DRAFT EIA & EMP FOR
PROPOSED ROUGH STONE & GRAVEL QUARRY
CATEGORY – B1 (CLUSTER)

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

ToR Lr.No.SEIAA-TN/F.No.9619/SEAC/ToR-1354 Dated: 10.02.2023

PROPOSED QUARRY LEASE DETAILS	
SURVEY NOS	7, 8/1, 2, 3, 4, 5 and 214/5
VILLAGE	VADA ALAPIRANDAN
TALUK	CHEYYAR
DISTRICT	TIRUVANNAMALAI
EXTENT	2.57.0 HA
PROPOSED PRODUCTION QUANTITY FOR FIVE YEARS	2,37,440 m^3 OF ROUGH STONE 18,465 m^3 OF WEATHERED ROCK 19,125 m^3 OF GRAVEL
LAND	CONSENT PATTA LAND

(Sector No. 1(a) (Sector no.1 as per NABET)
Category of the Project: B1 Cluster Mining, Total Cluster Area – 10.62Ha
Baseline Monitoring Period – March to May 2023

APPLICANT

THIRU. K.SUDHAKARAN
S/O.KANNAN, NO.782, MARIAMMAN KOVIL STREET,
JAMBODAI VILLAGE, AZHIVIDAITHANGI POST,
VEMBAKKAM TK., THIRUVANNAMALAI - 604402

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

June -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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ACKNOWLEDGEMENT

M/s. Global Mining Solutions, Salem is very much thankful to Thiru.K.Sudhakaran, 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 10.62 Ha at Vada Alapirandan Village, Cheyyar 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 Vada Alapirandan 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

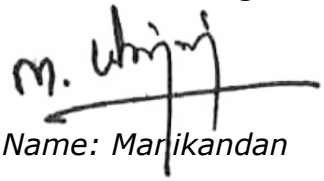
(M.Prabhu)

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 10.62 Ha at Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu.

For Global Mining Solutions



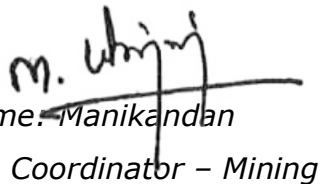
Name: Manikandan
EIA Coordinator – Mining Of Minerals
Global Mining Solutions

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.9619/SEAC/ToR-1354 dated 10.02.2023 for preparation of EIA/EMP report for the proposed Rough Stone & Gravel Quarry over a cluster area of 10.62 Ha at Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu for the production of 2,37,440 Cu.m of Rough Stone, 18,465 Cu.m of Weathered Rock and 19,125 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. NABET/EIA/2326/IA 0110 valid till 04.01.2026.

For Global Mining Solutions



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

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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 10.62 Ha at Vada Alapirandan Village, Cheyyar 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

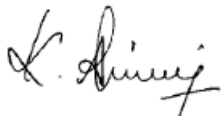
Signature & Date

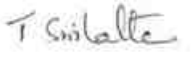
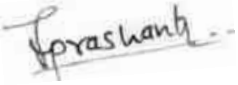
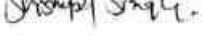
Period of involvement: March 2023 to May 2023.

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.*	R. Dhanal

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.* *Period: March 2023 to May 2023.*	
5	*EB*	*Saravanan S*	*Baseline data collection related to ecology of the area.* *Period: March 2023 to May 2023.*	
6	*HG*	*Ravinthiran N*	*Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area.* *Period: March 2023 to May 2023.*	

7	*AQ*	*Srilatha Thiruveedhula*	*Air quality modeling utilizing the area, source model. Prediction 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.* *<u>Period: March 2023 to May 2023.</u>*	
9	*LU*	*Dhanalakshmi Ramanathan*	*Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment.* *<u>Period: March 2023 to May 2023.</u>*	
10	*RH*	*S.V. Prashant*	*Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker.* *<u>Period: March 2023 to May 2023.</u>*	
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.*	

EIA CONTENT

FIGURE LIST

TABLE LIST

LIST OF ANNEXURE

COMPLIANCE TO TERMS OF REFERENCE

THIRU. DEEPAK S.BILGI, I.F.S.
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY-TAMIL NADU
3rd Floor, PanagalMaaligai,
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.9619/SEAC/ToR-1354/Dated:10.02.2023.

To

Thiru. K. Sudhakaran,
S/o. Kannan,
No.782, Mariamman Kovil Street,
Azhividaithangi Post,
Vembakkam Taluk,
Tiruvannamali District - 604 402.

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 2.57.0ha at SF Nos.7, 8/1, 8/2, 8/3, 8/4, 8/5 and 241/5 of Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamali District, Tamil Nadu by Thiru. K. Sudhakaran - 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/406265/2022 dt. 28.11.2022
2. Your application submitted for Terms of Reference dated: 06.12.2022
3. Minutes of the 346th SEAC meeting held on 12.01.2023
4. Minutes of the 591st SEIAA meeting held on 10.02.2023

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Lr No.SEIAA-TN/F.No.9619/SEAC/ToR-1354/Dated:10.02.2023. | SEIAA-TN

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

The proponent. Thiru. K. Sudhakaran, submitted application for Terms of Reference (ToR) on 06.12.2022, in Form-I, Pre- Feasibility report for the proposed Rough Stone Gravel Quarry lease over an extent of 2.57.0ha at SF Nos.7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5 of Vada Alapirandan Village, Cheyyar Taluk, Thiruvannamalai District, Tamil Nadu

Discussion by SEAC and the Remarks:-

The proposal was placed in this 346th meeting of SEAC held on 12.01.2023. The details of the project are available in the website (parivesh.nic.in).

The SEAC noted the following:

1. The project proponent, Thiru.K Sudhakaran has applied for Terms of Reference for the proposed Rough stone & gravel quarry lease over an extent of 2.57.0 Ha at S.F.No.7, 8/1, 8/2, 8/3, 8/4, 8/5 & 214/5 of Vada Alapirandan Village, Cheyyar 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.
3. As per the mining plan, the lease period is for 5 years. The mining plan is for 5 years. The production for 5 years not to exceed 2,41,440 cu.m of rough stone, 18,465 cu.m of weathered rock and 19,125 cu.m of gravel with an ultimate depth of 27m below ground level.

Based on the presentation and details furnished by the project proponent, **SEAC considering the safety aspects, decided to grant Terms of Reference (TOR) with Public Hearing for the restricted quantity of 2,37,440 cu.m of rough stone after removing 7th bench in section XY-AB, 18,465 cu.m of weathered rock and 19,125 cu.m of gravel** 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 structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m shall be enumerated with details such as dwelling houses with number of occupants, places of worship, industries, factories, sheds, etc.
2. **The Project Proponent shall conduct an exclusive hydro-geological study considering the existence of Cheyyar River at a distance 120 m and implications of quarrying operations**

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by involving academic & research institution such as Anna University-Department of Geology, CEG Campus Chennai (or) IIT Madras.

3. 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.
4. The proponent shall also furnish details/photographs of the garland drains provided.
5. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an "Action Plan" for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.
6. The Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
7. 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.
8. 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.
9. 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.
10. 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.

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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.

11. 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).

12. The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,

13. The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the posed quarry based on the volume of rock handled & area of excavation.

14. 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.

15. 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.

16. **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. Necessary data and documentation in this regard may be provided.

17. 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.

18. 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.

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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.

19. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
20. 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.
21. 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.
22. 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.
23. 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.
24. Impact on local transport infrastructure due to the Project should be indicated.
25. 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.
26. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
27. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
28. The Public hearing advertisement shall be published in one major National daily and one most

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circulated vernacular daily.

29. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
30. 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.
31. 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.
32. 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
33. 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.
34. 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.
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. 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

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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. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
39. 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.
40. 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.
41. The PP shall prepare the EMP for the entire life/lease of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
42. 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.

