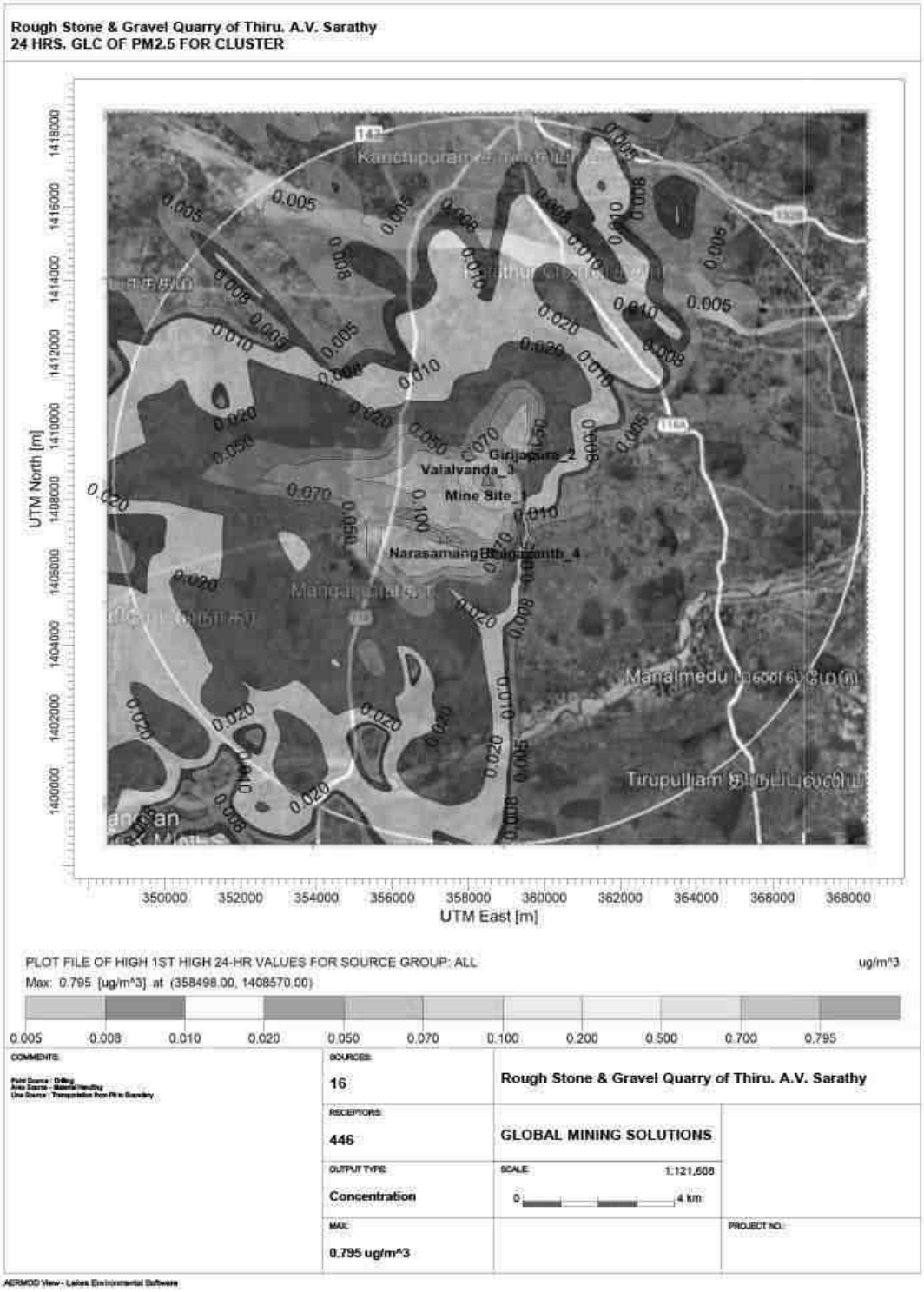

Figure 7.1 Cluster Isopleth of GLC Prediction for $PM_{2.5}$

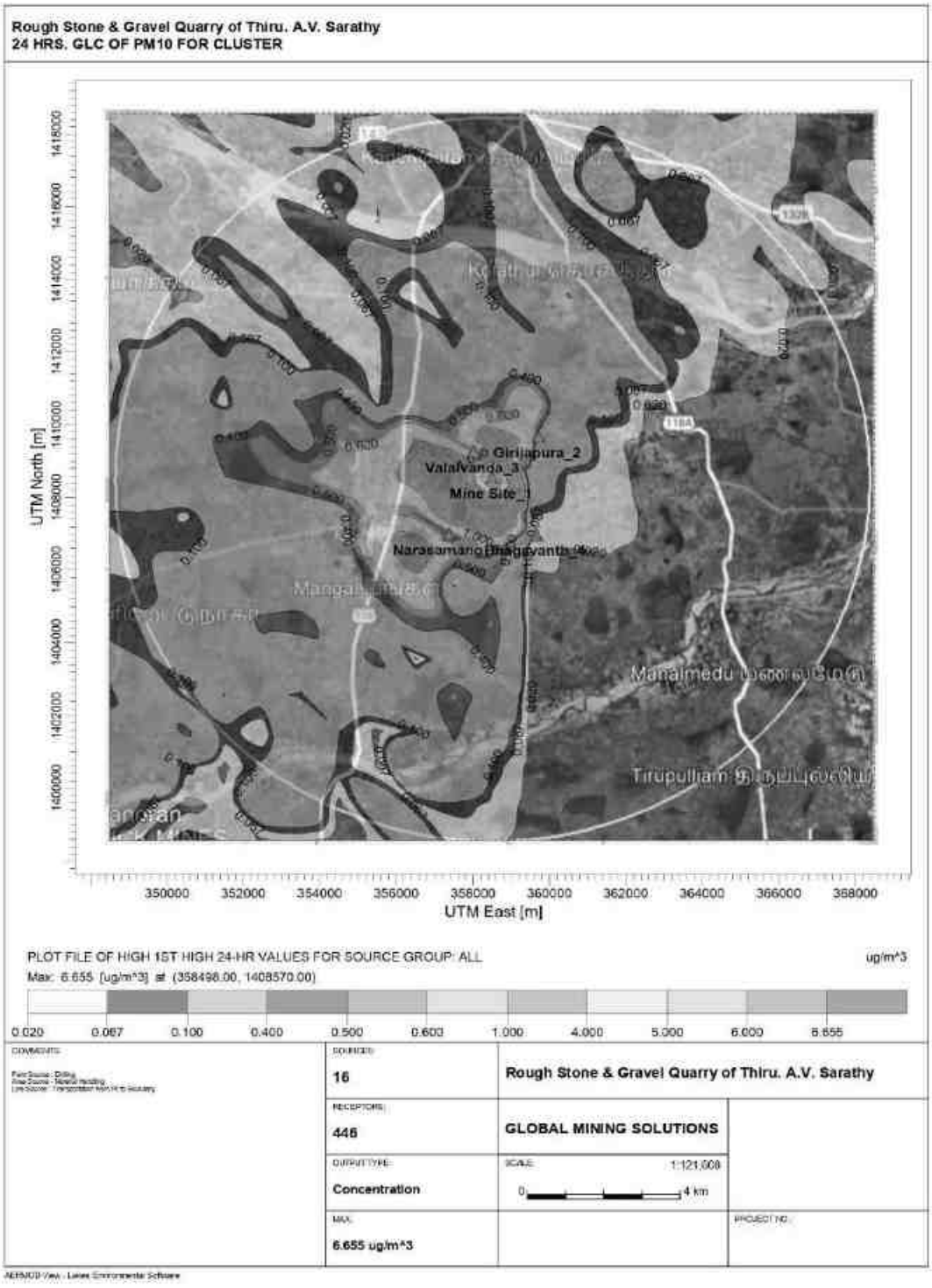

Figure 7.2 - Cluster Isopleth of GLC Prediction for PM_{10}

7.4.3 CUMULATIVE IMPACT ON TRAFFIC

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

Table 7. 6 – Impact on Traffic

Quarry	Description	Rough Stone	Gravel	Weathered Rock	Total
P1	No. of Lorry Load per day	32	15	15	62
P2		55	12	-	67
P3		7	3	-	10
Total					**139**

As two quarries already exist, they are part of the current traffic. The proposed project will bring 62 trips per day. The existing road can absorb this additional traffic due to this project. Various measures like proper maintenance of road, covering of the loaded truck with tarpaulin, water sprinkling will be carried out to ensure no adverse impact on the logistical front.

7.4.4 CUMULATIVE IMPACT ON SOCIO-ECONOMIC ENVIRONMENT

The mining operations in the 3 mines will provide direct employment opportunity and indirect employment opportunity for scores of people through allied opportunities in logistics, contract workers, trading, repairing works etc. Various mitigative measures suggested in this report will be properly implemented to ensure that no adverse impact is felt on the socio economic and ecological front in the area.

Table 7.7 SOCIO ECONOMIC BENEFITS FROM 3 MINES

	Employment	Project Cost	CER
P1	27	Rs. 96,11,800/-	Rs.500000/-
P2	24	Rs. 49, 80,000/-	Rs 99,600/-
P3	12	Rs. 66,69,000/-	Rs 1,29,900/-
Total	**63**	**Rs.2,12,60,800/-**	**Rs.7,29,500/-**

7.5 CLUSTER MINE CLOSURE PLAN

In the mine closure stage all necessary measures will be taken as per Act & Rules, there is no proposal for back filling, reclamation and rehabilitation in any of the proposals. The quarried pits after the end of life of mine will be properly fenced all around to prevent inherent entry of public and cattle and all the statutory requirements will be fulfilled. As already explained, in the post mining stage the rainwater harvested in the mined- out void shall be utilized for irrigation and domestic needs locally. The mine closure plan is provided in Figure 2.12.

7.6 SLOPE STABILITY PLAN

The factors that affect slope stability of the mine are detailed below.

- Geological structure comprising dip, intervening shear zone formation, clay intrusion, joints / discontinuities, faults etc.,
- Lithology of formation
- slope geometry
- Ground water availability which may cause increased thrust on the faces

Site Specific Analysis

- The quarry lease area is plain terrain which is covered by weathered rock formation. The rock type noticed in the lease area is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian.
- Since the formation is of homogeneous rock type probability of slope failure is low and can be avoided if proper measures are adopted.
- There will be a 7.5m safety zone which will form a ridge which can also take care of the top section and as such no risk is envisaged on this front.

Mitigation Measures

- Regular inspection of the mine faces to be carried out by pp for ensuring absence of any structural features like faults, joints, dyke, intrusive material in the rock strata which may affect the slope stability and cleared.

- No loose material or boulders is to be stacked on the mine top or pit benches.
- Height of the benches should be 5m.
- Haul road formation will be at 1 in 15 slope with adequate road width.
- There will be no ground water table intersection.
- No seepage is expected due to formation. Adequate drainage management system comprising peripheral garland drain, settling pond to regulate monsoon water will be created to prevent saturation of compact layers, apparent drainage over the bench slope to avert damages to quarry face and manage the water flow.

7.7 HYDROGEOLOGICAL STUDY

Ground water generally occurs under phreatic conditions in the weathered mantle and under semiconfined conditions in the fissured and fractured zones at deeper levels. The depth of dug wells ranged from 30 to 80 m BGL. The yield of large diameter wells in the district, tapping the weathered mantle of crystalline rocks ranges from 50 to 100 lpm and are able to sustain pumping for 2 to 6 hours per day. The yield characteristics of wells vary considerably depending on the topographic set-up, lithology and nature of weathering. The ground water table in this area is ranging from 55m and 58 m BGL.

The Palar River is situated 5.8 km to the north and Cheyyar river at 6.4 km in southeast direction. Vegavati river is situated at a distance of 8.7 km in northern side of the project. Palar river in the north and Cheyyar in the south control the drainage pattern of the area. The study area falls in the Vembakkam block which is categorized as safe zone as per G.O (MS) No 113 dated 09.06.2016.

The quarrying operation is proposed upto a depth of 44 m maximum below ground level, the water table in the area is 58 m below ground level, hence the project will not intersect the Ground water table during entire quarry period.

8 PROJECT BENEFITS

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

The mining activity at proposed Rough Stone & Grave of Thiru. A.V. Sarathy will create direct employment opportunity for 27 local people. The PP has proposed CER amount of Rs. 5.0 Lakhs for project surrounding schools development.

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9 ENVIRONMENTAL COST BENEFIT ANALYSIS

Environmental Cost Benefit Analysis is recommended during the scoping stage, if needed. In the TOR granted by SEIAA, Tamil Nadu, it is not recommended. Hence not applicable.

10 ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management plan is a site-specific plan. It is developed to ensure that the project is implemented in an environmentally sustainable manner, where all contractors and subcontractors, including consultants if any, understand the potential environmental risks arising from the project and take appropriate actions to minimize those risks. EMP also ensures that the project implementation is carried out in accordance with the planned design and by taking appropriate mitigation measures to reduce adverse environmental impacts during project's life cycle.

10.1 ENVIRONMENTAL POLICY

The Project Proponent – Thiru. A.V. Sarathy shall carry out all the quarrying operations and activities in an environmentally responsible manner and to continually improve environmental performance.

The Proponent will:

- Abide by all laws, ordinances, rules, and regulations that are pertinent to its operations and activities.
- Allocate the resources required to guarantee that the environmental policy is carried out.
- Implement a programme to educate employees about environmental issues in general and their personal environmental responsibilities at work.
- Set up monitoring systems to alert as soon as there is a problem or a performance that is unexpected in relation to environmental protections.

10.2 ENVIRONMENTAL MANAGEMENT PLAN

The impacts due to this mining project are detailed in chapter 4. Mitigation measures at the source level and an overall Management Plan at the site level are elaborated in this chapter. Details of EMP measures for implementation in the mine are given in the table 9.1.

Table 10.1 - ENVIRONMENTAL MANAGEMENT PLAN

Environmental Parameter	Mitigation Measures
Air	Wet drilling to suppress the dust emission from drill machine
	Regular water sprinkling on haulage road through fixed water sprinkler.
	1.5 m3/day of water will be used for dust suppression.
	Avoiding blasting during high wind period, night times and temperature inversion periods.
	Regular grading of haul road to clear accumulation of loose material.
	It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements
	Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution
	Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted air pollution control measures.
	Afforestation for control of dust.
Water	
Surface water	A canal passing on northern side of the S.F.No.181/2, for which 50 m safety distance maintained. No other water bodies close to the project site, The Palar River is situated 5.8 km to the north and Cheyyar river at 6.4 km in southeast direction. Vegavati river is situated at a distance of 8.7 km in northern side of the project. There is no effluent discharge from this proposed Quarry. So no impact is anticipated. Surface runoff management structures like garland drain of required length which is connected to a settling pond will be constructed around the quarry to collect the rain water. Monthly or after rainfall, inspection for performance of water management structures and systems. There is no discharge of any effluent into nearby water bodies.

Ground Water	The quarrying operation is proposed upto a depth of 44 m maximum below ground level, the water table in the area is 55m & 58m below ground level, hence the project will not intersect the Gund water table during entire quarry period.
Water Consumption and Wastewater generation	The required water of 3.5 KLD will be procured from outside agencies initially and later rainwater harvested in the mine pit shall be used other than drinking purpose.
	Domestic wastewater generation of 0.3 KLD will be discharged in soak pit via septic tank.
	Conduct ground water and surface water monitoring for parameters specified by CPCB
Noise	The workers employed are provided with personal protective equipment (PPE) as such, earmuffs and ear- plugs for the protection from high noise level generated at the mine site wherever required.
	Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
	Development of thick greenbelt all along the Buffer Zone (7.5 Meters) of the project area to attenuate the noise and the same will be maintained.
	Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation.
	Regular ambient noise level monitoring are 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.
Ground Vibration and Fly Rock Control	Controlled blasting using delay detonators will be carried out to maintain the PPV value well within the prescribed standards of DGMS.
	Drilling and blasting will be carried under the supervision of qualified persons.
	ensure blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material.
	Undertake noise or vibration monitoring.
Land Environment	There is no change will be in the land use pattern as mentioned in the approved mining plan a such mine pit, safety zone etc., At conceptual stage, the mining pits will be converted into Rain Water Harvesting. Remaining area will be converted into greenbelt area.
	Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.

	The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.
	Frequent Soil and ground water testing as per Environmental Monitoring Plan.
Top Soil / Overburden	There is no waste anticipated in this rough stone and gravel Quarry. The entire quarried minerals will be utilized.
Biological Environment	During mining, three layer thick plantation will be carried out around the project periphery, on safety barrier zone, on top benches of quarried out area etc.,
	The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
	Regular review on Green belt development programme.
	Year wise greenbelt development plan mentioned in Chapter IV

10.3 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. The organizational chart for the same has been given below.

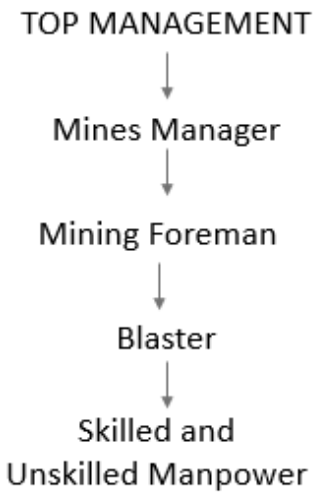

Figure 10.1 Organization Chart

The action plan for monitoring consists of monitoring of following environmental components.

- Monitoring of the water/ waste water quality, air quality and solid waste generated
- Analysis of the water and air samples collected through external laboratory
- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- Co-ordination of the environment related activities within the project as well as with outside agencies
- 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.

10.4 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. 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 detail medical examination at the time of employment.

10.5 BUDGETARY PROVISION FOR ENVIRONMENTAL MANAGEMENT

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

Table 10.2 Environmental Management Plan Budget

Sl .No	Budget planned for	Capital Cost Amount (INR)	Recurring Cost/Annum Amount (INR)
1	Air Environment	11,61,030	2,84,030
2	Water Environment	11,500	5,000
3	Noise monitoring	50,000	2,000
4	Implementation of EC, Mining Plan & DGMS Condition	12,13,750	9,00412
5	Greenbelt Development	5,80,000	60,000
Total		**30,16,280**	**12,51,442**

10.6 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.

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11. SUMMARY AND CONCLUSION

11.1 INTRODUCTION

This EIA Report is prepared for Thiru. A.V. Sarathy Rough Stone & Gravel Quarry over an extent of 4.10.30 Ha. patta lands in S.F. No. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu in compliance with ToR obtained vide Lr.No.SEIAA-TN/F.No.9767/SEAC/ToR-1448/2023, dated: 09.05.2023.

Although the individual lease area of this project is less than 5 hectares, the existing Quarries (2 Nos) within a 500-meter radius, along with this subject project, add up to more than 5 hectares i.e. 8.91.30 Ha. A map showing the existing and proposed quarry located within 500m radius is given in Figure 1.1.

This cluster includes the nearby two existing Quarries namely Tvl.NRM Sons Blue Metals, Kizhnaickenpalayam, 171/9, 171/12 (Girijapuram) & &103/4, 103/5, 103/6 & 103/10 (2.06.0 Ha) and Thiru.K. Devaraj, Girijapuram, 83/11F, 83/11G, 83/11H, 92/1B, 92/3A, 92/3B, 92/3C, 98/13A & 98/14A (2.75.0 Ha.).

This project proposed to produce 4,71,330m3 of Rough Stone, 57,622m3 of Weathered Rock and 60,678m3 of gravel formation and for the period of 5 years with ultimate depth upto 44m.

11.2 PROJECT DESCRIPTION

Table 11.1 Salient Features of the Project

Description	Salient Feature
Name of the Project	Thiru. A.V. Sarathy Rough Stone and Gravel Quarry
Location of the Project	S.F. No. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

Latitude & Longitude	Latitude: 12°44'13.44"N to 12°44’25.54"N Longitude: 79°41'44.11"E to 79°41'51.88"E
Toposheet No.	57 P/9,10,13 & 14.
ML Area	4.10.30 Ha
Type of Land	Patta Land
Geological Resource	Rough Stone – 16,35,960m3 Gravel – 81,798m3 Weathered Rock - 81,798m3
Mineable Reserves	Rough Stone – 4,71,330m3 Gravel – 60,678m3 Weathered Rock - 57,622m3
Life of the mine	5 years
Proposed depth of mining	44 m
Method of Mining	Opencast semi mechanized mining involving drilling and blasting
Proposed bench height and width	Bench Height & Width – 5m.
Total Waste	NIL
Top Soil / Overburden	There is no waste anticipated in this rough stone and gravel Quarry. The entire quarried minerals will be utilized.
Water Requirement & source	Total – 3.5 KLD. The required water will be procured from outside agencies initially. Later, water collected in the mine pit will be used to meet the needs.
Proposed Manpower Deployment	27 Nos
Total Project Cost	Rs. 96,11,800/-
Nearest Highway	The Nearest National Highway (NH-48) Chennai – Krishnagiri which is about 15.0Km on the Northern side of the area. The State Highway (SH-116) Kanchipuram – Vandavasi is about 2.7Km on Southern side of the area.
Nearest Railway Station	Kanchipuram – Chengalpattu line - 10.5Km on the Northeastern side of the area.
Nearest Airport	Chennai – 59.0 Km – NE
Nearest Major Water bodies	Core Zone A canal passing on northern side of the S.F. No. 181/2 for which 50m safety distance maintained. Buffer Zone Canal – 2.1 km, N Canal – 5.8 km, (SE)

	Mamandur Tank – 3.7 km, W Palar River- 5.8 km, N Cheyyar River – 6.4km, (SE) Vegavati River – 8.7 km, N
Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	NIL within 10 km radius
Reserved / Protected Forests	NIL within 10 km radius
Nearest Village	Valavandal - 700m – NW Girijapuram - 1.3km - NE Bagavandapuram - 1.7Km – SE Narasamangalam - 1.8Km-SW
Seismic Zone	Zone II

11.3 DESCRIPTION OF THE ENVIRONMENT

The baseline monitoring study was carried out during March to May 2023 to assess the existing environmental scenario in the area. For the purpose of EIA studies, project area was considered as the core zone and area outside the project area up to 10km radius from the periphery of the project site was considered as buffer zone. Baseline Environmental data has been collected for: -

a) Land

b) Water

c) Air

d) Noise

e) Biological

f) Socio-economic status

11.3.1 LAND ENVIRONMENT

The existing land use pattern of the study area is tabulated below in table 10.2.

Table - 11.2 Land use Pattern of the study area

Sl.No.	LULC_CLASS	Area in Sq.km	Percentage (%)
1	Agriculture/Plantation	217.40	67.17
2	Settlement	20.40	6.30
3	Fallow land	9.39	2.90
4	Land with scrub	7.12	2.20
5	Land without scrub	1.14	0.35
6	Mining process	2.57	0.79
7	Water bodies	65.64	20.28
Total		**323.65**	**100**

Source: Survey of India Toposheet and Landsat Satellite Imagery

11.3.2 SOIL CHARACTERISTICS

Results of the soil samples show that the pH values were found to be 6.56 to 7.52 and Electrical Conductivity values were ranging between 65.2 – 96.4 µmhos/cm. Soils are generally Silt Loam. Organic matter values were ranging between 0.66 – 0.75 %. Total Nitrogen values were ranging between 170 – 210 mg/kg. Phosphorus values were ranging between 0.57 – 1.56 µg/g. Potassium values were ranging between 360 – 635 mg/kg. Sodium values were ranging between 121 – 675 mg/kg. Total Sulphur values were observed to be BDL. The soil quality data for the 3 samples collected and analyzed are provided in Table no – 3.14.

11.3.3 AMBIENT AIR QUALITY

The results of ambient air quality monitoring for the period (March to May 2023) are presented in Chapter 3. The ambient air quality data for PM10, PM2.5, SO2, NO2, CO studied at 5 locations as per prescribed guidelines/ methods. As per the monitoring data, the PM10 values were in the range of 47.9 – 76.1 µg/m3. PM2.5 values were in the range of 21.4 – 33.4 µg/m3. SO2 levels were ranging from 4.4 – 7.6 µg/m3. NO2 levels were ranging from 6.2 – 15.1 µg/m3. While comparing with the NAAQ

Norms laid by MoEF, all monitored values of PM10, PM2.5, SO2, NO2 & CO were found to be well within the prescribed standards. The CO values in the all locations found to be below detectable limit (DL – 1144 µg/m3).

11.3.4 WATER ENVIRONMENT

Surface Water

The pH varied from 7.7 to 7.9 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH). Total Dissolved Solids varied from 500 to 713 mg/l. Chloride varied between 63 mg/l and 85mg/l. Nitrates varied from 21.7 to 29.3mg/l, while sulphates varied from 42 to 61 mg/l.

Ground Water

Suitability of ground water for drinking/irrigation/industrial purposes is determined keeping in view the effects of various chemical constituents present in water as required human use, plant use. Though many ions are very essential for the growth of plants and human body but when present in excess, have an adverse effect on health and growth.

As Per the data it has been observed that the pH value varies from 7.38 – 7.81, Chlorides Ranges From 84.5 - 243 mg/l, Sulphates value found to be between 98.6 - 202 mg/l, Fluoride Ranges low in lease area i.e. 0.18 – 2.69, Hardness varies from 255 - 492 mg/l, and Total dissolved solid 520 - 1150 mg/l. The ground water has been analyzed as per IS10500: 2012 and found to be suitable for drinking purpose. So the results of chemical and bacteriological analysis of water samples are classified under good class for drinking purpose with respect to total dissolved solids. Total hardness of the samples ranged from soft to moderately hard waters and can be fairly used for drinking. Regular ground water monitoring is suggested as the quality of ground water may fluctuate with groundwater consumption and seasonal variations.

11.3.5 NOISE ENVIRONMENT

From the table 3.11 it is observed that the day Equivalent Noise (Leq-d) level were ranging from 45.5 to 51.3 dB(A) and Night Equivalent Noise (Leq-n) level were ranging from 40.4 to 45.3 (A). Day and Night Equivalent Noise (Leq-n) level were ranging from 44.6 to 49.8 dB(A). While comparing with the MoEF Norm of 55 dB(A) for day time and 45 dB(A) for night time in Residential areas, the monitored ambient noise levels are within the limit values.

11.3.6 BIOLOGICAL ENVIRONMENT

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. Hence this small operation over short period of time will not have any significant impact on the surrounding flora and fauna.

11.3.7 SOCIO-ECONOMIC ENVIRONMENT

An attempt has been made to assess the impact of the proposed mining project at Keelnaickenpalayam Village on Socioeconomic aspect of the study area. The various attributes that have been taken into account are population composition, employment generation, occupational shift, household income and consumption pattern. Implementation of the Proposed Mine Project will generate both direct and indirect employment. Besides, Mining operation will be legally valid and it will bring income to the state exchequer.

11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND 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 Chapter 4 of this report.

The project proponent will adopt all the necessary mitigation measures and management plan mentioned in this report and also comply the conditions stipulated in Environmental clearance and CTO of this project.

11.5 ENVIRONMENTAL MONITORING PROGRAM

Environmental Monitoring program will be conducted for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB. Post project monitoring program is detailed in Chapter 6.

PP will supervise the overall environmental management plan of the project during operation. The capital cost of Rs. 30,16,280 /- and the recurring cost of Rs. 12,51,442/- have been allocated under the EMP budget.

11.6 ADDITIONAL STUDIES

Terms of Reference with Public Hearing (ToR) for the project was issued vide Lr.No.SEIAA-TN/F.No.9767/SEAC/ToR-1448/2023, dated: 09.05.2023. Now, this Draft EIA / EMP Report is prepared for conducting Public Hearing as the projects falls under B1 Category.

No high-risk accidents are anticipated as it is small scale semi-mechanized Quarry with essential light machinery. The area is not prone for landslides, seismic activities, subsidence, floods, inundation etc. As there are no rivers and habitation in the vicinity of probable disaster from the mine lease area. Elaborate description in respect of Risk Assessment and Mine closure plan are given in Chapter – 7.

Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius along with this subject project works out to >5 Ha. A Cumulative impact study is conducted to determine the impact of the

existing and proposed quarries located within 500m radius on the environment and are detailed in Section 7.4.

11.7 CONCLUSION

EIA study was performed as per the approved ToR. Various environmental attributes were studied relating with aspects of mining activities. The related impacts were identified and evaluated. Considering all the possible ways to mitigate the environmental concerns, Environmental Management Plan was prepared and accordingly fund was allocated. The EMP has been dynamic, flexible and subject to periodic review.

The project will increase the revenue of the State Govt. as well as it will help in the social upliftment of the local community. The green belt development programme will help in increasing the green cover in the area. Thus, the proposed project is not likely to affect the environment or adjacent ecosystem adversely.

The Mine Management will be responsible for the project 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.

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12 DISCLOSURE OF CONSULTANTS

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

Declaration by Experts contributing to the proposed Rough Stone & Gravel Quarry over an extent of 4.10.30 Ha, while total cluster area of 8.91.30 Ha at Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

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

M. MANIKANDAN

EIA Coordinator Name: M. Manikandan

EIA CO-ORDINATOR
GLOBAL MINING SOLUTIONS
SALEM

Signature & Date

Period of involvement: March 2023 to May 2023.

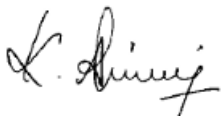
Contact information:

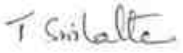
M/s Global Mining Solutions

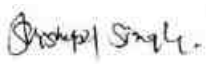
Plot No.6, SF No. 13/2, A2, VS City, RC Chettypatty,

Kottamettupatty, Omalur,

Salem, Tamil Nadu – 636 455

S. No.	*Functional areas*	*Name of the expert/s*	*Involvement (period and task**)*	*Signature and Date*
1	*AP*	*Dhanalakshmi Ramanathan*	*Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation measures for air pollution.* *Period: March 2023 to May 2023.*	
2	*WP*	*Abirami Kaliaperumal*	*Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact.* *Period: March 2023 to May 2023.*	
3	*SHW*	*Ramadoss N*	*Assessment of waste generated from the project, suggested waste management practices.* *Period: March 2023 to May 2023.*	

4	*SE*	*Sarasvathy K*	*Baseline SE study. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan.* *<u>Period: March 2023 to May 2023.</u>*	
5	*EB*	*Saravanan S*	*Baseline data collection of related to ecology of the area.* *<u>Period: March 2023 to May 2023.</u>*	
6	*HG*	*Ravinthiran N*	*Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area.* *<u>Period: March 2023 to May 2023.</u>*	
7	*AQ*	*Srilatha Thiruveedhula*	*Air quality modeling utilizing the area source model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures.* *<u>Period: March 2023 to May 2023.</u>*	

8	*NV*	*Dhanalakshmi Ramanathan*	*Ambient noise study of the area. Incremental noise generation due to quarry operation and impact of the noise due to the project.* *Period: March 2023 to May 2023.*	
9	*LU*	*Dhanalakshmi Ramanathan*	*Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment.* *Period: March 2023 to May 2023.*	
10	*RH*	*S.V. Prashant*	*Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker.* *Period: March 2023 to May 2023.*	
11	*SC*	*Shisupal Sing*	*Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil.* *Period: March 2023 to May 2023.*	

12	*GEO*	*Valliappan Meyyappan*	*Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area.* *Period: March 2023 to May 2023.*	

TM-FAE:

S.No	Name of TM (FAE)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	M. Prabu	LU	T.Srilatha	March to May 2023	Associated with FAE in preparing Land use map based on satellite imagery, Land use classification and analysis, Impact prediction on surrounding land environment	
		HG	Ashok Kumar		Associated with FAE in studying hydrogeological pattern of study area, Studying ground water and the impact of the project on ground water	
2	M. Manikandan	EB	S.Saravanan	March to May 2023	Associated with the expert in baseline data collection related to ecology of the study area	
		SC	Shishupal Singh		Associated with the expert in Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	

TM-FAA:

S.No	Name of TM (FAE)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	Suresh	WP	*Abirami Kaliaperumal*	March to May 2023	Associated with the expert in assessing existing water quality, studying impact of the project on surface and ground water quality, suggesting mitigation measures for minimizing impact	M.Suresh
		AP	Dhanalakshmi		Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	
2	S.Kamaraj	SC	Shishupal Singh	March to May 2023	Associated with the expert in Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	S.Kamaraj
		RH	S.V.Prashant		Associated with the expert in Identification of the Risk related to the mining activities. Preparation of	

					emergency disaster management plan. Plan for supply of safety equipment for the workers	

ANNEXURE-1

ANNEXURE

நக.எண்:.144/கனிமம்/2022

துணை இயக்குநர், அலுவலகம்,
(புவியியல் மற்றும் சுரங்கத்துறை)
திருவண்ணாமலை-4.
நாள்: 21.12.2022.

அறிவிக்கை

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - திருவண்ணாமலை மாவட்டம் - வெம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள்.181/1A (0.18.5), 181/3A1 (0.83.48), 181/3A2 (0.93.52), 181/3B1A1 (0.54.12), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் 5.17.62 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க - குவாரி குத்தகை உரிமம் வழங்கக்கோரி திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவர் விண்ணப்பம் செய்தது - பரிந்துரை அறிக்கை வரப்பெற்றது - சுரங்கத் திட்டம் **(Mining Plan)** தயார் செய்து சமர்ப்பிக்க கோருவது - தொடர்பாக.

பார்வை:
1. திரு.A.V.சாரதி த/பெ.C.வரதன் எண்.34 R-1, வேலூர் மெயின் ரோடு, ஆற்காடு வட்டம், வேலூர் மாவட்டம் என்பவரின் விண்ணப்ப நாள்.17.06.2022.
2. இவ்வலுவலக கடிதம் நக.எண்.144/கனிமம்/2022, நாள் 17.06.2022.
3. வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் கடிதம் நக.அ5/3122/2022, நாள்.27.08.2022.
4. திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவரின் கடித நாள்.30.11.2022.
5. உதவி புவியியலாளர் புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களின் புலத்தணிக்கை அறிக்கை நாள்.01.12.2022
6. அரசாணை (MS)எண்.169 தொழில்துறை (எம்.எம்.சி1) துறை நாள்.04.08.2020.

❖❖❖❖❖❖

திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள்.181/1A (0.18.5), 181/3A1 (0.83.48), 181/3A2 (0.93.52), 181/3B1A1 (0.54.12), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் 5.17.62 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரி திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவர் அளித்த பார்வை 1-ல் கண்ட விண்ணப்பத்தின் மீது பார்வை 3-ல் கண்ட வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் பரிந்துரை அறிக்கை வரப்பெற்றது.

2. இந்நிலையில் பார்வை 4-ல் காணும் திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவர் கடிதத்தில் 10 ஆண்டுகளுக்கு கல்குவாரி குத்தகை உரிமம் வழங்க கோரியதை 5 ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்குமாறும் மேலும், குத்தகை உரிமம் கோரிய புலங்களில் புல எண்கள்.181/3A1 (0.83.48) மற்றும் 181/3B1A1 (மொத்த ஹெக்டேர் 0.54.12)-யில் 0.05.34 ஹெக்டேர் மட்டும் நீக்கம் செய்து மீதமுள்ள புலங்களான புல எண்கள்.181/3A2 (0.93.52), 181/3B1A1 (பகுதி) (0.48.78), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் **4.10.30** ஹெக்டேர் பரப்பில் குத்தகை உரிமம் வழங்குமாறும் கோரியிருந்தார்.

3. அதனைத்தொடர்ந்து பார்வை 5-ல் காணும் திருவண்ணாமலை மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, துணை இயக்குநர் அலுவலக உதவி புவியியலாளர் அவர்கள் அளித்த பரிந்துரை அறிக்கைகள் பரிசீலிக்கப்பட்டது.

4. மேற்படி செய்யார் வருவாய் கோட்ட அலுவலர் மற்றும் திருவண்ணாமலை மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, துணை இயக்குநர் அலுவலக உதவி புவியியலாளர் ஆகியோரின் பரிந்துரை அடிப்படையில **திரு.A.V.சாரதி த/பெ.C.வரதன்** என்பவருக்கு சாதாரணக்கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க 5 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரிய வெம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள்.181/3A2 (0.93.52), 181/3B1A1 (பகுதி) (0.48.78), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் 4.10.30 ஹெக்டேர் நிலப்பரப்பில் எவ்வித தடையும் இன்றி குவாரிப்பணி செய்ய வாய்ப்பு உள்ளதால், மேற்படி விண்ணப்பதாரார் திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க குவாரி குத்தகை உரிமம் வழங்க பரிந்துரை செய்யப்பட்ட **4.10.30** ஹெக்டேர் பரப்பினை கற்குவாரி செய்ய உகந்த புலம் **(Precise Area)** என தீர்மானித்து கீழ்கண்ட நிபந்தனைகளுக்கு உட்பட்டு அறிவிப்பு செய்யப்படுகிறது.

<u>நிபந்தனைகள்</u>

1) விண்ணப்ப புலத்தில் கிழக்கு-மேற்கு மற்றும் வடக்கு-தெற்காக செல்லும் தாழ் மின்னழுத்த கம்பிகளுக்கு 50மீ பாதுகாப்பு இடைவெளி விட வேண்டும் (அ) குத்தகை ஒப்பந்த பத்திரம் எற்படுத்தும் முன் மாற்றம் செய்யப்பட்டதற்கான தமிழ்நாடு மின்உற்பத்தி மற்றும் பகிர்மானக் கழகம் லிமிடெட், திருவண்ணாமலை சான்று சமர்ப்பிக்கப்பட வேண்டும்
2) பிரஸ்தாப புலத்தின் வடக்கே புல எண்.181/2 உள்ள கால்வாய்க்கு 50மீ பாதுகாப்பு இடைவெளி விட வேண்டும்.
3) விண்ணப்ப புலத்திற்கு அருகில் உள்ள அரசு புறம்போக்கு நிலத்திற்கு 10மீ பாதுகாப்பு இடைவெளி விட வேண்டும்.
4) அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5மீ பாதுகாப்பு இடைவெளி விடவேண்டும்.
5) பொதுமக்களுக்கும் அருகிலுள்ள நிலங்களுக்கும் எவ்வித பாதிப்பும் ஏற்படுத்தக்கூடாது.
6) குவாரிப்பணி தொடங்குவதற்கு முன்பாக குவாரியை சுற்றி முள் கம்பிவேலி அமைத்து குவாரிப்பணி தொடங்க வேண்டும்.
7) முறைப்படியும், விஞ்ஞானபூர்வமாகவும் குவாரிப்பணி செய்யவேண்டும்.
8) சான்றிதழ் பெறப்பட்ட போர்மேன், வெடிப்பாளர் மற்றும் சுரங்க மேலாளர் மூலம் முறையே குவாரிப்பணி செய்யப்பட வேண்டும்.
9) குவாரிப்பணி தொடங்குவதற்கு முன் சுரங்க பாதுகாப்பு இயக்குநர், சென்னை அவர்களுக்கு தகவல் தெரிவிக்கபட வேண்டும்.
10) பாறைகளைத் தகர்க்க கைத்துளைப்பான்களை கொண்டு பாறைகளை துளையிட்டு குறைவான வெடிபொருட்கள் பயன்படுத்த வேண்டும

5. **தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதிகள் 41 மற்றும் 42-ன்படி** கல் மற்றும் இதர சிறு கனிமங்களுக்கு குவாரி குத்தகை உரிமம் வழங்கும் முன்பு ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மை சான்று பெறப்பட வேண்டும் என வரையறுக்கப்பட்டுள்ளது.

6. எனவே, திரு.A.V.சாரதி த./பெ.C.வரதன் என்பவர் ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மைச் சான்றினை பெற்று சமர்ப்பிக்கும் பட்சத்தில் வெம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள்.181/3A2 (0.93.52), 181/3B1A1 (பகுதி) (0.48.78), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் **4.10.30** ஹெக்டேர் பரப்பில் கற்குவாரி செய்ய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் **1959** விதி எண்*19(1)* மற்றும் *20*-ன்கீழ் 5 ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்க உரிய நடவடிக்கை மேற்கொள்ளப்படும் என்ற விவரம் தெரிவிக்கப்படுகிறது.

7. மேலும், இவ்வறிவிப்பு கிடைக்கபெற்ற *90* நாட்களுக்குள் மேற்சொன்ன நிபந்தனைகளையும் குறிக்கும் வகையில் வரைவு சுரங்கத்திட்ட அறிக்கை தயார் செய்து துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களிடம் ஒப்புதல் பெற சமர்ப்பிக்குமாறும் அறிவுறுத்தப்படுகிறது.

துணை இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
திருவண்ணாமலை.

<u>பெறுநர்:</u>
திரு.A.V.சாரதி
த./பெ.C.வரதன்
எண்.*34* R-1, வேலூர் மெயின் ரோடு,
ஆற்காடு வட்டம்,
வேலூர் மாவட்டம்.

ANNEXURE-2

Annexure-I

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From

Thiru.A.Perumal, M.Sc., M.Phil.,
Deputy Director,
Geology and Mining,
Tiruvannamalai - 4.

To

Thiru.A.V.Sarathy,
S/o. Varathan,
No.34, R-1, Vellore Main Road,
Arcot Taluk,
Vellore District.

Rc.No. 144/Kanimam/2022, dated:06.01.2023

Sir,

Sub: Quarries and Minerals – Minor Mineral Rough Stone and Gravel – Tiruvannamalai District – Vembakkam Taluk – Keelnaickenpalayam village – Patta SF.No.181/3A2 & etc., over an extent 4.10.30 hects., - Application preferred by **Thiru.A.V.Sarathy S/o. Varathan** – Precise area communicated – Submission of Mining Plan for approval - Approved - Regarding.

Ref:
1. Application from Thiru.A.V.Sarathy S/o. Varathan dated.17.06.2022.
2. Precise Area Communication Notice Rc.No.144/Kanimam/2022, dated.21.12.2022
3. Mining Plan submitted by Thiru.A.V.Sarathy S/o. Varathan dated.05.01.2023.

*****

In the reference 2nd cited, the Deputy Director, Geology and Mining Tiruvannamalai has communicated the SF.Nos.181/3A2 (0.93.52), 181/3B1A1 (Part) (0.48.78), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) over an extent 4.10.30 hects., of Keelnayackenpalayam village, Vembakkam Taluk, as precise area to the applicant **Thiru.A.V.Sarathy** for grant of quarry lease for quarrying Rough Stone and Gravel for a period of 5 years with a direction to produce an approved mining plan in respect of the precise area as per Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959 by incorporating the conditions stipulated in the Deputy Director, Geology and Mining Tiruvannamalai letter dated 21.12.2022.

2. In response to the precise area communication letter issued by the Deputy Director, Geology and Mining, Tiruvannamalai the applicant has prepared the draft Mining Plan through the Recognized Qualified Person for approval vide reference 3rd cited.

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

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

ii) All the conditions stipulated in the Deputy Director, Geology and Mining Letter Rc.No.144/Kanimam/2022 dated:21.12.2022 have been incorporated in the mining plan.

iii) The reserves estimated in the mining plan is

Depth in Mts.	Geological reserves in Cu.m	Mineable Reserves in Cu.m
44m below ground level (2m Gravel + 2m Weathered Rock + 40m Rough Stone)	Rough Stone : 16,35,960 Weathered Rock : 81,798 Gravel : 81,798	Rough Stone : 4,71,330 Weathered Rock : 57,622 Gravel : 60,678

4. In the light of the above, in exercise of the powers conferred under Rule 41 (7) of Tamil Nadu Minor Mineral Concession Rules, 1959 the mining plan in respect of Rough Stone quarry of Thiru.A.V.Sarathy is approved subject to the following conditions.

i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.

ii) The approval of the mining plan does not in any way imply the approval of the Government it 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, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under and the Tamil Nadu Minor Mineral Concession Rule s, 1959.

iii) iii) The mining Plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

iv) Quarrying operations and production shall be carried out as per the approved Mining Plan and the applicant shall be liable to pay the cost of mineral if there is any deviation in the quantum indicated in the approved year wise quantum of production and any such cases as on date are to be dealt with as per Court direction.

Encl: 2 Copies of Approved Mining Plan.

Deputy Director,
Geology and Mining,
Tiruvannamalai.

6/11/23

Copy submitted to:

1. The Chairman, SEIAA,
   Tamil Nadu, 3rd Floor, Panagal Maaligai,
   No.1, Jeenis Road, Saidapet, Chennai-15.
2. The Commissioner of Geology and Mining, Chennai-32.
3. The District Collector, Tiruvannamalai.