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Appendix -I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	*Aegle marmelos*	Vilvam	
2	*Adenanthera pavonina*	Manjadi	
3	*Albizia lebbeck*	Vaagai	
4	*Albizia amara*	Usil	
5	*Bauhinia purpurea*	Manthara	
6	*Bauhinia racemosa*	Aathi	
7	*Bauhinia tomentosa*	Iruvathi	
8	*Buchanania axillaris*	Kattuma	
9	*Borassus flabellifer*	Panai	
10	*Butea monosperma*	Murukkamaram	
11	*Bobax ceiba*	Ilavu, Sevvilavu	
12	*Calophyllum inophyllum*	Punnai	
13	*Cassia fistula*	Sarakondrai	
14	*Cassia roxburghii*	Senggondrai	
15	*Chloroxylon swietenia*	Purasamaram	
16	*Cochlospermum religiosum*	Kongu, Manjalllavu	
17	*Cordia dichotoma*	Naruvali	
18	*Crateva adansonii*	Mavalingam	
19	*Dillenia indica*	Uva, Uzha	
20	*Dillenia pentagyna*	SiruUva, Siruzha	
21	*Diospyro ebenum*	Karungali	
22	*Diospyro schlorexylon*	Vagenai	
23	*Ficus amplissima*	Kalltchi	
24	*Hibiscus tiliaceus*	Aatrupoovaram	
25	*Hardwickia binata*	Aacha	
26	*Holoptelia integrifolia*	Aayili	
27	*Lannea coromandelica*	Odhiam	
28	*Lagerstroemia speciosa*	Poo Marudhu	
29	*Lepisanthes tetraphylla*	Nedkottaimaram	
30	*Limonia acidissima*	Vila maram	
31	*Litsea glutinos*	Pisinpattai	
32	*Madhuca longifolia*	Illuppai	
33	*Mansfkara hexandra*	UlakkaiPaalai	
34	*Mimusops elengi*	Magizhamaram	
35	*Mitragyna parvifolia*	Kadambu	
36	*Morinda pubescens*	Nuna	
37	*Morinda citrifolia*	Vellai Nuna	
38	*Phoenix sylvestre*	Eachai	
39	*Pongamia pinnat*	Pungam	

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40	*Premna mollissima*	Munnai	முன்னை
41	*Premna serratifolia*	Narumunnai	நரு முன்னை
42	*Premna tomentosa*	Malaipoovarasu	மலை பூவரசு
43	*Prosopis cineria*	Vanni maram	வன்னி மரம்
44	*Pterocarpus marsupium*	Vengai	வேங்கை
45	*Pterospermum canescens*	Vennangu, Tada	வெண்ணாங்கு
46	*Pterospermum xylocarpum*	Polavu	பலவு
47	*Pudranjiva roxburghii*	Karipala	கரிப்பாலை
48	*Saltodora persica*	Ugaa Maram	உகா மரம்
49	*Sapindus emarginatus*	Manipungan, Soapnuts	பனிபுங்கன் சோப்நட்ஸ்
50	*Saraca asoca*	Asoca	அசோகா
51	*Streblus asper*	Piray maram	பிரய் மரம்
52	*Strychnos nuxvomica*	Yetti	எட்டி
53	*Strychnos potatorum*	Therttang Kottai	தேற்றாங் கொட்டை
54	*Syzygium cumini*	Naval	நாவல்
55	*Terminalia bellerica*	Thandri	தான்றி
56	*Terminalia arjuna*	Vella marudhu	வெள்ள மருது
57	*Toona ciliata*	Sendhuna vembu	சந்தன வேம்பு
58	*Thespesia populnea*	Puvarasu	பூவரசு
59	*Walsuramfebrifuga*	valsura	வால்சுரா
60	*Wrightia tinctoria*	Veppalai	வெப்பாலை
61	*Pithecellobium dulce*	Kodukkapuli	கொடுக்காப்புளி

Discussion by SEIAA and the Remarks:-

The subject was placed in 591st authority meeting held on 10.02.2023. The authority noted that the subject was appraised in 346th SEAC meeting held on 12.01.2023. 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 following conditions and conditions mentioned in 'Annexure B' of this minutes.

i) The proponent shall study in detail the impact of mining on the nearby river, agriculture/agricultural fields, ground water, water bodies, climate change, temperature, biodiversity and also sedimentation & erosion of water body .

ii) A detailed hydrogeological study shall be furnished.

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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.

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22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.

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.

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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.

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

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approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water

40. bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.
41. 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.
42. 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 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

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Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.

8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.

9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.

10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.

12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.

13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.

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14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.

15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.

16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.

17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.

18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.

20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).

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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 ased sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season) primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.

24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.

25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.

26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.

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27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.

28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.

30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.

31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.

32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.

34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.

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35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.

36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.

37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.

38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.

39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.

40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.

41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.

42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.

43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.

44) Besides the above, the below mentioned general points are also to be followed:-

a) Executive Summary of the EIA/EMP Report

b) All documents to be properly referenced with index and continuous page numbering.

c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.

d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing

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reports should be available during appraisal of the Project.

e) Where the documents provided are in a language other than English, an English translation should be provided.

f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.

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

h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

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

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

In addition to the above, the following shall befurnished:-

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

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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.
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

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25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
b. All documents may be properly referenced with index, page numbers and continuous page numbering.
c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this

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regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website http://www.moef.nic.in/ may be referred.

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

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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department,Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan,CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board,76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC,Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Tiruvannamalai District.
7. Stock File.

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S.No.	ToR Points	Reply	Pg. No
A. ToR in Addition to Standard ToR			
1	The structures within the radius of i) 50m, ii) 100m iii) 200m, iv) 300m shall be enumerated with details such as dwelling houses with number of occupants, places of worship, industries, factories, sheds, etc.	The 500m certificate showing the details of structures within 500 m radius is obtained from the VAO and the certificate is given in Annexure – 4. The features within the 10km radius from the lease area is shown in Figure 3.1 in Chapter 3	265
2	The project proponent shall conduct an exclusive hydro-geological study considering the existence of Cheyyar river at a distance of 120m and implications of quarrying operations by involving academic & research institution such as Anna University-Department of Geology, CEG campus, Chennai or IIT Madras	This compliance is under progress and the same will be incorporated in the final EIA & EMP.	
3	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	There is no trees within ML area. The distance between adjacent quarries and from water bodies are given in the chapter 2 and 7. Fencing and plantations are under process.	
4	The proponent shall furnish details/photographs of the garland drains provided	This is a fresh quarry. Garland drain will be constructed after commencement of quarrying operation.	
5	In the case of proposed lease in an existing or old quarry where the benches are not formed or partially formed as per the approved mining plan, the project proponent (PP) shall prepare and submit an Action plan for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst.Director of Geology and Mining during the time of appraisal for obtaining the EC	Not applicable. This is a fresh quarry.	

6	The proponent shall submit a conceptual 'Slope Stability Plan for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30m below ground level	The depth proposed for this quarry is only 27m. However, measures to ensure slope stability is given in Chapter 7.	182
7	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	Complied.	
8	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 30m from the blast site	**Complied.** Conceptual design for control blasting has been prepared and the same has been approved by department of Geology and Mining, Tiruvannamalai. The same is incorporated in the **Chapter - 2.**	93
9	The EIA Coordinators shall obtain and furnish the details of quarry/queries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	The PP has not carried out any quarrying operation before this project.	
10	If the proponent has already carried out mining activity in the proposed mining 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. Detail of approved depth of mining. d. Actual depth of the mining achieved earlier. e. Name of the person already mined in that leases area. f. lf EC and CTO already obtained, the copy of the same shall be submitted.	Not applicable. This is a new quarry project.	

<table>
<tr><td></td><td>g. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</td><td></td><td></td></tr>
<tr><td>11</td><td>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).</td><td>Project coordinates superimposed in satellite imagery and given as Figure in Chapter 2.

The geology and geomorphology map is provided as Figure in Chapter-3.

The Lithology map and Soil map are provided as Figure in Chapter-3.

The 10km Radius Index plan showing buffer zone is given as in Chapter-3.</td><td>88

82

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79</td></tr>
<tr><td>12</td><td>The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,</td><td>This compliance is under process.</td><td></td></tr>
<tr><td>13</td><td>The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the proposed quarry based on the volume of rock handled & area of excavation</td><td>Total manpower remain same as 25. The revised manpower structure including statutory person is given below.
<table>
<tr><td rowspan="2">1</td><td rowspan="2">Statutory</td><td>Mines Manager/ Foreman</td><td>2 No.</td></tr>
<tr><td>Mate</td><td>1 No.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Skilled</td><td>Operator</td><td>8 No</td></tr>
<tr><td>Mechanic</td><td>1 No.</td></tr>
<tr><td>2</td><td>Semi–skilled</td><td>Driver</td><td>3 No.</td></tr>
<tr><td>3</td><td>Unskilled</td><td>Labours</td><td>10Nos</td></tr>
<tr><td colspan="3">Total</td><td>25Nos</td></tr>
</table></td><td>190</td></tr>
<tr><td>14</td><td>The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, and proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.</td><td>The geological reserves is estimated to be 25,648m^3 of Gravel, 25,648m^3 of Weathered rock and 6,41,200m^3 of rough stone.

The mineable reserves is 2,37,440m^3 of Rough stone 18,465m^3 of Weathered rock and 19,125m^3 of Gravel which will be recovered at the rate of 100% recovery upto a depth of 27m below ground level for the period of five years.

Details are given in Chapter 1.</td><td>73</td></tr>
</table>

15	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, and proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	Mineral reserves and mineable reserves, planned production capacity, and proposed working methodology are given in **Chapter 3.** The anticipated impacts and corresponding mitigation measures are provided in **Chapter 4**.	**73** **134**
16	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 l 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.	This compliance is under progress and the same will be incorporated in the final EIA & EMP.	
17	The proponent shall famish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic /vehicular movement study.	The baseline data for all environments is collected for the Pre-monsoon season (March to May 2023) and the details are given in **Chapter 3.**	**102**
18	The Proponent shall carry out the cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of air pollution, water pollution, & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Detailed cumulative impact study has been carried and the same is incorporated in the **Chapter 7.** Accordingly, a detailed Environment Management Plan is prepared considering air, water, noise and soil environment and the details are given in **Chapter 10.**	**170** **186**
19	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Rain water harvesting Plan is given in **chapter 4.**	**142**

20	Land use of the study area delineating forest area, agricultural land, grazing land. Wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Satellite imagery has been used to study the lease area and the details of land use is given in **Chapter 3**	**122**
21	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area distance from mine lease, its land use, R&R issues, if any, should be provided.	**Not applicable.** There is no generation of the OB & waste.	
22	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 famished to the effect that the proposed mining activities could be considered.	No proximity to Critically polluted areas.	
23	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The impact of the mining operations due to this quarry on water environment is studied and mitigation measures are proposed. Rain water harvesting plan is given in Chapter 4.	**140**
24	Impact on local transport infrastructure due to the Project should be indicated	Since the production is very less, only few tippers of 5/10T will be used for transport. The effect of transport on local will be negligible.	
25	A tree survey shall be carried out (Nos. name of species, age, diameter, etc.) both within the mining lease applied area & 300m buffer zone and its management during mining activity	There is no trees within 300 meter boundary of the lease area.	
26	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific	Detailed mine closure plan is given in **Chapter 7**.	**183**

27	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 and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF & CC accordingly.	Draft EIA & EMP is being prepared to conduct Public Hearing. This conditions will be complied after PH.	
28	The public hearing advertisement shall be published in one major national daily and one most circulated vernacular daily	Agreed.	
29	The PP shall produce/display the EIA report, executive summary and other related information with respect to public hearing in Tamil language also.	Agreed.	
30	As part of the study of flora and fauna around the vicinity of the proposed site, the EIA Coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, where ever possible	Accepted. It will be done	
31	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix – I in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner	Green belt is proposed in an area of 0.20 Ha. Green belt development plan showing the plant species selected is given in Chapter IV.	
32	Taller/one year old saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/horticulturist with regard to site-specific choices. The proponent shall earmark the green belt	Accepted. The photographs showing green belt will be provided once it is completed.	

	area with GPS coordinates all along the boundary of the project site with at least 3 m wide and in between blocks in an organized manner		
33	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A Disaster Management Plan is prepared and the details are given in **Chapter 7**	**182**
34	A risk assessment and Management plan shall be prepared and included in the EIA/EMP report for the complete life of the proposed quarry or till the end of the lease period	Risk assessment and its management is given in **Chapter 7**	**182**
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.	The anticipated impacts of the mining operations on the health of employees is studied and mitigation measures are provided. Details are in **Chapter 4**.	**158**
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.	Since there are no habitations in 500m radius, and the villages are located more than 1km, there will not be any major impact.	
37	The Socio-economic studies should be carried out within a 5km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Socio economic study is conducted both by visits and secondary data collection. Details are given in **Chapter 3**	**123**
38	Details of litigation pending against the project, if any, with direction /order passed by any Court of law against the Project should be given.	No litigation is pending against the project.	

39	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project is given in Chapter 8	**184**
40	If any quarrying operations were carried out in the proposed quarrying site for which now EC is sought, the project proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF & CC, Regional Office, Chennai or the concerned DEE/TNPCB.	This is a fresh quarry. After obtaining EC, compliance reports will be submitted to Regional office, MoEF & CC, Chennai	
41	The PP shall prepare the EMP for the entire life/lease of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	The EMP is planned for the entire life of the mine.	
42	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the condition mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986	Agreed.	
Additional Conditions stipulated by SEIAA - TN			
i)	The proponent shall study in detail the impact of mining on the nearby river, agriculture/agricultural fields, ground water, water bodies, climate change, temperature, biodiversity and also sedimentation & erosion of water body.	Agreed. The detailed impacts has been studied and incorporated in the **Chapter 4**	
ii)	A detailed hydrogeological study shall be famished.	Agreed. The hydrogeological study is under progress. It will be incorporated in the final EIA & EMP report.	
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 four quarries, including the present proposed and abandoned quarries within 500-metre radius. The proponent will take the initiative to form a cluster management committee once environmental clearance is obtained for	

		this quarry as well as the other three proposed quarries.	
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	Agreed. Will be complied.	
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Agreed. The list of members of the committee formed will be submitted to AD/Mines after obtaining Environmental Clearance.	
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 four quarries proposed in the cluster area.	
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Risk management plan for the individual quarry is given in this report. As far as cluster working condition is concerned, once the committee is formed, risk management as a cluster including inundation of clusters and the evacuation plan will be elaborated and the same will be submitted to the SEIAA. **Chapter - 7**	**167**
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Environmental Policy for the cluster will be framed by the cluster management committee and the policy will be in accordance with EP Act 1986 and its amendments, guidelines by MoEF&CC/SEIAA and other regulatory bodies. This policy will be displayed in the quarry.	
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed. It will be complied as mentioned in the Point No.4	
8	The committee shall furnish the Emergency Management plan within the cluster.	Agreed. It will be complied as mentioned in the Point No.4	
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Agreed. It will be complied as mentioned in the Point No.4	

10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	Agreed. It will be complied as mentioned in the Point No.4	
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Agreed. It will be complied as mentioned in the Point No.4	
Impact study of mining			
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following,		
a	Soil health & soil biological, physical land chemical features	Complied. The details are given in Chapter 3 of the Draft EIA report.	**117 119**
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	The proposed quarry is a very small scale Opencast Semi-Mechanized mining method and the anticipated impacts of Greenhouse gases (GHG), rise in Temperature and effect of livelihood of the local people will be negligible. It will be controlled in the source level as per mitigation measures proposed in the Chapter 4 & 10.	
d	Possibilities of water contamination and impact on aquatic ecosystem health	The total water requirement is 5.0 KLD. It will be outsourced from the nearby villages. So no impact in the project area due to water usage. The wastewater generation in the form of runoff water during rainy season will be collected in the bottom quarry through proper drainage pattern and the collected water will be used for plantation and dust separation during dry season. However, there is no wastewater discharge from this quarry is being anticipated. So, possibilities of water contamination and impact on aquatic ecosystem health is not envisaged.	
e	Agriculture, Forestry & Traditional practices	There are no forest area and traditional practices within the project area. However there are some agricultural land around the project site. It may be affect due to the quarry operation as	

		such dust particles sedimentation in the agricultural land. It will be controlled at the source level by proper dust separation as such wet drilling, controlled blasting and water sprinkling on the project roads and project surrounding roads. As per Air Quality Modelling the impact of the air quality limited to 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 is not envisaged.	
h	Sediment geochemistry in the surface streams	Cheyyar river is located at a distance of 296m and Tandarai canal is located at distance of 120m, due to mining operation there may be minimum impact to the said water bodies due to dust sedimentation. It will be controlled by wet drilling, water sprinkling and plantation.	
Agriculture & Agro-Biodiversity			
13	Impact on surrounding agricultural fields around the proposed mining Area.	Agreed. It is described in the point no. 12 (e) of this ToR Compliance Annexure-B	
14	Impact on soil flora & vegetation around the project site.	Complied. The details are given in **Chapter 3.**	**117 119**
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.**	**119**
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.**	**119**