MINING PLAN FOR KEELNAICKENPALAYAM ROUGH STONE AND GRAVEL QUARRY

(Prepared under rule 19(1), 41 & 42 of

Tamil Nadu Minor Mineral Concession Rules, 1959)

LOCATION OF THE QUARRY LEASE APPLIED AREA

STATE	:	TAMIL NADU
DISTRICT	:	TIRUVANNAMALAI
TALUK	:	VEMBAKKAM
VILLAGE	:	KEELNAICKENPALAYAM
S.F.NOS	:	181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4
EXTENT	:	4.10.30Ha

ECO-FRIENDLY

SUSTAINABILITY

SAFETY

FOR APPLICANT

THIRU.A.V.SARATHY,

S/o.C.VARATHAN,

NO:34, R-1, VELLORE MAIN ROAD, ARCOT TALUK,

VELLORE DISTRICT.

PREPARED BY

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

Qualified Person

NO.93/36E2, SUBRAMANIYAR KOVIL STREET,

OMALUR TALUK, SALEM DISTRICT, TAMIL NADU,

PIN CODE-636 455.

MOBILE: 97502 23535 & 94446 54520.

(PPE)

A.V.Sarathy,
S/o.C.Varathan
No:34, R-1, Vellore Main road,
Arcot Taluk, Vellore District.

CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 4.10.30hectares of Patta lands in S.F.Nos.181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State has been prepared by

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

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

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

I hereby undertake that all modifications so made in the Mining Plan by the Qualified Person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and building on me in all respects.

Signature of the Applicant

A.V.Sarathy

Place: Tiruvannamalai
Date: 22.12.2022

A.V.Sarathy,
S/o.C.Varathan
No:34, R-1, Vellore Main road,
Arcot Taluk, Vellore District.

DECLARATION

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 4.10.30hectares of Patta lands in S.F.Nos.181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State has been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Signature of the Applicant

A.V.Sarathy

Place: Tiruvannamalai
Date: 22.12.2022

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

CERTIFICATE

This is to certify that, the provisions of Minor Minerals Conservation and Development Rules, 2010 (MMCDR) have been observed in the Mining Plan for the grant of **Rough Stone and Gravel** quarry lease over an extent of 4.10.30hectares of Patta lands in S.F.Nos.181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State applied by Thiru.A.V.Sarathy, for fresh quarry lease.

Wherever specific permission / exemptions / relaxations or approvals are required, the applicant will approach the concerned authorities of State and Central Governments for granting such permissions etc.

Certified
Signature of Qualified Person.

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

Place: Salem
Date: 23.12.2022

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

CERTIFICATE

Certified that, in preparation of Mining Plan for **Rough Stone and Gravel** quarry over an extent of 4.10.30hectares of Patta lands in S.F.Nos.181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State for Thiru.A.V.Sarathy covers all the provisions of Mines Act, Rules, and Regulations etc made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Certified

Signature of Qualified Person.

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

Place: Salem
Date: 23.12.2022

CERTIFICATE

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

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

Accordingly I prepared this Mining Plan in respect of Rough Stone and Gravel quarry lease applied for an extent of 4.10.30Ha of (Patta lands) in S.F.Nos. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District by Thiru.A.V.Sarathy, for a period of Five years. Since the Mining Plan is prepared as per the provisions contained in Rule 15(1) (a) and (b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) concession Rules 2016, the same may be approved by the Competent Authority.

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

Qualified Person

Place: Salem

Date: 23.12.2022

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

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MINING PLAN FOR MINOR MINERALS

ROUGH STONE AND GRAVEL

Over an extent of 4.10.30hectares of Patta land in S.F.Nos. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State.

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

1.0 Introduction and Executive Summary;

1. The present Mining Plan is prepared for Thiru.A.V.Sarathy, S/o.C.Varathan residing at No:34, R-1, Vellore Main road, Arcot Taluk, Vellore District.
2. The application was processed by the Deputy Director, Department of Geology and Mining, Tiruvannamalai, and passed an order vide Rc.No. 144/Kanimam/2022 dated 21.12.2022 directing the applicant to produce approved Mining Plan under Rule 41(5) of the Tamil Nadu Minor Mineral Concession Rules, 1959 and Environmental Clearance Certificate under Rule 42 from the State Level Environmental Impact Assessment Authority (SEIAA) for the grant of quarry lease to quarry **Rough Stone and Gravel** over an extent of 4.10.30 hectares of Patta lands in S.F.Nos. 181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District of Tamil Nadu State for a period of five years.
3. Accordingly, Mining Plan is prepared under the provisions of rule 19(1), 41 and 42 as per the amendments under Tamil Nadu Minor Mineral Concession Rules, 1959 by incorporating following the conditions imposed in the precise area communication letter.

a) Applicant should transfer LT line (passing on the East-west and North-south direction) before submitting Mining plan or A safety distance of 50m has to be provided to the LT line passing on the east-west and North-south direction.

b) A canal passing on northern side of the S.F.No.181/2 applicant has to provide 50 safety distance.

c) A safety distance of 10m should be provided to the adjoining Government lands.

d) A safety distance of 7.5m should be provided to the adjoining patta lands.

e) Applicant should not cause any hindrance to public and adjacent patta lands.

f) Barbed wire fencing should be erected all along the boundary of the lease granted area before quarrying operation.

g) Quarrying operation should be done proper scientific method only.

h) The applicant will engage should have valid certified persons (Mines Manager, Foreman, Mate).

i) Before the quarrying operation applicant will intimate to the Director of Mines safety.

j) Applicant should use jackhammer and mild explosive during blasting in quarry.

4. Geological Resources is estimated at 16,35,960m^3 of Rough stone, 81,798m^3 of Weathered Rock and 81,798m^3 of gravel formation and Mineable Reserves is estimated at 4,71,330m^3 of Rough Stone, 57,622m^3 of Weathered Rock and 60,678m^3 of gravel formation and after leaving necessary safety distance from the lease boundary as indicated in the precise area letter and relevant mining laws in force.

5. Production Schedule is proposed production of 4,71,330m^3 of Rough Stone, 57,622m^3 of Weathered Rock and 60,678m^3 of gravel formation for the period of five years.

6. applicant ensured that, child labours under 18 years of age will not be engaged for quarrying operation.

7. The applicant ensure that will engage should have valid certified persons (Mines Manager, Foreman, Mate) during quarrying operation.

8. Environmental parameters,

i) The area does not attract the Forest Conservation Act, 1980 as there is no forest around 10Kms radius.

ii) There is no interstate boundary around 10Kms radius.

iii) There is no wild life animal sanctuary within 10Kms radius from the project site area under the Wildlife (Protection) Act, 1972.

Therefore the project seeks clearance only from State Level Environmental Impact Assessment Authority (SEIAA) under B2 Category.

9. Environmental measures to be adopted shall be,

i) Dust Control at source while drilling and blasting,

ii) Dust suppression at loading point and transport haul roads,

iii) Noise Control in blasting, control of fly rock missiles and vibration by doing peak particle velocity with in standard as prescribed by the DGMS and MOEF.

iv) Unnecessary land degradation should be avoided or damaged land should be reclaimed or rehabilitated.

v) Avoid uneven rat hole mining and follow scientific and systematic mining by safe bench system of open cast mining.

vi) Mining near major fracture zones if any should be avoided to control ground water fluctuation in the adjacent agricultural lands.

vii) Emission test of vehicles should be in tack to maintain minimum emission level of flue gases.

viii) Noise level should not exceed 80db and the vehicles should use only permitted Air Horn while on road near residential areas.

ix) Safety zones as prescribed by the Department of Geology and Mining from adjacent infrastructures should be strictly adhere to.

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

EXECUTIVE SUMMARY:

a.	Name of the Village Panchayat	:	Keelnaickenpalayam
b.	Name of the Panchayat Union	:	Vembakkam
c.	The proposed total Minable Reserves	:	4,71,330m³ of Rough Stone, 57,622m³ of Weathered Rock 60,678m³ of gravel formation
d.	The proposed quantity of reserves (level of production) for Five years to be mined is(Recoverable reserves)	:	4,71,330m³ of Rough Stone, 57,622m³ of Weathered Rock 60,678m³ of gravel formation
e.	Total extent of the area	:	4.10.30Ha
f.	Proposed Period of mining	:	Five Years
g.	Existing depth	:	It is fresh quarry lease applied area
h.	Proposed Depth of mining	:	44m (Below ground level) for the proposed mining plan.
i.	Method of mining/level of mechanization	:	Opencast, Semi-mechanized Mining with a bench height of 5m and bench width of 5m and 80⁰ Slope is proposed.
j.	Types of Machineries used in the quarry	:	Machineries like Tractor mounted compressor attached with Jack hammers, Excavators are proposed to deploy for quarrying operation.
k.	Cost of the Project A. Fixed Assets Cost B. Operational Cost C. EMP Cost		Rs. 27,61,800/- Rs. 62,50,000/- Rs. 6,00,000/- Total Project cost(A+B+C)=**Rs. 96,11,800/-**

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

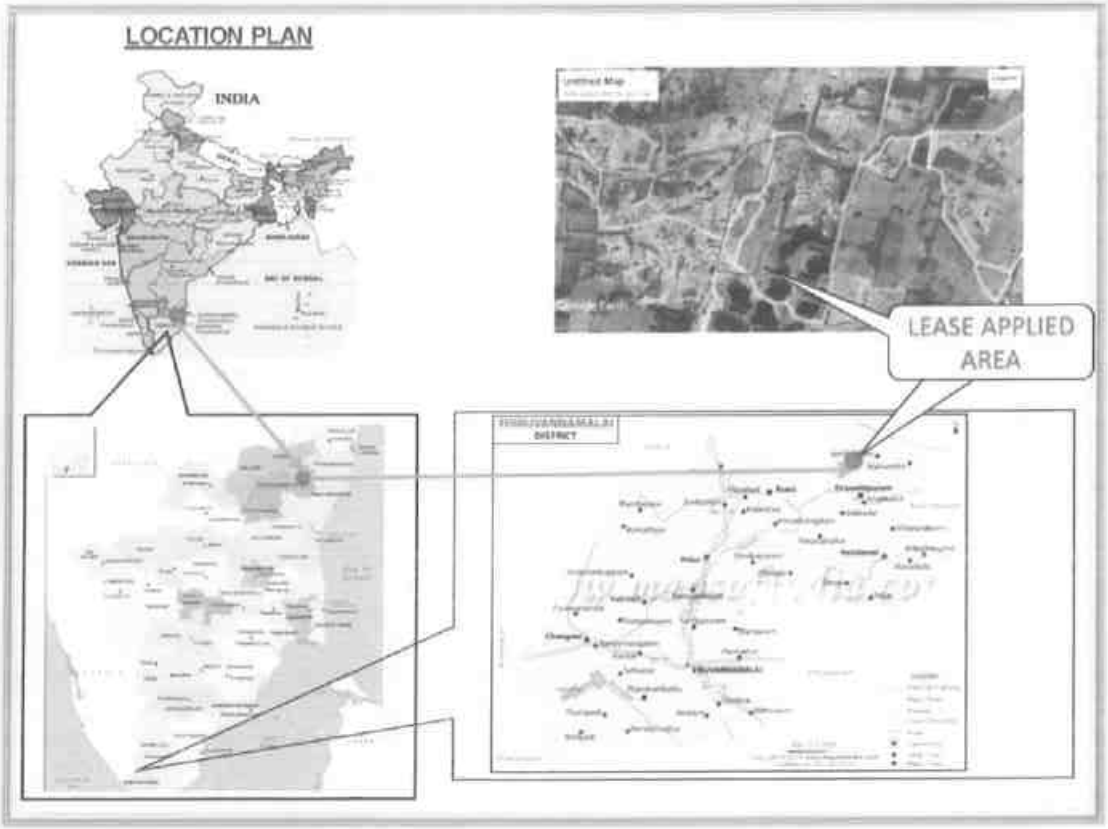
Corners	Co- ordinates		Distance between the corners
	Latitude	Longitude	
1	12° 44' 13.89'N	79° 41' 44.11"E	1-2 = 229.2m
2	12° 44' 21.18'N	79° 41' 45.73"E	2-3 = 51.8m
3	12° 44' 20.82'N	79° 41' 47.40"E	3-4 = 34.6m
4	12° 44' 21.41'N	79° 41' 48.39"E	4-5 = 119.2m
5	12° 44' 25.16'N	79° 41' 49.37"E	5-6 = 42.8m
6	12° 44' 25.54'N	79° 41' 50.74"E	6-7 = 36.2m
7	12° 44' 25.19'N	79° 41' 51.88"E	7-8 = 23.6m
8	12° 44' 24.42'N	79° 41' 51.87"E	8-9 = 266.0m
9	12° 44' 16.09'N	79° 41' 49.47"E	9-10 = 37.0m
10	12° 44' 16.15'N	79° 41' 48.24"E	10-11 = 85.6m
11	12° 44' 13.44'N	79° 41' 47.49"E	11-1 = 102.8m

2.0 General Information:

2.1	a.	Name of the Applicant	:	Thiru.A.V.Sarathy,
	b.	Address of the Applicant with phone No and e-mail id if any	:	S/o.C.Varathan No:34, R-1, Vellore Main road, Arcot Taluk, Vellore District. Pincode:602 106 Cell No.:6382207708
	c.	Status of the Applicant	:	Individual
2.2	a.	Mineral Which the applicant intends to mine	:	Rough Stone and Gravel.
	b.	Precise area communication letter No.	:	Precise area communication letter received from the Deputy Director, Department of Geology and Mining, Tiruvannamalai, Rc.No.144/Kanimam/2022 dated 21.12.2022
	c.	Period of permission / lease granted	:	The Deputy Director, Department of Geology and Mining, Tiruvannamalai, has grant of lease period for **five years.**
	d.	Name and Address of the QP preparing Mining Plan	:	**C.Natarajan, M.Sc.,M.Phil.,** **Qualified Person** No.93/36E2, Subramaniyar Kovil Street, Omalur Taluk, Salem District, Tamil Nadu, Pin-636 455. Mobile: 97502 23535 & 94446 54520.

3.0 Location:

S.No	Details of the Area:	
1	Corner Coordinates	Latitude: 12°44'13.44"N to12°44'25.54"N Longitude: 79°41'44.11"E to 79°41'51.88"E
2	Toposheet Number	57 P/10
3	The altitude of the area	104m (MSL)
4	Extent	4.10.30Ha
5	Survey Nos	181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4
6	Village	Keelnaickenpalayam
7	Taluk	Vembakkam
8	District	Tiruvannamalai
9	State	Tamil Nadu



a.	Classification of the Area (Ryotwari / poramboke / others)	:	Patta land
b.	Ownership / Occupancy of the Applied area (Surface rights)	:	It is patta land jointly registered in the name of Applicant and Thiru.Ruthrasekar vide patta no.452, the applicant has obtained consent from the pattadar, Please refer Annexure No: IV and VII.
c.	Toposheet No. with Latitude and Longitude	: : :	Topo Sheet No: 57 P/10 Latitude: 12°44'13.44"N to12°44'25.54"N Longitude: 79°41'44.11"E to 79°41'51.88"E
d.	Existence of Public Road / Railway line if any nearby the area and approximate distance	:	There is an existing road from the area leads to Bagavandapuram - Santhimedu village road on southern side of the area. The Nearest Railway line is Kanchipuram – Chengalpattu line which is about 10.5Km on the Northeastern side of the area.

SATELLITE IMAGERY OF THE LEASE APPLIED AREA

TOPOGRAPHICAL VIEW OF LEASE APPLIED AREA

Fig. Location of the lease Applied Area

PART - A

4.0 Geology and Mineral Reserves:

4.1	a.	Topography	:	➢ The area applied for quarry lease is exhibits almost plain topography covered by Gravel formation. The massive Charnockite formation is noticed below 2m (Avg) Gravel and 2m weathered rock formation and sloping towards Southeastern side of the area, the altitude of the area is above 104m (maximum) from MSL. ➢ No major river is found nearby the lease applied area. ➢ Water table is found at a depth of 58m in summer and 55m in rainy seasons. ➢ Temperature of the area is reported to be 18°C to a maximum of 42°C during summer. ➢ Rainfall of this area is about 800mm to 900 mm during the both NE & SW monsoons.
	b.	General Geology of the Area	:	The area is underlain by the wide range of metamorphic rocks of peninsular gneissic complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The geological formations found in the district are Archaean rocks like Gneisses, Granites, Charnockites basic granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite. The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock. The strike of the Charnockite formation is N45°W – S45°E with dipping towards NE70°.

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

a. Geological Resources

The quarrying is restricted up to a depth of 44m Below ground level only. Availability of Resources is given below.

Table No-1

Section	Length in (m)	Width in (m)	Depth in (m)	Volume in m^3	Gravel in m^3	Weathered Rock in m^3	Geological Resources of Rough stone in m^3
XY-AB	92	104	2	19136	19136		
	92	104	2	19136		19136	
	92	104	40	382720			382720
Total					**19136**	**19136**	**382720**
XY-CD	136	146	2	39712	39712		
	136	146	2	39712		39712	
	136	146	40	794240			794240
Total					**39712**	**39712**	**794240**
XY-EF	153	75	2	22950	22950		
	153	75	2	22950		22950	
	153	75	40	459000			459000
Total					**22950**	**22950**	**459000**
Grand Total					**81798**	**81798**	**1635960**

Gravel Formation	:	81,798m³
Weathered Rock Formation	:	81,798m³
The Geological Resources of Rough stone	:	16,35,960m³

b. Mineable Reserve

The mineable reserve calculated by deducting 7.5m and 50m safety distance and bench loss.

Table No-2

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m³	Gravel in m³	Weathered Rock in m³	Mineable Reserves of Rough stone in m³
XY-AB	I	84	87	2	14616	14616		
	II	82	83	2	13612		13612	
	III	76	72	5	27360			27360
	IV	69	59	5	20355			20355
	V	63	46	5	14490			14490
	VI	57	33	5	9405			9405
	VII	50	20	5	5000			5000
Total						**14616**	**13612**	**76610**
XY-CD	I	136	129	2	35088	35088		
	II	136	125	2	34000		34000	
	III	136	114	5	77520			77520
	IV	136	101	5	68680			68680
	V	136	88	5	59840			59840
	VI	135	75	5	50625			50625
	VII	129	62	5	39990			39990
	VIII	122	49	5	29890			29890
	IX	109	36	5	19620			19620
	X	96	23	5	11040			11040
Total						**35088**	**34000**	**357205**
XY-EF	I	93	59	2	10974	10974		
	II	91	55	2	10010		10010	
	III	85	44	5	18700			18700
	IV	79	31	5	12245			12245
	V	73	18	5	6570			6570
Total						**10974**	**10010**	**37515**
Grand Total						**60678**	**57622**	**471330**

The mineable reserve is computed as 4,71,330m³ of Rough stone, 57,622m³ of Weathered rock formation and 60,678m³ of Gravel formation upto a depth of 44m below ground level only.

Gravel and weathered rock mass will be removed first, after the excavation of weathered rock mass will preserved all along the boundary barrier if market is rise the same will be loaded into tipper for needy customer this will be done after paying the necessary Seigniorage Fees to Government.

5.0	**Mining**:		
5.1	Method of Mining	:	1. Opencast method of semi mechanized mining with 5.0m height 5m width and 80⁰ slope of the bench. 2. However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106(2) (b) as above is seldom possible due to various inherent petrogenetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of mines safety for which necessary provision is available with the regulation 106 (2) (b) of MMR-1961, under Mine Act-1952.
5.2	Mode of Working	:	The rough stone is proposed to quarry 5m bench height, 5m width with 80⁰ slope and with conventional opencast semi-Mechanized method. The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough stone to the needy buyers. The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining. Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy buyers. Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast semi mechanized method of mining.
5.3	Proposed bench height & Width	:	Quarrying of Rough Stone is proposed bench height of 5m and bench width of 5m.
5.4	Details of Overburden / Mineral Production proposed for the first 5 years.	:	The overburden in the form of Gravel and weathered rock mass after the excavation of weathered rock mass same will preserved all along the boundary barrier if market is rise the will be loaded into tipper for needy customer this will be done after paying the necessary Seigniorage Fees to Government. The excavated rough stone and gravel will be directly loaded into tipper to the needy crushers/other buyers for road project and construction works for filling and leveling of low lying areas.

The Yearwise Production and Development Table

Table No -3

Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m^3	Gravel in m^3	Weathered Rock in m^3	Mineable reserve of Rough stone in m^3
I	XY-AB	I	84	87	2	14616	14616		
		II	82	83	2	13612		13612	
		III	76	72	5	27360			27360
	XY-CD	I	117	129	2	30186	30186		
		II	117	125	2	29250		29250	
		III	117	114	5	66690			66690
Total							**44802**	**42862**	**94050**
II	XY-CD	I	19	129	2	4902	4902		
		II	19	125	2	4750		4750	
		III	19	114	5	10830			10830
		IV	105	101	5	53025			53025
	XY-EF	I	93	59	2	10974	10974		
		II	91	55	2	10010		10010	
		III	85	44	5	18700			18700
		IV	79	31	5	12245			12245
Total							**15876**	**14760**	**94800**
III	XY-CD	IV	31	101	5	15655			15655
		V	100	88	5	44000			44000
	XY-AB	IV	69	59	5	20355			20355
		V	63	46	5	14490			14490
Total									**94500**
IV	XY-CD	V	36	88	5	15840			15840
		VI	135	75	5	50625			50625
		VII	22	62	5	6820			6820
	XY-EF	V	73	18	5	6570			6570
	XY-AB	VI	57	33	5	9405			9405
		VII	50	20	5	5000			5000
Total									**94260**
V	XY-CD	VII	107	62	5	33170			33170
		VIII	122	49	5	29890			29890
		IX	109	36	5	19620			19620
		X	96	23	5	11040			11040
Total									**93720**
Grand Total							**60678**	**57622**	**471330**

The applicant has proposed to carry out 4,71,330m^3 of Rough stone 57,622m^3 of Weathered rock formation and 60,678m^3 of Gravel formation at the rate of 100% recovery upto a depth of 44m below ground level for the period of five years.

5.5		Machineries to be used		
	a.	Drilling	:	It is proposed to use following machineries for quarrying rough stone

S.No	Type	Nos	Dia Hole mm	Size Capacity	Make	Motive power
1	Jack hammer	10	32	1.2m to 6m	Atlas Copco	Compressed air
2	Compressor	3	-	400 psi	Atlas Capco	Diesel Drive

	b.	Loading	:	Excavator of 0.90m^3 bucket capacity (with Rock breaker attachment) (1No).
	c.	Transportation	:	Tipper 4Nos (5/10Ts) capacity.
5.6		Disposal of Overburden	:	The overburden in the form of Gravel and weathered rock mass after the excavation of weathered rock mass same will preserved all along the boundary barrier if market is rise the will be loaded into tipper for needy customer this will be done after paying the necessary Seigniorage Fees to Government. Gravel will be directly loaded into tipper to the needy crushers/other buyers for road project and construction works for filling and leveling of low lying areas.
5.7		Brief Note on Conceptual Mining Plan for the entire lease period	:	Conceptual Mining Plan is prepared with an object of five years of systematic development of bench lay outs, selection of ultimate pit limit, depth of quarrying, ultimate pit slope, selection of sites for construction of infrastructures etc. Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under,

Ultimate Pit dimension (M)			
Pit No	Length (max) in (m)	Width (Avg) in (m)	Depth(max) in(m)
I	313	99	44m

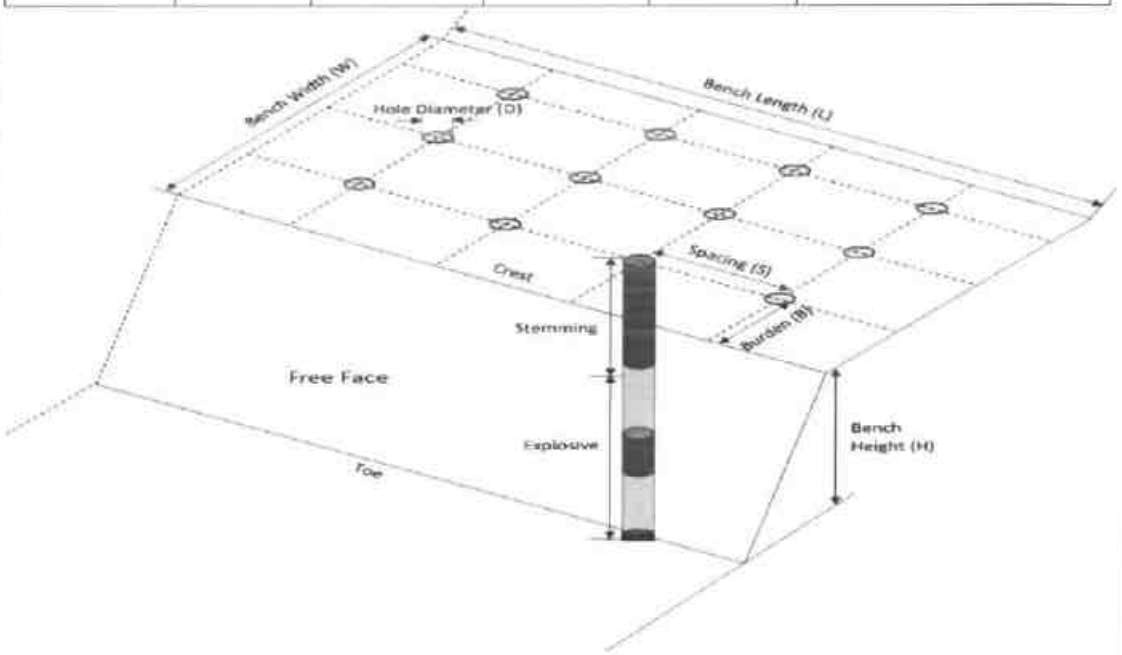
Afforestation has been proposed on all along the boundary barrier by planting trees.

All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be carried out every year as per the MOEF norms.

6.0 Blasting:

6.1	Blasting Pattern	:	The massive formation shall be broken into pieces of portable size by drilling and blasting using jack hammers and shot hole blasting. Powder factor of explosives for breaking such hard rock shall be in the order of 6 to 7 Tonnes per K.g of explosives. Blasting parameters are as follows.

Diameter of the hole	Spacing	Depth	Burden for hole	Pattern of hole	Inclination of hole
32-36mm	0.6m	1 to 1.5m	0.6m	Zig Zag	70^0 from the horizontal



6.2	Types of Explosives	:	Small dia, 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.

6.3	Measures proposed to minimize ground vibration due to blasting	:	➢ Controlled blasting measures will be adopted for minimizing ground vibration and fly rock. ➢ Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly rock.

Number of holes	:	272
Powder factor	:	6Ts/Kg of explosives
Total explosive required	:	136Kg slurry explosives
Charge / hole	:	0.5Kg
Blasting time	:	12-2 Pm

6.4	Storage of Explosives and safety measures to be taken while blasting.	:	➢ The applicant will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/ mines manager. ➢ ***The applicant ensure that will appoint the Mate (Should have Valid Blaster Certificate) during Blasting Operation.***

7.0 <u>Mine Drainage</u>:

7.1	Depth of Water table	:	The ground water table is reported as 58m below ground level. In the proposed mining plan only 44m Below ground level depth has been envisaged as workable depth for safe & economic quarrying for the entire lease period. Hence the quarrying operation may not affect the ground water.
7.2	Arrangement and Places where the mine water is finally proposed to be discharged	:	The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300lpm and it shall be pumped about periodically by a stand by diesel powered Centrifugal pump motivated with 7.5H.P.Motor. The quality of water is potable and it is not contaminated with any hazardous things. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water stored in the old pit will also be used for plantation purposes

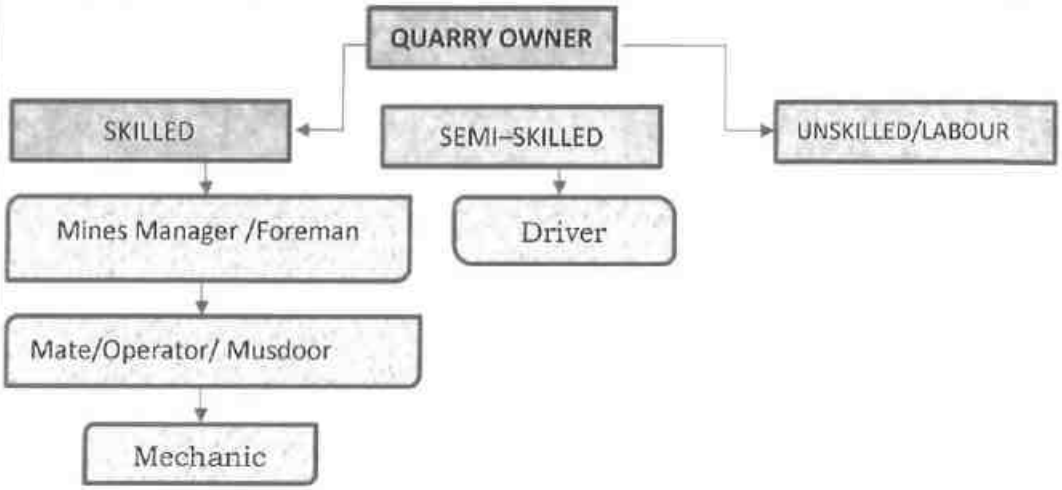
8.0 Other Permanent Structures:

8.1	Habitations / Village	:	There are no habitations within a radius of 300m.
8.2	Power lines (HT/LT)	:	There is LT line passing on the east-west and North-south direction of the lease applied the applicant applied to (TANGEDCO) transfers the line from applied area, please refer copy of acknowledgment is enclosed as Annexure no-VIII.
8.3	Water bodies (River, Pond, Lake, Odai, Channel etc)	:	There is canal passing on northern side of the S.F.No.181/2 and is 50m safety distance maintained from the canal.
8.4	Archeological / Historical Monuments	:	There are no Archeological / Historical Monuments within a radius of 500m.
8.5	Road (NH, SH, Village Road etc)	:	The Nearest National Highway (NH-48) Chennai – Krishnagiri which is about 15.0Km on the Northern side of the area. The State Highway (SH-116) Kanchipuram – Vandavasi is about 2.7Km on Southern side of the area.
8.6	Places of Worship	:	There are no Places of Worship within a radius of 500m.
8.7	Reserved Forest / Forest / Social Forest / Wild Life Sanctuary etc.,	:	There is no Reserved Forest /Wild Life Sanctuary etc within a radius of 1Km.
8.8	Any Interstate Border, Protected areas under the Wild Life (Protection) Act, 1972, Critically Polluted Areas as Identified by Central Pollution Control Board and Notified Eco sensitive areas	:	There are No inter State border within a radius of 10Kms.
8.9	Any Other Structures	:	Nil

9.0 Employment Potential & Welfare Measures:

9.1 Employment Potential (Management & Supervisory personal)

The proposed organization chart



1.	Skilled	Operator	10No.
		Mechanic	1 No.
		Mines manager	1 No.
		Foremen/Mate	1 No.
2.	Semi-skilled	Driver	4 No.
3.	Unskilled	Labours	10Nos
		Total =	27Nos

Allowing 10% absentee, the no. of men of roll will be around 24.

The above man power is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply the statutory provisions of Mines Safety Regulations.

- **It is been ensured that, child labours under 18 years of age will not be engaged for quarrying operation.**
- **Necessary life insurance policies will be taken by the applicant to all the employees up to the end of the lease period.**

9.2		Welfare Measures		
	a.	Drinking Water	:	Packaged drinking water is available from the nearby approved water vendors in Valavandal village which is about 700m on Northwestern side of the area.

	b.	Sanitary facilities	:	Semi-permanent latrines & urinals shall be maintained at convenient places for use of labourers as per the provisions of Rule (33) of the Mines Rules, 1960 separately for males and females. Washing facilities shall also be arranged as per rule (36) of the Mines Rules, 1960.
	c.	First Aid Facility	:	First aid kits are kept in Mines office room, in case of such eventualities the victim will be given first aid immediately at the site and injured person will be taken to the hospital. Hospital is available at distance of 11.5Km (NW) in Vembakkam the competent and Statutory foreman/ permit manager will be in charge of first aid.
	d.	Labour Health	:	As per Mines Rule, Periodic medical examination related to occupational health safety will be conducted to all the workers in applicant's own cost.
	e.	Precautionary safety measures to the Labourers:		
		Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc., have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation. Necessary training will be conducted once in a year to all the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation.		

PART – B

10.0 Environmental Management Plan:

10.1	Existing Land Use Pattern	:	1. The area is exhibits almost plain topography covered by Gravel formation. 2. Quarrying operation is proposed up to a depth of 44m Below ground level for the proposed mining plan period. 3. Fluctuation of Water table in this area is in between 58m and 55m during a year. 4. This region receives the average annual rainfall of 800mm to 900mm. The surrounding area is practiced by the seasonal cultivation. The existing land use pattern is given as under. Table No-4

Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1.	Quarrying Pit	Nil	3.10.00
2.	Infrastructure	Nil	0.02.00
3.	Roads	Nil	0.02.00
4.	Green Belt	Nil	0.40.00
5.	Unutilized	4.10.30	0.56.30
	Total =	**4.10.30**	**4.10.30**

10.2	Water Regime	:	Water table in this area is noticed at a depth of 58m and presently, in the proposed mining plan only 44m Below ground level depth has been envisaged as workable depth for safe & economic quarrying for the entire lease period. hence, it will not affect the ground water depletion of this area.
10.3	Flora and Fauna	:	Except acacia bushes, no other valuable trees are noticed in the applied area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.
10.4	Climatic conditions	:	Generally subtropical climatic condition prevails throughout the year and there is no sharp variation in climate. This District receives rain both in south west and north east monsoon. The average rainfall is about 800mm to 900mm and the temperature ranges from 18°C during winter and to a maximum of 42°C during the summer.

<table>
<tr><td>10.5</td><td>Human Settlement</td><td>:</td><td>The nearest habitations with the population is given as under.
Table No-5
<table>
<tr><th>S. No</th><th>Name of the Village</th><th>Approximate distance & Direction from lease applied area</th><th>Approximate population</th></tr>
<tr><td>1.</td><td>Girijapuram</td><td>1.3km - NE</td><td>450</td></tr>
<tr><td>2.</td><td>Valavandal</td><td>700m - NW</td><td>300</td></tr>
<tr><td>3.</td><td>Bagavandapuram</td><td>1.7Km – SE</td><td>250</td></tr>
<tr><td>4.</td><td>Narasamangalam</td><td>1.8Km-SW</td><td>400</td></tr>
</table></td></tr>
<tr><td>10.6</td><td>Plan for Air, Dust Suppression</td><td>:</td><td>Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying. Wet drilling and dust extractor arrangements will be provided to drilling units so as to control raise of dust from the site of drilling. Operators, those exposed directly to such conditions will be provide such protective equipment like mask, ear plug, helmet, gloze etc., as per the Mines Act.</td></tr>
<tr><td>10.7</td><td>Plan for Noise Control</td><td>:</td><td>Quarrying of Rough Stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out to check the noise level in and around the quarry site. Nowhere the noise level should exceed the permissible limit of 80db during the quarry working hours.</td></tr>
<tr><td>10.8</td><td>Environmental Impact Assessment Statement Describing Impact on mining on the next Five years</td><td>:</td><td>The mining plan proposed is for a small production of Rough stone without involving deep hole drilling and heavy blasting. Such limited mining activity is not likely to cause any impact adversely on environment as far as pollution of air, water and noise is concerned, anyhow environmental impact studies will be conducted as per EIA notification issued by MOEF. It is B2 Category mine.</td></tr>
</table>

10.9	Proposal for Waste Management	:	There is no waste anticipated in this rough stone quarry operation.
10.10	Proposal of Reclamation of Land affected during mining activities and at the end of mining.	:	In the proposed mining plan 44m (Below ground level) depth has been envisaged as workable depth for safe & economic mining during the lease period. Hence, after quarry reaches ultimate pit limit (for this lease period) of 44m depth, fencing will be constructed around the quarried pits to prevent inherent entry of the public and cattle.
10.11	Program for Afforestation	:	The 7.5m & 50m safety distance along the lease boundary has been identified to be utilized for afforestation Appropriate native species of Neem/Pungan trees will be planted in a phased manner as described below.

Table No-6

Year	No. of tress proposed to be planted	Survival %	Area to be covered Sq.m	Name of the species	No of trees expected to be grown
I	50	80%	800	Neem/Pungan	40
II	50	80%	800	Neem/Pungan	40
III	50	80%	800	Neem/Pungan	40
IV	50	80%	800	Neem/Pungan	40
V	50	80%	800	Neem/Pungan	40

Nearly 4000Sqm area is proposed to use under afforestation by planting 50nos. of Neem/Pungan trees during every year with an anticipated survival rate of 80%. The Quarry landuse, layout and afforestation plan is shown in Plate No.III.

10.12	Proposed Financial Estimate / Budget for (EMP) Environment Management		
	A.Fixed Asset Cost:		
	1. Land Cost (600000/1Ha)=	:	Rs. 24,61,800
	2. First aid room and accessories	:	Rs.1,00,000
	3. Labour Shed		Rs.1,00,000
	4. Sanitary Facility		Rs.1,00,000
	Total=		**Rs. 27,61,800/-**

	B.Operational Cost: 1. Machineries 2. Fencing cost **Total**	: : :	 Rs.60,00,000- Rs. 2,50,000 **Rs.62,50,000/-**
	C.EMP Cost:	:	Budget Provision for the entire quarrying period.
		:	Air Quality Sampling = Rs. 40,000/-
		:	Water Quality Sampling = Rs. 40,000/-
		:	Noise Monitoring = Rs. 20,000/-
			Ground vibration test = Rs. 20,000/-
	Expenditure 1. Drinking water facility 2. Sanitary Arrangments 3. Safety kids 4. Water sprinkling 5. Afforestation **Total=**	 : : : : :	 Rs.1,50,000/- Rs. 50,000/- Rs. 50,000/- Rs. 1,50,000/- Rs. 80,000/- **Rs. 6,00,000/-**
	Total Project Cost (A+B+C)	:	**Rs. 96,11,800/-**
	CSR Cost(2% of Total Project Cost)	:	**Rs. 1,92,236/-**

11.0 Mine Closure Plan:

11.1	Steps proposed for phased restoration, reclamation of already mined out area.	:	There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of the life of lease will be fenced to prevent inherent entry of public and cattles.
11.2	Measures to be under taken on mine closure as per Act & Rules	:	Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by using Barbed wire fencing to prevent inherent entry of public and cattle.
11.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	:	Mitigation measures: Drilling will be carried out by wet drilling mode to control the dust propagation into the air. Blasting will be carried out on limited scale. Mist Water spraying on haul road is proposed to prevent the dust propagation into the air.

திருவண்ணாமலை

12.0 Any Other Details Intend to Furnish by the Applicant:

(i) Permission will be obtained from the District Mines Office to extract the Rough Stone from the Boundary barriers and for slopes.

(ii) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.

(iii) The applicant will endeavor every attempt to quarry the Rough Stone economically without any wastage and to improve the environment and ecology.

(iv) The Mining Plan is prepared by incorporating the conditions stipulated in the precise area communication issued and relevant mining laws in force.

(v) Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Department.

Prepared by

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

Place : Salem
Date : 23.12.2022

This Mining Plan Is Approved Subject to the Conditions/Stipulation Indicated In The Mining Plan Approval Letter No. 144 /mines/2022 Dt: 06.1.2023 Office Of The Deputy Director Of Geology And Mining, Tiruvannamalai.

This Mining Plan is approved based on incorporation of the particulars specified in the letter of the Commissioner of Geology and Mining, Chennai Lr.No: 3868/LC/2012, Dated: 19-11-2012 and subject to further fulfillment of the conditions laid down under Tamil Nadu Minor Mineral Concession Rules.1959.

6/1/23

Deputy Director
Dept.of Geology and Mining
Tiruvannamalai.

6/1/23

ANNEXURE

நக.எண்:.144/கனிமம்/2022

துணை இயக்குநர், அலுவலகம்,
(புவியியல் மற்றும் சுரங்கத்துறை)
திருவண்ணாமலை-4.
நாள்: 21.12.2022.

அறிவிக்கை

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - திருவண்ணாமலை மாவட்டம் - வெம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள்.181/1A (0.18.5), 181/3A1 (0.83.48), 181/3A2 (0.93.52), 181/3B1A1 (0.54.12), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் 5.17.62 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க - குவாரி குத்தகை உரிமம் வழங்கக்கோரி திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவர் விண்ணப்பம் செய்தது - பரிந்துரை அறிக்கை வரப்பெற்றது - சுரங்கத் திட்டம் **(Mining Plan)** தயார் செய்து சமர்ப்பிக்க கோருவது - தொடர்பாக.

பார்வை:
1. திரு.A.V.சாரதி த/பெ.C.வரதன் எண்.34 R-1, வேலூர் மெயின் ரோடு, ஆற்காடு வட்டம், வேலூர் மாவட்டம் என்பவரின் விண்ணப்ப நாள்.17.06.2022.
2. இவ்வலுவலக கடிதம் நக.எண்.144/கனிமம்/2022, நாள் 17.06.2022.
3. வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் கடிதம் நக.அ5/3122/2022, நாள்.27.08.2022.
4. திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவரின் கடித நாள்.30.11.2022.
5. உதவி புவியியலாளர் புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களின் புலத்தணிக்கை அறிக்கை நாள்.01.12.2022
6. அரசாணை (MS)எண்.169 தொழில்துறை (எம்.எம்.சி1) துறை நாள்.04.08.2020.

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திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள்.181/1A (0.18.5), 181/3A1 (0.83.48), 181/3A2 (0.93.52), 181/3B1A1 (0.54.12), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் 5.17.62 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரி திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவர் அளித்த பார்வை 1-ல் கண்ட விண்ணப்பத்தின் மீது பார்வை 3-ல் கண்ட வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் பரிந்துரை அறிக்கை வரப்பெற்றது.

2. இந்நிலையில் பார்வை 4-ல் காணும் திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவர் கடிதத்தில் 10 ஆண்டுகளுக்கு கல்குவாரி குத்தகை உரிமம் வழங்க கோரியதை 5 ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்குமாறும் மேலும், குத்தகை உரிமம் கோரிய புலங்களில் புல எண்கள்.181/3A1 (0.83.48) மற்றும் 181/3B1A1 (மொத்த ஹெக்டேர் 0.54.12)-யில் 0.05.34 ஹெக்டேர் மட்டும் நீக்கம் செய்து மீதமுள்ள புலங்களான புல எண்கள்.181/3A2 (0.93.52), 181/3B1A1 (பகுதி) (0.48.78), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் **4.10.30** ஹெக்டேர் பரப்பில் குத்தகை உரிமம் வழங்குமாறும் கோரியிருந்தார்.

3. அதனைத்தொடர்ந்து பார்வை 5-ல் காணும் திருவண்ணாமலை மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, துணை இயக்குநர் அலுவலக உதவி புவியியலாளர் அவர்கள் அளித்த பரிந்துரை அறிக்கைகள் பரிசீலிக்கப்பட்டது.

4. மேற்படி செய்யார் வருவாய் கோட்ட அலுவலர் மற்றும் திருவண்ணாமலை மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, துணை இயக்குநர் அலுவலக உதவி புவியியலாளர் ஆகியோரின் பரிந்துரை அடிப்படையில **திரு.A.V.சாரதி த/பெ.C.வரதன்** என்பவருக்கு சாதாரணக்கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க 5 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரிய வெம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள்.181/3A2 (0.93.52), 181/3B1A1 (பகுதி) (0.48.78), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் 4.10.30 ஹெக்டேர் நிலப்பரப்பில் எவ்வித தடையும் இன்றி குவாரிப்பணி செய்ய வாய்ப்பு உள்ளதால், மேற்படி விண்ணப்பதாரார் திரு.A.V.சாரதி த/பெ.C.வரதன் என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க குவாரி குத்தகை உரிமம் வழங்க பரிந்துரை செய்யப்பட்ட **4.10.30** ஹெக்டேர் பரப்பினை கற்குவாரி செய்ய உகந்த புலம் **(Precise Area)** என தீர்மானித்து கீழ்கண்ட நிபந்தனைகளுக்கு உட்பட்டு அறிவிப்பு செய்யப்படுகிறது.