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.	**186**
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.**	**186**
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.**	**119**
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.**	**119**
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 1 km (radius) so as to assess the impacts on the nearby water bodies 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.	Complied. The details are given in **Chapter 7.**	**182**
24	Erosion Control measures.	There is no waste generation (OB) in this quarry has been envisaged. However, there may be erosion due the rainy season and that is limited within quarry area. The control measures are explained in Chapter 8.	**138**

25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	Complied. The details are incorporated in **Chapter 3**.	**196**
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Not applicable.	
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Fragmentation impact on environment may be due to drilling and blasting. The anticipated impacts and mitigation measures are discussed in **Chapter 4**.	**156**
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	An ecological and biodiversity study has been conducted and the same is incorporated in the Chapter 3 of the Draft EIA/EMP report. However, there is no any features mentioned in this condition within the M.L area. However, the impacts anticipated with respect to the environment of the project area is very negligible and it will be minimized within the project area. The details are described in **Chapter 10**.	
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Agreed.	
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	Complied. The details are described in **Chapter 3**.	**112**
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.**	**155**
Climate Change			
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Complied. The details are described in **Chapter 4.**	**144**

33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	Complied. The details are described in Chapter 4.	**145**
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 7.**	**183**
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.	Complied. The details are described in **Chapter 10.**	**186**
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	Complied. The details are described in **Chapter 10.**	**192**
Risk Assessment			
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Complied. The details are described in **Chapter 7.**	**167**
Disaster Management Plan			
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	Complied. The details are described in **Chapter 7.**	**182**
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.	Complied. Enclosed as Annexure 5	**269**

40	As per the MoEF& CC office memorandum F.N0.22-65/2017-1A.11I dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.	Noted. It will be complied in the Final EIA/EMP report.	
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	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 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	This is a new project. No mining has been carried out in this lease area so far by the proponent.	
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given	Precise Area Communication letter received from the Deputy Director, Department of geology & Mining, Tiruvannamalai. (Annexure-1)	**217**
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.	Complied. All the documents 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).	Complied. Project coordinates superimposed in satellite imagery and given as Figure in **Chapter 2.** The geology and geomorphology map is provided as Figure in **Chapter-3.** The Lithology map and Soil map are provided as Figure in **Chapter-3**. The 10km Radius Index plan showing buffer zone is given as in **Chapter-3.**	**88** **82** **92** **79**
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.	Complied. The details are given in **Chapter 2**.	79
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.	Not Applicable. The proposed land is Patta Land.	
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	The proposed quarry is small scale magnitude operation and controlled by lessee individually by engaging optimum statutory personals. Based on magnitude of the operation the PP has framed Environmental Policy and the same is incorporated in Chapter 10.	190

	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.	Risks are identified and the management is given in para Chapter **7.**	167
9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.	The study area of 10km comprising core zone and buffer zone is used for the study. All details given in Chapter – 3.	
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.	Satellite imagery has been used to study land use and the details of land use in the core and buffer zone is given in **Chapter 3.**	104
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.	The entire material quarried out will be sold. No waste generation from this quarrying operation.	
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.	Not Applicable. There is no forest land in the lease area.	

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. There is no forest land in the lease area.	
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. There is no forest land in the lease area.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	There is no forest land in the lease area. However, study are forest details are given in **Chapter – 2**.	91
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.	No wildlife sanctuary or national parks or any areas of ecological importance is found in the 10km area.	
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.	Not Applicable. Nil within 10 km radius.	
18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating	Flora and fauna composition in the core and buffer zone of the project has been studied through primary field surveys. The details are furnished in **Chapter 3**.	119

	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.	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 w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable	
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 he undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoml programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease	Not applicable. The proposed area is own Patta land. No habitation within 500 meter of the radius.	

	area will be shifted or not. The issues relating to shilling of village(s) including their R&R and socio-economic aspects should be discussed in the Report.		
22	One season (non-monsoon) (i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season) primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality,: noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site- specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Baseline data for meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Pre Monsoon season (March 2023 to May 2023) and detailed in Chapter-3.	
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.	Modelling is done using AERMOD and the projected values are found to be within the norms. Hence, there is no major impact due to this mining project. Cumulative impact of mining is also studied and the same is found to be within norms. The details are given in **Chapter 4**.	145 170

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.	The entire water requirement for the project is 5.0KLD which will be sourced from outside agencies. Negligible sewage of 0.8 KLD will be generated, for which a septic tank with soak pit will be set up. The water balance diagram is shown in **Chapter 4**	141
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable. The required water will be outsourced from the nearby village.	
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.	Details of water conservation plan is given **chapter 10**.	186
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.	The surface water condition and ground water condition in the study area is given in Chapter 3.	112
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.	Ground water table of the project surrounding area is 48m BGL and proposed ultimate pit level is 27m BGL. So, the proposed mine working will not intersect the ground water table.	
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.	Not applicable. There is no stream, seasonal or otherwise, passing through the lease area.	

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.	Details of site elevation and depth are given in Chapter 3.	189
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. Phasc-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.	In the lease area, safety barrier 7.5m is left as safety zone. Greenbelt/Plantation will be carried out in and around the lease area to enhance the vegetative growth and aesthetic in the area.	
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.	This is a small quarry and the production is very less. 3 Nos. of 5T/10T tippers will be used for transport. The trips will be minimum. Hence no major impact on transport is expected	
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Onsite shelter and facilities will be provided to mine workers	

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.	The post mining land use/conceptual land use of the study area is given in **Chapter 4.**	121
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.	Occupational health and safety details has been incorporated in Section 4.10 of **Chapter-4** of Draft EIA/EMP report.	158
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 major impact on public health since the villages are located more than 1km from the lease area.	
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 25 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.	
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.	The cost details including break-up of various costs are given in **Chapter 2**.	100
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	The disaster and its management plan is given in **Chapter-7**.	182
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.	This project will contribute financially through payment of taxes like royalty, GST, etc. The project will also contribute via CSR. The demands of people during public hearing will also be considered by the project proponent. This project provides employment to 25 people directly. Local people will be hired for unskilled labour. Through CSR, nearby schools, hospitals will be benefitted. For CSR, INR 5 Lakhs has been allocated.	
44	Besides the above, the below mentioned general points are also to be followed.		
	a) Executive Summary of the EIA/EMP Report	Yes, Complied.	
	b) All documents to be properly referenced with index and continuous page numbering.	Yes, Complied.	
	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, noise, etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.	Yes, Complied.	
	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-11013/41/2006-IA.II(I) dated 4th August 2009 which are available on the website of this Ministry, should be followed.	Yes, Complied.	
	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.	Yes, Complied.	
	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 Environmental 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.	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	Yes, Complied.	

	showing the land features of the adjoining area.		

CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF THE REPORT

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

Thiru.K.Sudhakaran has obtained a Precise Area communication letter from the Deputy Director, Department of Geology and Mining, Tiruvannamalai District, to quarry out 2, 37,440m3 of Rough Stone, 18,465m3 of Weathered rock and 19,125m3 of Gravel over an extent of 2.57.0Ha located at S.F. Nos. 7, 8/1, 2, 3, 4, 5 and 214/5 located in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu. Hence, this proposed quarry falls under the cluster situation due to the following proposed and abandoned quarries located within a 500m radius. The details are given below.