<u>நிபந்தனைகள்</u>

1) விண்ணப்ப புலத்தில் கிழக்கு-மேற்கு மற்றும் வடக்கு-தெற்காக செல்லும் தாழ் மின்னழுத்த கம்பிகளுக்கு 50மீ பாதுகாப்பு இடைவெளி விட வேண்டும் (அ) குத்தகை ஒப்பந்த பத்திரம் எற்படுத்தும் முன் மாற்றம் செய்யப்பட்டதற்கான தமிழ்நாடு மின்உற்பத்தி மற்றும் பகிர்மானக் கழகம் லிமிடெட், திருவண்ணாமலை சான்று சமர்ப்பிக்கப்பட வேண்டும்
2) பிரஸ்தாப புலத்தின் வடக்கே புல எண்.181/2 உள்ள கால்வாய்க்கு 50மீ பாதுகாப்பு இடைவெளி விட வேண்டும்.
3) விண்ணப்ப புலத்திற்கு அருகில் உள்ள அரசு புறம்போக்கு நிலத்திற்கு 10மீ பாதுகாப்பு இடைவெளி விட வேண்டும்.
4) அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5மீ பாதுகாப்பு இடைவெளி விடவேண்டும்.
5) பொதுமக்களுக்கும் அருகிலுள்ள நிலங்களுக்கும் எவ்வித பாதிப்பும் ஏற்படுத்தக்கூடாது.
6) குவாரிப்பணி தொடங்குவதற்கு முன்பாக குவாரியை சுற்றி முள் கம்பிவேலி அமைத்து குவாரிப்பணி தொடங்க வேண்டும்.
7) முறைப்படியும், விஞ்ஞானபூர்வமாகவும் குவாரிப்பணி செய்யவேண்டும்.
8) சான்றிதழ் பெறப்பட்ட போர்மேன், வெடிப்பாளர் மற்றும் சுரங்க மேலாளர் மூலம் முறையே குவாரிப்பணி செய்யப்பட வேண்டும்.
9) குவாரிப்பணி தொடங்குவதற்கு முன் சுரங்க பாதுகாப்பு இயக்குநர், சென்னை அவர்களுக்கு தகவல் தெரிவிக்கபட வேண்டும்.
10) பாறைகளைத் தகர்க்க கைத்துளைப்பான்களை கொண்டு பாறைகளை துளையிட்டு குறைவான வெடிபொருட்கள் பயன்படுத்த வேண்டும

5. **தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதிகள் 41 மற்றும் 42-ன்படி** கல் மற்றும் இதர சிறு கனிமங்களுக்கு குவாரி குத்தகை உரிமம் வழங்கும் முன்பு ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மை சான்று பெறப்பட வேண்டும் என வரையறுக்கப்பட்டுள்ளது.

6. எனவே, திரு.A.V.சாரதி த./பெ.C.வரதன் என்பவர் ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மைச் சான்றினை பெற்று சமர்ப்பிக்கும் பட்சத்தில் வெம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள்.181/3A2 (0.93.52), 181/3B1A1 (பகுதி) (0.48.78), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்தம் **4.10.30** ஹெக்டேர் பரப்பில் கற்குவாரி செய்ய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் **1959** விதி எண்*19(1)* மற்றும் *20*-ன்கீழ் 5 ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்க உரிய நடவடிக்கை மேற்கொள்ளப்படும் என்ற விவரம் தெரிவிக்கப்படுகிறது.

7. மேலும், இவ்வறிவிப்பு கிடைக்கபெற்ற *90* நாட்களுக்குள் மேற்சொன்ன நிபந்தனைகளையும் குறிக்கும் வகையில் வரைவு சுரங்கத்திட்ட அறிக்கை தயார் செய்து துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களிடம் ஒப்புதல் பெற சமர்ப்பிக்குமாறும் அறிவுறுத்தப்படுகிறது.

துணை இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
திருவண்ணாமலை.

<u>பெறுநர்:</u>
திரு.A.V.சாரதி
த./பெ.C.வரதன்
எண்.*34* R-1, வேலூர் மெயின் ரோடு,
ஆற்காடு வட்டம்,
வேலூர் மாவட்டம்.

ANNEXURE

District : Tiruvannamalai

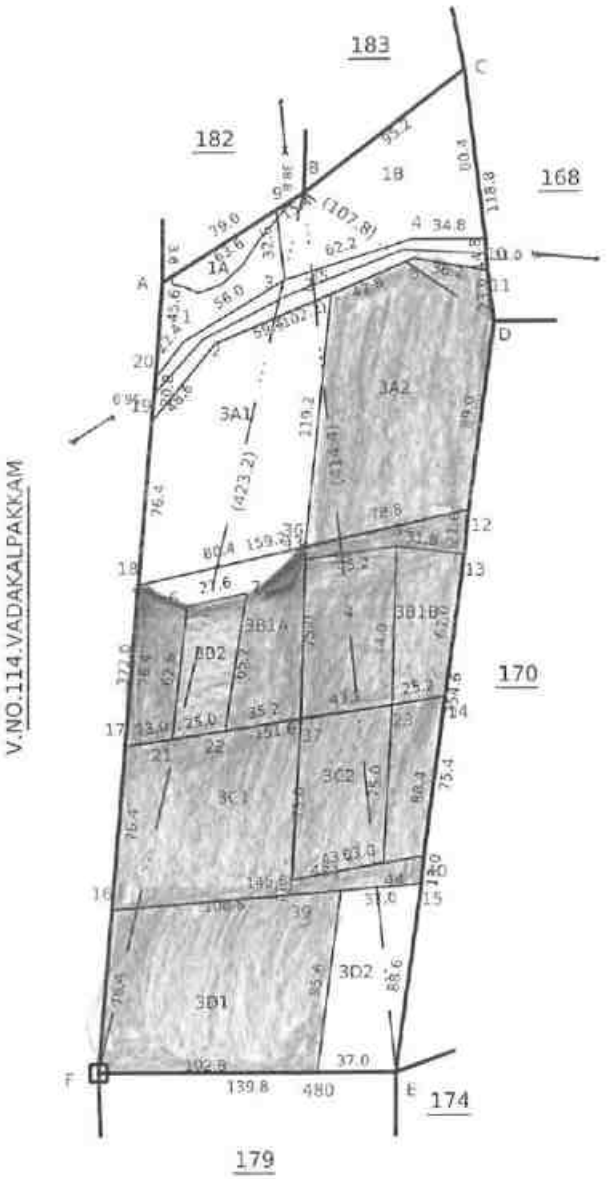
Taluk : VEMBAKKAM

Village : KILNAICKENPALAYAM [113]

Survey No : 181

Area : Hect 06 Ares 19.86

Scale : 1 : 2819



Date of Issue: 07-12-2021 11:14:28

mv.260

Survey and Settlement Department, Government of TamilNadu

LEASE APPLIED AREA

Survey Nos.	Name of details
97	Amman Kovil
106	Eswaran Kovil
116	Pillayar Kovil
115	Nallachennir Kulam
140 & 151	Transformer

No. 116
SODIYAMBAKKAM

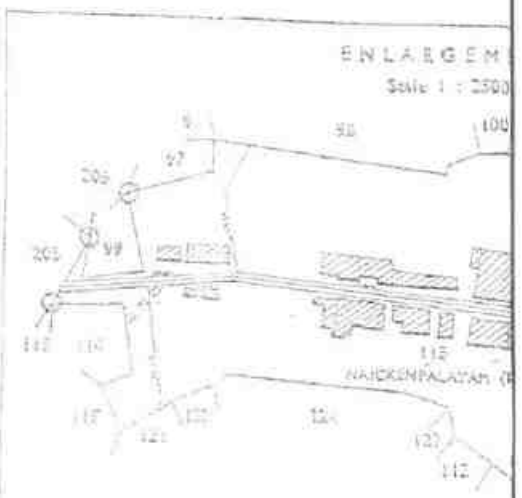
V. No. 113 Naickenpalayam (Kil) (Supplemental Survey) S. Nos 1 to 241

Note :— This village map is brought upto date during the Supplemental Survey under the Updating Registry Scheme.

Supplemental Survey (under U.D.R. Scheme) G. O. Ms. No. 525 C. T. & R. E. Dept. dated 14-8-1979

No. 118
GIRIJAPURAM

ENLARGEM
Scale 1 : 2500



LEASE APPLIED AREA

ANNEXURE III

ANNEXURE IV

தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : திருவண்ணாமலை வட்டம் : வெம்பாக்கம்

வருவாய் கிராமம் : கீழ்நாய்க்கன்பாளையம் பட்டா எண் : 452

உரிமையாளர்கள் பெயர்

வரதன் மகன் சாரதி

ஜெயராமன் மகன் ருத்ரசேகர்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
181	1A	0 - 18.50	0.37	--	--	--	--	2020/0103/06/171648--- -- 27-05-2020
181	3A1	0 - 83.48	1.70	--	--	--	--	2020/0103/06/191381--2017/06/10/000007SD -- 12-10-2020
181	3A2	0 - 93.52	1.90	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	3B1A1	0 - 54.12	1.10	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	3B1B	0 - 20.00	0.40	--	--	--	--	2020/0103/06/171648--1417/593 -- 27-05-2020
181	3B2	0 - 17.00	0.35	--	--	--	--	2018/0103/06/062551--8A1416/170 -- 09-02-2018
181	3C1	0 - 83.12	1.70	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	3C2	0 - 32.38	0.70	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	3D1	0 - 83.12	1.70	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	4	0 - 32.38	0.70	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
		5 - 17.62	10.62					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் 06/10/113/00452/100321 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-11-2021 அன்று 06:12:57 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில்

14__ - ஆம் பசலி … மாவட்டம் … வட்டம் … கிராமம்

எண் 2

கிராமத்தில் … அடங்கல் கணக்கு

நில அளவை எண் (1)	உட்பிரிவு எண் (2)	பரப்பு (3)	தீர்வை (4)	(5)	பட்டாதாரருடைய பெயரும் எண்ணும் அல்லது அனுபோகதாரருடைய பெயர் (6)	(7)	(8)	(9)	(10)	(11)	(12)
181	3B1B	0090	0.40		152 சிவசாமி சு/பெ குப்புசேகரன்						
181	3B1A	0547	1.10		-do-						
181	3B2	0170	0.35		-do-						
181	3C1	0831	1.70		-do-						
181	3C2	0323	0.70		-do-						
181	3D1	0831	1.70		-do-						
181	3A2	0135	1.90		-do-						
181	3A1	0831	1.70		-do-						
181	1A	0185	0.37		-do-						
181	4	0323	0.70		-do-						

(2ஆம் தேதி நகல்)

ஒப்பம் / 7 / 2022
கிராம நிர்வாக அலுவலர்
74 கீழ்… பள்ளிப்பட்டு
80 கிரிஜாபுரம்
செங்கம் வட்டம்
திருவண்ணாமலை மாவட்டம்

(13)	(14)	(15)	(16)	(17)	(18)	(18 அ)	(19)
					பனை மரம் - 108		
					மாமரங்கள் - 65 [illegible] மரம் - 10		
					வேப்பமரம் - 18		

ANNEXURE V

திருவண்ணாமலை

380/21-R.F. III-A-10-10,00,000 Cps.-GSP.-MDU.-7-2022.

ANNEXURE VI

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
								ரூ. பை.	ஹெ.ஏர்ஸ்.	ரூ.பை.		
174	1பி	1பி	ர	பு	..	8-4	6	2 00	1 64.0	3 08	17, வீ. [illegible]முகம்.	
	1சி	1சி	ர	பு	..	8-4	6	2 00	1 70.0	3 40	278, [illegible] பம்மாள், முனுசாமி.	
	1டி	1டி	ர	பு	..	8-4	6	2 00	0 89.0	1 78	279, (1) குப்பன், (2) நாகப்பன்.	
	2	2	அ	புற	..	..	..	..	1 43.5	..	..	பாட்டை
	3	3	ர	பு	..	8-4	6	2 00	0 47.5	0 95	279, (1) குப்பன், (2) நாகப்பன்.	
									7 27.5	11 68		
175	..	175	ர	ய	..	8-4	6	2 00	0 70.5	1 41	340, தோ. ஆசனும் மற்றும் ஏழு பேர்களும்.	
176	..	176	ர	பு	..	8-4	6	2 00	0 73.5	1 47	319, கோபாலும் மற்றும் இரண்டு பேர்களும்.*	
177	..	177	ர	பு	..	8-4	6	2 00	0 18.0	0 36	340, கு. [illegible] மற்றும் ஏழு பேர்களும்.*	
178	—	178	ர	பு	..	8-4	6	2 00	0 33.0	0 66	340, கு. [illegible] மற்றும் ஏழு பேர்களும்.	
179	1 2A 2 2B 3	179/1 179/2 2 179/2 3	ர ர ர ர ர	பு பு பு பு பு	.. ..	8-4 8-4 8-4 8-4 8-4	6 6 6 6 6	2 00 2 00 2 00 2 00 2 00	1 [redacted] 0 [redacted]	[redacted]	[redacted]	OSP/TK 26/00/437 dt 29/12/17
									[redacted]	[redacted]		
180	..	180	ர	பு	..	8-4	6	2 00	0 [redacted]	[redacted]	[redacted]	
181	1எ	181-1எ	ர	பு	..	8-4	6	2 00	0 [redacted]	[redacted]	[redacted]	
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	..	..	..	0 [redacted]	[redacted]	[redacted]	கல்லாத குத்த [illegible] வை தரிசு கால்வாய்.
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	..	..	..	0 [redacted]	[redacted]	[redacted]	
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	8-4	6	2 00	1 [redacted]	[redacted]	[redacted]	
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	8-4	6	2 00	1 [redacted]	[redacted]	[redacted]	

* விவரப் பட்டியைப் பார்க்கவும்.

கி. எண் 113, கீழ்நாய்க்கன்பாளையம்.

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
								ரூ.பை.	ஹெ. ஏர்ஸ்.	ரூ.பை.		
181	3சி	181-3சி	ர	பு	..	8-4	6	2 00	1 15.5	2 31	280, (1) கெர் காகப்பன், (2) கன்னப்பன்.	
	3டி	3டி	ர	பு	..	8-4	6	2 00	1 15.5	2 31	318, வே சுப்பிரமணியனும் மற்றும் ஆறு பேர்களும்.*	
									6 19.5	11 01		
182	1	182-1	அ	புற	..	..	..	..	0 02.0	..	....	கால்வாய்.
	2	2	ர	ந(அ)	..	7-5	13	11 58	0 05.5	0 61	134, ஏ. திருநாவுக்கரசு உடையார்.	
	3	3	ர	ந(அ)	..	7-5	13	11 58	0 03.0	0 33	134, ஏ. திருநாவுக்கரசு உடையார்.	
	4	4	ர	ந(அ)	..	7-5	13	11 58	0 02.0	0 23	134, ஏ. திருநாவுக்கரசு உடையார்.	
	5	5	ர	ந(அ)	..	7-5	13	11 58	0 02.0	0 23	134 ஏ. திருநாவுக்கரசு உடையார்.	
	6	6	ர	ந(அ)	..	7-5	13	11 58	0 02.5	0 28	134, ஏ. திருநாவுக்கரசு உடையார்.	
	7	7	ர	ந(அ)	..	7-5	13	11 58	0 01.0	0 14	134, ஏ. திருநாவுக்கரசு உடையார்.	
	8	8	ர	ந(அ)	..	7-5	13	11 58	0 02.5	0 28	134, ஏ திருநாவுக்கரசு உடையார்.	
	9	9	ர	ந(அ)	..	7-5	13	11 58	0 01.0	0 09	134. ஏ. திருநாவுக்கரசு உடையார்.	
	10	10	ர	ந(அ)	..	7-5	13	11 58	0 02.5	0 28	134, ஏ. திருநாவுக்கரசு உடையார்.	
	11	11	ர	ந(அ)		7-5	13	11 58	0 02.5	0 28	134, ஏ. திருநாவுக்கரசு உடையார்.	
									0 26.5	2 75		
183	1	183-1	ர	ந(அ)	..	7-5	13	11 58	0 01.5	0 19	134, ஏ. திருநாவுக்கரசு உடையார்.	
	2	2	ர	ந(அ)	..	7-5	13	11 58	0 03.0	0 33	96, க. சிவலிங்க முதலி.	
	3	3	ர	ந(அ)	..	7-5	13	11 58	0 01.5	0 19	96, க. சிவலிங்க முதலி.	
	4	4	ர	ந(அ)	..	7-5	13	11 58	0 02.0	0 23	134, ஏ. திருநாவுக்கரசு உடையார்.	
	5	5	ர	ந(அ)	..	7-5	13	11 58	0 03.5	0 42	281, (1) த வேணு நாய்க்கர், (2) ந. மரகதம்.	
	6	6	ர	ந(அ)	..	7-5	13	11 58	0 04.0	0 47	281, (1) த வேணு நாய்க்கர், (2) ந. மரகதம்.	

ANNEXURE IX

ANNEXURE X

CHETTINAD CEMENT CORPORATION LTD.

(Regd. Office: RANI SEETHAI HALL BUILDING IV & V FLOORS, 603, ANNA SALAI, MADRAS-600 006.)
WORKS OFFICE : PULIYUR.

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

All Correspondences to
Kamarajah Muthiah Nagar
PULIYUR CEMENT FACTORY
Karur (Via) Trichy Dt.)

22nd September, 1987.

T.RAJU.,B.E.,
MINES MANAGER & DY.GENERAL MANAGER.

CERTIFICATE.

This is to certify that Mr.C.Natarajan has been working as a Geologist from 14-12-1979 to till date. He has been incharge of supervision of day to day functions in respect of Exploration, Preparation of Geological Plans & Sections, Preparation of Mines Plans, and Quality control and other allied mining activities in the following Pits of our Seethainagar Limestone Mines in Anna District.

Name of the Pit.		Average Raising/day.
1. Alambadi Pit.	-	1,700 T.
2. Mallapuram Pit.	-	900 T.
3. Karikkali Pit.	-	150 T.
Total.	-	2,750 T.

He has got nearly Eight years of total experience in our Mines in the above supervisory capacity.

for CHETTINAD CEMENT CORPORATION LTD.,

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

3269.

Faculty of Science

The Senate of the Annamalai University hereby makes known that E. Natarajan has been admitted to the Degree of Master of Science (by Examination) in Zoology, he having been certified by duly appointed Examiners at the examination held in April 1976, to be qualified to receive the same and that he was placed in the First Class.

Given under the seal of the University.

Annamalainagar.
8th December 1976.

A. Chandrasekha
Vice-Chancellor.

PLATE NO: I

DATE OF SURVEY : 22.12.2022

APPLICANT:
THIRU.A.V.SARATHY,
S/o.C.A.VARATHAN,
NO.34E-1,VELLORE MAIN ROAD,
ARCOT TALUK,
VELLORE DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOs :181/3A2,181/3B1A1(P),181/3B1B,181/3B2,
:181/3C1,181/3C2,181/3D1&181/4,
EXTENT : 4.10.30Ha,
VILLAGE : KEELNAICKENPALAYAM,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

Q. L. A. AREA :

TOPO SHEET NO : 57 P/ 10

LATITUDE: 12°44'13.44"N to12°44'25.54"N

LONGITUDE: 79°41'44.11"E to 79°41'51.88"E

LOCATION PLAN

NOT TO SCALE

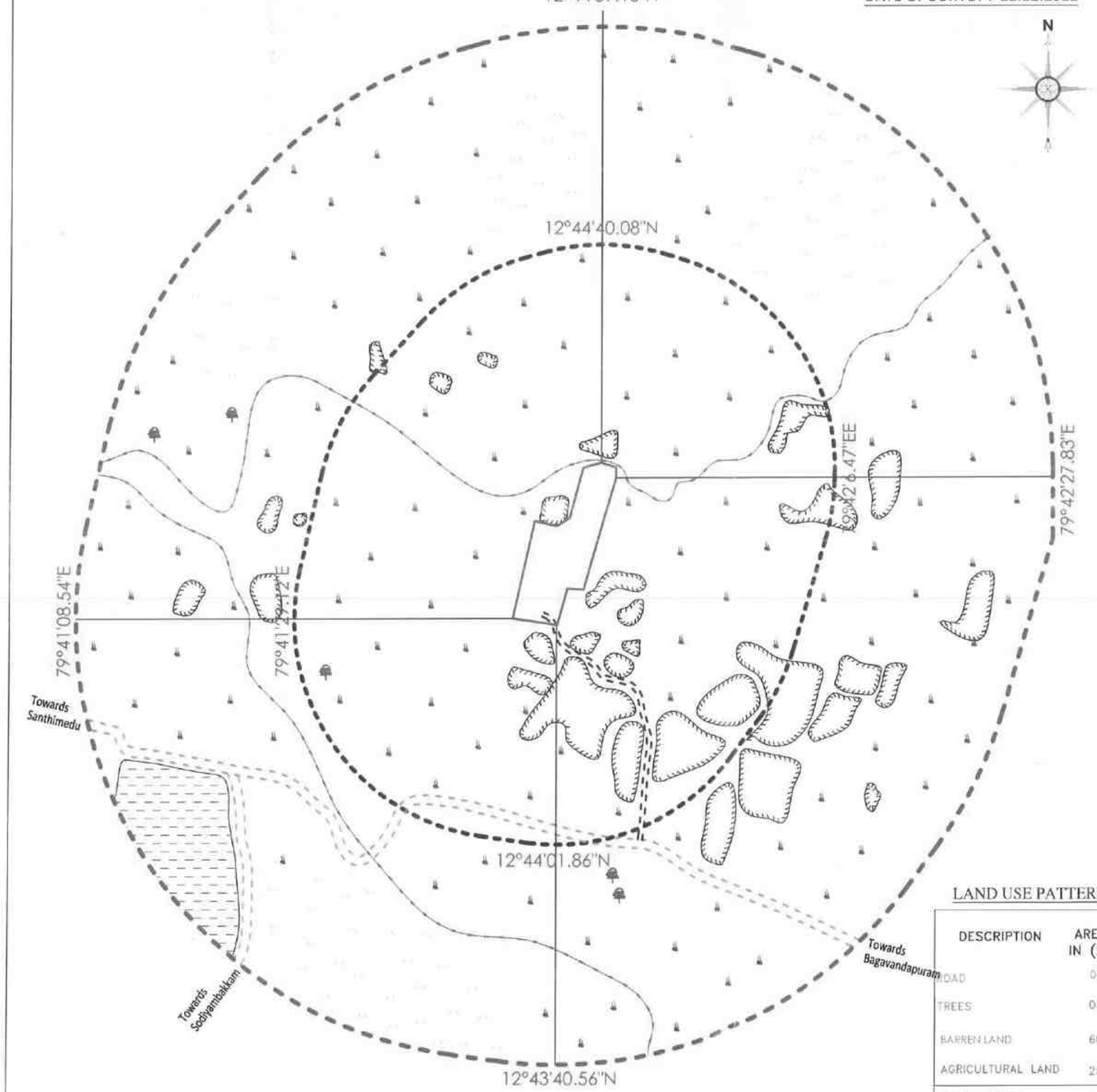
PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

C.NATARAJANR,M.Sc,M.Phil.,
QUALIFIED PERSON

PLATE NO: 1A

DATE OF SURVEY : 22.12.2022



APPLICANT:

THIRU.A.V.SARATHY,
S/o.C.VARATHAN,
NO:34,R-1,VELLORE MAIN ROAD,
ARCOT TALUK,
VELLORE DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOs :181/3A2,181/3B1A1(P),181/3B1B,181/3B2,
:181/3C1,181/3C2,181/3D1&181/4,
EXTENT : 4.10.30Ha,
VILLAGE : KEELNAICKENPALAYAM,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

TOPO SHEET NO : 57 P/ 10

LATITUDE: 12°44'13.44"N to12°44'25.54"N

LONGITUDE: 79°41'44.11"E to 79°41'51.88"E

Q.L. APPLIED AREA	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
PANCHAYAT ROAD	
BARREN LAND	
TREES	
AGRICULTURAL LAND	
QUARRY PIT	
TANK	
CANAL	

LAND USE PATTERN

DESCRIPTION	AREA IN (%)
ROAD	05
TREES	05
BARREN LAND	60
AGRICULTURAL LAND	25
WATER BODIES	05

ENVIRONMENTAL PLAN

SCALE 1: 10,000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

C.NATARAJANR.M.Sc.M.Phil.,
QUALIFIED PERSON

N

திருவண்ணாமலை

PLATE NO: 1B

DATE OF SURVEY : 22.12.2022

APPLICANT:

THIRU.A.V.SARATHY,
S/o.C.VARATHAN,
NO:34,R-1,VELLORE MAIN ROAD,
ARCOT TALUK,
VELLORE DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOs :181/3A2,181/3B1A1(P),181/3B1B,181/3B2,
:181/3C1,181/3C2,181/3D1&181/4,
EXTENT : 4.10.30Ha,
VILLAGE : KEELNAICKENPALAYAM,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

TOPO SHEET NO : 57 P/ 10

LATITUDE: 12°44'13.44"N to12°44'25.54"N

LONGITUDE: 79°41'44.11"E to 79°41'51.88"E

Q.L. APPLIED AREA

500M RADIUS

1KM RADIUS

APPROACH ROAD

PANCHAYAT ROAD

SATELLITE IMAGE
SCALE 1 : 10,000

PREPARED BY :

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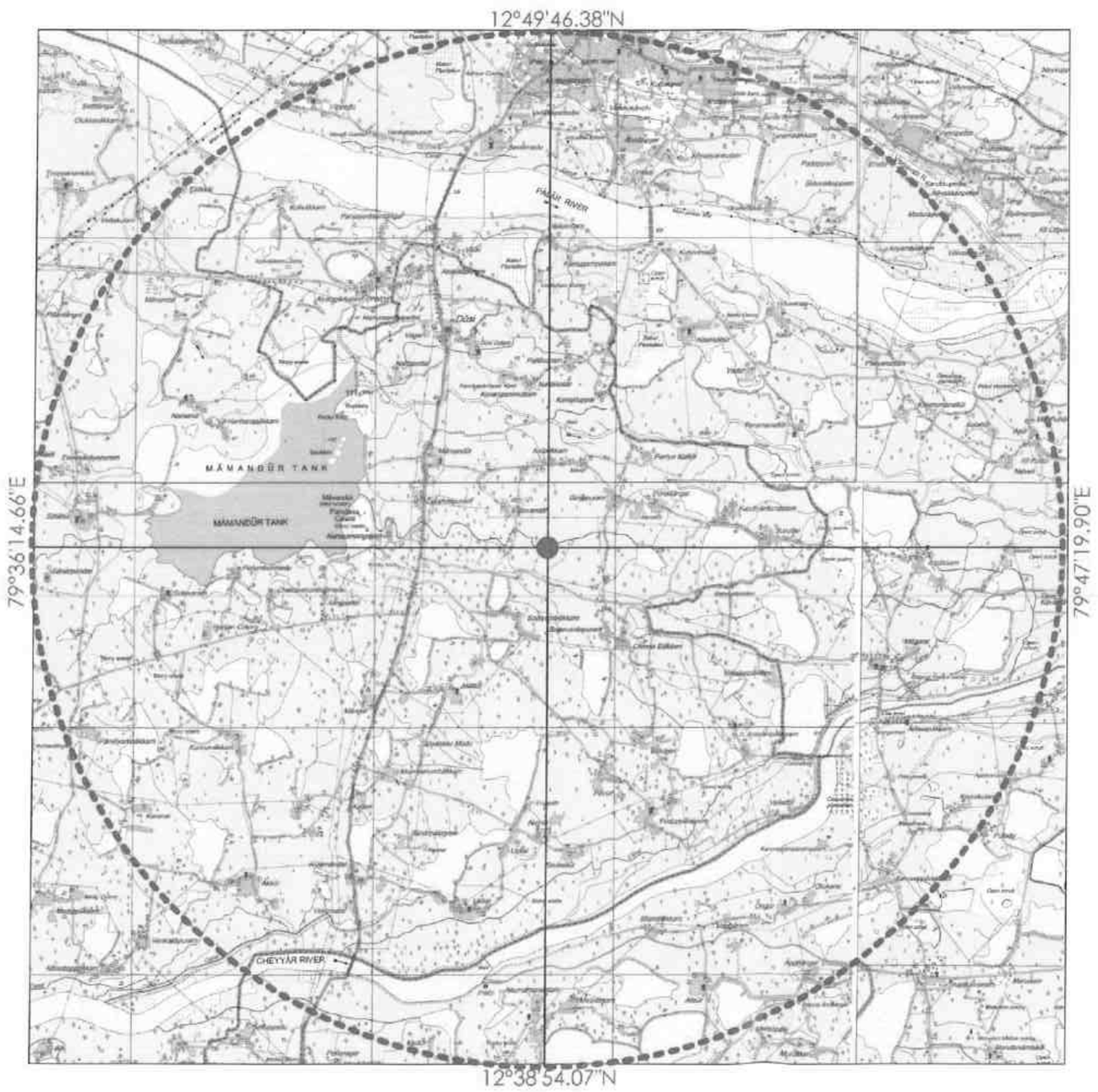
C.NATARAJANR.M.Sc,M.Phil.,
QUALIFIED PERSON

PLATE NO-I C

DATE OF SURVEY : 22.12.2022



APPLICANT:

THIRU.A.V.SARATHY,
S/o.C.VARATHAN,
NO:34,R-1,VELLORE MAIN ROAD,
ARCOT TALUK,
VELLORE DISTRICT.

இயக்குநர் அலுவலகம் திருவண்ணாமலை புவியியல் மற்றும் சுரங்கத்துறை

QUARRY LEASE APPLIED AREA:

S.F.NOs :181/3A2,181/3B1A1(P),181/3B1B,181/3B2,
:181/3C1,181/3C2,181/3D1&181/4,
EXTENT : 4.10.30Ha,
VILLAGE : KEELNAICKENPALAYAM,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

TOPO SHEET NO : 57 P/ 10

LATITUDE: 12°44'13.44"N to12°44'25.54"N

LONGITUDE: 79°41'44.11"E to 79°41'51.88"E

Q.L.A.AREA

10KM RADIOUS

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 10Km RADIUS

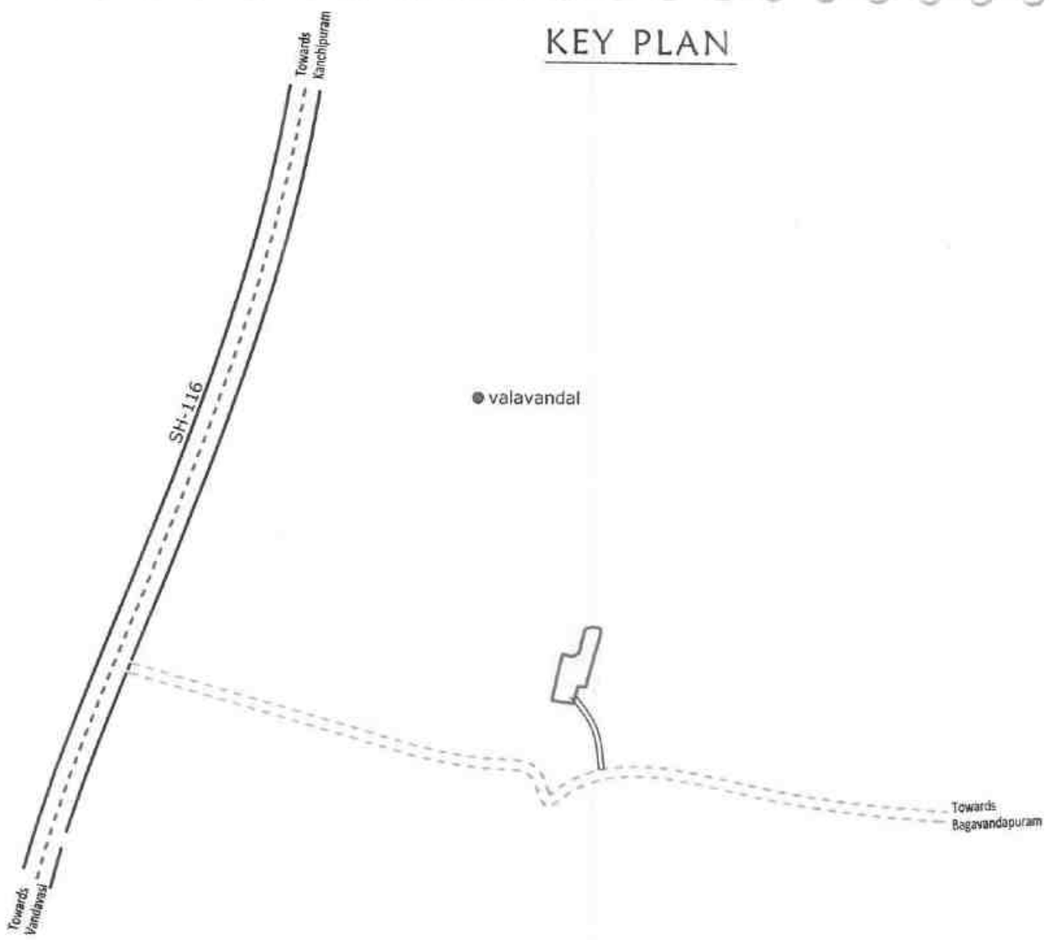
SCALE- 1:1,00,000

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 LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

C.NATARAJANR.M.Sc,M.Phil.,
QUALIFIED PERSON

KEY PLAN



N

PLATE NO:I-D

DATE OF SURVEY : 22.12.2022

APPLICANT:

THIRU.A.V.SARATHY,
S/o.C.VARATHAN,
NO:34,R-1,VELLORE MAIN ROAD,
ARCOT TALUK,
VELLORE DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOs :181/3A2,181/3B1A1(P),181/3B1B,181/3B2,
:181/3C1,181/3C2,181/3D1&181/4,
EXTENT : 4.10.30Ha,
VILLAGE : KEELNAICKENPALAYAM,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

Q.L. APPLIED AREA	
STATE HIGHWAY	
PANCHAYAT ROAD	
APPROACH ROAD	
HABITATIONS	

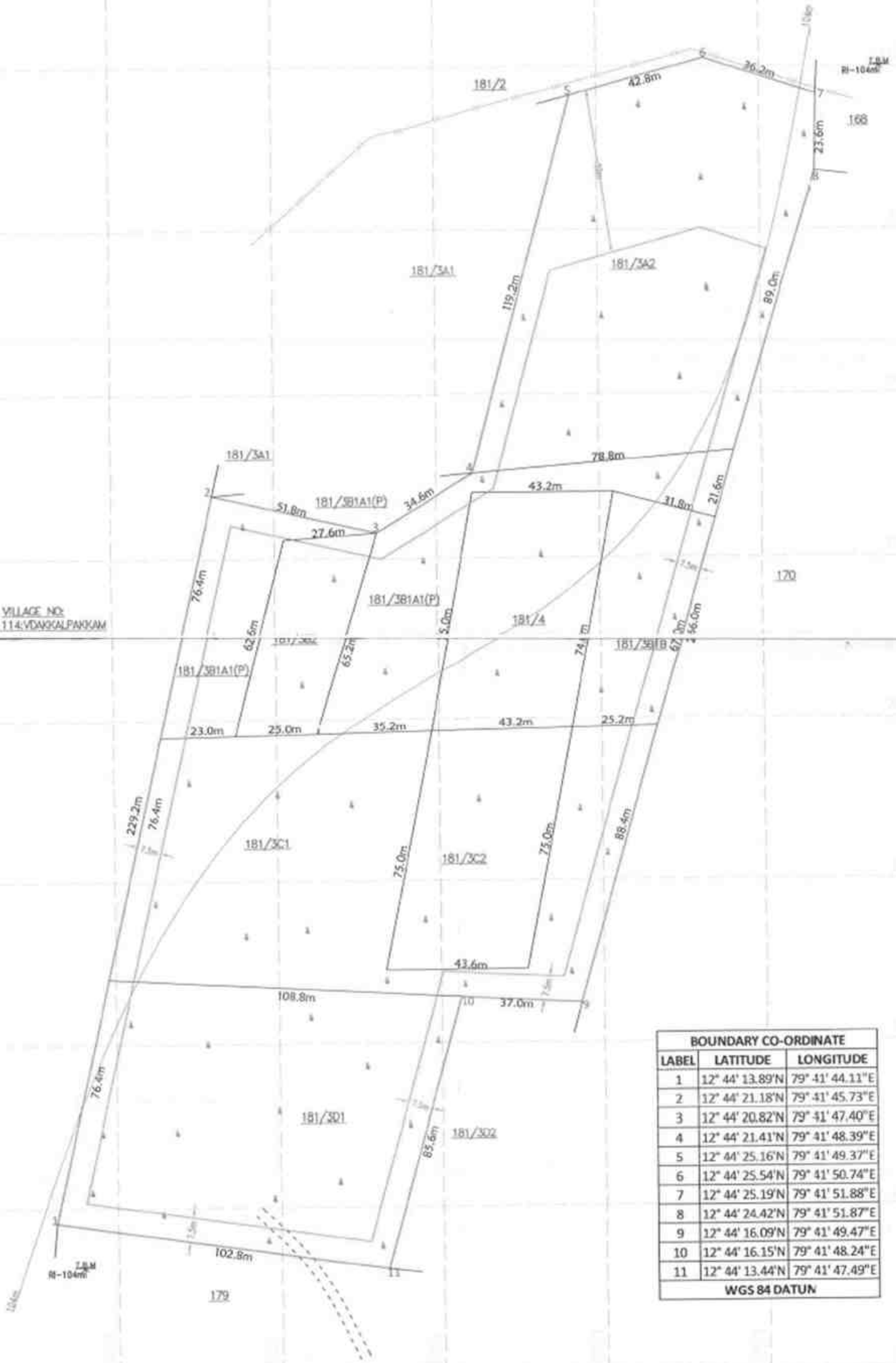
KEY PLAN

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 LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

C.NATARAJAN,B.Sc,M.Phil.,
QUALIFIED PERSON



VILLAGE NO:
114:VEMBAKALPAKKAM

BOUNDARY CO-ORDINATE		
LABEL	LATITUDE	LONGITUDE
1	12° 44' 13.89"N	79° 41' 44.11"E
2	12° 44' 21.18"N	79° 41' 45.73"E
3	12° 44' 20.82"N	79° 41' 47.40"E
4	12° 44' 21.41"N	79° 41' 48.39"E
5	12° 44' 25.16"N	79° 41' 49.37"E
6	12° 44' 25.54"N	79° 41' 50.74"E
7	12° 44' 25.19"N	79° 41' 51.88"E
8	12° 44' 24.42"N	79° 41' 51.87"E
9	12° 44' 16.09"N	79° 41' 49.47"E
10	12° 44' 16.15"N	79° 41' 48.24"E
11	12° 44' 13.44"N	79° 41' 47.49"E
WGS 84 DATUN		

PLATE NO-II

DATE OF SURVEY : 22.12.2022

APPLICANT:

THIRU.A.V.SARATHY,
S/o.C.VARATHAN,
NO:34,R-1,VELLORE MAIN ROAD,
ARCOT TALUK,
VELLORE DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOs :181/3A2,181/3B1A1(P),181/3B1B,181/3B2,
:181/3C1,181/3C2,181/3D1&181/4,
EXTENT : 4.10.30Ha,
VILLAGE : KEELNAICKENPALAYAM,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

- Q.L. APPLIED BOUNDARY
- 7.5m & 50mSAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- CANAL

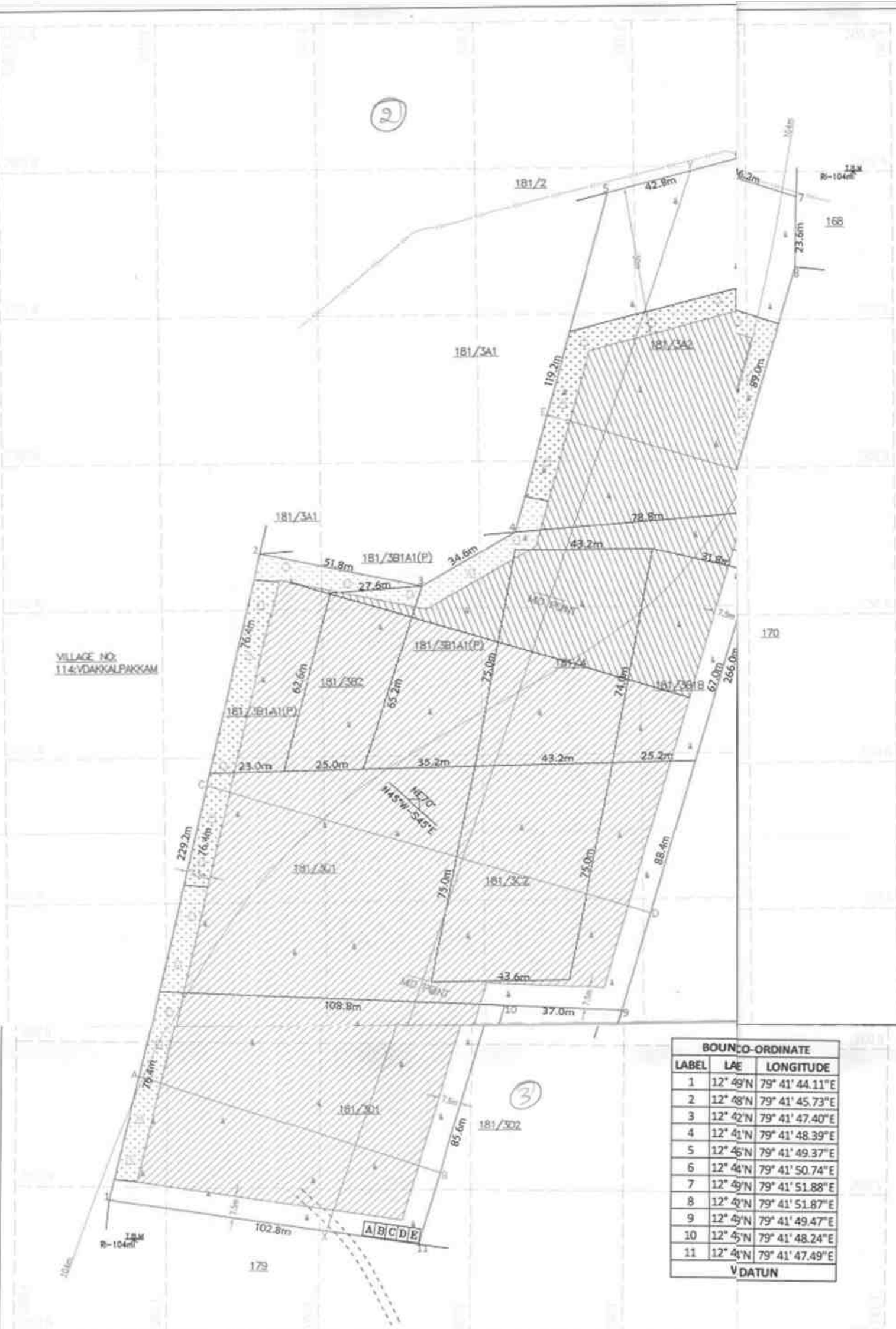
QUARRY LEASE & SURFACE PLAN

SCALE 1 : 1000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

C.NATARAJAN,M.Sc.,M.Phil.,
QUALIFIED PERSON



PROPOSED SITE SERVICES

- A – OFFICE
- B – STORE ROOM
- C – FIRST AID ROOM
- D – REST SHELTER
- E – TOILET
- M – MAGAZINE

- 1st Year Proposed area to be Quarried
- 2nd Year Proposed area to be Quarried
- 3rd Year Proposed area to be Quarried
- 4th Year Proposed area to be Quarried
- 5th Year Proposed area to be Quarried
- 1st Year Proposed area to be Planted
- 2nd Year Proposed area to be Planted
- 3rd Year Proposed area to be Planted
- 4th Year Proposed area to be Planted
- 5th Year Proposed area to be Planted