Table 1.1 Cluster Mines Details

Sl. No.	Extent	Proponent	Status of lease
1	2.57.0 Ha	Thiru. Sudhakaran	Proposed
2	1.55.0 Ha	Thiru. Srinivasan, M/s.JCK Mines	
3	2.00.0 Ha	Thiru. Ramchandran	
4	4.50.0 Ha	Thiru. Ganesan	
5	1.00.0 Ha	Tmt. Poongodhai	Abandoned
Total Cluster extent is 10.62 Ha			

As per EIA notification, 2006 and its subsequent amendments the proposed "Rough Stone & Gravel Quarry of Thiru.K.Sudhakaran" cluster is falls under Schedule 1(a)

Mining of Minerals. It is further classified under Category B1 due to the overall extent of the cluster area being 10.62 Ha which is >5 Ha. The ToR for preparation of EIA/EMP was approved vide letter No. SEIAA-TN/F.No.9619/SEAC/ToR-1354/dated 10.02.2023. This report has been prepared in line with the approved TOR for the production of maximum excavation of 2,37,440 Cu.m of Rough Stone, 18,465 Cu.m of Weathered Rock, and 19,125 Cu.m of Gravel for a period of five years.

1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

The proposed project is for the mining of Rough Stone & Gravel (under cluster) from the S.F. Nos. 7, 8/1, 2, 3, 4, 5, and 214/5 located in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu. As per EIA notification, 2006 and its subsequent amendments the project comes under Schedule 1 (a) under Category B1 (Lease area >5 to 250 Ha). The proposed project details are given below.

(a) Proposed project details

Sl. No.	Description	Status/Remarks
1.	Sector	Non-coal mining
2.	Category of the project	B1 (Cluster)
3.	Proposed mineral	Rough Stone and Gravel
4.	Type of Lease	Fresh Lease
5.	Extent of the lease	2.57.0 Ha
6.	Proposed depth of mining	27 m BGL
7.	Method of mining	Opencast Semi-mechanized
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years
10.	Proposed production quantity for five years	Rough Stone - 2,37,440 m^3, Weathered rock - 18,465 m^3 and Gravel - 19,125 m^3

(b) Profile of the project proponent

The proposed lessee Thiru.K. Sudhakaran is an individual with sound experience in the identification of quarry, operation, and marketing in the field of Rough Stone. The

proposed land is partly owned by Patta land in the name of the lessee, i.e., S.F. No. 8/4, 0.605 ha, and the remaining area is other Patta land. The lessee has obtained consent from land owners to quarry the Rough Stone and Gravel and the registered consent document has been attached as Annexure 8. The landowner's details are given below.

Table 1.2 Proposed land details

Sl. No.	S.F. Nos.	Area (Ha)	Owner
1	7	0.075	Srinivasan, Boopalan, Gopalan, Vetrivelan, Sudhakaran
2	8/1	0.92	Srinivasan, Boopalan, Gopalan, Vetrivelan, Sudhakaran
3	8/2	0.21	Srinivasan, Boopalan, Gopalan, Vetrivelan, Sudhakaran
4	8/3	0.315	Srinivasan, Boopalan, Gopalan, Vetrivelan, Sudhakaran
5	8/4	0.605	K.Sudhakaran
6	8/5	0.285	Srinivasan, Boopalan, Gopalan, Vetrivelan, Sudhakaran
7	214/5	0.16	Srinivasan, Boopalan, Gopalan, Vetrivelan, Sudhakaran
Total extent - 2.57.0 Ha			

(c) Project proponent details

Name of the proponent : Thiru.K.Sudhakaran

Status of the Proponent : Individual

Address Thiru.K.Sudhakaran
S/o.Kannan,
No.782, Mariamman Kovil Street,
Jambodai Village,
Azhividaithangi Post,
Vembakkam Taluk,
Tiruvannamalai District – 604 402

1.3 BRIEF DESCRIPTION OF NATURE OF THE PROJECT

The proposed quarrying operation is an opencast semi-mechanical method with a 5m bench height, 5m bench width, and an overall bench slope of less than 80°. The quarry operation involves shallow jackhammer drilling, slurry blasting, excavation, loading, and transportation.

1.4 SIZE AND LOCATION OF THE PROJECT

(a) Size of the project

Table 1.3 Proposed project details

Sl. No.	Feature	Description
1	Type of land	Private Patta land
2	Extent of lease area	2.57.0 Ha
3	Type of lease	Fresh lease
4	Geological Resource	6,41,200 m^3 of Rough Stone, 25,648 m^3 of Weathered rock and 25,648 m^3 of Gravel
5	Mineable Resource	2,37,440 m^3 of Rough Stone, 18,465 m^3 of Weathered rock and 19,125 m^3 of Gravel
6	Proposed production quantity for five years	2,37,440 m^3 of Rough Stone, 18,465 m^3 of Weathered rock and 19,125 m^3 of Gravel
6	Proposed depth of mining	27m BGL

(b) Location of the project

The proposed project site is located in Vala Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, at latitudes of 12°38'20.50" N to 12°38'28.14" N and longitudes of 79°35'53.58" E to 79°36'01.61" E, with Survey of India Topo Sheet No. 57-P/10.

1.5 IMPORTANCE OF THE PROJECT TO THE COUNTRY AND REGION

There is an increasing demand for rough stone in India and other countries. Since the construction industry is rapidly growing now, there is an increasing demand for

rough stones & gravel. Thus, this project will contribute not only to the demand of Rough Stone, but also provide employment opportunities to the nearby villages.

1.6 SCOPE OF THE STUDY WITH DETAILS OF REGULATORY SCOPING

Any mining project may cause environmental impacts near the project site during its operation. The type and intensity of impacts on various components of the environment may vary depending on the nature of the project as well as its geographical location. The net impacts of the project can be quantified through environmental impact assessment (EIA) studies on the physical, biological, and socio-economic environments. The EIA studies provide a basis for preparing an Environmental Management Plan (EMP) to conserve the environment of the area.

For the purpose of preparing EIA/EMP for the SEIAA, Tamilnadu has issued a Terms of Reference vide Letter No. SEIAA-TN/F.No.9619/SEAC/ToR-1354 dated 10.02.2023 in accordance with the provisions of EIA Notification 2006 and its subsequent amendments. This EIA study includes both the core and buffer zones, i.e., the lease area and 10km radius of the project area, respectively. This EIA report was prepared based on the data generated from the summer season 2023 (March 2023 to May 2023), and all individual components of the environment are described in detail. An in-depth analysis of available information has been made for working out an effective environmental management Plan.

1.7 PRESENT STUDY

The project proponent has assigned M/s Global Mining Solutions, Salem, to conduct the environmental impact assessment and environmental management plan (EIA/EMP) for this project. The Environmental Impact Assessment and Environmental Management Plan of this cluster quarry address all the environmental related impacts and mitigation measures. The EMP report is based on the data generated from March 2023 to May 2023 by Swasti Enviro Solutions Pvt. Ltd. and the data generated by the

FAE of Global Mining Solutions, Salem. The study evaluates the prevailing baseline environmental conditions. The objectives of the present study are given below.

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

1.8 STATUS OF LITIGATIONS

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

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. 155/Kanimam/2022 dated 21.09.2022. The letter copy is enclosed as Annexure 1.

b. Mining Plan Approval Letter:

The project proponent has prepared a mining plan under rules L9(l), 41, and 42 of the Tamil Nadu Minor Mineral Concession Rules, 1959, and the same has been approved by the Deputy Director, Dept. of Geology and Mining, Tiruvannamalai, vide Rc. No. 155/Kanimam/2022 dated 03.10.2022. The approval letter, along with the approved plan, is enclosed as Annexure 2.

c. 500m radius quarry features:

The project proponent has obtained an official letter from the Deputy Director, Dept. of Geology and Mining, Tiruvannamalai, vide Rc. No. 155/Kanimam/2022, dated 13.10.2022. The letter copy is enclosed as Annexure 3.

d. VAO certification regarding 300 meter features of the project area.