PRESENT & POST LAND USE PATTERN

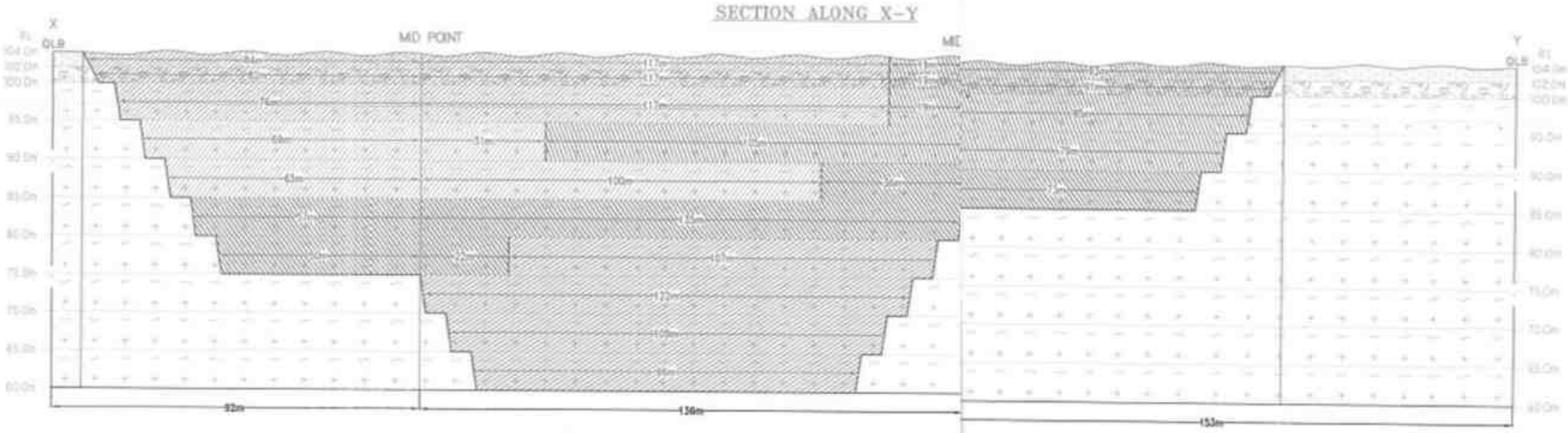
DESCRIPTION	PRESENT AREA (Ha)	AREA AT THE END OF THIS QUARRYING PERIOD (Ha)
AREA UNDER QUARRYING	Nil	3.10.00
INFRASTRUCTURE	Nil	0.02.00
ROADS	Nil	0.02.00
GREEN BELT	Nil	0.40.00
UN-UTILIZED AREA	4.10.30	0.56.30
GRAND TOTAL	4.10.30	4.10.30

BOUNDARY CO-ORDINATE

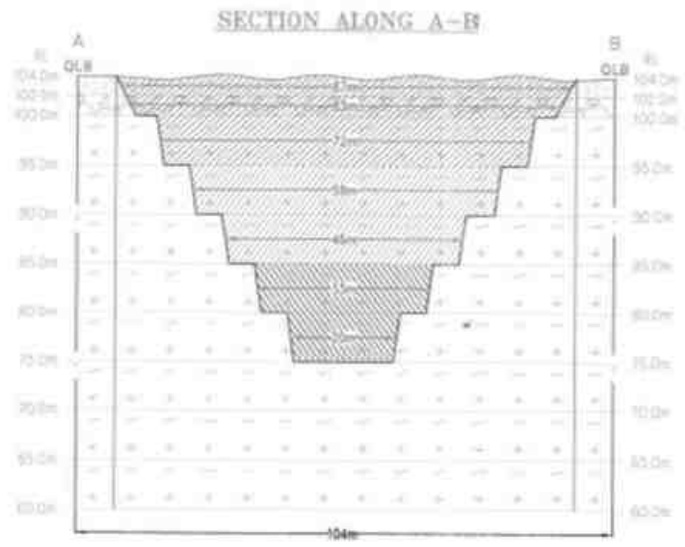
LABEL	LATITUDE	LONGITUDE
1	12° 41'49"N	79° 41' 44.11"E
2	12° 41'48"N	79° 41' 45.73"E
3	12° 41'42"N	79° 41' 47.40"E
4	12° 41'41"N	79° 41' 48.39"E
5	12° 41'46"N	79° 41' 49.37"E
6	12° 41'44"N	79° 41' 50.74"E
7	12° 41'49"N	79° 41' 51.88"E
8	12° 41'52"N	79° 41' 51.87"E
9	12° 41'49"N	79° 41' 49.47"E
10	12° 41'45"N	79° 41' 48.24"E
11	12° 41'44"N	79° 41' 47.49"E

VDATUN

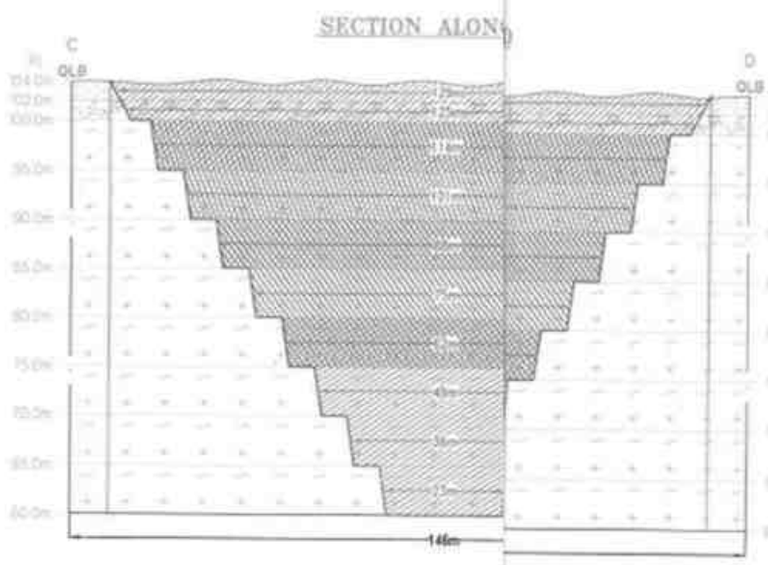
SECTION ALONG X-Y



SECTION ALONG A-B



SECTION ALONG C-D



SECTION ALONG E-F

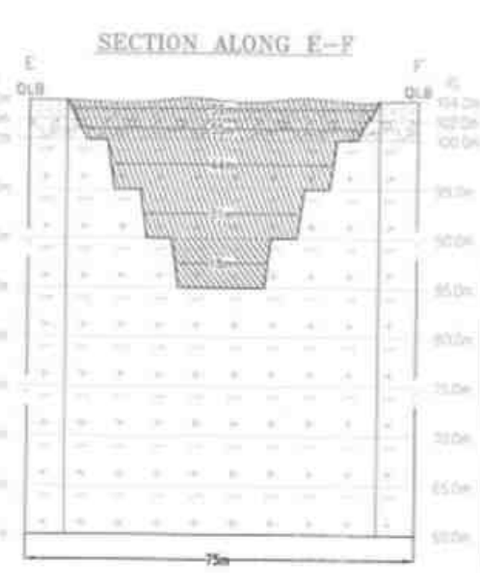


PLATE NO-III

DATE OF SURVEY : 22.12.2022

APPLICANT:

THIRU.A.V.SARATHY,
S/o.C.VARATHAN,
NO:34,R-1,VELLORE MAIN ROAD,
ARCOT TALUK,
VELLORE DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOs :181/3A2,181/3B1A1(P),181/3B1B,181/3B2,
:181/3C1,181/3C2,181/3D1&181/4.
EXTENT : 4.10.30Ha.
VILLAGE : KEELNAICKENPALAYAM,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

- Q.L. APPLIED BOUNDARY
- 7.5m & 50m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- GRAVEL
- WEATHERED ROCK
- ROUGH STONE
- STRIKE & DIP
- CANAL

TOPOGRAPHY,GEOLOGICAL , YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTION

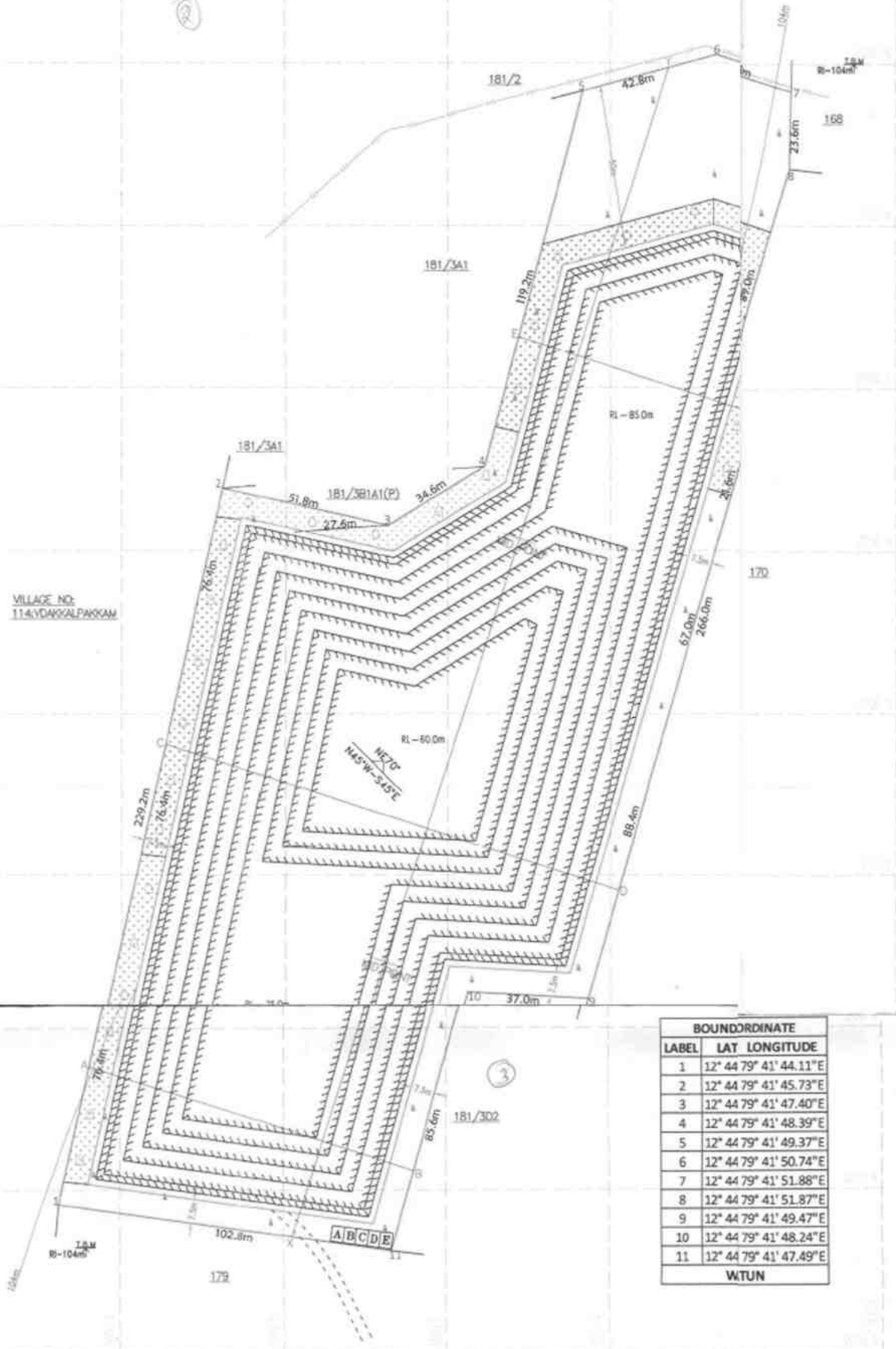
SCALE 1 : 1000

SECTION HOR 1 : 1000, VER 1: 500

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

C.NATARAJAN,M.Sc.,M.Phil.,
QUALIFIED PERSON



VILLAGE NO:
114:VADAKKALPAKKAM

BOUNDORDINATE	
LABEL	LAT LONGITUDE
1	12° 44 79" 41' 44.11"E
2	12° 44 79" 41' 45.73"E
3	12° 44 79" 41' 47.40"E
4	12° 44 79" 41' 48.39"E
5	12° 44 79" 41' 49.37"E
6	12° 44 79" 41' 50.74"E
7	12° 44 79" 41' 51.88"E
8	12° 44 79" 41' 51.87"E
9	12° 44 79" 41' 49.47"E
10	12° 44 79" 41' 48.24"E
11	12° 44 79" 41' 47.49"E
W.TUN	

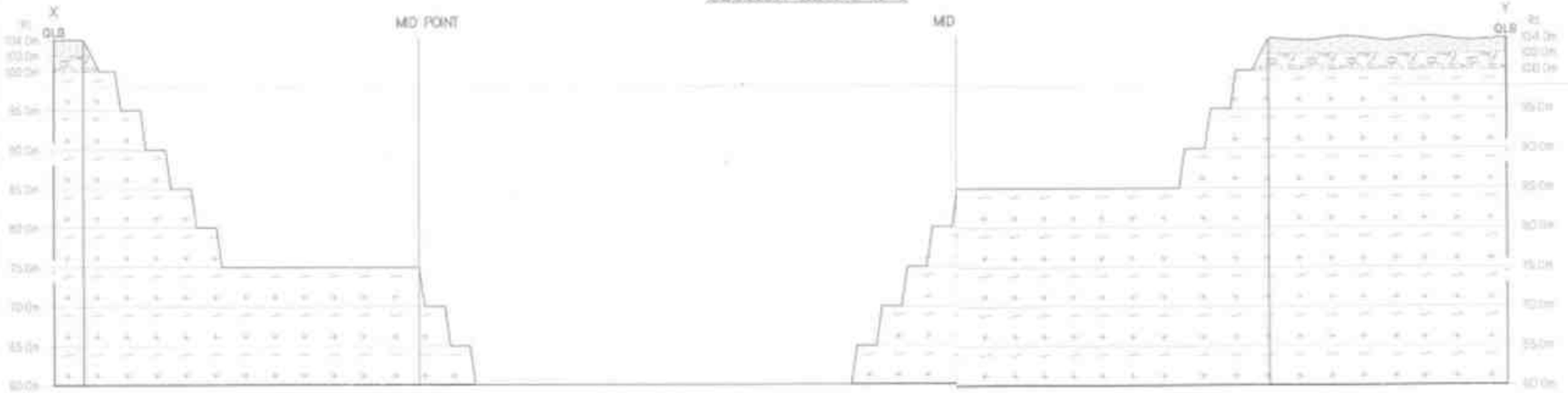
PROPOSED SITE SERVICES

A – OFFICE
B – STORE ROOM
C – FIRST AID ROOM
D – REST SHELTER
E – TOILET
M – MAGAZINE

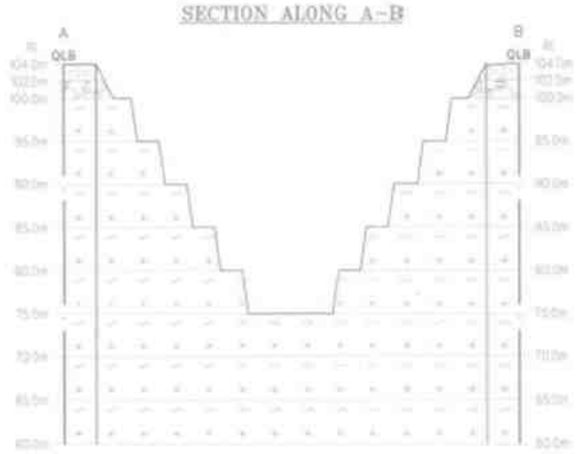
1st Year Proposed area to be Planted
2nd Year Proposed area to be Planted
3rd Year Proposed area to be Planted
4th Year Proposed area to be Planted
5th Year Proposed area to be Planted

Ultimate Pit Dimension
L313(m)(Max)XW99(m)(Avg)(Avg)XD44(m)(Max)

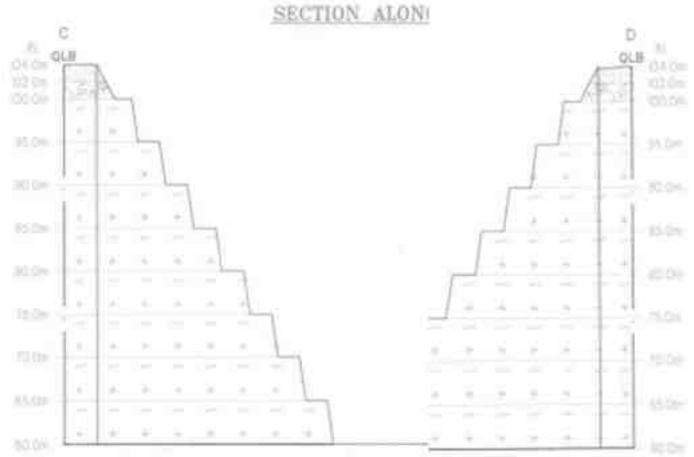
SECTION ALONG X–Y



SECTION ALONG A–B



SECTION ALONG C–D



SECTION ALONG E–F

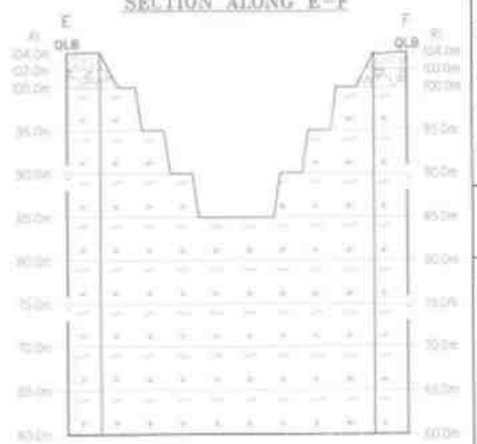


PLATE NO-IV
DATE OF SURVEY : 22.12.2022

APPLICANT:
THIRU.A.V.SARATHY,
S/o.C.VARATHAN,
NO:34,R-1,VELLORE MAIN ROAD,
ARCOT TALUK,
VELLORE DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOs :181/3A2,181/3B1A1(P),181/3B1B,181/3B2,
:181/3C1,181/3C2,181/3D1&181/4,
EXTENT : 4.10.30Ha,
VILLAGE : KEELNAICKENPALAYAM,
TALUK : VEMBAKKAM.
DISTRICT : TIRUVANNAMALAI.

INDEX

Q.L. APPLIED BOUNDARY
7.5m & 50m SAFETY DISTANCE
TEMPORARY BENCH MARK
APPROACH ROAD
CONTOUR
SCRUB
GRAVEL
WEATHERED ROCK
ROUGH STONE
STRIKE & DIP
CANAL
PROPOSED QUARRY PIT

CONCEPTUAL PLAN & SECTION
SCALE 1 : 1000
SECTION HOR 1 : 1000, VER 1: 500

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

C.SATHIYANARAYANA, M.Phil.,
QUALIFIED PERSON

ANNEXURE-3

Annexure - II

97

From

Thiru.A.Perumal, M.sc., M.phil.,
Deputy Director,
Geology and Mining,
Tiruvannamalai District.

To

Thiru.A.V.Sarathy,
S/o. Varathan,
No.34, R-1, Vellore Main Road,
Arcot Taluk,
Vellore District.

Rc.No. 144/Kanimam/2022, dated:06.01.2023

Sub: Quarries and Minerals – Minor Mineral Rough Stone and Gravel – Tiruvannamalai District – Vembakkam Taluk – Keelnaickenpalayam village – Patta SF.No.181/3A2 & etc., over an extent 4.10.30 hects., - Application preferred by Thiru.A.V.Sarathy S/o. Varathan – Precise area communicated – Submission of Mining Plan for approval - Approved - Regarding.

Ref: Thiru.A.V.Sarathy S/o. Varathan Letter Dated:05.01.2023

*****

In the reference cited, Thiru.A.V.Sarathy the applicant of proposed Rough Stone quarry lease in SF.Nos.181/3A2 (0.93.52), 181/3B1A1 (Part) (0.48.78), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) over an extent 4.10.30 hects., of Keelnayackenpalayam village, Vembakkam Taluk, Tiruvannamalai District has requested to furnish the details of quarries located within 500 meters radius from his proposed quarry.

In this regard, the followings are furnished.

i). Existing quarries

Sl. No.	Name of the Owner (Tvl.)	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
1	Tvl. NRM SONS BLUE METALS, 97A, Ottakuthar St, Mamallan Nagar, Kanchipuram District.	Kizhnaickenpalayam 171/9, 171/12 & Girijapuram 103/4, 103/5, 103/6 & 103/10	2.75.0	17.12.2021 to 16.12.2031	Existing quarry
2	Thiru.K.Devaraj, S/O. T.Kanniyappan, No.105, Gandhisilai St, Lakshmipuram Village, Vembakkam Taluk, Tiruvannamalai.	Girijapurm 83/11F, 83/11G, 83/11H, 92/1B, 92/3A, 92/3B, 92/3C, 98/13A, & 98/14A	2.06.0	15.10.2018 to 14.10.2023	

ii). Abandoned quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
1	Thiru.L.Sudhakar, S/o. Loganathan, No.82, Palla Street, Agaram Village, Thenneri Post,, Kancheepuram.	Girijapuram 94/4, 95/2, 96/1, 103/11 & 103/12	3.51.5	14.09.2017 to 13.09.2022	Expired quarry

iii). Present Proposed quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.
1	Thiru.A.V.Sarathy, S/o. Varathan, No.34, R-1, Vellore Main Road, Arcot Taluk, Vellore District.	Keelnayackenpalayam 181/3A2 (0.93.52), 181/3B1A1 (Part) (0.48.78), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38)	4.10.30

iv). Future Proposed quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.
--Nil--			

6/1/23

Deputy Director,
Geology and Mining,
Tiruvannamalai.

6/01/23

ANNEXURE-4

கிராம நிர்வாக அலுவலர் சான்று

Annexure - III

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திருவண்ணாமலை மாவட்டம், வெம்பாக்கம்
வட்டம், நெ! 74 கீழ்நாயக்கன்பாளையம் கிராமம், புன்செய்
சர்வே எண்கள் 181/3A2, 181/3B1A1 பகுதி, 181/3B1B
181/3B2, 181/3C1, 181/3C2, 181/3D1, 181/4
இவைகளின் மொத்த பரப்பு 4.10.30 ஹெக்டேர் நிலத்தில்
வேலூர் மாவட்டம் ஆற்காடு வட்டம், வேலூர் பிரதான
சாலை நெ. 3A-R1 என்ற முகவரியில் வசிக்கும்
வரதன் மகன் A.V. சாரதி என்பவர் சாதாரண கல்வெட்டி
எடுக்க உரிமம் கோரியுள்ளார். மேற்படி புல எண்களில்
விளைபயிர் மரங்கள், புராதனச்சின்னங்கள், பொதுகிணறுகள்
உயர் மின்னழுத்த கம்பிகள் எதும் இல்லை. அனுமதி
கோரியுள்ள புல எண்களுக்கு 500 மீட்டர் சுற்றளவில்
குடியிருப்புகள் எதும் இல்லை. மேலும் அங்கீகரிக்கப்பட்ட
வீட்டுமனை பிரிவுகள் எதும் இல்லை என சான்றளிக்கிறேன்.

ஒ-ம்/- 17/1/2023

கிராம நிர்வாக அலுவலர்
74. கீழ்நாயக்கன்பாளையம்
80. கிரிஜாபுரம்
வெம்பாக்கம் வட்டம்
திருவண்ணாமலை மாவட்டம்.

இடம்: கீழ்நாயக்கன்பாளையம்

நாள்: 17/1/2023

ANNEXURE-5

Annexure - IV 100

தமிழ்நாடு தமிலநாடு TAMILNADU

23 JAN 2023

CS 843924

A.V. Sarathy
34, R-1, Vellore Main Road Arcot Tk
Vellore - 602 106

M. KAILASH CHAND
STAMP VENDOR-L.No.11727/C/98
RAIDAPET, CHENNAI-15. 9840173086

AFFIDAVIT TO SEIAA, TAMIL NADU

I A.V.Sarathy, S/o.C.Varathan, No:34, R-1, Vellore Main road, Arcot Taluk, Vellore District. Pincode:602 106. Do hereby solemnly declare and sincerely affirm that, I have applied for getting environment clearance to SEIAA, Tamil Nadu for quarry lease for Rough Stone and gravel quarry over an extent is 4.10.30hectares of patta land in S.F.Nos.181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 of Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State,

1. I swear to state and confirm that within 10km area of the quarry site, we have applied for environmental clearance, none of the following is situated.
   a. Protected areas notified under the wild life (Protection) Act, 1972 (NBWL).

   Wildlife Sanctuary: Nil within 10km radius

   b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and control of Pollution) Act 1974.

NOTARY * K.KAMARAJ, M.A., B.L. Chennai City G.O. No. No.59 Law Dept. DT: 28-02-2019 * GOVT OF TAMIL NADU *

24/01/2023

A. Sarathy

K.KAMARAJ, M.A., B.L.,
ADVOCATE & NOTARY
Adithya Builders
Res & Office : No: 6, Devanathan Colony,
West Mambalam, Chennai - 600 033.
Cell: 93800 46413

c. Interstate boundaries and international boundaries within 10km radius from the boundary of the proposed site.

2. I will complete the following Corporate Environment Responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	Project cost (Rs)	CER cost 2.0% of Project cost (Rs)
Tree plantation, improvement in infrastructural facilities in nearby government school	Rs.96,11,800/-	Rs.1,92,300/-
Revised budget allotted	Rs.96,11,800/-	Rs.5.0 lakhs/- has been allocated as the revised CER budget

3. Details of quarry within 500m radius from the applied area

S.No	Name and address of the lessee	Quarry location	Extent in Hectare	Lease Period
a. Abandoned Quarries				
1	Thiru.L.Sudhakar, S/o.Loganathan, No.82, Palla Street, Agaram Village, Thenneri Post, Kancheepuram District	Girijapuram Village, S.F.Nos.94/4, 95/2, 96/1, 103/11 & 103/12	3.51.5Ha	14.09.2017 to 13.09.2022 Expired Quarry
b. Existing Quarries				
1	Tvl.NRM Sons Blue Metals, No.97A, Ottakuthar Street, Mamallan Nagar, Kancheepuram District	Keelnaickenpalayam Village, S.F.No.171/9, 171/12 Girijapuram village S.F.No.103/4, 103/5, 103/6 & 103/10	2.75.0Ha	17.12.2021 to 16.12.2031 Existing Quarry

NOTARY * GOVT. OF TAMIL NADU * K.KAMARAJ, M.A., B.L. Chennai-City G.O.Ms.No.59 Law Dept. Dt: 28.02.2019

2	Thiru.K.Devaraj, S/o. T.Kanniyappan, No.105, Gandhisilai Street, Lakshmipuram Village, Vembakkam Taluk, Tiruvannamalai District	Girijapuram Village, S.F.No.83/11F, 83/11G, 83//11H, 92/3B, 92/3C, 98/13A & 98/14A	2.06.0Ha	15.10.2018 to 14.10.2023 Existing Quarry
	c. Proposed Quarries			
1	Thiru.A.V.Sarathy, S/o.C.Varathan No:34, R-1, Vellore Main road, Arcot Taluk, Vellore District	Keelnaickenpalayam Village, S.F.Nos.181/3A2, 181/3B1A1(P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4	4.10.30Ha	Proposed Quarry
	d. Future Proposed Quarries			
		Nil		

The total lease within the 500m radius (Existing + Proposed) (2nos + 1no) works out to 8.91.30 ha including this lease area. **As such cluster situation is applicable and TOR for this project is applied.**

4. There will not be hindrance or disturbance to the people living no enrooted/ nearby our quarry site while transporting the mineral and due to quarrying activities.
5. There is no approved habitation within 300m radius from the periphery of our 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 our quarry site.
8. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough Stone, weathered rock and gravel.
9. I will not engage any child labor in our quarry site and I aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided to all the laborers working in our quarry.

NOTARY * GOVT. OF TAMIL NADU * K.KAMARAJ, Chennai City G.O. Ms.No.59 Law Dept DT: 26.02.2019

A. Sarathy

11. No permanent structures, temple etc., are located within 500m radius from the periphery of our quarry.
12. I will erect fencing around the quarry lease before commencement of mining activities.
13. I will carry out systematic and scientific mining employing qualified mines manager, blaster.
14. I will inform DGMS before commencement of mining activities.
15. I ensure to do the social and Environment commitment as mentioned in the Mining plan to the best of our knowledge.

Notary Sign & Seal

NOTARY * K.KAMARAJ, M.A., B.L. Chennai City G.O.Ms.No.59 Law Dept DT: 28-02-2019 * GOVT. OF TAMILNADU

Quarry owner sign & Seal

A.V. Sarathy

24/11/2023

K.KAMARAJ, M.A.,B.L.,
ADVOCATE & NOTARY
Adithya Builders
Res & Office : No: 5, Devanathan Colony,
West Mambalam, Chennai - 600 033.
Cell: 93800 46411

ANNEXURE-6

Annexure - V

TIN No : 33186305138
CST No: 1292532Dt - 22-04-15

Ph : 0416 - 2296214
Cell : 97877 38852

A.R.ENTERPRISES

181 A, Maruthi Nagar, Periyapudur Post, Katpadi,
Vellore District. Tamil Nadu - 632 059.
e-mail : prakashkonar@yahoo.com

Ref :

Date :

Ref:ARE/RMPL/2022

17.09.2022

To
M/s. A.V.Sarathy,
S/o. Varathan,
No:34, R-1, Vellore Main Road,
Arcot Taluk, Ranipet District,
Tamil Nadu.

Dear Sir,

Sub: Consumption of Explosives & Accessories in your quarry.

****

We refer to the discussion regarding your requirement to carry out blasting operations at the quarry leased in your name. We wish to inform you that we are having Explosives Licence issued by M/s Petroleum & Explosives Safety Organization (PESO) in Form-22 – Licence No. E75379; magazine situated at Survey No.64, Panniyur Village, Keelveeranam & Post, Arakkonam Taluk, Ranipet District, Tamilnadu.

We also have our own Licenced Explosives Vans and well experienced & licensed Blasters for safe handling of the blasting works and we are carrying out blasting operations for the last 4 years without any untoward incidents.

We hereby express our willingness to undertake blasting works on contract basis at your Quarry situated in Sy.No.181/3A1, 181/3A2, 181/3B1A1, 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 & 181/4 Keelnayackenpalayam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

Thanking you,

Yours truly,
For A.R Enterprises,

Proprietor

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अनुज्ञप्ति प्रपत्र 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 I 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 मैगज़ीन में वर्ग 6 के विस्फोटक रखने
Licence to possess : (c) for use,explosives of class 1, 2,3,4,5,6 or 7 in a magazine

अनुज्ञप्ति सं. (Licence No.) : E/HQ/TN/22/456(E75379)
वार्षिक फीस रुपए (Annual Fee Rs): 16500/-

1. Licence is hereby granted to:

M/s. A. R. Enterprises Prop. Shri R. Prakash Kumar (अधिभोगी / Occupier : Shri Prakash Kumar), 181/A, Maruthi Nagar, Post : Priya..., Town/Village - Katpadi, District-VELLORE, State-Tamil Nadu, Pincode-

को अनुज्ञप्ति अनुदत्त की जाती है।

2. अनुज्ञप्तिधारी की प्रास्थिति | Status of licensee : Proprietorship Firm

3. अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमान्य है। possess for use of **Nitrate mixture - Slurry and Emulsion Explosives, Detonating Fuse, Electric and/or Ordinary Detonators,** - के उपयोग के लिए
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.	Nitrate mixture - Slurry and Emulsion Explosives	2.0	0	10000 Kg
2.	Detonating Fuse	6.2	0	100000 Mtrs
3.	Electric and/or Ordinary Detonators	6.3	0	44000 Nos.

(ख) किसी एक कलैंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञप्ति के लिए] **10 times as above.**
(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 अनुज्ञप्त परिसर की पुष्टि होती है। रेखाचित्र सं. (Drawing No.) E/HQ/TN/22/456(E75379) दिनांक (Dated) 26/03/2015
The licensed premises shall conform to the following drawing(s)

6. अनुज्ञप्ति परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address: Survey No. 64/1, 64/2, 64/3, 65/8/B, 65/9B, 65/11 & 65/12 , ग्राम (Town/Village) : **Panniyur, Post Keelaveeranam,** पुलिस थाना (Police Station) : **Banavaram**

जिला (District)	VELLORE	राज्य (State)	Tamil Nadu	पिनकोड (Pincode)	
दूरभाष (Phone)	09845038852	ई मेल (E-Mail)		फैक्स (Fax)	

7. अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट हैं। **A Main High Explosives Storage Room, A Lobby & A Detonators Storage Room**
The licensed premises consist of following facilities

8. अनुज्ञप्ति समय - समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उसके अधीन विरचित विस्फोटक नियम, 2008 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबन्धों 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, 2008 framed there under and the conditions, additional conditions and the following Annexures

1. उपर्युक्त क्रम सं. 5 में यथा वर्णित रेखाचित्र (स्थल, सन्निर्माण संबंधी और अन्य विवरण दर्शित करते हुए)।
   Drawings (showing site, constructional and other details) as stated in serial No. 5 above
2. अनुज्ञप्ति प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञप्ति की शर्तें और अतिरिक्त शर्तें।
   Conditions and Additional Conditions of this licence signed by the licensing authority
3. दूरी प्रपत्र DE-2 | Distance Form DE-2

9. यह अनुज्ञप्ति तारीख **31 मार्च 2019** तक विधिमान्य रहेगी। This licence shall remain valid till **31st day of March 2019.**
यह अनुज्ञप्ति, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपवर्णित इस अनुज्ञप्ति की शर्तों का अतिक्रमण करने या यदि अनुज्ञप्त परिसर योजना या उससे संलग्न उपाबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंहृत की जा सकती है, जहां यह 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

Sd/-
मुख्य विस्फोटक नियंत्रक | **Chief Controller of Explosives**

तारीख | The Date - 26/03/2015

Amendments :
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 28/10/2015

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
06/03/2019	31/03/2024	Controller of Explosives, Vellore

ANNEXURE-7

ANNEXURE IV

தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : திருவண்ணாமலை வட்டம் : வெம்பாக்கம்

வருவாய் கிராமம் : கீழ்நாய்க்கன்பாளையம் பட்டா எண் : 452

உரிமையாளர்கள் பெயர்

வரதன் மகன் சாரதி

ஜெயராமன் மகன் ருத்ரசேகர்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
181	1A	0 - 18.50	0.37	--	--	--	--	2020/0103/06/171648--- -- 27-05-2020
181	3A1	0 - 83.48	1.70	--	--	--	--	2020/0103/06/191381--2017/06/10/000007SD -- 12-10-2020
181	3A2	0 - 93.52	1.90	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	3B1A1	0 - 54.12	1.10	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	3B1B	0 - 20.00	0.40	--	--	--	--	2020/0103/06/171648--1417/593 -- 27-05-2020
181	3B2	0 - 17.00	0.35	--	--	--	--	2018/0103/06/062551--8A1416/170 -- 09-02-2018
181	3C1	0 - 83.12	1.70	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	3C2	0 - 32.38	0.70	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	3D1	0 - 83.12	1.70	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
181	4	0 - 32.38	0.70	--	--	--	--	2018/0103/06/062551--2017/06/10/000007SD -- 09-02-2018
		5 - 17.62	10.62					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் 06/10/113/00452/100321 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-11-2021 அன்று 06:12:57 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில்

2360/2022 — Tp/1326 21498/2022

भारतीय गैर न्यायिक

एक सौ रुपये — Rs. 100

रु. 100 — ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU Rs. 100/-

CT 790377

A.V. சாரதி
சென்னை

14.9.2022

S. [signature]
முத்திரைத்தாள் விற்பனையாளர்
உரிமம் எண் : 4986/பி2/2000
வட்டாட்சியர் அலுவலக வளாகம்
ஆற்காடு (வே.மா.) தமிழ்நாடு

பொது அதிகார ஆவணம்

2022 ஆம் ஆண்டு, செப்டம்பர் மாதம், 14 ஆம் தேதி, இராணிப்பேட்டை மாவட்டம், ஆற்காடு வட்டம், ஆற்காடு டவுன், வேலூர் பிரதான சாலை, கதவு எண். 34R-1 இல் வசிக்கும் காலம் சென்ற C.வரதன் அவர்களின் குமாரர் திரு. **A.V.சாரதி** (Aadhaar No. 9380 0741 6551) (PAN-No. ADDPV6055C) (Cell No. 98423 36095) அவர்களுக்கு :-

வேலூர் மாவட்டம், காட்பாடி வட்டம், வேலூர் - 632 007, தாராபடவேடு, வைபவ் நகர், பகுதி-3, 1-வது மெயின் ரோடு, மனை எண். 151 இல் வசித்து வரும் காலம் சென்ற ஜெயராமன் அவர்களின் குமாரர் திரு. **J.ருத்ரசேகர்** (Aadhaar No. 7574 0326 6056) (PAN-No. BAFPR4103P) ஆகிய நான் எழுதிக்கொடுத்த பொது அதிகார ஆவணம் என்னவென்றால்:-

எழுதி வாங்குபவர் கையெழுத்து — A.V. Sarathy

எழுதி கொடுப்பவர் கையெழுத்து — [signature]

2022 ஆம் வருடத்திய 2360 ஆவணம்
13 தாள்களைக் கொண்டது
1 ஆம் தாள் — பதிவு அலுவலர் [signature]

भारतीय गैर न्यायिक

भारत

दस रुपये रु.10

TEN RUPEES Rs.10

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMIL NADU

58AA 013734

பத்திரத்தாள் விற்பனையாளர்
உரிமம் எண் : 4966/பி2/2000
வட்டாட்சியர் அலுவலக வளாகம்
ஆற்காடு (வே.மா.) தமிழ்நாடு

(2)

தாங்களும், நானும் சேர்ந்து கூட்டாக சென்ற 31-01-2018 ஆம் தேதியில் K.சங்கர் என்பவரிடமிருந்து கிரையம் பெற்ற பத்திரமானது தூசி சார்பதிவாளர் அலுவலகத்தில் 1 புத்தகம், **194/2018** எண்ணாக பதிவு செய்யப்பட்ட பத்திரப்படியும், சென்ற 22.05.2020 ஆம் தேதியில் M.கன்னியப்பன் வகையராவிடமிருந்து கிரையம் பெற்ற பத்திரமானது தூசி சார்பதிவில் 1 புத்தகம், **808/2020** எண்ணாக பதிவு செய்யப்பட்ட பத்திரப்படியும், எனக்கும், தங்களுக்கும் பாத்தியப்பட்டு என் பெயரிலும், தங்கள் பெயரிலும் பட்டா எண். 452-ன்படி அனுபவித்து வரும் திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள். 181/1A, (0.18.50), 181/3A1, (0.83.48), 181/3A2, (0.93.52), 181/3B1A1, (0.54.12), 181/3B1B, (0.20.00) 181/3B2, (0.17.00), 181/3C1, (0.83.12), 181/3C2, (0.32.38), 181/3D1, (0.83.12) & 181/4, (0.32.38) ஆகியவற்றில் மொத்தம் 5.17.62 ஹெக்டேர்

எழுதி வாங்குபவர் கையெழுத்து

எழுதி கொடுப்பவர் கையெழுத்து

भारतीय गैर न्यायिक

भारत

दस रुपये रु.10

TEN RUPEES Rs.10

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMIL NADU

58AA 013735

முத்திரைத்தாள் விற்பனையாளா
உரிமம் எண் : 4986/பி2/2000
வட்டாட்சியர் அலுவலக வளாகம்
ஆற்காடு (வே.மா.) தமிழ்நாடு.

(3)

பரப்பில் சாதரணகல் மற்றும் கிராவல் வெட்டியெடுக்க துணை இயக்குநர் அலுவலகம் (புவியியல் மற்றும் சுரங்கத்துறை) திருண்ணாமலை – 4, ந.க.எண்.144/கனிமம்/2022, நாள். 07-09-2022-ன்படி 10 ஆண்டுகளுக்கு குவாரிக்குத்தகைக்கு உரிமம் பெற்று கல்குவாரி அமைத்துக்கொள்ள நாம் இருவரும் வழிவகை செய்யப்பட்டுள்ளது. மேற்கண்ட புலங்களில் அமைத்துள்ள கல்குவாரியை தற்போது என்னால் நேரில் இருந்து பராமரிக்க இயலாத காரணத்தினாலும், தங்களுக்கும் இதில் பொதுவில் பாதி பாகம் உள்ளதாலும் என்னுடைய நம்பிக்கைக்குரிய பொது அதிகார முகவராக நியமித்து இந்த பொது அதிகார ஆவணம் எழுதிக்கொடுக்கிறேன்.

எழுதி வாங்குபவர் கையெழுத்து

எழுதி கொடுப்பவர் கையெழுத்து

2022 ...ம் வருடத்திய ... 2360

தாள்களைக் கொண்டது

தாள்

தமிழ்நாடு तमिलनाडु TAMIL NADU

58AA 013736

பத்திரைத்தாள் விற்பனையாளர்
உரிமம் எண் : 4986/பி2/2000
வட்டாட்சியர் அலுவலக வளாகம்
ஆற்காடு (வே.மா.) தமிழ்நாடு

(4)

ஆகவே மேற்படி புலங்களில் அரசு விதிப்படி கல்குவாரி அமைத்து தேவைப்படும் தொழில்கள் நடத்தவும், கல்குவாரி அமைக்க மின்இணைப்புகள் பெறவும் அதற்கான டெபாசிட் தொகைகளை செலுத்தவும், மாசு கட்டுப்பாட்டு வாரியத்தின் மூலம் அனுமதி பெறவும், மற்றும் கல்குவாரிக்கு தேவைப்படும் இதர உரிமங்கள் பெறவும், தொழில் சம்மந்தமாக வங்கி கணக்குகள் துவங்கவும், வங்கி கணக்குகளை பராமரிக்கவும் போன்ற அனைத்து விதமான ஆவணங்களிலும் மற்றும் படிவங்களிலும், தங்களுக்காகவும், எனக்கு பதிலாகவும் தாங்களே கையெழுத்து செய்து சம்மந்தப்பட்ட அலுவலங்களில் தாக்கல் செய்யவும் மற்றும் அனைத்து அலுவலகங்களில் தங்களுக்காகவும், எனக்கு பதிலாகவும் தாங்களே கையெழுத்து செய்து மனு செய்து தரவும், வழக்கு ஏதேனும் ஏற்பட்டால் தக்க வழக்கறிஞர்களை நியமித்து வாதாடவும் நியாயமாக இருந்தால் தள்ளுபடி செய்யவும் போன்ற அனைத்து நடவடிக்கைகளையும் தங்களுக்காகவும், எனக்குப்பதிலாகவும் தாங்களே செய்து வரவேண்டியது.

எழுதி வாங்குபவர் கையெழுத்து

எழுதி கொடுப்பவர் கையெழுத்து

B. தாள்களைக் கொண்டது

भारतीय गैर न्यायिक

भारत

दस रुपये रु.10

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INDIA

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தமிழ்நாடு तमिलनाडु TAMIL NADU

58AA 013737

14.9.2002

முத்திரைத்தாள் விற்பனையாளர்
உரிமம் எண் : 4986/பி2/2000
வட்டாட்சியர் அலுவலக வளாகம்
ஆற்காடு (வே.மா.) தமிழ்நாடு.

தாங்கள் செய்யும் அனைத்து நடவடிக்கைகளுக்கும் சரியான வரவு, செலவு, கணக்கு விவரம் வைத்து நான் கேட்கும்போது காண்பித்து என்னுடைய ஒப்புதல் பெற வேண்டியது. இந்த பொது அதிகார ஆவணம் நான் தங்களுக்கு எழுதித்தரும் பொருட்டு நான் தங்களிடமிருந்து எந்தவிதமான பிரதி பலனும் பெறப்படவும் இல்லை. தாங்கள் கொடுக்கவும் இல்லை. இந்தப்படிக்கு நான் என் முழுமனச்சம்மதியில் எழுதிக்கொடுத்த பொது அதிகார ஆவணம்:-

எழுதி வாங்குபவர் கையெழுத்து

எழுதி கொடுப்பவர் கையெழுத்து

2360

I 2002 ...ம் வருடத்திய.......ம் ...

13 தாள்களைக் கொண்டது

5 ஆம் தாள்

தமிழ்நாடு तमिलनाडु TAMIL NADU

58AA 013738

15.9.2022

முத்திரைத்தாள் விற்பனையாளர்
உரிமம் எண் : 4986/பி2/2000
வட்டாட்சியர் அலுவலக வளாகம்
ஆற்காடு (வே.மா.) தமிழ்நாடு

சொத்து விவரம்

திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், செய்யாறு பதிவு மாவட்டம், தூசி சார்பதிவைச்சேர்ந்த, **கீழ்நாயக்கன்பளையம்** கிராமத்தில், பட்டா எண். 452-ல் வரும் புல எண்கள். 181/1A, (0.18.50), 181/3A1, (0.83.48), 181/3A2, (0.93.52), 181/3B1A1, (0.54.12), 181/3B1B, (0.20.00) 181/3B2, (0.17.00), 181/3C1, (0.83.12), 181/3C2, (0.32.38), 181/3D1, (0.83.12) & 181/4, (0.32.38) ஆகியவற்றில் மொத்தம் 5.17.62 ஹெக்டேர் உள்ள நிலங்களும் (... 181/4 ... 181/3B1A ...)

எழுதி வாங்குபவர் கையெழுத்து

எழுதி கொடுப்பவர் கையெழுத்து

I 2022 ...ம் வருடத்திய 2360 ம் ஆவணம்
13 தாள்களைக் கொண்டது
6 வது தாள்
பதிவு அலுவலர்

தமிழ்நாடு तमिलनाडु TAMIL NADU

58AA 013739

14.9.2022

முத்திரைத்தாள் விற்பனையாளர்
உரிமம் எண் : 4986/112/2000
வட்டாட்சியர் அலுவலக வளாகம்
ஆற்காடு (வே.மா.) தமிழ்நாடு

(7)

இதில் அமைந்துள்ள கல்குவாரி உள்படவும் சேர்ந்து இந்த பொது அதிகார ஆவணத்திற்குட்பட்டது.

எழுதி வாங்குபவர் கையெழுத்து

எழுதி கொடுப்பவர் கையெழுத்து

சாட்சிகள்:

1

2

வரைவு தயாரித்து தட்டச்சு செய்தவர்:
(V.S.Gurumoorthy)

வளையாத்தூர் உரிமம் எண். A/298/CYR-2022
நெ.28, தனலட்சுமி நகர். ஆற்காடு - Cell No. 98942 56932

தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : திருவண்ணாமலை **வட்டம் : வெம்பாக்கம்**

வருவாய் கிராமம் : கீழ்நாய்க்கன்பாளையம் **பட்டா எண் : 452**

உரிமையாளர்கள் பெயர்

1.	வரதன்	மகன்	சாரதி	-
2.	ஜெயராமன்	மகன்	ருத்ரசேகர்	-

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
181	1A	0 - 18.50 (மா)	0.37	--	--	--	--	2020/0103/06/171648----- 27-05-2020
181	3A1	0 - 83.48 (மா)	1.70	--	--	--	--	2020/0103 /06/191381--2017/06/10 /000007SD -- 12-10-2020
181	3A2	0 - 93.52 (மா)	1.90	--	--	--	--	2018/0103 /06/062551--2017/06/10 /000007SD -- 09-02-2018
181	3B1A1	0 - 54.12 (மா)	1.10	--	--	--	--	2018/0103 /06/062551--2017/06/10 /000007SD -- 09-02-2018
181	3B1B	0 - 20.00 (மா)	0.40	--	--	--	--	2020/0103 /06/171648--1417/593 -- 27-05-2020
181	3B2	0 - 17.00 (மா)	0.35	--	--	--	--	2018/0103 /06/062551--8A1416/170 -- 09-02-2018
181	3C1	0 - 83.12 (மா)	1.70	--	--	--	--	2018/0103 /06/062551--2017/06/10 /000007SD -- 09-02-2018
181	3C2	0 - 32.38 (மா)	0.70	--	--	--	--	2018/0103 /06/062551--2017/06/10 /000007SD -- 09-02-2018
181	3D1	0 - 83.12 (மா)	1.70	--	--	--	--	2018/0103 /06/062551--2017/06/10 /000007SD -- 09-02-2018
181	4	0 - 32.38 (மா)	0.70	--	--	--	--	2018/0103 /06/062551--2017/06/10 /000007SD -- 09-02-2018
		5 - 17.62	10.62					

*மா - மானாவரி

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **06/10/113/00452/100321** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 14-09-2022 அன்று 10:45:14 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

U. Barathy 2022 2360 ... ஆவணம்

13 தாள்களைக் கொண்டது

8 ரூ காண்

பதிவு அலுவலர்

Government of India

Download Date: 19/08/2020

குத்ரசேகர ஜெயராமன்
Rudrasekar Jayaraman
பிறந்த நாள்/DOB: 29/05/1965
ஆண்/ MALE

Issue Date: 01/07/2017

7574 0326 6056

VID : 9116 9769 4838 6509

எனது ஆதார், எனது அடையாளம்

Unique Identification Authority of India

முகவரி:
S/O ஜெயராமன், பிளாட் 151, 1வது மெயின் ரோடு, வி ஐ டி பல்கலைக்கழகம் எதிரில், வைபவ் நகர் பேஸ், பிரம்மபுரம், வேலூர், தமிழ் நாடு - 632014

Address:
S/O Jayaraman, Plot 151, 1st Main Road, Opp V I T University, Vaibhav Nagar Phase 3, Brammapuram, Vellore, Tamil Nadu - 632014

7574 0326 6056

VID : 9116 9769 4838 6509

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आयकर विभाग भारत सरकार
INCOME TAX DEPARTMENT GOVT. OF INDIA

स्थायी लेखा संख्या कार्ड
Permanent Account Number Card

BAFPR4103P

नाम/ Name
J RUDRASEKAR

पिता का नाम/ Father's Name
JAYARAMAN

जन्म की तारीख / Date of Birth
29/05/1965

हस्ताक्षर/ Signature

28022018

इस कार्ड के खोने / पाने पर कृपया सूचित करें / लौटाए :
आयकर पैन सेवा इकाई, एन एस डी एल
5 वीं मंजिल, मंत्री स्टर्लिंग, प्लॉट नं. 341, सर्वे नं. 997/8,
मॉडल कालोनी, दीप बंगला चौक के पास,
पुणे – 411 016.

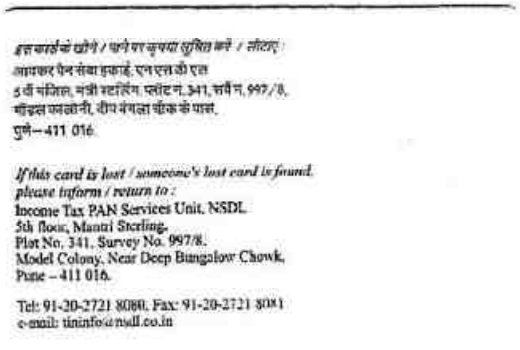
If this card is lost / someone's lost card is found, please inform / return to :
Income Tax PAN Services Unit, NSDL
5th floor, Mantri Sterling,
Plot No. 341, Survey No. 997/8,
Model Colony, Near Deep Bungalow Chowk,
Pune - 411 016.

Tel: 91-20-2721 8080, Fax: 91-20-2721 8081
e-mail: tininfo@nsdl.co.in

U. Basathy

7867008858

2022 ... 2360
13 தாள்களைக் கொண்டது
பதிவு



A V Sarathy

A V Sarathy

98423 36095

2360

தாள்களைக் கொண்டது

Government of India

Issue Date: 06/01/2013

கோபாலகிருஷ்ணமூர்த்தி கோவிந்தராஜ்
Gopala Krishna Murthy Govindaraj
பிறந்த நாள்/DOB: 15/04/1972
ஆண்/ MALE

2680 3867 5827

VID : 9162 9618 9053 2490

எனது ஆதார், எனது அடையாளம்

Unique Identification Authority of India

Download Date: 15/11/2021

முகவரி:
S/O கோவிந்தராஜ், எண் 2/187, தமாராஜா கோவில் தெரு, மேலகுப்பம், மேலகுப்பம், வேலூர்,
தமிழ் நாடு - 632517

Address:
S/O Govindharaj, D NO 2/187, DHARMARAJA KOVIL STREET, MELAKUPPAM, Melakuppam, Vellore,
Tamil Nadu - 632517

2680 3867 5827

VID : 9162 9618 9053 2490

1947 | help@uidai.gov.in | www.uidai.gov.in

இந்திய அரசாங்கம்

Government of India

Dhandapani Govindhasamy

Father : GOVINDHASAMY

DOB: 15/07/1972

Male

4027 3319 2097

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

Unique Identification Authority of India

Address: S/O Govindasamy, NO 78/165, ANNA NAGAR 2, MASAPETTAI, Arcot, Arcot, Vellore, Tamil Nadu, 632503

4027 3319 2097

1947 | 1800 300 1947 | help@uidai.gov.in | www.uidai.gov.in

I 2022 2360

13/11 தாள்களைக் கொண்டது

பதிவு தாள்

R/தூசி/புத்தகம்-1/2360/2022

2022 ஆம் ஆண்டு செப்டம்பர் மாதம் 14ம் தேதி பி.ப. 05:54 மணியளவில் தூசி சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்து கட்டணம் ₹ 10,230/- செலுத்தியவர்.

இடது பெருவிரல்  	 கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி
எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	 கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி
எழுதி வாங்கியதாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	 கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி
அடையாளம் தெரிவித்தவர்கள் சாட்சிகள் 1 இடது பெருவிரல்  	 கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

2360

R/தூசி/புத்தகம்-1/2360/2022

அடையாளம் தெரிவித்தவர்கள்
சாட்சிகள் 2
இடது பெருவிரல்

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

2022 ஆம் ஆண்டு செப்டம்பர் மாதம் 14ம் நாள்

விஸ்வநாதன் ராமகிருஷ்ணன்
சார்பதிவாளர்
தூசி

சார்பதிவாளர்
தூசி

R/தூசி/புத்தகம்-1/2360/2022 எண்ணாகப் பதிவு செய்யப்பட்டது.

நாள்: 14/09/2022
தூசி

விஸ்வநாதன் ராமகிருஷ்ணன்
சார்பதிவாளர்

சார்பதிவாளர்
தூசி

இந்த பொது அதிகார ஆவண அடிப்படையில் பதிவு செய்யப்படும் எந்தவொரு ஆவணத்திற்கும் முதல்வர் உயிருடன் உள்ளார் என்பதற்கான சான்று தாக்கல் செய்யப்பட வேண்டும்.

D ..... 2360 ..... ஆவணம்
13.தாள்களைக் கொண்டது
13 ஆவது தாள்

ANNEXURE-8

Annexure - VI
106

தமிழ்நாடு வனத்துறை

விடுநர்

திரு.ப.கோ.அருண்லால், இ.வ.ப.,
மாவட்ட வன அலுவலர்,
திருவண்ணாமலை வனக்கோட்டம்,
திருவண்ணாமலை.

பெறுநர்

மாவட்ட சுழற்சி நிருவாகஸ்தர்,
திருவண்ணாமலை மாவட்டம்,
திருவண்ணாமலை.

ந.க.எண்.8212/2022/வ, நாள்: 16.09.2022.

அய்யா,

பொருள் : கனிமங்களும் குவாரிகளும் - திருவண்ணாமலை மாவட்டம் - திரு.A.V.சாரதி த/பெ.C.வரதன், என்பவரது மனுவில் கல்குவாரி குத்தகை உரிமம் கோரப்பட்ட புலத்திலிருந்து சுமார் 25 கி.மீ தொலைவில் காப்புக்காடுகள், வனவிலங்கு சரணாலயம், யானை வழித்தடங்கள், புலிகள் காப்பகம் அமைந்துள்ளதா என்ற விவரம் கோரியது – தொடர்பாக.

பார்வை 1. மாவட்ட சுழற்சியர் கடிதம் ந.க.எண்:144/கனிமம்/2018, நாள்: 12.09.2022.

2. திரு.A.V.சாரதி த/பெ.C.வரதன், என்.34 R-I, வேலூர் மெயின் ரோடு, ஆற்காடு வட்டம், வேலூர் மாவட்டம் என்பவரின் மனு நாள்:12.09.2022.

3. வனச்சரக அலுவலர், ஆரணி வனச்சரகம், ஆரணி க.எண்.463/2022 நாள்:16.09.2022.

****

பார்வை-1ல் காணும் கடிதத்தில் திருவண்ணாமலை மாவட்டம், வேம்பாக்கம் வட்டம், கீழ்நாய்க்கன்பாளையம் கிராம புல எண்கள்.181/3A1 (0.83.48), 181/3A2 (0.93.52), 181/3B1A1 (0.54.12), 181/3B1B (0.20.0), 181/3B2 (0.17.0), 181/3C1 (0.83.12), 181/3C2 (0.32.38), 181/3D1 (0.83.12) & 181/4 (0.32.38) ஆகியவற்றில் மொத்த பரப்பு 4.99.12 எக்டர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க 5 ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் வழங்கக் கோரி விண்ணப்பிக்கப்பட்ட புலத்திலிருந்து 25 கி.மீ சுற்றளவிற்கு காப்புக் காடுகள், வனவிலங்கு சரணாலயம், யானை வழித்தடங்கள், புலிகள் காப்பகம் ஏதேனும் உள்ளனவா? அவ்வாறு இருந்தால் எவ்வளவு தொலைவில் உள்ளது? என்ற விவரம் கோரப்பட்டது. அது தொடர்பான விவரங்களை பின்வருமாறு தெரிவித்துக்கொள்கிறேன்.

1. மேற்கண்ட குவாரி அமைய உள்ள இடமானது தண்டப்பந்தாங்கல் காப்புக்காட்டு எல்லையிலிருந்து சுமார் 17.80 கி.மீ தொலைவில் அமைந்துள்ளது.
2. மேற்கண்ட புலத்திலிருந்து 25 கி.மீ சுற்றளவிற்குள் வனவிலங்கு சரணாலயம், யானை வழித்தடங்கள், புலிகள் காப்பகம் ஏதுமில்லை.

தங்கள் உண்மையுள்ள,
ஒம்/-ப.கோ.அருண்லால்,
மாவட்ட வன அலுவலர்,
திருவண்ணாமலை வனக்கோட்டம்,
திருவண்ணாமலை.

//உ.நா.உ.ப.//

16/9/22

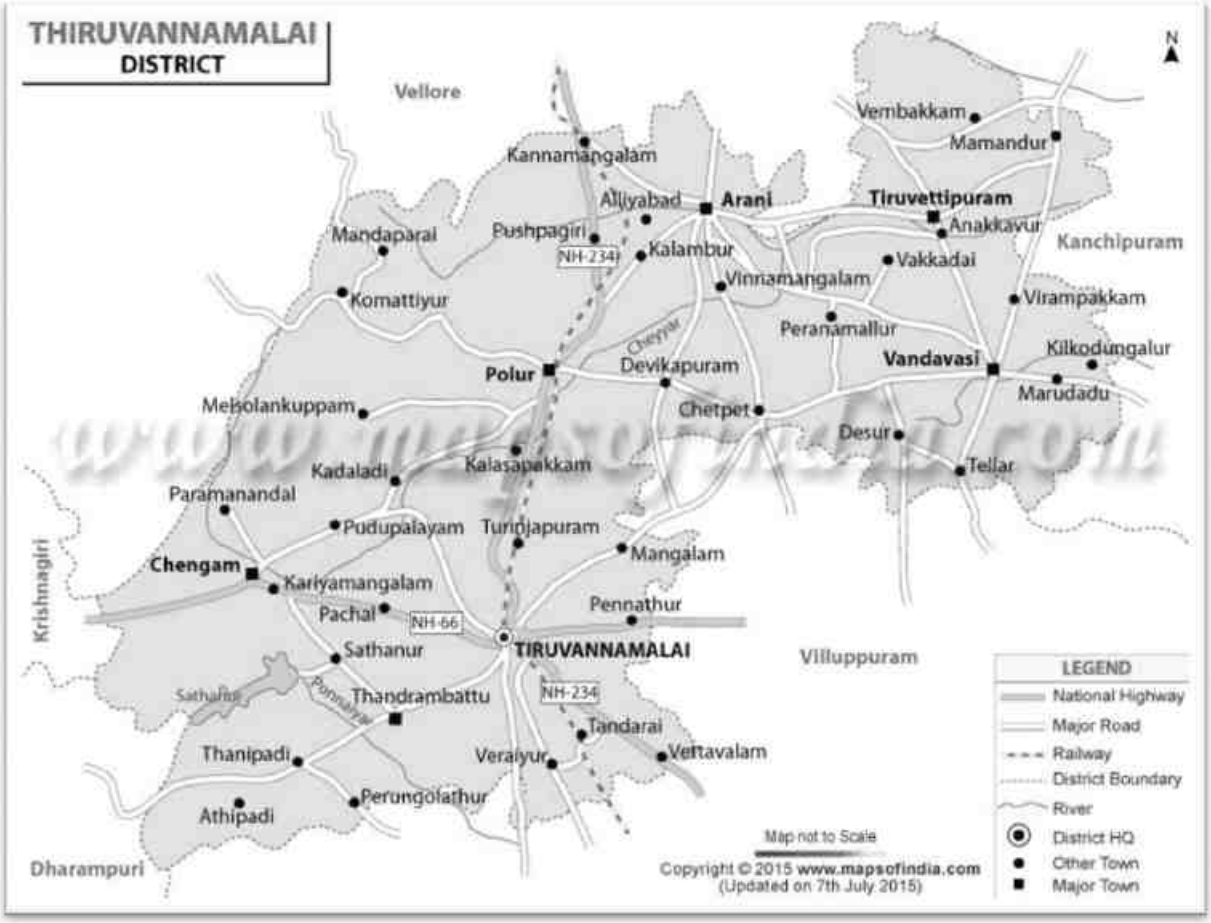
வரைதொழில் அலுவலர்.

ANNEXURE-9

DISTRICT SURVEY REPORT
FOR MINOR MINERALS OTHER THAN SAND MINING / RIVER BED MINING

MINOR MINERAL : ROUGH STONE

(Prepared As Per Notification Of Ministry Of Environment, Forest And Climate Change - MOEF & CC S.O.141 (E) Dated 15th January 2016 & S.O.3611 (E) Dated 25th July 2018)



MAY -2019

DISTRICT SURVEY REPORT TIRUVANNAMALAI DISTRICT

1. INTRODUCTION

Geologically Tiruvannamalai District mainly comprises of rocks of Archaeon age. The type of rocks found in the district are Charnockite, Granitic gneiss, Epidote Hornblende Gneiss, Amphibolite, Pyroxenite, Dunite, Migmatites, Banded Magnetite Quartzite, Shale and Clay. Dolerite dykes (Black Granite) are also noticed cutting across the country rocks.

The need of the minor minerals particularly for infrastructural development of Individuals as well as for the Government is increasing day by day rapidly, accordingly the mining of minor minerals, is also developing vigorously. However, each entity looking for a good environment for their habitat.

As per the Gazette Notification **S.O.3611 (E) Dated: 25.07.2018** Ministry of Environment, Forest and Climate Change (MoEF & CC),laid procedure for preparation of District Survey Report of minor minerals other than sand mining or river bed mining. The main purpose of preparation of District Survey Report is to identify the mineral resources and developing the mining activities along with other relevant data of the District.

This District Survey report, guides systematic and scientific utilization of natural resources, so that present and future generations benefit equally. The objective of District Survey Report (DSR) is to meet human needs while preserving the Environment so that these needs can be met not only in the present, also for future generation.

The minerals are basic and strategic material for industrial and Economic development. In mining, the possibilities of adverse effects on the Environment are quite high if the adverse effects are not contain are reduced to minimum. The Negative impact of Mining could be controlled through the application of the concept and principles of sustainable development to mining operation.

The District Survey report (DSR) contain mainly data published and endorsed by various Departments and websites about Geology of the area, Mineral Wealth details, Details of Lease and Mining activity in the District along with Revenue of Minerals. This report also contains details of Forest, Rivers, Soil, Agriculture, Road, Transportation and Climate etc.

The main purpose of preparation of District Survey Report is to identify the mineral resources and developing the mining activities along with other relevant data of the District.

List of occurrences of Minerals in Thiruvannamalai District:

1. Rough Stone and associated products
2. Granite (Black Granite and Multi Colour Granite)
3. Fire Clay
4. Gravel / Ordinary Earth (Savudu) / Brick Clay

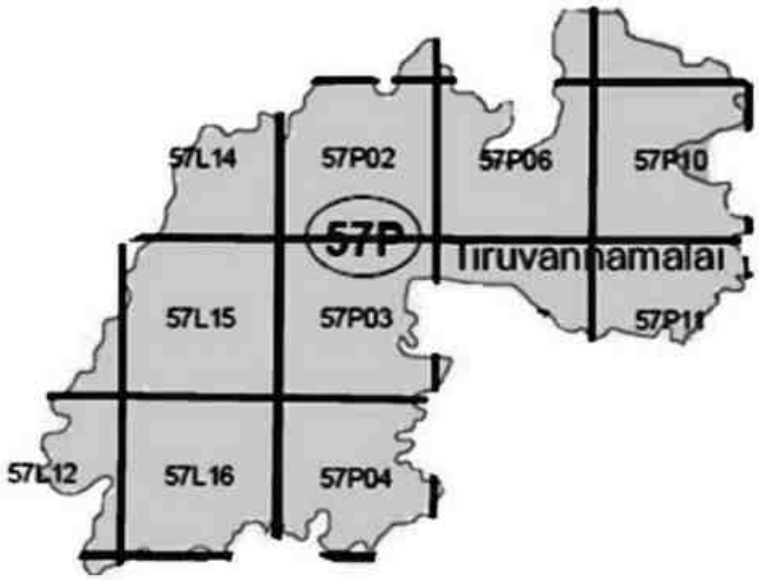
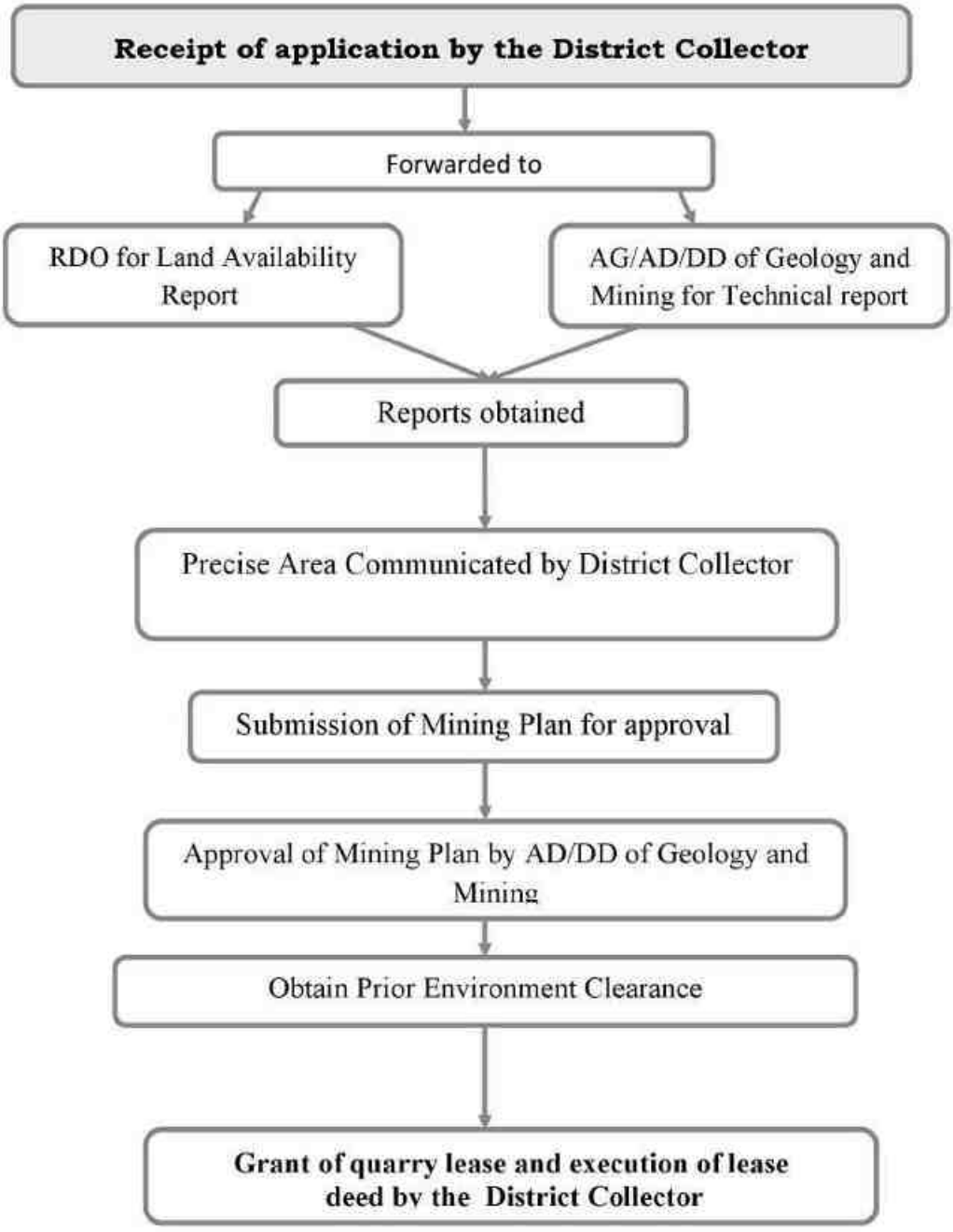


Fig.1.1 Toposheet in Tiruvannamalai District

2. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT

The Mining activities are carried out in the district by Opencast Mechanized method and Opencast Manual method. In opencast method, Mining activities being carried out by drilling and blasting and also deploying heavy machineries like pocklain, Breaker, Tipper and compressors etc., Benches are formed along the strike on the hanging wall and footwall sides to work the deposit at depth.

Procedure for Grant of quarrying lease for Minor Minerals - Rough Stone



The office of the Assistant Director, Department of Geology and Mining is functioning under the control of District Collector, Thiruvannamalai. The Assistant Director, Geology and Mining are assisting the District Collector in the Mineral Administration works.

3. GENERAL PROFILE OF THE DISTRICT

Tiruvannamalai district lies in the northern part of Tamil Nadu, and 200 Km from the state capital Chennai. It is bounded on the north by Vellore District, on the east by Kanchipuram District, and Villupuram on the south by Villupuram District, and on the west by Dharmapuri, Krishnagiri and Vellore districts. Tiruvannamalai District is divided into 3 Revenue Divisions namely Tiruvannamalai, Arni and Cheyyar and 12 Taluks namely Tiruvannamalai, Kilpennathur, Chengam, Thandarampattu, Kalasapakkam, Polur, Arni, Chetput, Cheyyar, Vembakkam, Vandavasi and Jamanamarathur. Tiruvannamalai consist of 18 Blocks (Union), 4 Municipalities, 10 Town Panchayats and 860 Village Panchayats.

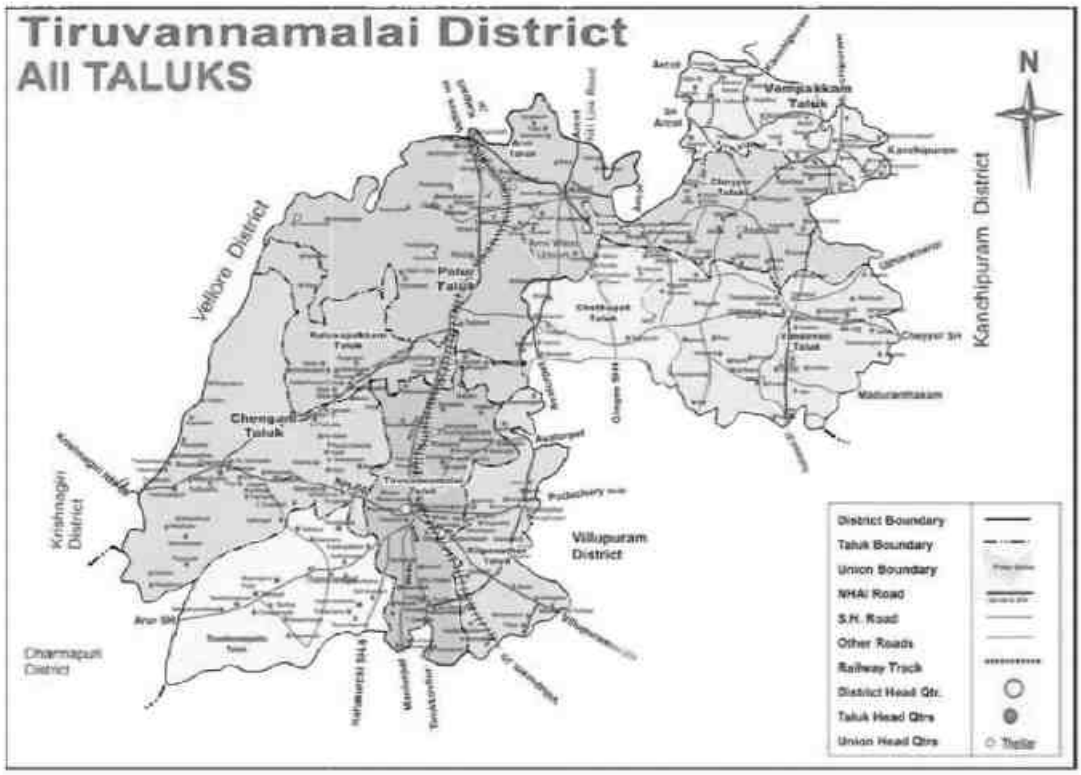


Fig.3.1 Tiruvannamalai District (Taluk wise)

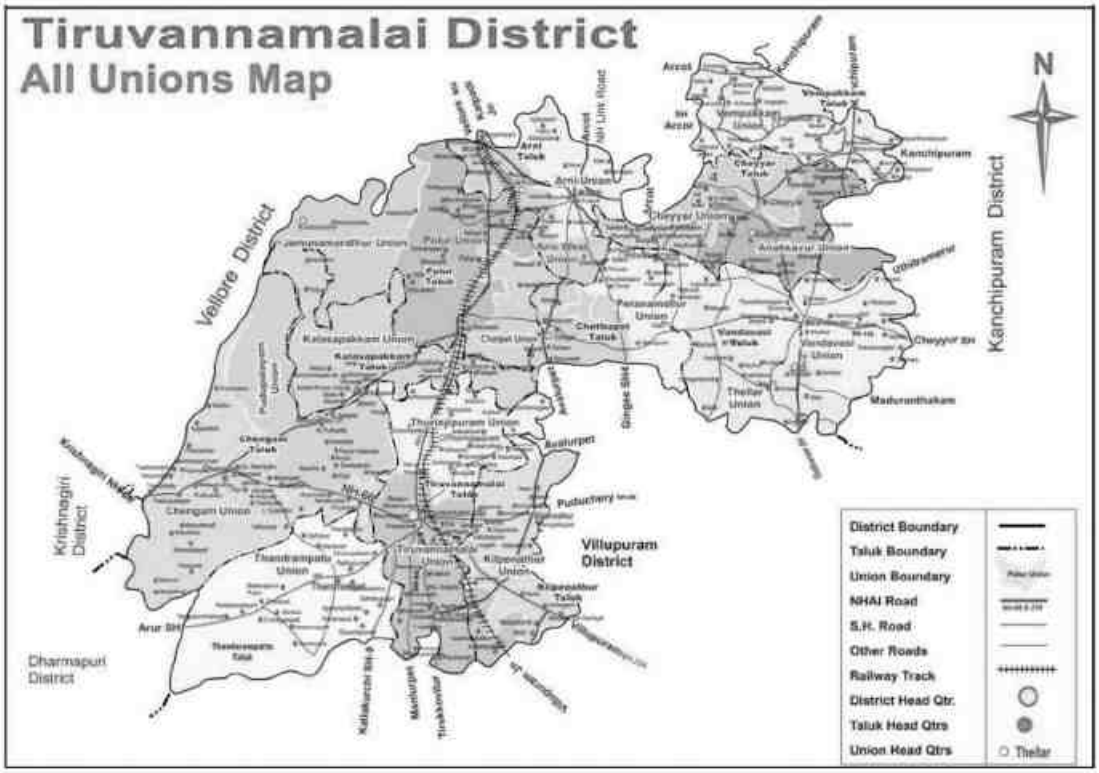


Fig.3.2 All Union Map, Tiruvannamalai District

TIRUVANNAMALAI DISTRICT PROFILE – 2017 - 18

Table	Geographical Position		
1	North Latitude between		Between 11.55 and 13.15'
	East Longitude between		Between 78.20 and 79.50'
2	Area and Population		
	1. Area in Square Km		6188
	2. Total Population as per 2011		2464875
	3. Density / Sq. Km		398
	4. Literate		
		Male %	83.11
		Female %	65.32
	Language spoken in the		Tamil
	Temperature (IN CELCIUS)		Max : 36.00 Min : 21.10
	Rainfall in mm		
	Normal		North East Monsoon : 446.5 South West Monsoon : 468.1
	Actual		North East Monsoon : 524.9 South West Monsoon : 621.9
	Agriculture (in Ha)		
	Total Cultivated area		314827
	Net area sown		208644
	Area sown more than once		106182
	Forests (in Ha)		
	Reserved forest		151799.64
	Forest		101017
	Un classed Forest		381.48

Places of worship and tourist

Tiruvannamalai is one of the most venerated places in Tamil Nadu. The main Deepam festival, Maha shivarathri and Pournami Girivalam attracts Tiruvannamalai and Parvathamalai devotees from far and wide throughout India and abroad. Further main features of the District attract historic places besides Tiruvannamalai, Arni, Vandavasi and Devigapuram connected to East India and French companies. It is also noticed that well-maintained tourist places such as Sathanur dam, Jawathumalai and Amirthy Game Park. In the late Chola period the Cholan of Sambuvarayar having Padavedu near Arni as HQ ruled this district.

4. GEOLOGY OF TIRUVANNAMALAI DISTRICT

The Entire district is underlain by the rocks belonging to hard crystalline rock masses of Archaean age. The Archaean rocks in this area are represented by rocks of eastern Ghat complex comprising charnockites, Migmatite complex of composite gneiss. The district is covered by metamorphic crystalline rocks of charnockite, composite gneiss of Archaean age. These rocks are highly metamorphosed and have been subjected to sever folding, crushing and faulting. Charnockites group is occupied by North and Southern part of the basin. The other rock type is encountered by composite granitic gneiss of Epidote hornblende biotite gneiss and hornblende biotite gneiss are occupy in the middle portion of the basin. Charnockite group occupies the high ground as well as plain and it is poorly weathered and jointed. They are generally black grey to dark grey in colour medium to coarse grained texture, and generally massive and un-foliated. A gneissic rock occurs as linear bands in the middle portion of the area and is highly migmatised. Mostly, micaceous with bands of granites, pegmatites, guartz veins the rock is well foliated. The Hornblende biotite gneiss forms the country rock of the area and epidote hornblende gneiss (Proterozic age) occurs as small isolated outcrops. The crystalline formations are charnockite, granitic gneiss of Archean age have been intrude by dolerite dykes and pegmatite veins. These rocks are highly metamorphosed and have been subjected to very severe folding, crushing and faulting. The crystalline rocks are subjected to tectonic activities under various orogenic cycles resulting in the development of secondary structures such as joints, fissures and cleavages. The intensity of weathering varies from place to place. Highly weathered zones and granitic rock occurs in masses are around some of the

villages like Ariyanallur, Mukkunam, Kaarunkuli Tondur, vedal, Melolakkur, Pennagar, Chinnaagram (57p/7). The general geological sequence of formation is given in the Table.

Age	Stage	Lithology
Archaean	Migmatite Complex	Biotite Gneiss, Epidote, Hornblende gneiss.
	Charnockite Group	Magnetite

ROUGH STONE, JELLIES AND M-SAND

Ordinary stones suitable for making Rough stones, Jelly and M-sand Ballast etc., used for road formation, construction and other purpose are available in all Taluks.

Photo.1-2: Charnockite (Rough Stone) Quarry

Foliation : N55°W / 70°SW **Coordininates** :12° 38' 40.04" N,
Joint : S50°W / 80°SW 79° 36' 12.21" E
Location : Athi - Village, Cheyyar Taluk

Photo .3: Rough stone crushed into Jellies, Ezhacherri, Cheyyar – Taluk

M-SAND

Manufactured Sand is defined as a purpose-made crushed fine aggregate produced from a suitable source material. Production generally involves crushing, screening and possibility washing. It is a substitute of river sand is produced from hard granite stone. The crushed sand is of cubical shape with grounded edges, washed and graded to as a construction material. The size of manufactured sand (M-Sand) is less than 4.75mm.

The precious river bed acts as not only mechanical filter but also as a biological filter with its microorganisms, formed through natural evolution over centuries which cannot be artificially replicated. Due to the depletion of good quality river sand for the use of construction, the use of manufactured sand has been increased.

Photo .4:Mining for M – Sand, Palli- Village, Cheyyar – Taluk

Photo .5: Wastage (Dust Particle) Of M- Sand

Photo .6: Powdered Rough stone for preparation of M - Sand

Photo: 7.Crushing Unit for preparation of M – Sand Manufactured Sand (M – Sand)

"Our Children's Future is in Our Hand or Decision"

Our contribution to environment is by producing M-Sand as an alternative to river sand, for reducing the extraction of sand from river bed

5. DRAINAGE AND IRRIGATION PATTERN

Drainage :

Cheyyar river which originates from Jawadhu Hills, flows in a southern direction at first, and turns south-east near Chengam after flowing through Polur, Vandavasi and Cheyyar taluks. Palar raising near Nandidurg in Mysore enters Vellore district passing through Gudiyatham, Walajah and Arakonam taluks before entering into Cheyyar taluk of Tiruvannamalai district and there after enters into Kancheepuram district. Pennaiyar and South Pennaiyar originate from Nandidurg of Karnataka. They pass through Dharmapuri district and enter southern part of Chengam taluk before entering in to Viluppuram district. Finally, the river enters into the Bay of Bengal at Cuddalore.

The river is dry for the most part of the year. Water flows during the monsoon season when it is fed by the southwest monsoon in catchment area and the northeast monsoon 45 in Tamil Nadu. A dam has been constructed across this river at Sathanur which is a picnic spot in this district. Sathanur Reservoir provides drinking water to Tiruvannamalai town and the water is used for irrigation when the reservoir is filled with surplus water.

Irrigation

Tanks and dug wells were the major sources of irrigation in the district. The district had 604 major tanks (with ayacut of 40 ha. or more) and 1,361 small tanks (with ayacut of less than 40 ha.) There were 1,050 private borewells, 200 dug-cum-bore wells and 1, 54,415 open wells in the district. Sathanur reservoir is built across the Thenpennai river with an ayacut of 18,882 ha. benefiting both Tiruvannamalai and Villupuram districts

Source : Records of Office of Assistant Director of Statistics, Tiruvannamalai

6. LAND UTILISATION PATTERN IN THE DISTRICT: FOREST, AGRICULTURAL, HORTICULTURAL, MINING, Etc.,

The total geographical area of the district is 6,191 Sq. km.

Details of Land Utilization pattern of Tiruvannamalai District

S. No	Classification	Area in Ha	Percentage
1	Forest	1,53,318	24.76
2	Barren and uncultivable land	21,058	3.40
3	Land put to non agricultural uses	92,598	15.00
4	Cultivable waste	14,963	2.41
5	Permanent pastures and other grazing land	2,908	0.46
6	Land under miscellaneous, tree crop sand groves included in the net area sown	2,690	0.43
7	Current fallows	68,662	11.09
8	Other fallow lands	32,621	5.27
9	Net area sown	2,30,282	37.19
10	Total Geographical area	**6,19,100**	**100.00**

Source: Records of Office of Department of Revenue, Tiruvannamalai

7. SURFACE WATER AND GROUND WATER SCENARIO OF THE DISTRICT

Surface water

The major rivers traversing the area are Ponnaiyar and Cheyyar.The major part of the district falls under the Palar sub catchment and extreme southern part of the district fall under Ponnaiyar sub catchment.

Cheyyar river which originates from Jawadhu Hills, flows in a southern direction at first, and turns south-east near Chengam after flowing through Polur, Vandavasi and Cheyyar taluks. Palar rising near Nandidurg in Mysore enters Vellore district passing through Gudiyatham, Walajah and Arakonam taluks before entering into Cheyyar taluk of Tiruvannamalai district and there after enters into Kancheepuram district. Pennaiyar and South Pennaiyar originate from Nandidurg of Karnataka

Ground water:

Ground Water is found beneath the earth's surface and is an importantsource of water in most of the Districts in the State. Ground Water is withdrawn for Agriculture, Municipal and industrial use. The depth at which the ground water is found is called Ground water Table.The district is classified into different blocks based on the ground water abstraction rate.

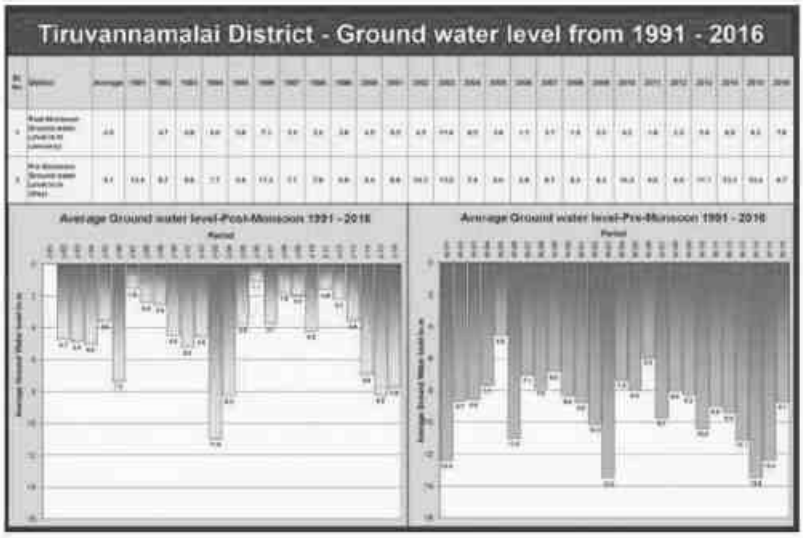


Figure 7.0 Geology And Mineral Resources Map Of Tiruvannamalai District

Over exploited (Greater than 100%)	Critical (Between 90 and 100%)	Semi – Critical (70 – 90%)	Safe (Less than 70%)
Chengam, Cheyyar, Kilpennathur, Osur Pachal, Melpallipattu, Somaspadi, Malaiyur, Pudupalayam, Vandavasi, Thandarampat, Thurinjapuram, Veraiyur.	Kettavarampalayam, Nayadumangalam, Vanapuram, Eraiyur, Thanipadi, Thatchampattu, Chennavaram, Vadathandalam, Desur, Kelur, Kilkodungalur, Kolappalur, Nedungunam, Peranamallur, Santhavasal, Thachambadi	Anakavoor, Dusi, Kadaladi, Kalasapakkam, Mandakolathur, Modayur, Polur, T.V. Malai (South), Vakkadai, Vinnamangalam, Mullipattu , Nateri, Thethurai, Mangalam, Agrapalayam, Kannamangalam Vakkadai, Vettavlam.	Perungattur, Sathyavijayanagaram Vembakkam, Arni

Source :Tamil Nadu Water Supply and Drainage Board

8. RAINFALL OF THE DISTRICT AND CLIMATE CONDITIONS.

Rainfall

The area receives rainfall and the 5 year rainfall collected from the IMD, Chennai is as follows.

Actual rainfall in mm					Normal rainfall in mm
2013	2014	2015	2016	2017	
812.80	799.10	1247.4	684.7	1251.3	1039.66

Climatic Conditions.

This district has moderate climate. In Tiruvannamalai and Chengam taluks, the climate is cool in winter and hot during summer. The district gets rainfall during both north-east monsoon and southwest monsoon. The physiographic nature prevailing in the district forces variation in the climatic conditions. The rainfall of the region depends on the south-west and the north-east monsoons. Except southern taluks of Cheyyar and Vandavas, the district experience moderate rainfall during north-east monsoon. In summer, from March to June, the wind is hot and uncomfortable. In the monsoon seasons, from July to November, the wind is mild and from December to February, the wind is cold. The hottest month in this district was April (36.3° C) and coldest month in this district was January (21.2° C).