There are no historical places, schools, cemeteries, HT and LT lines, temples, bird sanctuaries, or wildlife sanctuaries within 300 metres of the proposed project area. In this regard, the project proponent has received an official letter from the Village Administrative Officer, Vada Alapirandan village, dated 21.10.2022. The letter copy is enclosed as Annexure 4.

e. Project Proponent undertaking affidavit:

The project proponent has issued an affidavit under MoEF & CC O.M. No. 3-50/2017-IA.III (Pt.) dated 30.05.2018 to comply with the direction of the Hon'ble SC made on 2.08.2017 in W.P. (C) 114 of 2014 in the matter of Common Cause vs. Union of India & Others. The affidavit copy is enclosed as Annexure 5.

f. Blasting Agreement:

The Project Proponent has an agreement with T.M.K. Explosives to carry out the blasting operation for the proposed quarry. The Blasting Agreement is enclosed as Annexure 6.

g. Land document of the proposed lease area:

It is Joint Owned Patta land, and the applicant has obtained consent from the Pattadar. A copy of the Consent document and a Patta copy are enclosed as Annexure 7.

CHAPTER 2

PROJECT DESCRIPTION

2.1 TYPE OF PROJECT

The type of project is an opencast semi-mechanized mining method to excavate Rough Stone & Gravel within the proposed mine lease area with drilling, blasting, loading, and transportation. This project is located at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5, and 214/5 over an area of 2.57.0 ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu.

As per the EIA notification, 2006 and its subsequent amendments, the project comes under Schedule 1 (a) under Category B1 (lease area >5 to 250 ha), considering the cluster situation, and the total cluster area is 10.62 ha. The details of mines located in the cluster area are certified by the Deputy Director of the Department of Geology and Mining, Tiruvannamalai District, through a 500-metre radius letter vide Rc. No. 155/Kanimam/2022 dated 13.10.2022.

The cluster includes four mining leases, i.e., this proposed quarry (2.57.0 ha) and three other proposed quarries (8.05.0 ha). The lessee's details are Thiru. R. Ganesan, Director of SRC Project Pvt. Ltd., Door No. 47, Brindavan Porlands, Salem, proposed for an extent of 4.50.0 Ha; Thiru. M. Ramachandran, S/o. Mogili Naidu, Door No. 15B, Medutheru, old Perukozhathuvoor, Tambaram, Chennai, proposed for an extent of 2.00.0 Ha; and Tvl. JCK Mines, Rep. by its partner Thiru. J. K. Srinivasan, Door No.782, Mariamman Koil Street, Jambodai village, Azhivedanthangi Post, Vembakkam Taluk, Tiruvannamalai District, proposed for an extent of 1.55.0 Ha.

The proposed production is 2,37,440 m^3 of rough stone, 18,465 m^3 of weathered rock, and 19,125 m^3 of gravel for a period of five years by the open-cast semi-mechanised mining method.

2.2 SALIENT FEATURES OF THE PROJECT

The salient features of the proposed Rough Stone and Gravel quarry of Thiru.K. Sudhakaran are given below.

Table 2.1 Salient features of the project

S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	Fresh project
3	Category	B1 Cluster
4	Nature of mineral	Minor mineral
5	Life of the mine	5 years
6	Production Quantity for five years	2,37,440m^3 of Rough Stone, 19125 m^3 of Gravel, 18465 m^3 of Weathered rock
7	Waste generation and management	Nil
8	Bench height and width	5m
9	Ultimate pit depth	27m BGL
10	End use	Rough Stone, Gravel and Weathered rock will be sold to nearby crushers and construction industries.

2.3 GEOLOGY AND TOPOGRAPHY

a. Topography

The mine lease area of 2.57.0 ha is covered in the Survey of India Toposheet 57-P/10 and is bounded by Latitude: 12°38’20.50" N to 12°38’24.14" N and Longitude: 79°35'53.58'' E to 79°36'01.61'' E. The Cheyyar River is located at a distance of 296m on the northwest side of the project site, and the Tandarai Canal is located at a distance of 120m from the project site. The water table is found at a depth of 48m in summer and 45m in rainy seasons. The temperature of the area is reported to be 18°C to a maximum of 42 °C during the summer. The rainfall in this area is about 800mm to 900 mm during both the NE and SW monsoons. The topomap showing the

lease area of the proposed quarry is given in Figure 2.1, and the satellite map showing the proposed lease area is given in Figure 2.2.

FIGURE - 2.1 TOPOMAP OF THE PROJECT 10 KM RADIUS

The elevation of the proposed quarry is 95 mRL (maximum). There is no forest land in the mine lease area. The project site is on dry land that is not suitable for cropping.

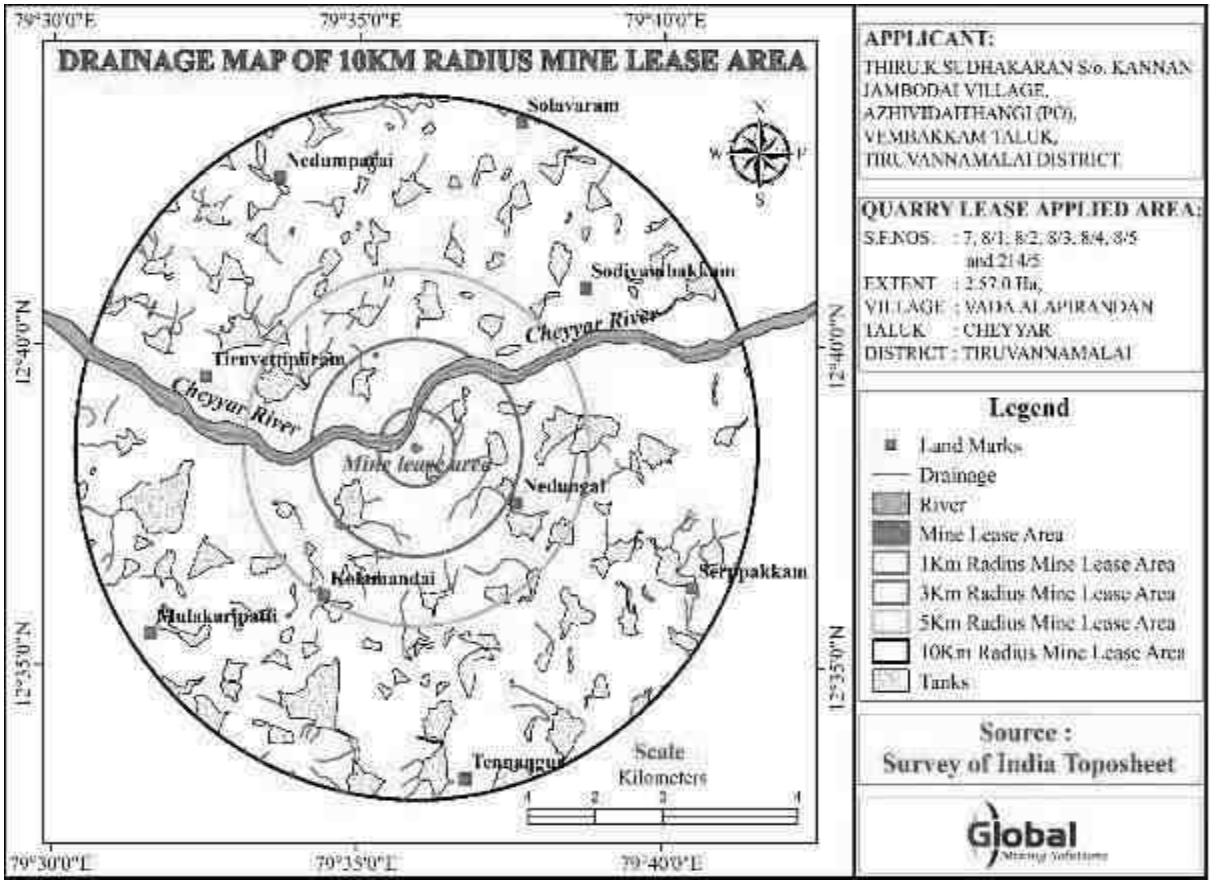
FIGURE - 2.2 SATELLITE MAP OF THE PROJECT AREA (1 KM RADIUS)

b. Drainage

There is no seasonal or perennial Odai within the M.L. area. The drainage pattern of the region is plane to sub-dendritic. Surface run-off water from the M.L. area is drained through the proposed drainage and collected in the bottom of the quarry. The collected water will be used for the same quarry operations as before, such as plantation and dust suppression. The nearest river, the Cheyyar River, flows from northwestern to northeastern at a distance of 296m from the proposed ML area. There is another water body nearer to the proposed quarry area, namely the Tandarai

canal located at a distance of 120m and a tank located at a distance of 470m. A drainage map showing a 10 km radius of the project area is given in Figure 2.3.

FIGURE 2.3 DRAINAGE MAP SHOWING 10 KM RADIUS OF THE PROJECT

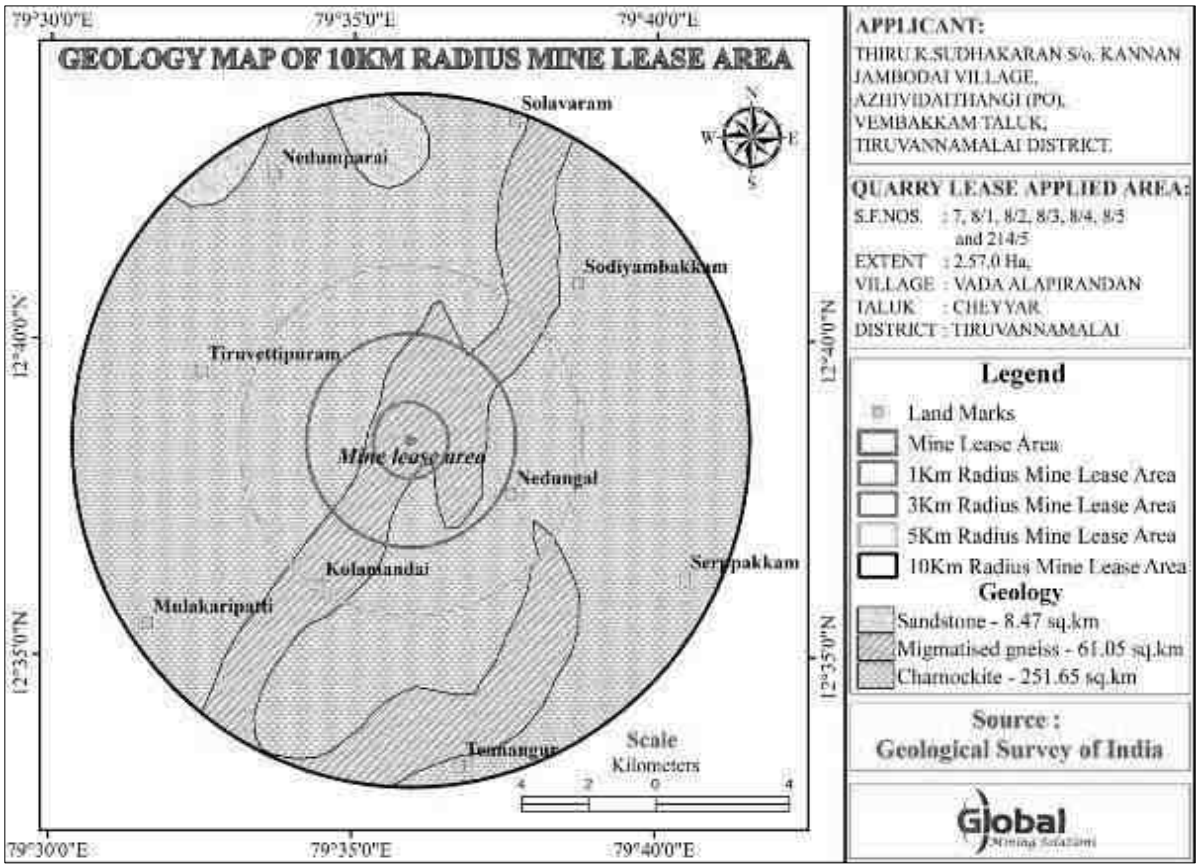


c. Regional Geology

Geologically, Tiruvannamalai District mainly comprises rocks of Archaean age. The types of rocks found in the district are charnockite, granitic gneiss, amphibolite, pyropenite, dunite, migmatite, banded magnetite quartzite, shale, and clay. Dolerite dykes (black granite) are also noticed cutting across the country rocks.

More than 95% of the area of this district is underlain by hard rock formations. These hard rock formations are predominantly occupied by gneissic rock. Charnockites are prevalent in the western part of and around Javadu Hills, around the central part of Tiruvannamalai Block, and as narrow limbs in parts of Cheyyar and Vandavasi Taluk. A regional geology map for the 10 km radius from the proposed project site is given in Figure 2.4.

FIGURE 2.4 REGIONAL GEOLOGY MAP OF 10 Km RADIUS FROM PROJECT AREA



d. Local Geology

The area is underlain by the wide range of metamorphic rocks of the peninsular gneissic complex. These rocks are extensively weathered and overlain by 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. Charnockite is part of peninsular Gneisses, a high grade metamorphic rock. The strike of the Charnockite formation is N500E–SS500W with a dip towards SE700. The general geological succession of the area is given as follows:

Age		**Rock Type**
Recent	-	Reddish and gravelly soil
Unconformity		
Archaean		Dolerite dyke
		Charnockite
	-	Peninsular Gneissic complex and Calc Gneiss

e. Geological Resources

Geological Resources are estimated at 6,41,200 m^3 of Rough Stone, 25,648 m^3 of Weathered Rock and 25,648 m^3 of Gravel and Mineable Reserves are estimated at 2,37,440 m^3 of Rough Stone, 18,465 m^3 of Weathered Rock and 19,125 m^3 of Gravel and after leaving necessary safety distance from the lease boundary as indicated in the Precise Area Letter and relevant mining laws in force.

TABLE 2.2 GEOLOGICAL RESOURCES IN THE LEASE AREA

Section	Length (m)	Width (m)	Depth (m)	Volume (m^3)	Gravel (m^3)	Weathered Rock (m^3)	Geological Resources of Rough Stone (m^3)
XY-AB	48	157	1	7536	7536		
	48	157	1	7536		7536	
	48	157	25	188400			188400
Total					7536	7536	188400
XY-CD	171	56	1	9576	9576		
	171	56	1	9576		9576	
	171	56	25	239400			239400
Total					9576	9576	239400
X1Y1-CD	97	88	1	8536	8536		
	97	88	1	8536		8536	
	97	88	25	213400			213400
Total					8536	8536	213400

Grand Total	25648	25648	641200

Gravel Formation : 25,648 m^3

Weathered Rock Formation : 25,648 m^3

The Geological Resources of Rough Stone : 6,41,200 m^3

The Geological Plan is given as Figure 2.5, and the geological cross section is given as Figure 2.6.