9. DETAILS OF THE ROUGH STONE MINING LEASES IN THE DISTRICT AS PER THE FOLLOWING FORMAT:-

Sl. No	Name of the Mineral	Name of the Lessee	Address & Contact No. lessee	Mining lease Grant Order No. & date	Area of Mining lease (ha)	Period of Mining lease (Initial)		Period of Mining lease (1st / 2nd … renewal)		date of commencement of Mining operation	Status (working/Non-Working/Temp. Working for dispatch etc.,	Captive / Non-Captive	Obtained Environmental Clearance (Yes/No) If yes letter No with date of grant of EC	Location of the mining lease (Latitude & Longitude)	Method of Mining (Opencast/ underground)
						From	To	From	To						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Rough Stone	D.Jaiganesh,	Vettavalam village, Tiruvannnamalai Taluk	614/K2/2009 **10.11.2017**	1.00.0	**10.11.2017**	**09.11.2019**	-	-	**10.11.2017**	Non-Operative	**Non-Captive**	**Yes SEIAA-TN/F.No.5536/EC/1(a)/EC.No.3708/2016 t.06.09.2016**	Vettavalam Tiruvannamalai **12°06' 38" 12° 06' 43" 79° 16' 27" 79° 16' 31"**	**Opencast**
2	Rough Stone	R.Prasath,	Polur Main Road, Tiruvannamalai	39/K2/2010 **08.03.2010**	2.00.0	**08.03.2010**	**07.03.2020**	-	-	**08.03.2010**	Operative	**Non-Captive**	**Yes SEIAA-TN/F.No.4413/EC/1(a)/EC.No.3065/2015 dt.02.03.2016**	Veraiyur Tiruvannamalai **2°05' 33" N 12° 05' 37" N 79° 07' 11" E 79° 07' 19" E**	**Opencast**
3	Rough Stone	E.Murugesan ,	Nachanandhal Tiruvannamalai	22/K2/2010 **05.04.2010**	1.00.0	**05.04.2010**	**04.04.2020**	-	-	**05.04.2010**	Non-Operative	**Non-Captive**	**-No-**	**Pavupattu Tiruvannmalai 12°07' 58"N 12° 07'53"N 79° 02' 55"E 79° 02' 50"E**	**Opencast**
4	Rough Stone	R.Singaram,	Thenimalai, Tiruvannamalai	73/K2/2010 **05.04.2010**	1.00.0	**05.04.2010**	**04.04.2020**	-	-	**05.04.2010**	Operative	**Non-Captive**	**Yes SEIAA-TN/F.No.4467/EC/1(a)/EC.No.3435/2016 dated. 29.07.2016**	Athipadi **Tiruvannmalai 12°05' 06" N 12° 05' 02"N 79° 02' 18"E 79° 02' 13"E**	**Opencast**

5	**Rough Stone**	A.Nakkeeran,	3, Kardukarar Street, Vettavalam	636/K2/2009 **10.05.2010**	0.77.0	**10.05.2010**	**09.05.2020**	-	-	**10.05.2010**	Non-Operative	**Non-Captive**	**-No-**	Vettavalam Tiruvannamalai **12°06' 27"N 12° 06' 32"N 79° 14' 07"E 79° 14' 11"E**	**Opencast**
6	**Rough Stone**	R.Arul,	Melanandahal Village, Tirukovilur Taluk.	40/K2/2010 **13.05.2010**	1.00.0	**13.05.2010**	**12.05.2020**	-	-	**13.05.2010**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4719/EC/1(a) EC.No.3303 /2016 dt.11.07.2016**	Athipadi **Tiruvannmalai 12°05' 04" N 12° 05' 09"N 79° 02' 11"E 79° 02' 15"E**	**Opencast**
7	**Rough Stone**	N.Suresh,	25/73, Ayyankula Street, Tiruvannamalai	43/K2/2010 **16.12.2010**	2.00.0	**16.12.2010**	**15.12.2020**	-	-	**16.12.2010**	Non-Operative	**Non Captive**	**-No-**	Meyyur **Tiruvannmalai 12°08' 59"N 12° 09' 05"N 79° 01' 49"E 79° 01' 54"E**	**Opencast**
8	**Rough Stone**	M.Selvaraj,	Chengam Road, Tiruvannamalai.	74/K2/2010 **16.12.2010**	1.00.0	**16.12.2010**	**15.12.2020**	-	-	**16.12.2010**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4689/EC/1(a)/ EC.No.3482 /2016 dt.29.07.2016**	Adaiyur **Tiruvannmalai 12° 16' 24" N 12° 16' 28"N 79° 02' 55" E 79° 02' 59"E**	**Opencast**
9	**Rough Stone**	S.Prasanth,	Chengam Road, Tiruvannamalai	75/K2/2010 **23.12.2010**	0.96.5	**23.12.2010**	**22.12.2020**	-	-	**23.12.2010**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5454/EC/1(a) EC.No.3671 /2016 t.08.08.2016**	Adaiyur **Tiruvannmalai 12°16' 20" N 12° 16' 25" N 79° 02' 54" E 79° 02' 58"E**	**Opencast**
10	**Rough Stone**	S.Senthilkumar	10, Kardukarar Street, Vettavalam.	168/K2/2010 **24.12.2010**	1.23.5	**24.12.2010**	**23.12.2020**	-	-	**24.12.2010**	Non-Operative	**Non Captive**	**-No-**	Vettavalam Tiruvannamalai **12° 07' 34"N 12° 07' 38"N 79° 15' 48"E 79° 15' 53"E**	**Opencast**

11	**Rough Stone**	K.Thirumal,	Perayampattu post and Village, Tandarampet	72/K2/2010 **01.03.2011**	1.30.0	**01.03.2011**	**28.02.2021**	-	-	**01.03.2011**	Non-Operative	**Non Captive**	**-No-**	Athipadi **Tiruvannmalai 12°05' 01"N 12° 05' 05"N 79° 02' 03"E 79° 02' 09"E**	**Opencast**
12	**Rough Stone**	N. Harijay ashree	No.18/7, Vadamathathi St.,Tiruvannamalai	57/K/2012 **28.04.2012**	4.00.0	**28.04.2012**	**27.04.2022**	-	-	**28.04.2012**	Non-Operative	**Non Captive**	**-No-**	Vallivagai **Tiruvannmalai 12° 16' 41"N 12° 16' 32"N 79° 08' 52"E 79° 08' 39"E**	**Opencast**
13	**Rough Stone**	R.Sekar,	Mel Chinna Goundanpatti, Tharamangalam Village, Omalur Taluk, Salem Dt.	47/K2/2015 **12.09.2017**	1.00.0	**12.09.2017**	**11.09.2022**	-	-	**12.09.2017**	Non-Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5254/EC/1(a)/EC.No.3656/2016 dt.24.08.2016**	Koothalavadi **Tiruvannmalai 12° 20 02.45"N 12° 20' 07.2"N 79° 06' 49.93'E 79°06' 53.59"E**	**Opencast**
14	**Rough Stone**	P.Adimoolam,	57A, Tamizhnagar, Tiruavannamalai taluk	130/K2/2009 **01.07.2009**	1.00.0	**01.07.2009**	**30.06.2019**	-	-	**01.07.2009**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4372/EC/1(a)/EC.No.3568/2016 dt.10.08.2016**	Iynkunam Kilpennathur **12°15' 36" N 12° 15' 47" N 79° 09' 56" E 79° 10' 02" E**	**Opencast**
15	**Rough Stone**	R.Karthikeyan	23/29, Lakshmipuram, Gandhi Nagar, Tiruvannamalai-2.	483/K2/2009 **20.04.2011**	1.00.0	**20.04.2011**	**19.04.2021**	-	-	**20.04.2011**	Non-Operative	**Non Captive**	**-No-**	Iynkunam Kilpennathur **12° 15' 43"N 12° 15' 47"N 79° 09' 41"E 79° 09' 47"E**	**Opencast**
16	**Rough Stone**	V.J.Dhamodharan,	No.1261-A Thendral Nagar, Vengikkal Village, Tiruvannamalai Taluk & District.	391/K/2017 **16.11.2018**	1.00.0	**16.11.2018**	**15.11.2023**	-	-	**16.11.2018**	Operative	**Non Captive**	**Yes** DEIAA- 5 /TVM/TN/F. No.391/K/2017/E.C.No.315/2017- 21 **dated: 17.09.2018**	Polakunam Kilpennathur **N 12°12'32.00" 12°12'34.95" E 79°08'40.72" 79°08'46.20''**	**Opencast**

17	**Rough Stone**	S.Vasanth-kumari	Uchimalaikuppam Chengam	621/K2/2009 **12.04.2010**	1.35.5	**12.04.2010**	**11.04.2020**	-	-	**12.04.2010**	Operative	**Non Captive**	**Yes** DEIAA- 5 /TVM/TN/F. No.97-58/K/2015 E.**C.No.315/ 2017-28 dt:17.9.2018**	Uchimalaikuppam Chengam N **12°15'54" 12°15'58" E 78°54'21" 78°54'27''**	**Opencast**
18	**Rough Stone**	K.Durai	1/2, Ramalinganar Street, Tiruvannamalai	27/K2/2010 **05.05.2010**	1.00.0	**05.05.2010**	**04.05.2020**	-	-	**05.05.2010**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4669/EC/1(a)/ Ec.No.3481/ 2016 dt.29.7.2016**	Paliapattu Chengam **12° 16' 10" N 12° 16' 01" N 79° 00' 15" E 79° 00' 08''E**	**Opencast**
19	**Rough Stone**	R.Jeevanantham,	50, Avarangaatu Street, Tiruvannamalai	24/K2/2010 **13.05.2010**	2.00.0	**13.05.2010**	**12.05.2020**	-	-	**13.05.2010**	Non-Operative	**Non Captive**	**-No-**	Chinnakola-padi Chengam **12° 15' 16"N 12° 15' 22"N 78° 59' 10"E 78° 59' 17"E**	**Opencast**
20	**Rough Stone**	R.M.Jayavelu	Chengam Road, Tiruvannamalai	28/K2/2010 **03.11.2010**	1.50.0	**03.11.2010**	**02.11.2020**	-	-	**03.11.2010**	Non-Operative	**Non Captive**	**-No-**	Paliapattu Chengam **12° 16' 11"N 12° 16' 04"N 79° 00' 20"E 79° 00' 14"E**	**Opencast**
21	**Rough Stone**	M.Palani	6, Peygopuram St., Tiruvannamalai	15/K2/2011 **12.01.2016**	0.50.0	**12.01.2016**	**11.01.2026**	-	-	**12.01.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.3424/EC/1(a)/ EC.No.2534 /2015 dt.18.12.2015**	Periyakola-padi Chengam **12° 15'02.12"N 12° 15' 05.67"N 79° 58'50.59"E 79°58'52.31"E**	**Opencast**
22	**Rough Stone**	Sadhaknawas,	No. 25, 3rd Street, Valace Garden, Chennai-6.	14/K2/2011 **12.01.2016**	0.50.0	**12.01.2016**	**11.01.2021**	-	-	**12.01.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.3940/EC/1(a)/ EC.No.2535 /2015 dt.18.12.2015**	Periyakola-padi Chengam **12° 15'01.92"N 12° 15' 05.72"N 79° 58'49.37"E 79°58'51.19"E**	**Opencast**

23	**Rough Stone**	Tmt.S.Kanimozhi	No.152, Old Street, Avoor Village Tiruvannamalai	48/K2/2015 **28.07.2016**	1.00.0	**28.07.2016**	**27.07.2021**	-	-	**28.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4668/EC/1(a)/3083/2015 dated. 02.03.2016**	Periyakola-padi Chengam **12° 15' 03" N 12° 15' 06" N 78° 58' 53" E 78° 58' 58" E**	**Opencast**
24	**Rough Stone**	M.Julia	180, Vambalur Road, Tirumalai village, Polur taluk	231/K2/2009 **22.06.2009**	2.00.0	**22.06.2009**	**21.06.2019**	-	-	**22.06.2009**	Non-Operative	**Non Captive**	**-No-**	Tirumalai Polur **12° 33' 44"N 12° 33' 47"N 79° 11' 26"E 79° 11' 33"E**	**Opencast**
25	**Rough Stone**	M.Parthiban,	27/A, Vengadathan street, Polur taluk & village.	136/K2/2010 **24.12.2010**	1.00.0	**24.12.2010**	**23.12.2020**	-	-	**24.12.2010**	Non-Operative	**Non Captive**	**-No-**	Pudhu-palayam Polur **12° 29' 18" N 79°6'40.64" E**	**Opencast**
26	**Rough Stone**	S.Rajakumar	2/57, Pillaiyar koil street, Kalasapakkam.	50/K/2015 **21.07.2016**	2.00.0	**21.07.2016**	**20.07.2021**	-	-	**21.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4708/EC/1(a)/EC.No.3344/2016 dt.15.07.2016**	Vasur Polur **12° 29' 16" N 12° 29' 21" N 79° 07' 11" E 79° 07' 17"E**	**Opencast**
27	**Rough Stone**	E.Sivakumar,	No.20,26,J.30, VRS Nagar, Govindasamy street, Polur.	51/K/2015 **21.07.2016**	2.00.0	**21.07.2016**	**20.07.2021**	-	-	**21.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4694/EC/1(a) EC.No.3317/2016 dated. 15.07.2016**	Pudu-palayam Polur **12° 29' 17"N 12° 29' 22" N 79° 06' 26" E 79° 06' 31"E**	**Opencast**
28	**Rough Stone**	P.Radhakrishnan	Mettu Street, Tiruvannamalai	20/K2/2010 **12.04.2010**	1.03.5	**12.04.2010**	**11.04.2020**	-	-	**12.04.2010**	Non-Operative	**Non Captive**	**-No-**	Sathanur Thandaram pattu **12° 11' 08"N 12° 11' 13"N 78° 53' 01"E 78° 53' 05"E**	**Opencast**

29	**Rough Stone**	M.Govindarajan,	No.3/337, Allabasha street,Mungilthurai pattu Village, Shankarapuram Tk.	79/K2/2010 **28.06.2010**	2.00.0	**28.06.2010**	**27.06.2020**	-	-	**28.06.2010**	Non-Operative	**Non Captive**	**-No-**	Thonda-manur Thandaram-pattu **12° 03' 48"N 12° 04' 03"N 78° 56' 57"E 78° 57' 05"E**	**Opencast**
30	**Rough Stone**	A.Thenarmozhi	Manalurmel Siruvallur Village, Sankarapuram	134/K2/2010 **23.08.2010**	2.00.0	**23.08.2010**	**22.08.2020**	-	-	**23.08.2010**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.3048/EC/1(a)/ EC.No.1750 /2014 dt.18.03.2015**	Perukulathur Thandaram-pattu **12° 01' 28" N 12° 01' 33" N 78° 55' 03" E 78° 55' 07"E**	**Opencast**
31	**Rough Stone**	Tmt.K.Sarasu	53, Nehru Street, Chengam	626/K2/2009 **17.03.2011**	1.00.0	**17.03.2011**	**16.03.2021**	-	-	**17.03.2011**	Operative	**Non Captive**	**Yes** DEIAA- 5 /TVM/TN/F. No.97-69/K2015/ **E.C.No.315/ 2017- 27 dt: 17.09.2018**	Sathanur Thandaram pattu **12°11'21"N 12°11'26"N 78°52'52"E 78°52'56"E**	**Opencast**
32	**Rough Stone**	R.Dhanakotti	Varagur Village, Tandrampet	18/K2/2011 **30.03.2011**	1.00.0	**30.03.2011**	**29.03.2021**	-	-	**30.03.2011**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4706/EC/1(a)/ EC.No.3316 /2016 dated. 15.07.2016**	Varagur Thandaram pattu **12° 08' 58" N 12° 08' 54" N 79° 01' 48"E 79° 01' 42"E**	**Opencast**
33	**Rough Stone**	P.Palani	Kolamanjanur Village, Tandarampet.	20/K2/2011 **18.04.2011**	2.00.0	**18.04.2011**	**17.04.2021**	-	-	**18.04.2011**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4376/EC/1(a)/ EC.No.3327 /2016 dated. 15.07.2016**	Kolaman-janur Thandaram pattu **12° 08' 14"N 12° 08' 25"N 78° 53' 05"E 78° 53' 12"E**	**Opencast**

34	**Rough Stone**	M.Veeramani	Royandapuram Village Thandarampattu Taluk.	19/K2/2011 **24.05.2012**	2.00.0	**24.05.2012**	**23.05.2022**	-	-	**24.05.2012**	Non-Operative	**Non Captive**	**-No-**	Royanda-puram Thandaram-pattu **12°04'49"N 12°04'55"N 78°56'23"E 78°56'29"E**	**Opencast**
35	**Rough Stone**	M.Vinothkannan,	Varagur Village, Tandrampet	49/K/2015 **20.01.2016**	0.40.0	**20.01.2016**	**19.01.2021**	-	-	**20.01.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4355/EC/1(a)/EC.No.2552/2015 dt.23.12.2015**	Varagur Thandaram pattu **12° 08' 32" N 12° 08' 29" N 79° 01' 39" E 79° 01' 37"E**	**Opencast**
36	**Rough Stone**	Tmt.R.Amutha	No.712, Bajanai Koil Street, Dhesurpalayam Village, Keelvanakkambadi Thandrampattu Taluk	396/K/2017 **11.06.2018**	2.00.0	**11.06.2018**	**10.06.2028**	-	-	**11.06.2018**	Operative	**Non Captive**	**Yes** DEIAA-3/TVM/TN/F.No.396/K/2017E.**C.No.315/2017-8 dated: 04.04.2018**	Allappanur Thandaram-pattu **N 12°06'06.86" 12°06'12.52" E 78°56'39.04" 78°56'45.64"**	**Opencast**
37	**Rough Stone**	S.Nagaraj	Manampathy Village, Uthiramerur Taluk.	29/K2/2011 **17.12.2011**	1.53.0	**17.12.2011**	**16.12.2021**	-	-	**17.12.2011**	Non-Operative	**Non Captive**	**-No-**	Athi Cheyyar **12° 38' 18"N 12° 38' 29"N 79° 36' 30"E 79° 36' 39"E**	**Opencast**
38	**Rough Stone**	K.Gopinath,	Kandigai melkottaiyur post, Chengelpet taluk.	26/K2/2011 **03.06.2011**	2.00.0	**03.06.2011**	**02.06.2021**	-	-	**03.06.2011**	Non-Operative	**Non Captive**	**-No-**	Avaniapuram Chetpattu **12° 08' 54"N 12° 08' 58"N 79° 01' 34"E 79° 01'41"E**	**Opencast**
39	**Rough Stone**	V.Rajagopal,	Oorapakkam,Chengalpattu.	169/K2/2010 **17.12.2011**	1.00.0	**17.12.2011**	**16.12.2021**	-	-	**17.12.2011**	Non-Operative	**Non Captive**	**-No-**	Jeganatha-puram Chetpattu **12° 28' 51"N 12° 28' 57"N 79° 24' 06"E 79° 24' 10"E**	**Opencast**

40	**Rough Stone**	D.Saravanan,	Venkatapuram, Saidapet,Chennai – 15.	140/K2/2010 **18.10.2010**	2.00.0	**18.10.2010**	**17.10.2020**	-	-	**18.10.2010**	Non-Operative	**Non Captive**	**-No-**	Seeyalam Vandavasi **12° 26' 24"N 12° 26' 27 N 79° 43' 05"E 79° 43' 12"E**	**Opencast**
41	**Rough Stone**	R.Tamilvanan.	Saidapet,Chennai –15.	143/K2/2010 **18.10.2010**	2.00.0	**18.10.2010**	**17.10.2020**	-	-	**18.10.2010**	Non-Operative	**Non Captive**	**-No-**	Seeyalam Vandavasi **12° 26' 14"N 12° 26' 18 N 79°43' 02"E 79° 43' 11"E**	**Opencast**
42	**Rough Stone**	Siddique Basha,	Kunnathur village, Arni taluk	602/K2/2009 **19.11.2009**	2.00.0	**19.11.2009**	**18.11.2019**	-	-	**19.11.2009**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4420/EC/1(a)/ EC.No.3505 /2016 dt.10.08.2016**	Melnagar ramasani kuppam Arni **12°42'13"N 12°42'07" N 79°11'01"E 79° 10' 55"E**	**Opencast**
43	**Rough Stone**	S.Suresh,	3, Saradha Nagar, Agraharam Koratur, Chennai – 76.	135/K2/2009 **23.11.2009**	1.00.0	**23.11.2009**	**22.11.2019**	-	-	**23.11.2009**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5557/EC/1(a) Ec.No.3658/ 2016 dt.24.08.2016**	Mullan-diram Arni **12°49'02.10"N 12°49'06.57" N 79°15'31.79"N 79°15'36.38"N**	**Opencast**
44	**Rough Stone**	M.Shajakhan	855, Bazar Street Santhavasal, Polur Tk.	68/K/2012 **24.05.2012**	1.00.0	**24.05.2012**	**23.05.2022**	-	-	**24.05.2012**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4470/EC/1(a) EC.No.3336 /2016 dated. 15.07.2016**	Melnagar Arni **12° 42' 27"N 12° 42' 32"N 79° 10' 17"E 79° 10' 21"E**	**Opencast**
45	**Rough Stone**	A.Nazeer Basha,	520/1, C.C.Road, Vannangulam, Arni taluk	51/K2/2010 **14.09.2010**	2.00.0	**14.09.2010**	**13.09.2020**	-	-	**14.09.2010**	Non-Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5584/TOR.540 /2018 t.30.07.2018**	Ayyam-palayam Arni **12° 42' 10"N 12° 42' 18"N 79° 10' 15"E 79° 10' 21"E**	**Opencast**

46	**Rough Stone**	A.G.Mohan,	43, V.A.K.Nagar, Arni Taluk	52/K/2015 **13.11.2017**	0.40.0	**13.11.2017**	**12.11.2022**	-	-	**13.11.2017**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4819/EC/1(a)/EC.No.3759/2016 t.26.09.2016**	Ariyapadi Arni **12° 41' 52"N 12° 41' 54"N 79° 13' 22"E 79° 13' 25"E**	**Opencast**
47	**Rough Stone**	P.Vinayagamoorthi	Ramana Nagar, Thiruvannamalai.	104/K2/2015 **02.03.2016**	0.75.5	**02.03.2016**	**01.03.2021**	-	-	**02.03.2016**	Non-Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4881/EC/1(a)/2914/2015 dated. 17.02.2016**	Pavithram Tiruvannamalai **12°07'21" N 12°07'24" E 79°06'26" 79°06'32"E**	**Opencast**
48	**Rough Stone**	C.Shanthi	No.3/22 Nehru Street, Vettavalam Taluk	132/K2/2015 **15.05.2018**	0.65.0	**15.05.2018**	**14.05.2023**	-	-	**15.05.2018**	Operative	**Non Captive**	**Yes** DEIAA-1/TVM/IN/F No.132/K/2015E.C **No. 315/2017-3 dt.8.11.2017**	Vettavalam Kilpennathur **12°06'15.10" 12°06'18.00" 79°13'59.75" 79°14'04.16"**	**Opencast**
49	**Rough Stone**	K.S.BABURAJ,	No.12/14,3rd Cross Street, Karpagam Garden, Adayar, chennai -20	101/K/2018 **14.11.2018**	1.66.0	**14.11.2018**	**13.11.2023**	-	-	**14.11.2018**	Operative	**Non Captive**	**Yes** DEIAA-1/TVM/IN/F No.101/K/2016/**E.C.No.315/2017-5 Dt. 16.02-2018**	Kasthambadi Polur **N 12°35'55" 12°36'01" E 79°11'51" 79°11'57"**	**Opencast**
50	**Rough Stone**	T.Selvaraj,	Harur Main Road,Mothakkal village,Thandarampattu Tk.	31/K/2013 **16.06.2014**	0.40.5	**16.06.2014**	**15.06.2019**	-	-	**16.06.2014**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.1430/EC/1(a) EC.No.1229/2013 dt:30.04.2014**	Mothakkal Tmpt **12°05'25.30"N 12°05'22.51"N 78°43'34.90"E 78°43'36.52"E**	**Opencast**

51	**Rough Stone**	R.Gopi,	4/75B, Veerapathran Kovil St., Vijayappanur, Thandarampattu Tk.	101/K/2015 **02.06.2016**	1.71.0	**02.06.2016**	**01.06.2021**	-	-	**02.06.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4768/EC/1(a) EC.No.3076 /2016 dt:02.03.2016**	Varagur Thandarampattu **12°08'54"N 12°08'58"N 79°01'34"E 79°01'41"E**	**Opencast**
52	**Rough Stone**	R.Venkatachalam,	No.30, New State Bank Colony, West Tambaram, Chennai.	95/K/2015 **21.07.2016**	2.90.0	**21.07.2016**	**20.07.2021**	-	-	**21.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5041/EC/1(a) EC.No.3236 /2016 dt:06.07.2016**	Palli Cheyyar **12° 42' 53"N 12° 43'01"N 79° 36' 08"E 79° 36'15"E**	**Opencast**
53	**Rough Stone**	Tvl.Src Projects (P) Ltd.,	4-B, Lakshmipuram, Gandhi Road, Salem-636 007.	99/K/2015 **21.07.2016**	4.75.5	**21.07.2016**	**20.07.2021**	-	-	**21.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5040/EC/1(a) EC.No.3224 /2016 dt.06.07.2016**	Palli Cheyyar **12° 43' 20"N 12° 43' 30"N 79° 36' 14" E 79° 36' 24"E**	**Opencast**
54	**Rough Stone**	I.Prakash	Senthamangalam Village S.V.Chathiram (Via), Sriperumpthur Taluk, Kanchipuram District.	122/K/2015 **28.07.2016**	0.78.0	**28.07.2016**	**27.07.2021**	-	-	**28.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5429/EC/1(a) EC.No.3404 /2016 dt.25.07.2016**	Painkinar Cheyyar **12°41'20.08" 12°41'24.79" 79°31'11.49" 79°31'15.16"**	**Opencast**
55	**Rough Stone**	S.Suresh Babu	No.5, Kulakkarai Street Anakkaputhur Village, Thambaram Taluk, Chennai District.	147/K/2015 **28.07.2016**	3.88.5	**28.07.2016**	**27.07.2021**	-	-	**28.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5430/EC/1(a) EC.No.3402 /2016 dt.25.07.2016**	Kurumbur Cheyyar **12°35'56.33" N 12°36'07.32"N 79°36'54.98" E 79°37'02.93"E**	**Opencast**

56	**Rough Stone**	R.Velmurugan,	304, Theradi Street, Asanamapettai Village, Vembakkam Taluk.	360/K/2017 **17.09.2018**	1.20.0	**17.09.2018**	**16.09.2023**	-	-	**17.09.2018**	Operative	**Non Captive**	**Yes** DEIAA-4/TVM/TN/F.No.360/K/2017/**E.C.No.315/2017-16 dt: 06-07-2018**	Palli Cheyyar **N 12°43'15" to 12°43'19" E 79°35'36" to 79°35'43"**	**Opencast**
57	**Rough Stone**	S.MURUGAN,	No.62/2 , Vedanatham Village, Tiruvannamalai Taluk & District.	125/K/2015 **03.11.2018**	2.06.5	**03.11.2018**	**02.11.2023**	-	-	**03.11.2018**	Operative	**Non Captive**	**Yes** DEIAA-4/TVM/TN/F.No.125/K/2015/**E.C.No.315/2017-11 dated: 06-07-2018**	Agatheri-pattu Cheyyar **N 12°36'39.77" 12°36'46.70" E 79°27'00.45" 79°27'05.69"**	**Opencast**
58	**Rough Stone**	M.Marimuthu,	Kilpudupakkam Village, Cheyyar Taluk, Tiruvannamalai District.	413/K/2017 **16.11.2018**	0.98.5	**16.11.2018**	**15.11.2023**	-	-	**16.11.2018**	Operative	**Non Captive**	**Yes** DEIAA-5/TVM/TN/F.No.413/K/2017 E.C.No.315/2017-26 **dated: 17.09.2018**	Palli Cheyyar **N 12°43'14" 12°43'20" E 79°35'59" 79°36'02"**	**Opencast**
59	**Rough Stone**	R.Seenuvasan,	Road Street,Arasanipalai village, Vembakkam Taluk	176/K/2013 **27.06.2014**	3.42.0	**27.06.2014**	**26.06.2019**	-	-	**27.06.2014**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.1807/EC/1(a)/EC.No.1163/2013 dt.03.03.2014**	Ezhacheri Vembakkam 12° 42' 48" N 12° 43' 1" N 79° 43' 17" E 79° 43' 27" E	**Opencast**
60	**Rough Stone**	Ganesh Kaskar,	RMC Ready mix (India) Sidco Industrial Thirumudivakkam, Chennai.	105/K/2013 **14.07.2014**	4.23.5	**14.07.2014**	**13.07.2019**	-	-	**14.07.2014**	Non-Operative	**Non Captive**	-No-	Sithala-pakkam Vembakkam **12°43'23"N 12° 43'10"N 79°43'29" E 79°43'36" E**	**Opencast**

61	**Rough Stone**	D.Madhavan	19, Sarangapani street, Krishnapuram, Ambathur, Chennai-53.	116/K/2013 **03.03.2015**	0.90.0	**03.03.2015**	**02.03.2020**	-	-	**03.03.2015**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4420/EC/1(a)/ EC.No.3505/ 2016 dt.10.08.2016**	Girijapuram Vembakkam **12° 44'25" 12° 44'19N" 79° 42' 14" 79° 42'11"E**	**Opencast**
62	**Rough Stone**	R.Mohanraj	No.33, Pillaiyar koil street, Puliyambedu village, Ambatthur Taluk.	242/K/2012 **13.05.2015**	0.81.0	**13.05.2015**	**12.05.2020**	-	-	**13.05.2015**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.1943/EC/1(a)/ EC.No.1753/ 2014 dt.18.03.2015**	Girijapuram Vembakkam **12° 44' 11" N 12° 44' 08" N 79° 42' 12" E 79° 42' 09" E**	**Opencast**
63	**Rough Stone**	N.Subramani	No 210 , Mandapam Junction Arpakkam Village, Kanchipuram	75/K/2014 **21.07.2016**	3.02.5	**21.07.2016**	**20.07.2021**	-	-	**21.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5151/EC/1(a)/ EC.No.3338/ 2016 dt.15.07.2016**	Menallur Vembakkam **12°44'08.63"N 12°44'18.71"N 79°42'16.36"E 79°42'21.37"E**	**Opencast**
64	**Rough Stone**	B.Sri Devi,	No.56, Balasundaram Street, Chandramohan Nagar, Velingapattarai, Kanchipuram 631 501.	12/K/2015 **28.07.2016**	1.15.5	**28.07.2016**	**27.07.2021**	-	-	**28.07.2016**	Non-Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5427/EC/1(a)/ EC.No.3401 /2016 dt.25.7.2016**	Kundiyan-thandalm Vembakkam **12°43'55.90"N 12°43'59.56"N 79°43'6.08" E 79°43'12.04"E**	**Opencast**
65	**Rough Stone**	K.Kumar,	No.2/32, Mandapam Junction, Arpakkam Village & Post, Kanchipuram.	14/K/2015 **28.07.2016**	2.29.5	**28.07.2016**	**27.07.2021**	-	-	**28.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5428/EC/1(a)/ EC.No.3379 /2016 dt.25.7.2016**	Kundiyan-thandalm Vembakkam **12°43'50.86"N 12°43'58.24"N 79°42'56.50"E 79°43'03.46"E**	**Opencast**
66	**Rough Stone**	K.Thirumalai,	No.52, Pillaiyar Koil Street, M.G.R. Nagar,Kundrathur, Chennai 600 069.	29/K/2015 **28.07.2016**	1.50.0	**28.07.2016**	**27.07.2021**	-	-	**28.07.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5431/EC/1(a) EC.No3388 /2016 dt.25.7.2016**	Suruttal Vembakkam **12°43' 56.14"N 12°44' 02.73"N 79°43' 48.82"E 79°43' 55.08"E**	**Opencast**

67	**Rough Stone**	Tmt.Deepa	81, Santhi Nagar First Street, Chengalpattu, Kanchipuram District	11/K/2014 **06.06.2016**	0.90.5	**06.06.2016**	**05.06.2021**	-	-	**06.06.2016**	Non-Operative	**Non Captive**	**Yes SEIAA-TN/F.No.2921/EC/1(a) EC.No.2835/2015 dt.08.2.2016**	Thiruppana-moor Vembakkam **12°45'34.03"N 12°45'39.08"N 79°34'44.00"E 79°34'49.08"E**	**Opencast**
68	**Rough Stone**	J. Venkatesan	153-A/1, Pillaiyar Koil Street, Melapattu Vge.,Ramakrishna puram. Cheyyar Taluk.	06/K/2017 **14.09.2017**	1.00.0	**14.09.2017**	**13.09.2022**	-	-	**14.09.2017**	Operative	**Non Captive**	**Yes** DEIAA-1/TVM/TN/ F.No.06/K/2017E.**C No. 315 /2017-4 dt:10.8.2017**	Chithathur Vembakkam **N 12°43'15" 12°43'20" E 79°36'25" 79°36'28"**	**Opencast**
69	**Rough Stone**	E.Panneerselvam	89, Vanniya Mettu St., Arpakkam Village, Kanchipuram Tk & Dt.	131/K/2015 **14.09.2017**	1.43.0	**14.09.2017**	**13.09.2022**	-	-	**14.09.2017**	Operative	**Non Captive**	**Yes** DEIAA-1/ TVM/TN/ F.No 131/K/2015 **/E.C No. 315/2017-1 dt10.8.2017**	Kundiyan-thandalm Vembakkam **N 12°43'45.58" 12°43'51.42" E 79°42'58.50" 79°43'02.06"**	**Opencast**
70	**Rough Stone**	L.Sudhakar ,	89, Palla Street, Agaram Village Thenneri Post, Kanchipuram Taluk.	105/K/2016 **14.09.2017**	3.51.5	**14.09.2017**	**13.09.2022**	-	-	**14.09.2017**	Operative	**Non Captive**	**Yes** DEIAA-1/TVM/TN/ F.No105/K/2016/**E.C No. 315/2017-2 dt.10.8.2017**	Girijapuram Vembakkam **12°44'03.76" 12°44'12.07N 79°42'00.56E" 79°42'08.36E**	**Opencast**
71	**Rough Stone**	A.Aron Samuvel,	No.15, Sesha Nagar, Poovirnthavalli, Chennai – 600 056.	80/K/2017 **17.09.2018**	1.83.5	**17.09.2018**	**16.09.2023**	-	-	**17.09.2018**	Operative	**Non Captive**	**Yes** DEIAA-4/TVM/TN/ F.No.80/K/2017/**E.C.No. 315/2017-13 dt: 06.07.2018**	Kundiyan-thandalm Vembakkam **N 12°43'46.58" 12°43'52.64" E 79°43'15.17" 79°43'21.32"**	**Opencast**

72	**Rough Stone**	M.Sudharsan,	Pl.No.37, Parvathi Nagar, 3rd Street, Madampakkam, Chennai- 600 126.	377/K/2017 **17.09.2018**	3.25.0	**17.09.2018**	**16.09.2023**	-	-	**17.09.2018**	Operative	**Non Captive**	**Yes E.C.No.315/ 2017- 14 dated: 06 .07.2018**	Kundiyan-thandalm Vembakkam **N 12°43'51.14" 12°43'57.08" E 79°43'07.34" 79°43'16.63"**	**Opencast**
73	**Rough Stone**	S.Sridhar	Managing Director,' SKT MINES, No.19C, Villakkadi Koil Thoppu Street, Kancheepuram-635 501.	26/K/2018 **17.09.2018**	3.96.5	**17.09.2018**	**16.09.2023**	-	-	**17.09.2018**	Operative	**Non Captive**	**Yes** DEIAA-4/TVM/TN/F.No.26/K/2018/**E.C.No. 315/2017-15 dt:06.7.2018**	Kaganam Vembakkam **N 12°44'36.64" 12°44'45.79" E 79°34'38.22" 79°34'48.97"**	**Opencast**
74	**Rough Stone**	B.Deenan ,	Vembakkam Taluk	78/K/2014 **20.07.2018**	0.95.5	**20.07.2018**	**01.03.2021**	-	-	**20.07.2018**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.4138/EC/1(a)/ EC.No.3070 /2015 dt.02.3.2016**	Ezhacheri Vembakkam **N 12°42'51" 12°42'48" E 79°43'25" 79°43'21"**	**Opencast**
75	**Rough Stone**	K.Devaraj,	No.105, Gandhisilai Street, Lakshmipuram Village, Vembakkam Taluk, Tiruvannamalai	248/K/2017 **17.10.2018**	2.10.0	**17.10.2018**	**16.10.2023**	-	-	**17.10.2018**	Operative	**Non Captive**	**Yes** DEIAA-4/TVM/TN/F.No.248/K/2017/ **E.C.No.315/2017 - 9 dated: 06.07.2018**	Girijapuram Vembakkam **N 12°44'14" 12°44'21" E 79°42'03" 79°42'09**	**Opencast**
76	**Rough Stone**	J.K.Srinivasan	No.782, Mariyamman Koil Street, Jambodai Village, Azhividaithangal, Vembakkam Taluk.	249/K/2017 **15.10.2018**	1.21.54	**15.10.2018**	**14.10.2023**	-	-	**15.10.2018**	Operative	**Non Captive**	**Yes** DEIAA-4/TVM/TN/F.No.249/K/2016/**E.C.No.315/2017-10 dt.06-07-2018**	Chithathur Vembakkam **N 12°44'09" to 12°44'14" E 79°37'18" to 79°37'25"**	**Opencast**

77	**Rough Stone**	M.R.Azhagiri,	No.120, Shanmuganandhar Kovil Street Mangadu, Sriperumbuthur Tk, Kancheepuram	85/K/2018 **17.10.2018**	3.87.5	**17.10.2018**	**16.10.2023**	-	-	**17.10.2018**	Operative	**Non Captive**	**Yes** DEIAA-4/TVM/TN/F.No.85/K/2015/**E.C.No. 315/2017-12 dated: 06-07-2018**	Chithala-pakkam Vembakkam **N 12°42'46.17" 12°42'52.84" E 79°43'25.08" 79°43'33.59"**	**Opencast**
78	**Rough Stone**	Tvl.Golden Sands,	No.15, 4th Street, VGP Lay Out, East coast Road, Chennai-115.	23/K/2018 **07.11.2018**	3.74.5	**07.11.2018**	**06.11.2023**	-	-	**07.11.2018**	Operative	**Non Captive**	**Yes** DEIAA- 5 /TVM/TN/F. No.23/K/2018/**E.C.No.315/2017- 24 dt.17.9.2018**	Ezhacheri Vembakkam **N12°43'18.09" 12°43'24.02" E 79°43'19.41" 79°43'11.43''**	**Opencast**
79	**Rough Stone**	Thiru.C.Sugumar,	No.18-A, V.V.Kovil Street, Walajabad Taluk, Kancheepuram District.	375/K/2017 **16.11.2018**	1.82.5	**16.11.2018**	**15.11.2023**	-	-	**16.11.2018**	Operative	**Non Captive**	**Yes** DEIAA-5/TVM/TN/F.No.375/K/2017E.**C.No .315/2017-19 dt:17.9.2018**	Ezhacheri Vembakkam **N 12°43'16.06" 12°43'19.39" E 79°43'10.40" 79°43'19.71''**	**Opencast**
80	**Rough Stone**	Muthukrishnan,	No.221,Chenjiam man Koil Street, Chithalappakkam Village, Arasanipalayam Post, Vempakkam Taluk.	337/K/2017 **22.11.2018**	1.26.0	**22.11.2018**	**23.11.2023**	-	-	**22.11.2018**	Operative	**Non Captive**	**Yes** DEIAA - 5 /TVM/TN/F. No.337/K/2017/**E.C.No.315/2017-18 dt:17.9.2018**	Chithala-pakkam Vembakkam **N 12°43'18.67" 12°43'24.09" E 79°43'30.36" 79°43'34.30"**	**Opencast**
81	**Rough Stone**	R.Venkatasubramaniyan,	No.83/1 Pillaiyar Kovil Street, Sirumayilur Village, Kancheepuram	05/K/2018 **04.12.2018**	2.43.0	**04.12.2018**	**05.12.2023**	-	-	**04.12.2018**	Operative	**Non Captive**	**Yes** DEIAA- 5 /TVM/TN/F. No.05/K/2018**E.C.No.315/2017-25 dt:17.9.2018**	Kundiyan-thandalam Vembakkam **N12°44'12" 12°44'44'17" E 79°43'03" 79°43'12''**	**Opencast**

82	**Rough Stone**	Tvl.Src Projects (P) Ltd.,	4-B, Lakshmipuram, Gandhi Road, Salem-636 007.	371/K/2017 **14.12.2018**	4.71.5	**14.12.2018**	**13.12.2023**	-	-	**14.12.2018**	Operative	**Non Captive**	**Yes** DEIAA- 5 /TVM/TN/F. No.371/K/ **E.C.No.315/ 2017- 23 dt:17.9.2018**	Chithathur Vembakkam **N 12°43'19.14" 12°43'27.05" E 79°36'22.83" 79°36'34.83"**	**Opencast**
83	**Rough Stone**	Vijay Ramakrishnan	Door No.52, MGR Road, Kalachitra Colony, Besent Nagar, Chennai-90	193/K/2013 **23.09.2014**	1.50.5	**23.09.2014**	**22.09.2019**	-	-	**23.09.2014**	Non-Operative	**Non Captive**	**Yes SEIAA-TN/F.No.2669/EC/1(a)/ EC.No.1522 /2014 dt.14.08.2014**	Kizhnamandi Vandavasi **12° 23'15"N 12° 23'23"N 79°29'40"E 79°29'43" E**	**Opencast**
84	**Rough Stone**	G.Vasudevan	Door No.842-D, Vengidamangalam Road, Melakkottaiyur,Chengalpattu Taluk,Kancheepuram.	115/K/2015 **08.12.2016**	1.04.0	**08.12.2016**	**07.12.2021**	-	-	**08.12.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.5580/EC/1(a)/ EC.No.3572 /2016 dt.19.08.2016**	Septangulam Vandavasi **12°31' 53.54" 12°31' 56.24" 79°26'21.93" 79°26'28.09"**	**Opencast**
85	**Rough Stone**	G.Rajendran,	No.18, First Street, Rajiv Gandhi Nagar, Urapakkam Village, Chengalpattu .	37/K/2014 **22.12.2016**	1.68.0	**22.12.2016**	**21.12.2021**	-	-	**22.12.2016**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.2845/EC/1(a)/ EC.No.2312 /2014 dt.27.10.2015**	Mavalavadi Vandavasi **12°22'32.00"N 79°39'29.10"E**	**Opencast**
86	**Rough Stone**	A.C.Mani,	Vetrilaikara street, Arni.	36/K/2013 **25.09.2014**	0.67.0	**25.09.2014**	**24.09.2019**	-	-	**25.09.2014**	Operative	**Non Captive**	**Yes SEIAA-TN/F.No.1937/EC/1(a)/ EC.No.1497 /2013 dt.13.08.2014**	Ariyapadi Arni **12°41'56"N 12° 41' 52"N 79° 13' 20" E 79° 13' 23"E**	**Opencast**

10. DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS (2016-17 TO 2018-19)

The mineral wise revenue collection for the last three years is given below:

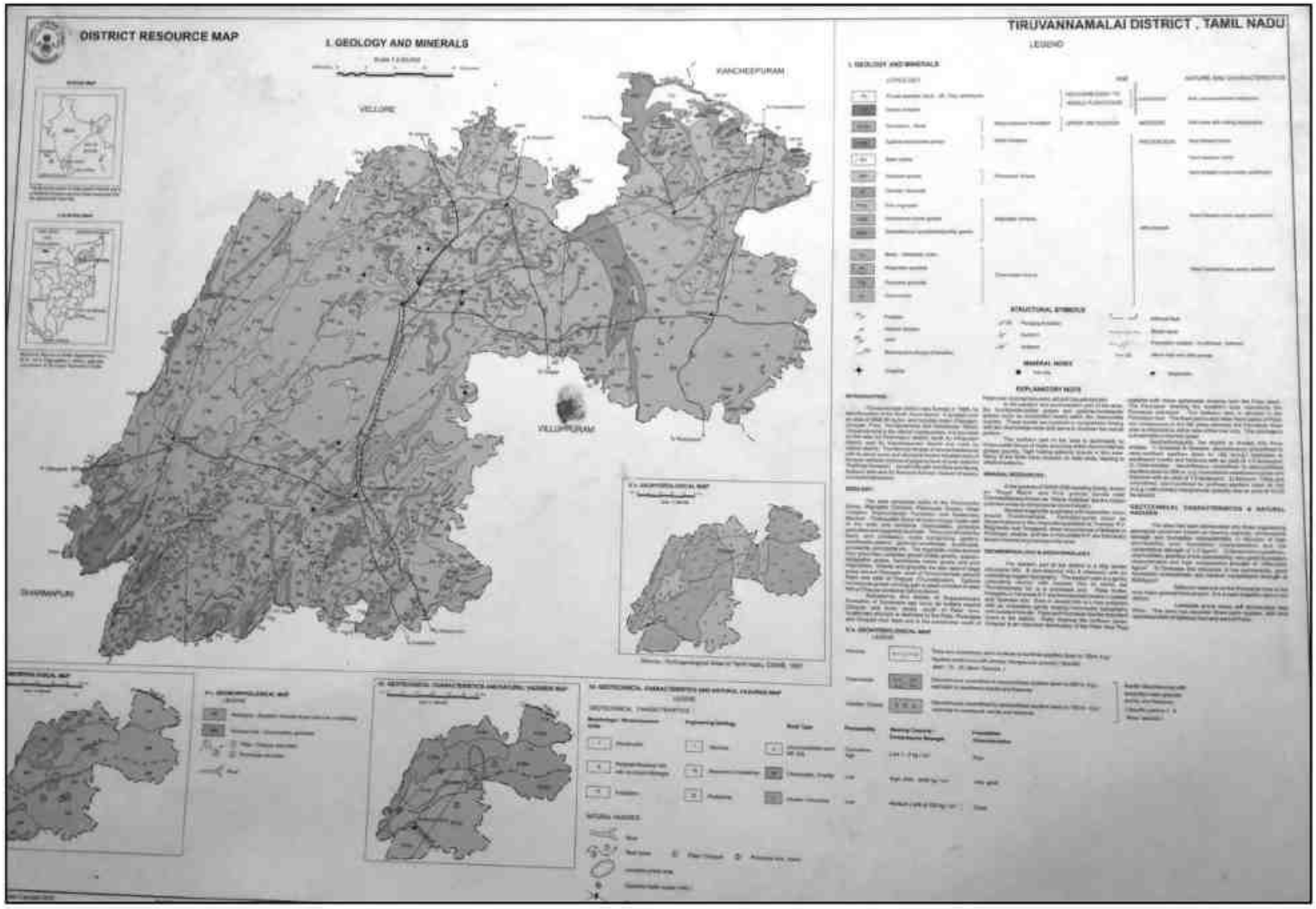
Sl.No	Year	Revenue realized
1.	2016-2017	33519675
2.	2017-2018	38311705
3.	2018-2019	59673732

11. DETAILS OF PRODUCTION OF MINERALS IN LAST THREE YEARS (2016-17 TO 2018-19)

The mineral wise production for the last three years is given below:

Sl.No	Year	Production of Rough Stone
1.	2016-2017	688198
2.	2017-2018	825787
3.	2018-2019	1023023

12. MINERAL MAP OF THE DISTRICT:-



13. LIST OF LETTER OF INTENT (LOI) HOLDERS IN THE DISTRICT ALONG WITH ITSVALIDITY AS PER THE FOLLOWING FORMAT:-

Sl. No	Name of the Mineral	Name of the lessee	Address & contact no. of letter of Intent holder	Letter of Intent Grant order No. & date	Area of mining lease to be allotted (Ha)	Validity of LOI	Use (Captive/ Non-captive)	Location of the Mining lease (Latitude & Longitude)
1	Rough Stone	Thiru.R.Monishkumar	No.35/88, Rajaji Street, Chengalpattu.	Rc.No.379/ Kanimam / 2017 dt:17.07.2018	3.12.5	-	Non-captive	Ezhacheri Vembakkam 12°43'01.10"N to 12°43'08.27"N 79°43'06.48"E to 79°43'16.34"E
2	Rough Stone	Thiru.R.Gunasekaran	No.50/70 Kalyanasundharam St, Merku Thambaram, Chennai.	Rc.No.378/ Kanimam /2017 dt:06.08.2018	1.49.0	-	Non-captive	Vazhavandal Vembakkam 12°44'10.61"N to 12°44'16.71"N 79°41'19.33"E to 79°41'23.75"E
3	Rough Stone	Tvl.Suganya Blue Stone	No.505/3, Main Road, Thirupanamoor, Vembakkam Taluk. Tiruvannamalai District.	Rc.No.25 / Kanimam / 2018 dt:05.09.2018	2.95.0	-	Non-captive	Thirupanamoor Vembakkam 12°45'38.82"N to 12°45'47.05"N 79°34'45.63"E to 79°34'56.70"E
4	Rough Stone	Thiru.A.WILLIAM	No.139, 4th Main Road, Lakshmi Nagar Extension, Porur, Chennai – 600 116.	Rc.No.32 / Kanimam/ 2018 dt.24.09.2018	2.88.0	-	Non-captive	Kundiyanthandalam Vembakkam 12°44'06.24"N to 12°44'21.05"N 79°43'01.47"E to 79°43'05.11"E

5	Rough Stone	Tvl. NRM SONS BLUE METALS	97A, Ottakuthar street, Mamallan Nagar, Kanchipuram District.	Rc.No.56 / Kanimam/2018 dt.19.09.2018	2.75.0	-	Non-captive	Kiznayacken palayam & Girijapuram vembakkam 12°44'07.37"N to 12°44'13.71"N 79°41'53.84"E to 79°41'00.88"E
6	Rough Stone	Thiru.R.Nethaji	No.79, Jain Street, Arpakkam Village, Valajabhath Taluk Kanchipuram District.	Rc.No.33/ Kanimam / 2018 dt.14.10.2018	2.45.0	-	Non-captive	Kundiyanthandalam Vembakkam 12°43'52"N to 12°43'57"N 79°43'16"E to 79°43'23"E
7	Rough Stone	Thiru.R.K.Sudhakar Ramakrishnan	No.326, Vivekanandar st, Thadaperumbakkam, Thiruvengadapuram, Ponneri, Tiruvallur District.	Rc.No. 78/ Kanimam / 2018 dt:27.09.2018	1.66.0	-	Non-captive	Thethurai Cheyyar 12°36'39.72"N to 12°36'44.60"N 79°37'16.98"E to 79°37'22.96"E
8	Rough Stone	Thiru.S.Sivasuriya madhava Raja	No.9/13, Shanmuga Nagar, Mannivakkam, Chennai – 600048.	Rc.No. 09/ Kanimam / 2018 dt.14.12.2018	1.05.5	-	Non-captive	Palli Cheyyar 12°43'11"N to 12°43'15"N 79°36'36"E to 79°36'41"E
9	Rough Stone	Thiru.S.Gopiraj	No.180/2, Pillaiyar Kovil Street, Kangeyanoor Village & Post, Polur Taluk, Tiruvannamalai.	Rc.No.395/ Kanimam / 2017 dt.10.12.2017	1.00.0	-	Non-captive	Pudhupalayam Polur 12°29'25.02"N to 12°29'29.53"N 79°06'32.03"E to 79°06'37.17"E

10	Rough Stone	Thiru.K.Ashok Kumar	Maganurpatti Village and Post, Uthangarai Taluk, Krishnagiri District.	Rc.No.20/ Kanimam/2017 dt.04.12.2017	1.00.0	-	Non-captive	Naradapattu Chengan 12°13'09"N to 12°13'12"N 78°41'20"E to 78°41'25"E
11	Rough Stone	Thiru.S.Manokaran	No.33/60 K, TPT Main Road, Vakkanampatti Post, Jolarpettai, Vellore District.	Rc.No.397/ Kanimam/2017 dt.17.11.2017	1.00.0	-	Non-captive	Thiruvadathanur Thandarampattu N 12°06'36.89" to 12°06'42.33" E 78°53'27.56" to 78°53'33.85"
12	Rough Stone	Thiru.K.Chandreskaran	No.301, Madhrayan Pettai Street, Mamandur Village, Vembakkam Taluk, Tiruvannamalai District	Rc.No.66/ Kanimam / 2018 dt.13.02.2019	1.97.5	-	Non-captive	Kundiyanthandalam Vembakkam 12°43'59.73"N to 12°43'06.66"N 78°43'01.36"E to 78°43'06.10"E
13	Rough Stone	M/s.Bhuvaneswari Blue Metals	No.37 B, Ground Floor, Vembuliamman Kovil Street, Pazhvanthangal, Chennai.	Rc.No.83/ Kanimam/2018 dt.02.02.2019	2.05.5	-	Non-captive	Kundiyanthandalam Vembakkam 12°43'50.85"N to 79°43'05.5"E to
14	Rough Stone	Thiru.R.Ganesan, Director of SRC Projects Pvt. Ltd.,	No.47, Brindhavan Road, Fairlands, Salem District.	Rc.No.18/ Kanimam / 2019 dt:16.05.2019	4.50.0	-	Non-captive	Athi Cheyyar 12°38'34.74"N to 12°38'43.98"N 79°35'58.85"E to 79°36'07.81"E

15	Rough Stone	M/s.Rajiraj Minerals Pvt. Ltd.,	O/F Penna Complex, Vellore Main Road, 3rd Street, Anna Nagar, Arcot, Vellore	Rc.No.182/ Kanimam / 2018 dt.20.05.2019	10.90.35	-	Non-captive	Pavoor & Ezhacheri Vembakkam 12°42'55"N to 12°43'08"N 79°41'53"E to 79°42'08"E
16	Rough Stone	Thiru.Rajganesh	No.192/86, Habibullah Road, Thiyagaraya Nagar, Chennai	Rc.No.135/ Kanimam/2018 dt.02.02.2019	2.58.5	-	Non-captive	Arugavoor Cheyyar 12°40'40.05"N to 12°40'49.43"N 79°30'36.11"E to 79°30'42.93"E
17	Rough Stone	N.Ragu	S/o.Nadarajan, No.14/2 Center street, Ganapathypuram, East Thambaram, Chennai	Rc.No.117/ Kanimam/2018 dt: 29.05.2019	2.95.0	-	Non-Captive	Menallur Vembakkam 12°43'52.49"N to 12°43'58.91"N 79°42'00.13"E to 79°42'07.16"E
18	Rough Stone	A.Dhasarathan,	No.39, Erikkarai Street, Thiruparuthikundram Village, Sevilimedu, Kanchipuram taluk & District.	Rc.No.79/Kanimam/2018 dt.02.02.2019	2.88.5	-	Non-Captive	Kundiyanthadalam Vembakkam 12°43'42.20"N to 12°43'51.08"N 79°42'54.37"E to 79°42'59.68"E

14. TOTAL MINERAL RESERVES AVAILABLE IN THE DISTRICT:-

Sl. No	Name of the Mineral	Name of the Lessee	Address & Contact No. lessee	Mining lease / Letter of Intent Grant Order No. & date	Area of Mining lease (ha)	Location of the mining lease (Latitude & Longitude)	Total Quantity (Geological Reveres)
1	2	3	4	5	6	7	8
1	**Rough Stone**	D.Jaiganesh,	Vettavalam village, Tiruvannnamalai Taluk	614/K2/2009 **10.11.2017**	1.00.0	Vettavalam Tiruvannamalai **12°06' 38" 12° 06' 43" 79° 16' 27" 79° 16' 31"**	**109580 cbm Rough Stone**
2	**Rough Stone**	R.Prasath,	Polur Main Road, Tiruvannamalai.	39/K2/2010 **08.03.2010**	2.00.0	Veraiyur Tiruvannamalai **2°05' 33" N 12° 05' 37" N 79° 07' 11" E 79° 07' 19" E**	**182300 cbm Rough Stone**
3	**Rough Stone**	E.Murugesan ,	Nachanandhal Tiruvannamalai.	22/K2/2010 **05.04.2010**	1.00.0	**Pavupattu Tiruvannmalai 12°07' 58"N 12° 07'53"N 79° 02' 55"E 79° 02' 50"E**	**213395 cbm Rough Stone**
4	**Rough Stone**	R.Singaram,	Thenimalai, Tiruvannamalai	73/K2/2010 **05.04.2010**	1.00.0	Athipadi **Tiruvannmalai 12°05' 06" N 12° 05' 02"N 79° 02' 18"E 79° 02' 13"E**	**100010 cbm Rough Stone**
5	**Rough Stone**	A.Nakkeeran,	3, Kardukarar Street, Vettavalam	636/K2/2009 **10.05.2010**	0.77.0	Vettavalam Tiruvannamalai **12°06' 27"N 12° 06' 32"N 79° 14' 07"E 79° 14' 11"E**	**192500 cbm Rough Stone**

6	**Rough Stone**	R.Arul,	Melanandahal Village, Tirukovilur Taluk.	40/K2/2010 **13.05.2010**	1.00.0	Athipadi **Tiruvannmalai 12°05' 04" N 12° 05' 09"N 79° 02' 11"E 79° 02' 15"E**	**148500 cbm Rough Stone**
7	**Rough Stone**	N.Suresh,	25/73, Ayyankula Street, Tiruvannamalai	43/K2/2010 **16.12.2010**	2.00.0	Meyyur **Tiruvannmalai 12°08' 59"N 12° 09' 05"N 79° 01' 49"E 79° 01' 54"E**	**500000 cbm Rough Stone**
8	**Rough Stone**	M.Selvaraj,	Chengam Road, Tiruvannamalai.	74/K2/2010 **16.12.2010**	1.00.0	Adaiyur **Tiruvannmalai 12° 16' 24" N 12° 16' 28"N 79° 02' 55" E 79° 02' 59"E**	**100250 cbm Rough Stone**
9	**Rough Stone**	S.Prasanth,	Chengam Road, Tiruvannamalai	75/K2/2010 **23.12.2010**	0.96.5	Adaiyur **Tiruvannmalai 12°16' 20" N 12° 16' 25" N 79° 02' 54" E 79° 02' 58"E**	**92750 cbm Rough Stone**
10	**Rough Stone**	S.Senthilkumar,	10, Kardukarar Street, Vettavalam.	168/K2/2010 **24.12.2010**	1.23.5	Vettavalam T iruvannamalai **12° 07' 34"N 12° 07' 38"N 79° 15' 48"E 79° 15' 53"E**	**61820 cbm Rough Stone**
11	**Rough Stone**	K.Thirumal,	Perayampattu post and Village, Tandarampet	72/K2/2010 **01.03.2011**	1.30.0	Athipadi **Tiruvannmalai 12°05' 01"N 12° 05' 05"N 79° 02' 03"E 79° 02' 09"E**	**165490 cbm Rough Stone**

12	**Rough Stone**	N. Harijayashree,	No.18/7, Vadamathathi St.,Tiruvannamalai	57/K/2012 **28.04.2012**	4.00.0	Vallivagai **Tiruvannmalai 12° 16' 41"N 12° 16' 32"N 79° 08' 52"E 79° 08' 39"E**	**600795 cbm Rough Stone**
13	**Rough Stone**	R.Sekar,	Mel Chinna Goundanpatti, Tharamangalam Village, Omalur Taluk, Salem Dt.	47/K2/2015 **12.09.2017**	1.00.0	Koothalavadi **Tiruvannmalai 12° 20 02.45"N 12° 20' 07.2"N 79° 06' 49.93'E 79°06' 53.59"E**	**38760 cbm Rough-Stone**
14	**Rough Stone**	P.Adimoolam,	57A, Tamizhnagar, Tiruavannamalai taluk	130/K2/2009 **01.07.2009**	1.00.0	ynkunam Kilpennathur **12°15' 36" N 12° 15' 47" N 79° 09' 56" E 79° 10' 02" E**	**154000 cbm Rough Stone**
15	**Rough Stone**	R.Karthikeyan	23/29, Lakshmipuram, Gandhi Nagar, Tiruvannamalai-2.	483/K2/2009 **20.04.2011**	1.00.0	Iynkunam Kilpennathur **12° 15' 43"N 12° 15' 47"N 79° 09' 41"E 79° 09' 47"E**	**190500 cbm Rough Stone**
16	**Rough Stone**	V.J.Dhamodharan,	No.1261-A Thendral Nagar, Vengikkal Village, Tiruvannamalai Taluk & District.	391/K/2017 **16.11.2018**	1.00.0	Polakunam Kilpennathur **N 12°12'32.00" 12°12'34.95" E 79°08'40.72" 79°08'46.20"**	**300750 cbm Rough Stone**
17	**Rough Stone**	S.Vasanthkumari	Uchimalaikuppam Chengam	621/K2/2009 **12.04.2010**	1.35.5	Uchimalaikuppam Chengam **N 12°15'54" 12°15'58" E 78°54'21" 78°54'27"**	**124560 cbm Rough Stone**

18	**Rough Stone**	K.Durai	1/2, Ramalinganar Street, Tiruvannamalai	27/K2/2010 **05.05.2010**	1.00.0	Paliapattu Chengam **12° 16' 10" N 12° 16' 01" N 79° 00' 15" E 79° 00' 08"E**	**274040 cbm Rough Stone**
19	**Rough Stone**	R.Jeevanantham,	50, Avarangaatu Street, Tiruvannamalai	24/K2/2010 **13.05.2010**	2.00.0	Chinnakola-padi Chengam **12° 15' 16"N 12° 15' 22"N 78° 59' 10"E 78° 59' 17"E**	**300000 cbm Rough Stone**
20	**Rough Stone**	R.M.Jayavelu	Chengam Road, Tiruvannamalai	28/K2/2010 **03.11.2010**	1.50.0	Paliapattu Chengam **12° 16' 11"N 12° 16' 04"N 79° 00' 20"E 79° 00' 14"E**	**155610 cbm Rough Stone**
21	**Rough Stone**	M.Palani	6, Peygopuram St., Tiruvannamalai	15/K2/2011 **12.01.2016**	0.50.0	Periyakola-padi Chengam **12° 15'02.12"N 12° 15' 05.67"N 79° 58'50.59"E 79°58'52.31"E**	**47595 cbm Rough Stone**
22	**Rough Stone**	Sadhaknawas,	No. 25, 3rd Street, Valace Garden, Chennai-6.	14/K2/2011 **12.01.2016**	0.50.0	Periyakola-padi Chengam **12° 15'01.92"N 12° 15' 05.72"N 79° 58'49.37"E 79°58'51.19"E**	**57465 cbm Rough Stone**
23	**Rough Stone**	Tmt.S.Kanimozhi	No.152, Old Street, Avoor Village Tiruvannamalai	48/K2/2015 **28.07.2016**	1.00.0	Periyakola-padi Chengam **12° 15' 03" N 12° 15' 06" N 78° 58' 53" E 78° 58' 58" E**	**266480 cbm Rough Stone**

24	**Rough Stone**	M.Julia	180, Vambalur Road, Tirumalai village, Polur taluk	231/K2/2009 **22.06.2009**	2.00.0	Tirumalai Polur **12° 33' 44"N 12° 33' 47"N 79° 11' 26"E 79° 11' 33"E**	**288000 cbm Rough Stone**
25	**Rough Stone**	M.Parthiban,	27/A, Vengadathan street, Polur taluk & village.	136/K2/2010 **24.12.2010**	1.00.0	Pudhu-palayam Polur **12° 29' 18" N 79°6'40.64" E**	**70385 cbm Rough Stone**
26	**Rough Stone**	S.Rajakumar	2/57, Pillaiyar koil street, Kalasapakkam.	50/K/2015 **21.07.2016**	2.00.0	Vasur Polur **12° 29' 16" N 12° 29' 21" N 79° 07' 11" E 79° 07' 17"E**	**392950 cbm Rough Stone**
27	**Rough Stone**	E.Sivakumar,	No.20.26.J.30, VRS Nagar, Govindasamy street, Polur.	51/K/2015 **21.07.2016**	2.00.0	Pudu-palayam Polur **12° 29' 17"N 12° 29' 22" N 79° 06' 26" E 79° 06' 31"E**	**239070 cbm Rough Stone**
28	**Rough Stone**	P.Radhakrishnan	Mettu Street, Tiruvannamalai	20/K2/2010 **12.04.2010**	1.03.5	Sathanur Thandarampattu **12° 11' 08"N 12° 11' 13"N 78° 53' 01"E 78° 53' 05"E**	**134345 cbm Rough Stone**
29	**Rough Stone**	M.Govindarajan,	No.3/337, Allabasha street,Mungilthuraipattu Village, Shankarapuram Tk.	79/K2/2010 **28.06.2010**	2.00.0	Thonda-manur Thandaram-pattu **12° 03' 48"N 12° 04' 03"N 78° 56' 57"E 78° 57' 05"E**	**279000 cbm Rough Stone**

30	**Rough Stone**	A.Thenarmozhi	Manalurmel Siruvallur Village, Sankarapuram	134/K2/2010 **23.08.2010**	2.00.0	Perukulathur Thandaram-pattu **12° 01' 28" N 12° 01' 33" N 78° 55' 03" E 78° 55' 07"E**	**199420 cbm Rough Stone**
31	**Rough Stone**	Tmt.K.Sarasu	53, Nehru Street, Chengam	626/K2/2009 **17.03.2011**	1.00.0	Sathanur Thandarampattu **12°11'21"N 12°11'26"N 78°52'52"E 78°52'56"E**	**182750 cbm Rough Stone**
32	**Rough Stone**	R.Dhanakotti	Varagur Village, Tandrampet	18/K2/2011 **30.03.2011**	1.00.0	Varagur Thandarampattu **12° 08' 58" N 12° 08' 54" N 79° 01' 48"E 79° 01' 42"E**	**186000 cbm Rough Stone**
33	**Rough Stone**	P.Palani	Kolamanjanur Village, Tandarampet.	20/K2/2011 **18.04.2011**	2.00.0	Kolaman-janur Thandarampattu **12° 08' 14"N 12° 08' 25"N 78° 53' 05"E 78° 53' 12"E**	**365400 cbm Rough Stone**
34	**Rough Stone**	M.Veeramani	Royandapuram Village Thandarampattu Taluk.	19/K2/2011 **24.05.2012**	2.00.0	Royanda-puram Thandaram-pattu **12°04'49"N 12°04'55"N 78°56'23"E 78°56'29"E**	**543200 cbm Rough Stone**
35	**Rough Stone**	M.Vinothkannan,	Varagur Village, Tandrampet	49/K/ 2015 **20.01.2016**	0.40.0	Varagur Thandarampattu **12° 08' 32" N 12° 08' 29" N 79° 01' 39" E 79° 01' 37"E**	**101250 cbm Rough Stone**

36	**Rough Stone**	Tmt.R.Amutha	No.712, Bajanai Koil Street, Dhesurpalayam Village, Keelvanakkambadi Thandrampattu Taluk	396/K/ 2017 **11.06.2018**	2.00.0	Allappanur Thandaram-pattu **N 12°06'06.86" 12°06'12.52" E 78°56'39.04" 78°56'45.64"**	**1000000 cbm Rough Stone**
37	**Rough Stone**	S.Nagaraj	Manampathy Village, Uthiramerur Taluk.	29/K2/2011 **17.12.2011**	1.53.0	Athi Cheyyar **12° 38' 18"N 12° 38' 29"N 79° 36' 30"E 79° 36' 39"E**	**230055 cbm Rough Stone**
38	**Rough Stone**	K.Gopinath,	Kandigai melkottaiyur post, Chengelpet taluk.	26/K2/2011 **03.06.2011**	2.00.0	Avaniapuram Chetpattu **12° 08' 54"N 12° 08' 58"N 79° 01' 34"E 79° 01'41"E**	**200080 cbm Rough Stone**
39	**Rough Stone**	V.Rajagopal,	Oorapakkam,Chengalpattu.	169/K2/2010 **17.12.2011**	1.00.0	Jeganatha-puram Chetpattu **12° 28' 51"N 12° 28' 57"N 79° 24' 06"E 79° 24' 10"E**	**199820 Cbm of Rough stone**
40	**Rough Stone**	D.Saravanan,	Venkatapuram, Saidapet,Chennai – 15.	140/K2/2010 **18.10.2010**	2.00.0	Seeyalam Vandavasi **12° 26' 24"N 12° 26' 27 N 79° 43' 05"E 79° 43' 12"E**	**295245 cbm Rough Stone**
41	**Rough Stone**	R.Tamilvanan.	Saidapet,Chennai –15.	143/K2/2010 **18.10.2010**	2.00.0	Seeyalam Vandavasi **12° 26' 14"N 12° 26' 18 N 79°43' 02"E 79° 43' 11"E**	**222720 cbm Rough Stone**

2	**Rough Stone**	Siddique Basha,	Kunnathur village, Arni taluk	602/K2/2009 **19.11.2009**	2.00.0	Melnagar ramasani kuppam Arni **12°42'13"N 12°42'07" N 79°11'01"E 79°10' 55"E**	**353600 cbm Rough Stone**
43	**Rough Stone**	S.Suresh,	3, Saradha Nagar, Agraharam Koratur, Chennai – 76.	135/K2/2009 **23.11.2009**	1.00.0	Mullan-diram Arni **12°49'02.10"N 12°49'06.57" N 79°15'31.79"N 79°15'36.38"N**	**204000 cbm Rough Stone**
44	**Rough Stone**	M.Shajakhan	855, Bazar Street Santhavasal, Polur Tk.	68/K/2012 **24.05.2012**	1.00.0	Melnagar Arni **12° 42' 27"N 12° 42' 32"N 79° 10' 17"E 79° 10' 21"E**	**136950 cbm Rough Stone**
45	**Rough Stone**	A.Nazeer Basha,	520/1, C.C.Road, Vannangulam, Arni taluk	51/K2/2010 **14.09.2010**	2.00.0	Ayyam-palayam Arni **12° 42' 10"N 12° 42' 18"N 79° 10' 15"E 79° 10' 21"E**	**266450 cbm Rough Stone**
46	**Rough Stone**	A.G.Mohan,	43, V.A.K.Nagar, Arni Taluk	52/K/2015 **13.11.2017**	0.40.0	Ariyapadi Arni **12° 41' 52"N 12° 41' 54"N 79° 13' 22"E 79° 13' 25"E**	**101250 cbm Rough Stone**
47	**Rough Stone**	P.Vinayagamoorthi	Ramana Nagar, Thiruvannamalai.	104/K2/2015 **02.03.2016**	0.75.5	Pavithram Tiruvannamalai **12°07'21"N 12°07'24" E 79°06'26" 79°06'32"E**	**151840 cbm Rough Stone**

48	**Rough Stone**	C.Shanthi	No.3/22 Nehru Street, Vettavalam Taluk	132/K2/2015 **15.05.2018**	0.65.0	Vettavalam Kilpennathur **12°06'15.10" 12°06'18.00" 79°13'59.75" 79°14'04.16"**	**130000 cbm Rough Stone**
49	**Rough Stone**	K.S.BABURAJ,	No.12/14,3rd Cross Street, Karpagam Garden, Adayar, chennai -20	101/K/2018 **14.11.2018**	1.66.0	Kasthambadi Polur **N 12°35'55" 12°36'01" E 79°11'51" 79°11'57"**	**207480 cbm Rough Stone**
50	**Rough Stone**	T.Selvaraj,	Harur Main Road,Mothakkal village,Thandarampattu Tk.	31/K/2013 **16.06.2014**	0.40.5	Mothakkal Tmpt **12°05'25.30"N 12°05'22.51"N 78°43'34.90"E 78°43'36.52"E**	**22276 cbm Rough-Stone**
51	**Rough Stone**	R.Gopi,	4/75B, Veerapathran Kovil St., Vijayappanur, Thandarampattu Tk.	101/K/2015 **02.06.2016**	1.71.0	Varagur Thandarampattu **12°08'54"N 12°08'58"N 79°01'34"E 79°01'41"E**	**171170 cbm Rough Stone**
52	**Rough Stone**	R.Venkatachalam,.	No.30, New State Bank Colony, West Tambaram, Chennai.	95/K/2015 **21.07.2016**	2.90.0	Palli Cheyyar **12° 42' 53"N 12° 43'01"N 79° 36' 08"E 79° 36'15"E**	**290000 cbm Rough Stone**
53	**Rough Stone**	Tvl.Src Projects (P) Ltd.,	4-B, Lakshmipuram, Gandhi Road, Salem-636 007.	99/K/2015 **21.07.2016**	4.75.5	Palli Cheyyar **12° 43' 20"N 12° 43' 30"N 79° 36' 14" E 79° 36' 24"E**	**1902000 cbm Rough Stone**

54	**Rough Stone**	I.Prakash	Senthamangalam Village S.V.Chathiram (Via), Sriperumpthur Taluk, Kanchipuram District.	122/K/2015 **28.07.2016**	0.78.0	Painkinar Cheyyar **12°41'20.08" 12°41'24.79" 79°31'11.49" 79°31'15.16"**	**168080 cbm Rough Stone**
55	**Rough Stone**	S.Suresh Babu	No.5, Kulakkarai Street Anakkaputhur Village, Thambaram Taluk, Chennai District.	147/K/2015 **28.07.2016**	3.88.5	Kurumbur Cheyyar **12°35'56.33" N 12°36'07.32"N 79°36'54.98" E 79°37'02.93"E**	**900840 cbm Rough Stone**
56	**Rough Stone**	R.Velmurugan,	304, Theradi Street, Asanamapettai Village, Vembakkam Taluk.	360/K/2017 **17.09.2018**	1.20.0	Palli Cheyyar **N 12°43'15" 12°43'19" E 79°35'36" 79°35'43"**	**416080 cbm Rough Stone**
57	**Rough Stone**	S.MURUGAN,	No.62/2 , Vedanatham Village, Tiruvannamalai Taluk & District.	125/K/2015 **03.11.2018**	2.06.5	Agatheri-pattu Cheyyar **N 12°36'39.77" 12°36'46.70" E 79°27'00.45" 79°27'05.69"**	**450740 cbm Rough Stone**
58	**Rough Stone**	M.Marimuthu,	Kilpudupakkam Village, Cheyyar Taluk, Tiruvannamalai District.	413/K/2017 **16.11.2018**	0.98.5	Palli Cheyyar **N 12°43'14" 12°43'20" E 79°35'59" 79°36'02"**	**244200 cbm Rough Stone**
59	**Rough Stone**	R.Seenuvasan,	Road Street,Arasanipalai village, Vembakkam Taluk	176/K/2013 **27.06.2014**	3.42.0	Ezhacheri Vembakkam **12° 42' 48" N 12° 43' 1" N 79° 43' 17" E 79° 43' 27" E**	**150155 cbm Rough-Stone**

60	**Rough Stone**	Ganesh Kaskar,	RMC Ready mix (India) Sidco Industrial Estate, Thirumudivakkam, Chennai.	105/K/2013 **14.07.2014**	4.23.5	Sithala-pakkam Vembakkam **12°43'23"N 12° 43'10"N 79°43'29" E 79°43'36" E**	**968970 cbm Rough Stone**
61	**Rough Stone**	D.Madhavan	19, Sarangapani street, Krishnapuram, Ambathur, Chennai-53.	116/K/2013 **03.03.2015**	0.90.0	Girijapuram Vembakkam **12° 44'25" 12° 44'19N" 79° 42' 14" 79° 42'11"E**	**76000 cbm Rough-Stone**
62	**Rough Stone**	R.Mohanraj	No.33, Pillaiyar koil street, Puliyambedu village, Ambatthur Taluk.	242/K/2012 **13.05.2015**	0.81.0	Girijapuram Vembakkam **12° 44' 11" N 12° 44' 08" N 79° 42' 12" E 79° 42' 09" E**	**257400 cbm Rough Stone**
63	**Rough Stone**	N.Subramani	No 210 , Mandapam Junction Arpakkam Village, Kanchipuram	75/K/2014 **21.07.2016**	3.02.5	Menallur Vembakkam **12°44'08.63"N 12°44'18.71"N 79°42'16.36"E 79°42'21.37"E**	**89184 cbm Rough Stone**
64	**Rough Stone**	B.Sri Devi,	No.56, Balasundaram Street, Chandramohan Nagar, Velingapattarai, Kanchipuram 631 501.	12/K/2015 **28.07.2016**	1.15.5	Kundiyan-thandalm Vembakkam **12°43'55.90"N 12°43'59.56"N 79°43'6.08" E 79°43'12.04"E**	**316710 cbm Rough Stone**
65	**Rough Stone**	K.Kumar,	No.2/32, Mandapam Junction, Arpakkam Village & Post, Kanchipuram.	14/K/2015 **28.07.2016**	2.29.5	Kundiyan-thandalm Vembakkam **12°43'50.86"N 12°43'58.24"N 79°42'56.50"E 79°43'03.46"E**	**334530 cbm Rough Stone**

66	**Rough Stone**	K.Thirumalai,	No.52, Pillaiyar Koil Street, M.G.R. Nagar,Kundrathur, Chennai 600 069.	29/K/2015 **28.07.2016**	1.50.0	Suruttal Vembakkam **12°43' 56.14"N 12°44' 02.73"N 79°43' 48.82"E 79°43' 55.08"E**	**257475 cbm Rough Stone**
67	**Rough Stone**	Tmt.Deepa	81, Santhi Nagar First Street, Chengalpattu, Kanchipuram District	11/K/2014 **06.06.2016**	0.90.5	Thiruppana-moor Vembakkam **12°45'34.03"N 12°45'39.08"N 79°34'44.00"E 79°34'49.08"E**	**20610 cbm Rough Stone**
68	**Rough Stone**	J. Venkatesan	153-A/1, Pillaiyar Koil Street, Melapattu Vge.,Ramakrishnapura m. Cheyyar Taluk.	06/K/2017 **14.09.2017**	1.00.0	Chithathur Vembakkam **N 12°43'15" 12°43'20" E 79°36'25" 79°36'28"**	**249150 cbm Rough Stone**
69	**Rough Stone**	E.Panneerselvam	89, Vanniya Mettu St., Arpakkam Village, Kanchipuram Tk & Dt.	131/K/2015 **14.09.2017**	1.43.0	Kundiyan-thandalm Vembakkam **N 12°43'45.58" 12°43'51.42" E 79°42'58.50" 79°43'02.06"**	**500500 cbm Rough Stone**
70	**Rough Stone**	L.Sudhakar ,	89, Palla Street, Agaram Village Thenneri Post, Kanchipuram Taluk.	105/K/2016 **14.09.2017**	3.51.5	Girijapuram Vembakkam **12°44'03.76" 12°44'12.07N 79°42'00.56E" 79°42'08.36E**	**1127350 cbm Rough Stone**
71	**Rough Stone**	A.Aron Samuvel,	No.15, Sesha Nagar, Poovirnthavalli, Chennai – 600 056.	80/K/2017 **17.09.2018**	1.83.5	Kundiyan-thandalm Vembakkam **N 12°43'46.58" 12°43'52.64" E 79°43'15.17" 79°43'21.32"**	**306990 cbm Rough Stone**

72	**Rough Stone**	M.Sudharsan,	Pl.No.37, Parvathi Nagar, 3rd Street, Madampakkam, Chennai- 600 126.	377/K/2017 **17.09.2018**	3.25.0	Kundiyan-thandalm Vembakkam **N 12°43'51.14" 12°43'57.08" E 79°43'07.34" 79°43'16.63"**	**634000 cbm Rough Stone**
73	**Rough Stone**	S.Sridhar	Managing Director,' SKT MINES, No.19C, Villakkadi Koil Thoppu Street, Kancheepuram- 635 501.	26/K/2018 **17.09.2018**	3.96.5	Kaganam Vembakkam **N 12°44'36.64" 12°44'45.79" E 79°34'38.22" 79°34'48.97"**	**1721925 cbm Rough Stone**
74	**Rough Stone**	B.Deenan ,	Vembakkam Taluk	78/K/2014 **20.07.2018**	0.95.5	Ezhacheri Vembakkam **N 12°42'51" 12°42'48" E 79°43'25" 79°43'21"**	**238000 cbm Rough Stone**
75	**Rough Stone**	K.Devaraj,	No.105, Gandhisilai Street, Lakshmipuram Village, Vembakkam Taluk, Tiruvannamalai	248/K/2017 **17.10.2018**	2.10.0	Girijapuram Vembakkam **N 12°44'14" 12°44'21" E 79°42'03" 79°42'09**	**822160 cbm Rough Stone**
76	**Rough Stone**	J.K.Srinivasan	No.782, Mariyamman Koil Street, Jambodai Village, Azhividaithangal, Vembakkam Taluk.	249/K/2017 **15.10.2018**	1.21.54	Chithathur Vembakkam **N 12°44'09" 12°44'14" E 79°37'18" 79°37'25"**	**484640 cbm Rough Stone**
77	**Rough Stone**	M.R.Azhagiri,	No.120, Shanmuganandhar Kovil Street Mangadu, Sriperumbuthur Tk, Kancheepuram	85/K/2018 **17.10.2018**	3.87.5	Chithala-pakkam Vembakkam **N 12°42'46.17" 12°42'52.84" E 79°43'25.08" 79°43'33.59"**	**968750 cbm Rough Stone**

78	**Rough Stone**	Tvl.Golden Sands,	No.15, 4th Street, VGP Lay Out, East coast Road, Chennai-115.	23/K/2018 **07.11.2018**	3.74.5	Ezhacheri Vembakkam **N12°43'18.09" 12°43'24.02" E 79°43'19.41" 79°43'11.43"**	**1310610 cbm Rough Stone**
79	**Rough Stone**	Thiru.C.Sugumar,	No.18-A, V.V.Kovil Street, Walajabad Taluk, Kancheepuram District.	375/K/2017 **16.11.2018**	1.82.5	Ezhacheri Vembakkam **N 12°43'16.06" 12°43'19.39" E 79°43'10.40" 79°43'19.71"**	**638750 cbm Rough Stone**
80	**Rough Stone**	Muthukrishnan,	No.221,Chenjiamman Koil Street, Chithalappakkam Village, Arasanipalayam Post, Vempakkam Taluk.	337/K/2017 **22.11.2018**	1.26.0	Chithala-pakkam Vembakkam **N 12°43'18.67" 12°43'24.09" E 79°43'30.36" 79°43'34.30"**	**441000 cbm Rough Stone**
81	**Rough Stone**	R.Venkatasubramaniyan,	No.83/1 Pillaiyar Kovil Street, Sirumayilur Village, Kancheepuram.	05/K/2018 **04.12.2018**	2.43.0	Kundiyan-thandalam Vembakkam **N12°44'12" 12°44'44'17" E 79°43'03" 79°43'12"**	**107395 cbm Rough Stone**
82	**Rough Stone**	Tvl.Src Projects (P) Ltd.,	4-B, Lakshmipuram, Gandhi Road, Salem-636 007.	371/K/2017 **14.12.2018**	4.71.5	Chithathur Vembakkam **N 12°43'19.14" 12°43'27.05" E 79°36'22.83" 79°36'34.83"**	**2121750 cbm Rough Stone**
83	**Rough Stone**	Vijay Ramakrishnan	Door No.52, MGR Road, Kalachitra Colony, Besent Nagar, Chennai-90	193/K/2013 **23.09.2014**	1.50.5	Kizhnamandi Vandavasi **12° 23'15"N 12° 23'23"N 79°29'40"E 79°29'43" E**	**102767 cbm Rough-Stone**

84	**Rough Stone**	G.Vasudevan	Door No.842-D, Vengidamangalam Road, Melakkottaiyur,Chengalpattu Taluk,Kancheepuram.	115/K/2015 **08.12.2016**	1.04.0	Septangulam Vandavasi **12°31' 53.54" 12°31' 56.24" 79°26'21.93" 79°26'28.09"**	**256700 cbm Rough Stone**
85	**Rough Stone**	G.Rajendran,	No.18, First Street, Rajiv Gandhi Nagar, Urapakkam Village, Chengalpattu .	37/K/2014 **22.12.2016**	1.68.0	Mavalavadi Vandavasi **12°22'32.00"N 79°39'29.10"E**	**202464 cbm Rough Stone**
86	**Rough Stone**	A.C.Mani,	Vetrilaikara street, Arni.	36/K/2013 **25.09.2014**	0.67.0	Ariyapadi Arni **12°41'56"N 12° 41' 52"N 79° 13' 20" E 79° 13' 23"E**	**36244 cbm Rough – Stone**
87	**Rough Stone**	R.Monishkumar	No.35/88, Rajaji Street, Chengalpattu.	Rc.No.379/ Kanimam / 2017 dt:17.07.2018	3.12.5	Ezhacheri Vembakkam **12°43'01.10"N 12°43'08.27"N 79°43'06.48"E 79°43'16.34"E**	**894250 cbm Rough Stone**
88	**Rough Stone**	R.Gunasekaran	No.50/70 Kalyanasundharam St, Merku Thambaram, Chennai.	Rc.No.378/ Kanimam /2017 dt:06.08.2018	1.49.0	Vazhavandal Vembakkam **12°44'10.61"N 12°44'16.71"N 79°41'19.33"E 79°41'23.75"E**	**521500 cbm Rough Stone**
89	**Rough Stone**	Tvl.Suganya Blue Stone	No.505/3, Main Road, Thirupanamoor, Vembakkam Taluk. Tiruvannamalai District.	Rc.No.25 / Kanimam / 2018 dt:05.09.2018	2.95.0	Thirupanamoor Vembakkam **12°45'38.82"N 12°45'47.05"N 79°34'45.63"E 79°34'56.70"E**	**1180000 cbm Rough Stone**

90	**Rough Stone**	A.WILLIAM	No.139, 4th Main Road, Lakshmi Nagar Extension, Porur, Chennai – 600 116.	Rc.No.32 / Kanimam/ 2018 dt.24.09.2018	2.88.0	Kundiyanthandalam Vembakkam **12°44'06.24"N 12°44'21.05"N 79°43'01.47"E 79°43'05.11"E**	**692200 cbm Rough Stone**
91	**Rough Stone**	Tvl. NRM SONS BLUE METALS	97A, Ottakuthar street, Mamallan Nagar, Kanchipuram District.	Rc.No.56 / Kanimam/2018 dt.19.09.2018	2.75.0	Kiznayacken palayam & Girijapuram vembakkam **12°44'07.37"N 12°44'13.71"N 79°41'53.84"E 79°41'00.88"E**	**2133360 cbm Rough Stone**
92	**Rough Stone**	R.Nethaji	No.79, Jain Street, Arpakkam Village, Valajabhath Taluk Kanchipuram District.	Rc.No.33/ Kanimam / 2018 dt.14.10.2018	2.45.0	Kundiyanthandalam Vembakkam **12°43'52"N 12°43'57"N 79°43'16"E 79°43'23"E**	**1326400 cbm Rough Stone**
93	**Rough Stone**	R.K.Sudhakar Ramakrishnan	No.326, Vivekanandar st, Thadaperumbakkam, Thiruvengadapuram, Ponneri, Tiruvallur District.	Rc.No. 78/ Kanimam / 2018 dt:27.09.2018	1.66.0	Thethurai Cheyyar **12°36'39.72"N 12°36'44.60"N 79°37'16.98"E 79°37'22.96"E**	**566755 cbm Rough Stone**
94	**Rough Stone**	S.Sivasuriya madhava Raja	No.9/13, Shanmuga Nagar, Mannivakkam, Chennai – 600048.	Rc.No. 09/ Kanimam / 2018 dt.14.12.2018	1.05.5	Palli Cheyyar **12°43'11"N 12°43'15"N 79°36'36"E 79°36'41"E**	**520800 cbm Rough Stone**
95	**Rough Stone**	S.Gopiraj	No.180/2, Pillaiyar Kovil Street, Kangeyanoor Village & Post, Polur Taluk, Tiruvannamalai.	Rc.No.395/ Kanimam / 2017 dt.10.12.2017	1.00.0	Pudhupalayam Polur **12°29'25.02"N 12°29'29.53"N 79°06'32.03"E 79°06'37.17"E**	**326190 cbm Rough Stone**

96	**Rough Stone**	K.Ashok Kumar	Maganurpatti Village and Post, Uthangarai Taluk, Krishnagiri District.	Rc.No.20/ Kanimam/2017 dt.04.12.2017	1.00.0	Naradapattu Chengan **12°13'09"N 12°13'12"N 78°41'20"E 78°41'25"E**	**355250 cbm Rough Stone**
97	**Rough Stone**	S.Manokaran	No.33/60 K, TPT Main Road, Vakkanampatti Post, Jolarpettai, Vellore District.	Rc.No.397/ Kanimam/2017 dt.17.11.2017	1.00.0	Thiruvadathanur Thandarampattu **N 12°06'36.89" 12°06'42.33" E 78°53'27.56" 78°53'33.85"**	**182600 cbm Rough Stone**
98	**Rough Stone**	K.Chandreskaran	No.301, Madhrayan Pettai Street, Mamandur Village, Vembakkam Taluk, Tiruvannamalai District	Rc.No.66/ Kanimam / 2018 dt.13.02.2019	1.97.5	Kundiyanthandalam Vembakkam **12°43'59.73"N 12°43'06.66"N 78°43'01.36"E 78°43'06.10"E**	**681640 cbm Rough Stone**
99	**Rough Stone**	M/s.Bhuvaneswari Blue Metals	No.37 B, Ground Floor, Vembuliamman Kovil Street, Pazhvanthangal, Chennai.	Rc.No.83/ Kanimam/2018 dt.02.02.2019	2.05.5	Kundiyanthandalam Vembakkam **12°43'50.85"N 79°43'05.5"E**	**807200 cbm Rough Stone**
100	**Rough Stone**	Thiru.R.Ganesan, Director of SRC Projects Pvt. Ltd.,	No.47, Brindhavan Road, Fairlands, Salem District.	Rc.No.18/ Kanimam / 2019 dt:16.05.2019	4.50.0	Athi Cheyyar **12°38'34.74"N 12°38'43.98"N 79°35'58.85"E 79°36'07.81"E**	**3294775 cbm Rough Stone**
101	**Rough Stone**	M/s.Rajiraj Minerals Pvt. Ltd.,	O/F Penna Complex, Vellore Main Road, 3rd Street, Anna Nagar, Arcot, Vellore	Rc.No.182/ Kanimam / 2018 dt.20.05.2019	10.90.35	Pavoor & Ezhacheri Vembakkam **12°42'55"N 12°43'08"N 79°41'53"E 79°42'08"E**	**7630070 cbm Rough Stone**

102	**Rough Stone**	Thiru.Rajganesh	No.192/86, Habibullah Road, Thiyagaraya Nagar, Chennai	Rc.No.135/ Kanimam/2018 dt.02.02.2019	2.58.5	Arugavoor Cheyyar **12°40'40.05"N 12°40'49.43"N 79°30'36.11"E 79°30'42.93"E**	**1240800 cbm Rough Stone**
103	**Rough Stone**	N.Ragu	S/o.Nadarajan, No.14/2 Center street, Ganapathypuram, East Thambaram, Chennai	Rc.No.117/ Kanimam/2018 dt: 29.05.2019	2.95.0	Menallur Vembakkam **12°43'52.49"N 12°43'58.91"N 79°42'00.13"E 79°42'07.16"E**	**1178520 cbm Rough Stone**
104	**Rough Stone**	A.Dhasarathan,	No.39, Erikkarai Street, Thiruparuthikundram Village, Sevilimedu, Kanchipuram taluk & District.	Rc.No.79/Kanim am/2018 dt.02.02.2019	2.88.5	Kundiyanthadalam Vembakkam **12°43'42.20"N 12°43'51.08"N 79°42'54.37"E 79°42'59.68"E**	**1298250 cbm Rough Stone**

15) QUALITY/ GRADE OF MINERAL AVAILABLE IN THE DISTRICT

ROUGH STONE

The charnockite series includes rocks of many different types, some being felsic and rich in quartz and microcline, others mafic and full of pyroxene and olivine, while there are also intermediate varieties corresponding mineralogical to norites, quartz-norites and diorites.