FIGURE - 2.5 GEOLOGY MAP OF PROJECT AREA

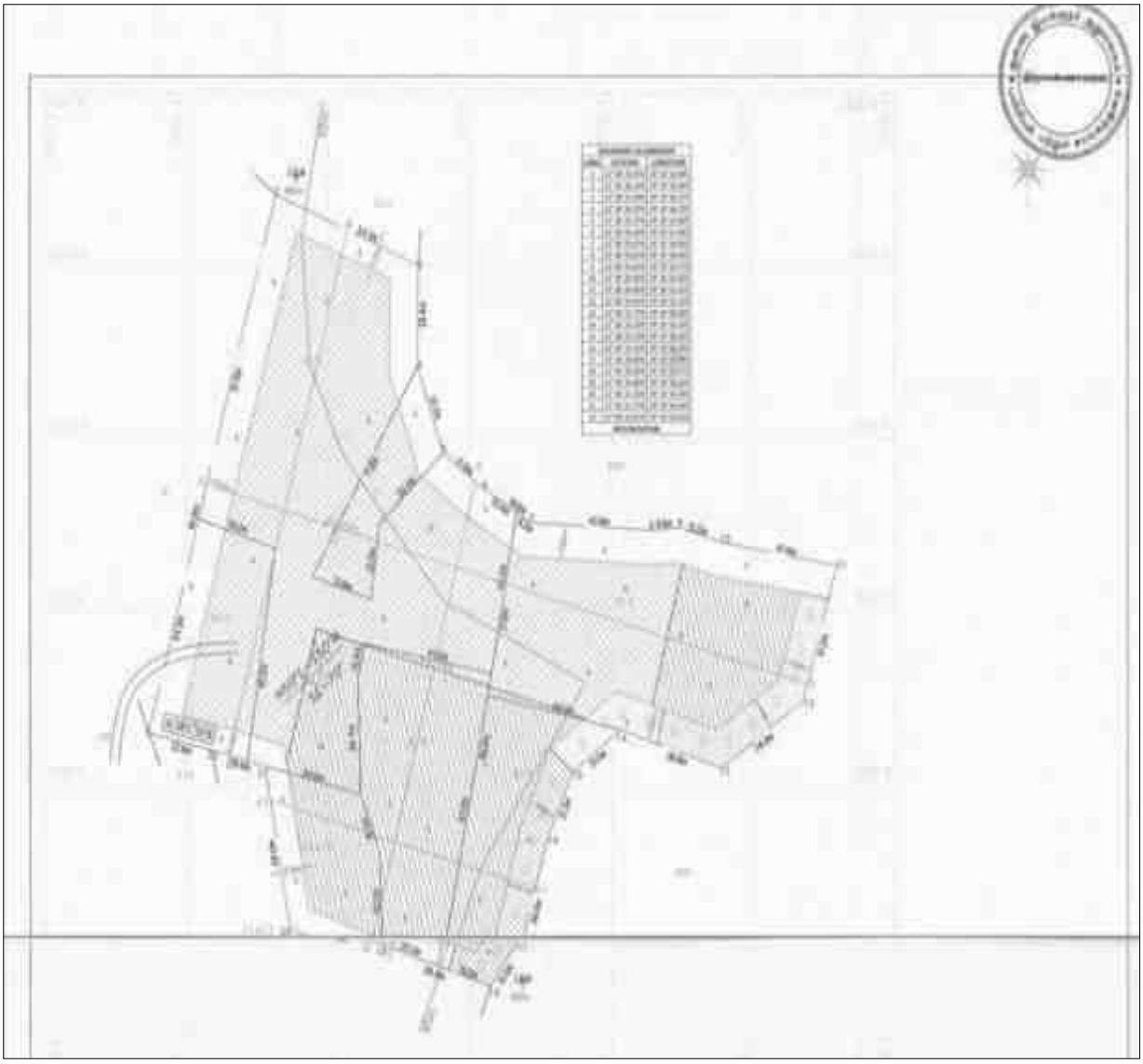
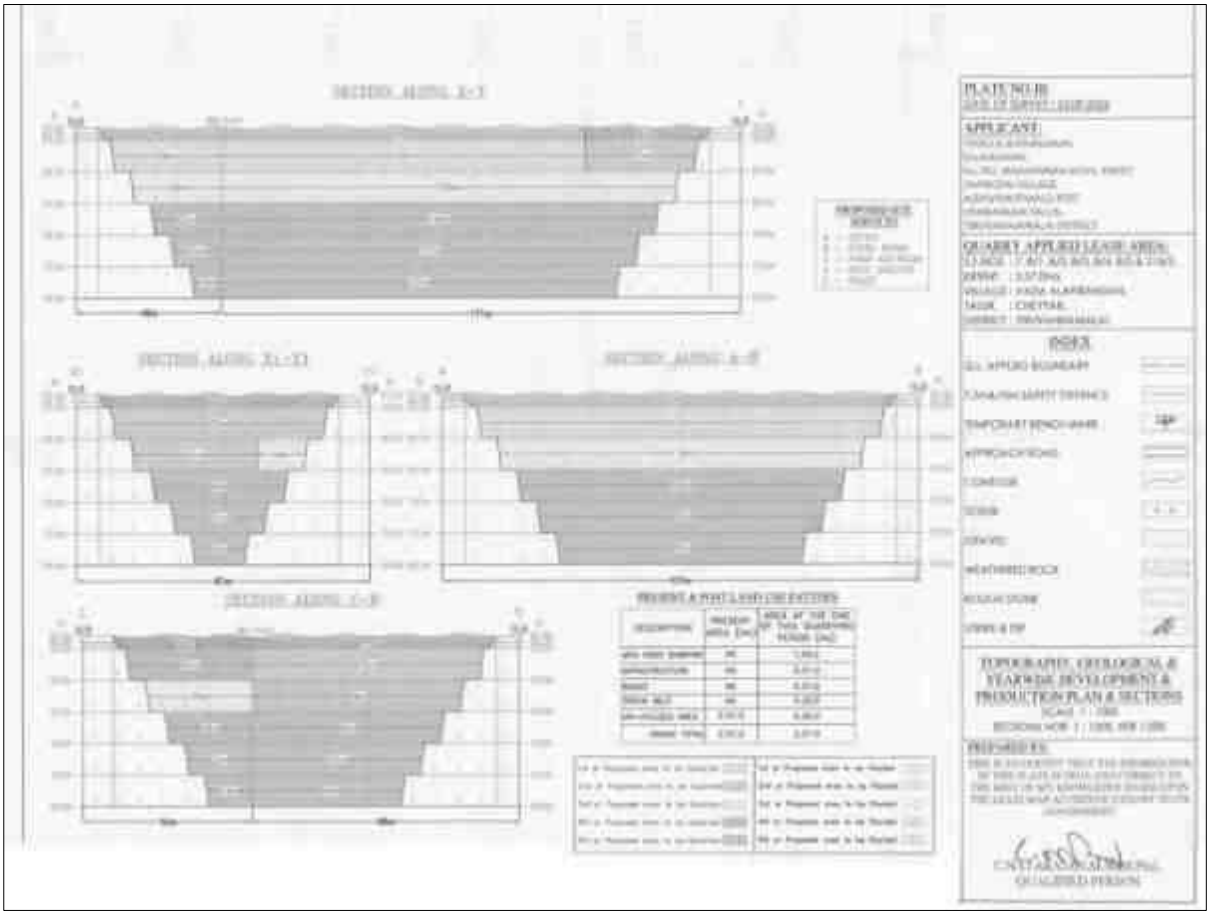


FIGURE - 2.6 GEOLOGY CROSS SECTION



2.4 AVAILABLE MINEABLE RESERVES

The mineable reserves are calculated by deducting 7.5 and 10m safety distances and bench losses.

Table 2.3 Mineable Resources in the Lease Area

Section	Bench	Length (m)	Width (m)	Depth (m)	Volume (m^3)	Gravel (m^3)	Weathered Rock (m^3)	Mineable Reserves of Rough Stone (m^3)
XY-AB	I	40	141	1	5640	5640		
	II	39	139	1	5421		5421	
	III	36	132	5	23760			23760
	IV	29	119	5	17255			17255

	V	23	106	5	12190			12190
	VI	16	93	5	7440			7440
Total						5640	5421	60645
XY-CD	I	161	45	1	7245	7245		
	II	160	44	1	7040		7040	
	III	157	41	5	32185			32185
	IV	150	35	5	26250			26250
	V	144	28	5	20160			20160
	VI	137	22	5	15070			15070
	VII	131	15	5	9825			9825
Total						7245	7040	103490
X1Y1-CD	I	78	80	1	6240	6240		
	II	76	79	1	6004		6004	
	III	70	76	5	26600			26600
	IV	57	69	5	19665			19665
	V	44	63	5	13860			13860
	VI	31	56	5	8680			8680
	VII	18	50	5	4500			4500
Total						6240	6004	73305
Grand Total						**19125**	**18465**	**237440**

2.5 NEED FOR THE PROJECT

The construction industry is growing at a very fast rate, so there is an increasing demand for Rough Stone and Gravel. Also, in the international market, there is a good demand for Indian cut and raw stones. Thus, this project will contribute to the demand for rough stone and provide employment opportunities to the nearby villages.

2.6 LOCATION

This project site is located in Vada Alapirandan village, Cheyyar Taluk, Tiruvannamalai District. The nearest highway is Kanchipuram-Vandavasi Road (SH 116) at a distance of 4.5km, SE. The nearest railway station is Kanchipuram Railway Station, which is located at a distance of 25 km NE from the project site. The nearest airport is Chennai (Meenambakkam) Airport, which is located at a distance of 90km (northeast). The general location is given in Figure 2.7. The specific location is given in Figure