A special feature, recurring in many members of the group, is the presence of a strongly pleochroic, reddish or green orthopyroxene (formerly known as hypersthene).

16. USE OF MINERAL

ROUGH STONE:

Aggregates – stone used for its strong physical properties – crushed and sorted into various sizes for use in concrete, coated with bitumen to make asphalt or used 'dry' as bulk fill in construction. Mostly used in roads, concrete and building products.

17.DEMAND AND SUPPLY OF THE MINERAL IN THE LAST THREE YEARS :-

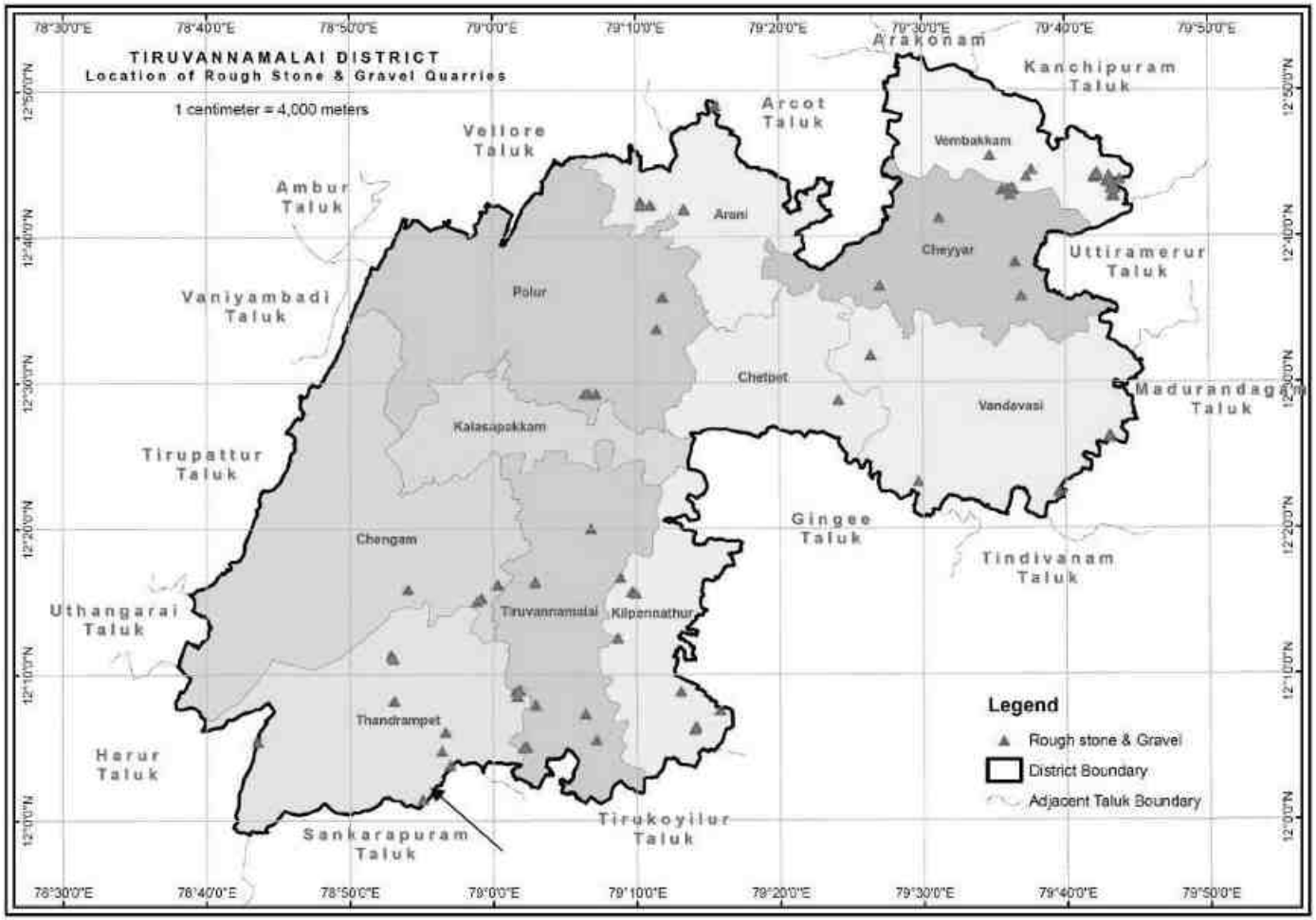
There is a huge demand for Rough stone and Gravel in the district due to the sudden increase of Construction activities and highway projects around the district.

Sl.No	Year	Production of Rough Stone	Revenue realized
1.	2016-2017	688198	33519675
2.	2017-2018	825787	38311705
3.	2018-2019	1023023	59673732

Granite quarry leases are considerably low in the district compare to the other district but the demand and supply of Granite stone is not much more.

18. MINING LEASES MARKED ON THE MAP OF THE DISTRICT

Figure 18.0 Rough stone quarry Leases marked in the District Map



Mining leases marked in the Madathukulam Taluk map

19. DETAILS OF THE AREA OF WHERE THERE IS A CLUSTER OF MINING VIZ., NUMBER OF MINING LEASES, LOCATION (LATITUDE AND LONGITUDE):-

S. No	Name of the Mineral	No. of Mining Lease	Taluk	village	Location of the Mining lease (Latitude & Longitude)
1	Rough Stone	5	Vembakkam	Ezhacheri	1. N 12°42'46.17" 12°42'52.84" E 79°43'25.08" 79°43'33.59"
					2. 12° 42' 48" N 12° 43' 1" N 79° 43' 17" E 79° 43' 27" E
					3. N 12°42'51" 12°42'48" E 79°43'25" 79°43'21"
					4. N 12°43'16.06" 12°43'19.39" E 79°43'10.40" 79°43'19.71"
				Chithala-pakkam	5. N12°43'18.09" 12°43'24.02" E 79°43'19.41" 79°43'11.43"
2		5	Vembakkam	Girijapuram	1. 12°44'03.76" 12°44'12.07N 79°42'00.56E" 79°42'08.36E
				Mennalur	2. 12°44'08.63"N 12°44'18.71"N 79°42'16.36"E 79°42'21.37"E
				Girijapuram	3. 12° 44' 11" N 12° 44' 08" N 79° 42' 12" E 79° 42' 09" E
					4. N 12°44'14" 12°44'21" E 79°42'03" 79°42'09
					5. 12° 44'25" 12° 44'19N" 79° 42' 14" 79° 42'11"E
3		7	Cheyyar	Palli	1. 12° 42' 53"N 12° 43'01"N 79° 36' 08"E 79° 36'15"E
					2. N 12°43'14" 12°43'20" E 79°35'59" 79°36'02
					3. N 12°43'15" to 12°43'19" E 79°35'36" to 79°35'43"
					4. 12° 43' 20"N 12° 43' 30"N 79° 36' 14" E 79° 36' 24"E
			Vembakkam	Chithathur	5. N 12°43'15" 12°43'20" E 79°36'25" 79°36'28"
					6. N 12°43'19.14" 12°43'27.05" E 79°36'22.83" 79°36'34.83"
				Chithathur	7. N 12°44'09" to 12°44'14" E 79°37'18" to 79°37'25"
4		5	Vembakkam	Kundiyan-thandalam	1. N 12°43'45.58" 12°43'51.42" E 79°42'58.50" 79°43'02.06"
					2. N 12°43'46.58" 12°43'52.64" E 79°43'15.17" 79°43'21.32"
					3. 12°43'50.86"N 12°43'58.24"N 79°42'56.50"E 79°43'03.46"E
					4. N 12°43'51.14" 12°43'57.08" E 79°43'07.34" 79°43'16.63"
					5. 12°43'55.90"N 12°43'59.56"N 79°43'6.08" E 79°43'12.04"E

20 .DETAILS OF ECO – SENSITIVE AREA, IF ANY, IN THE DISTRICT.

- There is no Wild Life Sanctuaries and National Park as per The Indian Wildlife (Protection) Act, 1972.
- There is no Western Ghats region near the district
- There is No Interstate Boundary crossing in the Tiruvannamalai District.
- There is No Coastal Regulation Zone (CRZ) within the district.

21.IMPACT ON THE ENVIRONMENT (AIR, WATER, NOISE, SOIL FLORA & FAUNA, LAND USE, AGRICULTURE, FOREST ETC.,) DUE TO MINING ACTIVITY

Generally, the Environmental impacts can be categorized as either primary or secondary. Primary impacts are those, which are attributed directly by the project, secondary impacts are those, which are indirectly induced and typically include the associated investment and changed pattern of social and economic activities by the proposed action.

The impact has been ascertained for the project assuming that the pollution due to mining activity has been completely spelled out under the baseline environmental status for the entire ROM which is proposed to exploit from the mines.

Air

Mining Operations are carried out by opencast semi mechanized/ Mechanized method, dust particles are generated due to various activities like, Excavation, Loading, handling of mineral and transportation. The air quality in the mining area depends upon the nature and concentration of emissions and meteorological conditions.

The major air pollutants due to mining activity includes:-

- Particulate Matter (Dust) of various sizes.
- Gases, such as, Sulphur Dioxide, Oxides of Nitrogen, Carbon Monoxide etc., from vehicular exhaust.
- Dust is the single Air pollutant observed in the open cast mines. Diesel operating drilling machines, small amount of blasting and movement of machinery/ vehicles produce NO_X,$SO_2$and CO emissions, usually at low

levels. Dust can be of significant nuisance surrounding land users and potential health risk in some circumstances.

Water

Impact

The mining operation leads to intersect the water table cause ground water depletion.

Due to the interruption surface water sources like River, Nallah, Odai etc., surface water system, Drainage pattern of the area is altered.

Noise

Noise pollution is mainly due to operation of Machineries and occasional plying of machineries. These activities will create Noise pollution in the surrounding area.

Land Environment

The topography of the area will change, due to the Topographical changes the entire Eco system will be altered.

Flora and Fauna

The impact on biodiversity is difficult to quantify because of its diverse and dynamic characteristics.

Mining activities generally result in the deforestation, land degradation, water, air and noise pollution which directly or indirectly affect the faunal and floral status of the project area.

However, occurrence and magnitude of these impacts are entirely dependent upon the project location, mode of operation and technology involved.

22. REMEDIAL MEASURE TO MITIGATE THE IMPACT OF MINING ON THE ENVIRONMENT

Air

Mitigated measures suggested for air pollution controls are based on the baseline ambient air quality of the area

The following measures are proposed to adopted in the mines such as,

- Dust generation shall be reduced by using sharp teeth of shovels.
- Wet drilling shall be carried out to contain the dust.
- Controlled blasting techniques shall be adopted.

- Water spraying on haul roads, service roads and overburden dumps will help in reducing considerable dust pollution.
- Proper and regular maintenance of mining equipment's have to be considered.
- Transport of material in trucks covered with tarpaulin.
- The mine pit water can be utilized for dust suppression in and around mine areas.
- Information on wind direction and meteorology will be considered while planning, so that pollutants, which cannot be fully suppressed by engineering technique, will be prevented from reaching the nearby agriculture area.
- Comprehensive green belt around overburden dumps has to be carried out to reduce to fugitive dust emissions in order to create clean and healthy environment.

Water

- Construction of garland drains to divert surface run-off into the mining area.
- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Retaining walls with weep hole will be constructed around the mine boundaries to arrest silt wash off.
- The mined out pits shall be converted into the water reservoir at the end of mine life. This will help in recharging ground water table by acting as a water harvesting structure.
- Periodic analysis of mine pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits.

Noise

Mitigation measures

- Periodic maintenance of machinery, equipment's shall be ensured to keep the noise generated at minimum.
- Development of thick green belt around mining area and haul roads to reduce the noise.

- Provision of earplugs to workers exposed to high noise generating activities. Workers and operators at work site will be provided with earmuffs.
- Conducting periodical medical check up of all workers for any noise related health problems.
- Proper training to personnel to create awareness about adverse noise level effects.
- Periodic noise monitoring at suitable locations in the mining area and nearby habitations to assess efficacy of adopted control measures.
- During the blasting, optimum Spacing, Burden and charging of holes will be made under the supervision of competent qualified mines foreman, Mate as approved by Director of Mines safety.

Biological Environment

MITIGATION MEASURES:

- Development of gap filling saplings in the safety barrier left around the quarry area.
- Carrying out thick greenbelt with local flora species predominantly with long canopy leaves on the inactive mined out upper benches.
- Development of dense poly-culture plantation using local flora species in the mining area at conceptual stage.
- Adoption of suitable air pollution control measures as suggested above.
- Transport of materials in trucks covered with tarpaulin.
- Construction of garland drains and settling tank to arrest silt wash off from lease area.
- Construction of retention walls around lower boundary of mining area to arrest silt wash off and roll down boulders.
- Retaining walls with weep hole will be constructed around the mine boundaries to arrest silt wash off.

23. RECLAMATION OF MINED OUT AREA (BEST PRACTICE ALREADY IMPLEMENTED IN THE DISTRICT, REQUIREMENT AS PER RULES AND REGULATION, PROPOSED RECLAMATION PLAN):-

Under Rule 23A, Mine Closure Plan: Every mine shall have Mine Closure Plan, which shall be of two types:-

(i) Progressive mine closure plan; and

(ii) Final mine closure plan.

Conceptual Final Landform-

The broad rehabilitation objective for the post-quarry landform is to establish a similar land use on the disturbed areas, with the exception of the final void. The topography of the final landform will consist of a large number of stepped benches formed in an amphitheatre configuration, each with a re-vegetated bench as shown in Figure-1.

Figure 2 shows plan and sectional views of the final landform. The void will be some approximately 1.88.8 Ha in area. Until such time that extraction has ceased, rehabilitation will occur around the perimeter of the pit only along the benches, and will not involve the pit floor. The primary purpose of rehabilitation during the operational phase is to mitigate any visual impacts.

Figure 23.0: Example of Bench Rehabilitation

Once operations have ceased, all buildings and infrastructure will be removed. These areas will be reshaped and ripped where necessary for top-soiling and re-vegetation.

The top benches will be vegetated with appropriate native species. The lower benches will be formed as a shallow depression of retention pond/ rain water harvesting structure.

Rehabilitation and Re-vegetation –

Rehabilitation of the site will be undertaken once extraction is complete. As the extraction progresses through the resource, 5 m wide benches will be left every

5 m of depth to provide a horizontal platform on which native flora species will be established.

The plantation in the mine lease area also includes gap filling plantation on the safety barrier zone left around the mine lease area. Gap filling plantation has been carried out in the safety barrier zone left around the mine lease area from the beginning of the mining operations.

Additional plantation will be carried out in the inactive mining area. Grass and bushes will be planted in areas prone to erosion. Other areas will be spread with organic manures and planted with local species.

The characteristics of this vegetation will resemble that of the natural environment except for the early growth, which may be a protective cover crop of non-seeding annuals. Before re-vegetation, the land will be properly prepared by spreading the top soil, which is rich in organic contents along with mulches and organic manure. Vegetation will be self-sufficient after planting and require no fertilizers or maintenance.

The re-vegetation program will re-establish native tree / shrub / ground cover and will stabilize reshaped and benched areas. Benches will be deep ripped to actively promote infiltration of water which will enhance soil moisture requirements for direct tree seeding and minimize surface runoff to underlying benches. Re-vegetation will also visually screen disturbed areas and will re-establish habitat for native fauna.

24. RISK ASSESSMENT & DISASTER MANAGEMENT PLAN:-

The Disaster Management Plan (DMP) is supposed to be a dynamic, changing, document focusing on continual improvement of emergency response planning and arrangements.

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. For effective implementation of the disaster management plan, it should be

widely circulated and personnel training through rehearsals/induction conducted by the respective department from time to time.

General Responsibilities of Employees during an Emergency:

During an emergency, it becomes more enhanced and pronounced when an emergency warning is raised, the workers in-charge, should adopt safe and emergency shut down and attend any prescribed duty as essential employee. If no such responsibility is assigned, he should adopt a safe course to assembly point and await instructions. He should not resort to spread panic. On the other hand, he must assist emergency personnel towards objectives of DMP.

Co-ordination with Local Authorities:

The mine manager who is responsible for emergency will always keep a jeep ready at site. In case any eventualities the victim will be taken to the nearby hospitals after carrying out the first aid at site. A certified first aid certificate holder will be responsible to carryout the first aid at site. The mine manager should collect and have adequate information of the nearby hospitals, fire station, police station, village panchayat heads, taxy stands, medical shop, district revenue authorities etc., and use them efficiently during the case of emergency.

25. DETAILS OF THE OCCUPATION HEALTH ISSUES IN THE DISTRICT. (LAST FIVE-YEAR DATE OF NUMBER OF PATIENTS OF SILICOSIS & TUBERCULOSIS IS ALSO NEEDS TO BE SUBMITTED):-

As per the guidelines of the Mine Rules 1955, occupational health safety stipulated by the ILO/WHO. The proponent's will take all necessary precautions. Normal sanitary facilities should be provided within the lease area. The management will carry out periodic health check up of workers.

Occupational hazards involved in mines are related to dust pollution, Noise pollution, blasting and injuries from moving machineries & equipment and fall from high places. DGMS has given necessary guidelines for safety against these occupational hazards. The management will strictly follow these guidelines.

All necessary first aid and medical facilities will be provided to the workers. The mine shall be well equipped with Personal Protective Equipment (PPE). Further all the necessary protective equipment's such as helmets, safety goggles, earplugs, earmuffs, etc. will be provided to persons working in mines as per Mines Rules. All operators and mechanics will be trained to handle fire-fighting equipment's.

26. PLANTATION OF GREEN BELT DEVELOPMENT IN RESPECT OF LEASES ALREADY GRANTED IN THE DISTRICT:-

Green Belt Development

- A well planned Green Belt with multi rows (Three tier) preferably with long canopy leaves shall be developed with dense plantations around the boundary and haul rods to prevent air, dust noise propagation to undesired places. Efforts will be taken for the enhancement of survival rate since the soil is alkaline in nature.

Species Recommended for Plantation

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

- Natural growth of existing species and survival rate of various species.
- Suitability of a particular plant species for a particular type of area.
- 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.
- The following species may be considered primarily for plantation best suited for the prevailing climatic condition in the area.

RECOMMENDED SPECIES TO PLANT IN THE GREENBELT

S.No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1.	Azadirachta indica	*Meliaceae*	Neem, Vembu	Tree
2.	Albizia falcatoria	*Fabaceae*	Tamarind, Puliyamaram	Tree
3.	Polyalthia longifolia	*Annonaceae*	Kattumaram	Tree
4.	Borassus flabellifer	*Arecaceae*	Palmyra Palm	Tree

27. ANY OTHER INFORMATION:-

The well developed Environmental management plan and remedial measures is proposed to carryout in all mining areas in the District.

CER/CSR activities shall be carried out by providing social and welfare measures to the local community of the nearby villages. The main activities would be like drinking water facilities for the government schools children, public toilets to the local community and government schools, conducting free medical camps, providing solar lights to the villages besides encouraging the local cultural activities of the area.

This District Survey Report has been prepared in a short span of time by doing rapid field work. The details related to the occurrence of mineral resources and other data of the district are subject to updation from time to time. Before grant of any quarry lease, the parameters related to geosciences and sustainable developments are to be considered on the basis of ground reality.

The Thiruvannamalai District is having very large deposits of Charnockite rock which is the raw material for the production of aggregates and M-sand. M-sand is the need of the hour to replace the utilisation of river sand. The Charnockite / Rough Stones are crushed in the crushing units for the manufacture of aggregates and M-sand which gives direct and indirect employment to the local people. Preferences and encouragements can be given to the Entrepreneurs for set up of new units for the production of M-sand.

COLLECTOR
Tiruvannamalai District,
Tiruvannamalai.

Assistant Director
Dept. of Geology & Mining
Thiruvannamalai District.

ANNEXURE-10

SES
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TEST REPORT

Report No.	SES/AAQ/1224/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	07.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	74.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	32.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	14.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1225/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	08.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	67.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	29.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	12.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1242/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	18.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	68.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	30.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	12.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1243/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	19.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	64.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	28.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1244/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	21.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	75.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	33.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	14.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1245/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	22.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	72.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	32.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	13.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1262/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	01.04.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	58.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1263/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	02.04.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	63.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1264/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	04.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	61.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1265/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	05.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	62.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1282/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	15.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	71.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	31.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	13.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	**For Swasti Enviro Solutions Pvt Ltd,**
Chemist	**Authorized Signatory** **A.Prabhu** **Quality/Technical Manager**

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1283/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	16.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	76.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	33.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	15.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1284/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	18.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	73.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	32.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	14.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1285/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	19.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	58.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1302/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	29.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	66.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	29.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD ★ Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1303/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	30.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	70.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	30.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	13.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1304/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	02.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	61.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1305/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	03.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	67.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	29.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	12.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1322/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	13.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	75.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	33.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	14.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1323/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	14.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	71.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	31.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	13.6	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1324/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	16.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	69.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	30.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	13.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1325/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- Within Mine Lease area**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	17.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	64.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	28.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1342/2023-24	Report Date	07.06.2023
Customer Name & Address	Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District		
Sample Description	Ambient Air Quality Survey		
Sample Location	A1- Within Mine Lease area	Sample Received on	29.05.2023
Sample Collected by	SES	Test Commenced on	29.05.2023
Sample Collected Date	27.05.2023	Test Completed on	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	59.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1343/2023-24	Report Date	07.06.2023
Customer Name & Address	Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District		
Sample Description	Ambient Air Quality Survey		
Sample Location	A1- Within Mine Lease area	Sample Received on	29.05.2023
Sample Collected by	SES	Test Commenced on	29.05.2023
Sample Collected Date	28.05.2023	Test Completed on	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	65.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	28.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.6	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/WA/1344/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1344
Sample Description	**W1- Within Mine Lease area**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.64	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1.0	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	916	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	550	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	84.5	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	184	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	312	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	212	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	100	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	84.8	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	24.0	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	230	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	0.05	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.2)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.26	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	3.24	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A. Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD ★ Chennai-83

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TEST REPORT

Report No.	SES/SA/1349/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	SA/1349
Sample Description	**S1- Within Mine Lease area**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD
1	pH at 25 °C	-	6.56	IS : 2720 (Part -26)
2	Electrical Conductivity	µmhos/cm	81.6	IS : 14767 : 2000
3	Dry matter content	%	96.33	IS : 15106 2002
4	Water Content	%	3.67	IS : 15106 2002
5	Organic Matter	%	0.72	IS : 2720 (Part – 22)
6	Soil texture	-	Loam	USEPA – Soil.sci.soi.AM.J.Vol 65 may – June 2001
7	Grain Size Distribution i. Sand	%	46.89	
8	ii. Silt	%	36.57	
9	iii. Clay	%	16.54	
10	Phosphorous as P	mg/kg	1.56	IS 10158 – 1982 (RA 2003)
11	Sodium as Na	mg/kg	630	USEPA 3050 B
12	Potassium as K	mg/kg	425	USEPA 3050 B
13	Total Nitrogen	mg/kg	210	IS 14684 - 1999
14	Total Sulphur	%	BDL(D.L 0.02)	FAO 2007
15	Water Holding Capacity	%	3.5	SES/SOP/15
16	Porosity	%	17.2	SES/SOP/16

Remarks: BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A. Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1226/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	07.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1227/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	08.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1240/2023-24	Report Date	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	Ambient Air Quality Survey		
Sample Location	A2- Girijapuram	Sample Received on	20.03.2023
Sample Collected by	SES	Test Commenced on	20.03.2023
Sample Collected Date	18.03.2023	Test Completed on	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	48.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1241/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	19.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1246/2023-24	Report Date	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	Ambient Air Quality Survey		
Sample Location	A2- Girijapuram	Sample Received on	03.04.2023
Sample Collected by	SES	Test Commenced on	03.04.2023
Sample Collected Date	21.03.2023	Test Completed on	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1247/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	22.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	54.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1260/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	01.04.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	56.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1261/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	02.04.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1266/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	04.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	48.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	**For Swasti Enviro Solutions Pvt Ltd,**
Chemist	**Authorized Signatory** **A.Prabhu** **Quality/Technical Manager**

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1267/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	05.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.0	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1280/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	15.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	56.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1281/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	16.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1286/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	18.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	49.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.0	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1287/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	19.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1300/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	29.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	57.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1301/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	30.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.0	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1306/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	02.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	48.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD ★ Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1307/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	03.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1320/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	13.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.0	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1321/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	14.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1326/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	16.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.0	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1327/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	17.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	56.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	**For Swasti Enviro Solutions Pvt Ltd,**
Chemist	**Authorized Signatory** **A.Prabhu** **Quality/Technical Manager**

SWASTI ENVIRO SOLUTIONS PVT LTD ★ Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1340/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	27.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	49.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.0	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1341/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2- Girijapuram	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	54.0	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/WA/1345/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1345
Sample Description	**W2- Girijapuram**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.38	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	1120	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	675	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	124	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	156	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	448	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	308	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	140	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	123	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	33.6	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	280	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	BDL(DL-0.01)	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.2)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.31	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.02	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A. Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/SA/1350/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	SA/1350
Sample Description	**S2- Girijapuram**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD
1	pH at 25 °C	-	7.05	IS : 2720 (Part -26)
2	Electrical Conductivity	µmhos/cm	96.4	IS : 14767 : 2000
3	Dry matter content	%	97.25	IS : 15106 2002
4	Water Content	%	2.75	IS : 15106 2002
5	Organic Matter	%	0.75	IS : 2720 (Part – 22)
6	Soil texture	-	Silty Clay Loam	USEPA – Soil.sci.soi.AM.J.Vol 65 may – June 2001
7	Grain Size Distribution i. Sand	%	20.33	
8	ii. Silt	%	40.24	
9	iii. Clay	%	39.43	
10	Phosphorous as P	mg/kg	1.75	IS 10158 – 1982 (RA 2003)
11	Sodium as Na	mg/kg	586	USEPA 3050 B
12	Potassium as K	mg/kg	470	USEPA 3050 B
13	Total Nitrogen	mg/kg	170	IS 14684 - 1999
14	Total Sulphur	%	BDL(D.L 0.02)	FAO 2007
15	Water Holding Capacity	%	3.1	SES/SOP/15
16	Porosity	%	18.2	SES/SOP/16

Remarks: BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A. Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1228/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	09.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	54.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1229/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	10.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	57.0	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1238/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	16.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1239/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	17.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1248/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	23.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	49.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1249/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	24.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1258/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	30.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	58.0	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.0	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1259/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	31.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	56.2	24 Hours	100	IS :5182P23,RA2017
2	PM 2.5 (< 2.5 µm)	26.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1268/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	06.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	57.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1269/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	07.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1278/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	13.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	49.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1279/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	14.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	54.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1288/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	20.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	58.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	12.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1289/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	21.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	56.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1298/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	27.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.6	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1299/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	28.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1308/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	04.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1309/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	05.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.0	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1318/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	11.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	58.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1319/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	12.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1328/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	18.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Channai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1329/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	19.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1338/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	25.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.0	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1339/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-Valavandal	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	26.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/WA/1348/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1348
Sample Description	**W5-Valavandal**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.63	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	1345	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	810	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	243	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	202	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	492	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	249	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	243	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	99.6	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	58.3	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	210	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	BDL(DL-0.01)	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.2)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.36	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.69	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A. Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/SA/1351/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	SA/1351
Sample Description	**S3-Valavandal**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD
1	pH at 25 °C	-	7.52	IS : 2720 (Part -26)
2	Electrical Conductivity	µmhos/cm	65.21	IS : 14767 : 2000
3	Dry matter content	%	95.48	IS : 15106 2002
4	Water Content	%	4.52	IS : 15106 2002
5	Organic Matter	%	0.66	IS : 2720 (Part – 22)
6	Soil texture	-	LOAM	USEPA – Soil.sci.soi.AM.J.Vol 65 may – June 2001
7	Grain Size Distribution i. Sand	%	47.64	
8	ii. Silt	%	30.26	
9	iii. Clay	%	22.10	
10	Phosphorous as P	mg/kg	1.36	IS 10158 – 1982 (RA 2003)
11	Sodium as Na	mg/kg	675	USEPA 3050 B
12	Potassium as K	mg/kg	360	USEPA 3050 B
13	Total Nitrogen	mg/kg	180	IS 14684 - 1999
14	Total Sulphur	%	BDL(D.L.0.02)	FAO 2007
15	Water Holding Capacity	%	3.6	SES/SOP/15
16	Porosity	%	17.8	SES/SOP/16

Remarks: BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A. Prabhu
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TEST REPORT

Report No.	SES/AAQ/1230/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	09.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1231/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	10.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1236/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	16.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	48.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	21.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
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TEST REPORT

Report No.	SES/AAQ/1237/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	17.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1250/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	23.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
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TEST REPORT

Report No.	SES/AAQ/1251/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	24.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

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For Swasti Enviro Solutions Pvt Ltd,

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TEST REPORT

Report No.	SES/AAQ/1256/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	30.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	47.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	21.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1257/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	31.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	49.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1270/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	06.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	**For Swasti Enviro Solutions Pvt Ltd,**
Chemist	**Authorized Signatory** **A.Prabhu** **Quality/Technical Manager**

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1271/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	07.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1276/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	13.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	54.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	**For Swasti Enviro Solutions Pvt Ltd,**
Chemist	**Authorized Signatory** **A.Prabhu** **Quality/Technical Manager**

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TEST REPORT

Report No.	SES/AAQ/1277/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	14.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1290/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	20.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.6	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1291/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	21.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1296/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	27.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	48.0	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	21.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD ★ Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1297/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	28.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	49.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1310/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	04.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	56.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1311/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	05.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1316/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	11.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	48.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	21.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1317/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	12.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	22.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1330/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	18.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	48.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	21.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1331/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	19.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1336/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-Bhagavanthapuram	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	25.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.6	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD ★ Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1337/2023-24	Report Date	07.06.2023
Customer Name & Address	Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District		
Sample Description	Ambient Air Quality Survey		
Sample Location	A4-Bhagavanthapuram	Sample Received on	29.05.2023
Sample Collected by	SES	Test Commenced on	29.05.2023
Sample Collected Date	26.05.2023	Test Completed on	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/WA/1347/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1347
Sample Description	**W4-Bhagavanthapuram**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.57	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	864	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	520	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	138	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	98.6	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	276	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	134	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	142	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	53.6	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	34.1	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	154	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	BDL(DL-0.01)	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.04)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.18	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.34	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A. Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1232/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	11.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	58.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1233/2023-24	Report Date	24.03.2023
Customer Name & Address	Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District		
Sample Description	Ambient Air Quality Survey		
Sample Location	A5-Narasamangalam	Sample Received on	20.03.2023
Sample Collected by	SES	Test Commenced on	20.03.2023
Sample Collected Date	12.03.2023	Test Completed on	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD ★ Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1234/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	14.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1235/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	20.03.2023
Sample Collected by	SES	**Test Commenced on**	20.03.2023
Sample Collected Date	15.03.2023	**Test Completed on**	20.03.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.6	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1252/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	25.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.4	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	**For Swasti Enviro Solutions Pvt Ltd,**
Chemist	**Authorized Signatory** **A.Prabhu** **Quality/Technical Manager**

SWASTI ENVIRO SOLUTIONS PVT LTD ★ Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1253/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	26.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	54.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1254/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	28.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1255/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	03.04.2023
Sample Collected by	SES	**Test Commenced on**	03.04.2023
Sample Collected Date	29.03.2023	**Test Completed on**	08.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.0	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1272/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	08.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	60.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	28.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.5	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1273/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	09.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	57.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.0	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1274/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	11.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	57.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1275/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	17.04.2023
Sample Collected by	SES	**Test Commenced on**	17.04.2023
Sample Collected Date	12.04.2023	**Test Completed on**	22.04.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	53.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.2	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1292/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	22.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	51.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.3	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1293/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	23.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	54.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1294/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	25.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	57.9	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1295/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	01.05.2023
Sample Collected by	SES	**Test Commenced on**	01.05.2023
Sample Collected Date	26.04.2023	**Test Completed on**	06.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.5	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1312/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	06.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1313/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	07.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	54.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.8	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD ★ Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1314/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	09.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	58.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	27.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1315/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	15.05.2023
Sample Collected by	SES	**Test Commenced on**	15.05.2023
Sample Collected Date	10.05.2023	**Test Completed on**	20.05.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	56.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	10.0	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1332/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	20.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	50.8	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	23.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.7	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/AAQ/1333/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	21.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	52.5	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	24.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.7	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1334/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	23.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	55.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	25.9	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.9	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.1	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1335/2023-24	Report Date	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-Narasamangalam	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	24.05.2023	**Test Completed on**	07.06.2023

Sl.No	Parameters	Results (µg/m³)	Time weighted Average	NAAQS Residential, Industrial Area	Test Method
1	PM 10.0 (<10 µm)	56.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	26.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.9	24 Hours	80	IS :5182P6 RA2017
5	Carbon Monoxide (CO)	BDL(D.L - 1144)	-	2.0	Gas Analyser

BDL – Below Detectable Limit DL- Detectable Limit
Opinion – The Values observed for the pollutants given above are within NAAQ standards.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/WA/1346/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1346
Sample Description	**W3-Narasamangalam**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.81	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	1915	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	1150	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	384	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	310	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	255	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	128	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	127	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	51.2	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	30.5	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	398	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	0.04	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.2)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.19	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.36	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A. Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/WA/1344/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1344
Sample Description	**W1- Within Mine Lease area**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.64	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1.0	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	916	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	550	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	84.5	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	184	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	312	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	212	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	100	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	84.8	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	24.0	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	230	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	0.05	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.2)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.26	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	3.24	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A. Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/WA/1345/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1345
Sample Description	**W2- Girijapuram**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.38	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	1120	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	675	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	124	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	156	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	448	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	308	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	140	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	123	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	33.6	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	280	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	BDL(DL-0.01)	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.2)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.31	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.02	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A. Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/WA/1346/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1346
Sample Description	**W3-Narasamangalam**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.81	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	1915	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	1150	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	384	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	310	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	255	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	128	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	127	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	51.2	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	30.5	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	398	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	0.04	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.2)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.19	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.36	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A. Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/WA/1347/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1347
Sample Description	**W4-Bhagavanthapuram**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.57	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	864	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	520	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	138	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	98.6	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	276	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	134	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	142	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	53.6	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	34.1	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	154	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	BDL(DL-0.01)	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.04)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.18	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.34	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A. Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/WA/1348/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	WA/1348
Sample Description	**W5-Valavandal**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	Desirable Limit IS-10500 R.2012
1	Odour	-	Agreeable	IS:3025/P5/RA2018	Agreeable
2	pH @ 25°C	-	7.63	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	1345	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	810	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	243	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	202	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	492	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	249	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	243	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	99.6	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	58.3	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	210	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	BDL(DL-0.01)	IS:3025/P53/RA2019	0.3
15	Free Residual Chlorine	mg/l	BDL (DL-0.2)	IS:3025/P26/RA2019	0.2
16	Fluorides (as F)	mg/l	0.36	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.69	IS:3025/P34/RA2019	No Relaxation
18	Manganese as Mn	mg/l	BDL (DL-0.05)	APHA 22nd Edition	0.1

Remarks: The above sample meets the requirements of IS 10500 R.2012 for portability with respect to the parameters tested. BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A. Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/NM/1352/2023-24	Report Date	08.06.2023

Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Reference No.**	NM/1352
Description	**Ambient Noise Monitoring**	**Monitoring Date**	02.06.2023
Monitored by	SES	**Data Received On**	03.06.2023

Sl.No.	Locations	DAY EQUIVALENT	NIGHT EQUIVALENT	DAY & NIGHT EQUIVALENT
1	N1- Within Mine Lease area	51.3	47.7	48.0
2	N2- Girijapuram	40.4	41.0	45.3
3	N3-Valavandal	49.8	46.4	47.3
4	N4-Bhagavanthapuram	51.3	47.7	48.0
5	N5-Narasamangalam	40.4	41.0	45.3
Unit		**dB(A)**		
Reference Method		**IS 9989-1981 (Reaff.2014)**		

***** End of Report *****

Verified By	For Swasti Enviro Solutions Pvt Ltd,
Chemist	Authorized Signatory A.Prabhu Quality/Technical Manager

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

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TEST REPORT

Report No.	SES/SA/1349/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	SA/1349
Sample Description	**S1- Within Mine Lease area**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD
1	pH at 25 °C	-	6.56	IS : 2720 (Part -26)
2	Electrical Conductivity	µmhos/cm	81.6	IS : 14767 : 2000
3	Dry matter content	%	96.33	IS : 15106 2002
4	Water Content	%	3.67	IS : 15106 2002
5	Organic Matter	%	0.72	IS : 2720 (Part – 22)
6	Soil texture	-	Loam	USEPA – Soil.sci.soi.AM.J.Vol 65 may – June 2001
7	Grain Size Distribution i. Sand	%	46.89	
8	ii. Silt	%	36.57	
9	iii. Clay	%	16.54	
10	Phosphorous as P	mg/kg	1.56	IS 10158 – 1982 (RA 2003)
11	Sodium as Na	mg/kg	630	USEPA 3050 B
12	Potassium as K	mg/kg	425	USEPA 3050 B
13	Total Nitrogen	mg/kg	210	IS 14684 - 1999
14	Total Sulphur	%	BDL(D.L.0.02)	FAO 2007
15	Water Holding Capacity	%	3.5	SES/SOP/15
16	Porosity	%	17.2	SES/SOP/16

Remarks: BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By

Chemist

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A. Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/SA/1350/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	SA/1350
Sample Description	**S2- Girijapuram**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD
1	pH at 25 °C	-	7.05	IS : 2720 (Part -26)
2	Electrical Conductivity	µmhos/cm	96.4	IS : 14767 : 2000
3	Dry matter content	%	97.25	IS : 15106 2002
4	Water Content	%	2.75	IS : 15106 2002
5	Organic Matter	%	0.75	IS : 2720 (Part – 22)
6	Soil texture	-	Silty Clay Loam	USEPA – Soil.sci.soi.AM.J.Vol 65 may – June 2001
7	Grain Size Distribution i. Sand	%	20.33	
8	ii. Silt	%	40.24	
9	iii. Clay	%	39.43	
10	Phosphorous as P	mg/kg	1.75	IS 10158 – 1982 (RA 2003)
11	Sodium as Na	mg/kg	586	USEPA 3050 B
12	Potassium as K	mg/kg	470	USEPA 3050 B
13	Total Nitrogen	mg/kg	170	IS 14684 - 1999
14	Total Sulphur	%	BDL(D.L.0.02)	FAO 2007
15	Water Holding Capacity	%	3.1	SES/SOP/15
16	Porosity	%	18.2	SES/SOP/16

Remarks: BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A. Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/SA/1351/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel quarry of Thiru. A.V. Sarathy over an extent of 4.10.30 Ha at S.F.Nos.181/3A2, 181/3B1A1 (P), 181/3B1B, 181/3B2, 181/3C1, 181/3C2, 181/3D1 and 181/4 over an area of 4.10.30Ha in Keelnaickenpalayam Village, Vembakkam Taluk, Tiruvannamalai District**		
Customer Reference	-	**Sample Reference No.**	SA/1351
Sample Description	**S3-Valavandal**	**Sample Received on**	29.05.2023
Sample Collected by	SES	**Test Commenced on**	29.05.2023
Sample Collected Date	28.05.2023	**Test Completed on**	07.06.2023

Sl.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD
1	pH at 25 °C	-	7.52	IS : 2720 (Part -26)
2	Electrical Conductivity	µmhos/cm	65.21	IS : 14767 : 2000
3	Dry matter content	%	95.48	IS : 15106 2002
4	Water Content	%	4.52	IS : 15106 2002
5	Organic Matter	%	0.66	IS : 2720 (Part – 22)
6	Soil texture	-	LOAM	USEPA – Soil.sci.soi.AM.J.Vol 65 may – June 2001
7	Grain Size Distribution i. Sand	%	47.64	
8	ii. Silt	%	30.26	
9	iii. Clay	%	22.10	
10	Phosphorous as P	mg/kg	1.36	IS 10158 – 1982 (RA 2003)
11	Sodium as Na	mg/kg	675	USEPA 3050 B
12	Potassium as K	mg/kg	360	USEPA 3050 B
13	Total Nitrogen	mg/kg	180	IS 14684 - 1999
14	Total Sulphur	%	BDL(D.L.0.02)	FAO 2007
15	Water Holding Capacity	%	3.6	SES/SOP/15
16	Porosity	%	17.8	SES/SOP/16

Remarks: BDL – Below Detectable Limit DL-Detectable Limit.

***** End of Report *****

Analyzed By

Chemist

SWASTI ENVIRO SOLUTIONS PVT LTD Chennai-83

For Swasti Enviro Solutions Pvt Ltd,

Authorized Signatory
A. Prabhu
Quality/Technical Manager

Note : 1. The Results relate only to this items tested
2. Report shall not be reproduced without the approval of the laboratory.
3. The test items will not be retained for more than 7 days from the date of issue of test report.

ANNEXURE-11

National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

SWASTI ENVIRO SOLUTIONS PVT LTD

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

PLOT NO.J 86, BHARATHI STREET, PARI NAGAR, JAFFERKHANPET, CHENNAI, TAMIL NADU, INDIA

in the field of

TESTING

Certificate Number: TC-10448

Issue Date: 29/03/2022 **Valid Until:** 28/03/2024

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Identity : SWASTI ENVIRO SOLUTIONS PVT LTD

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer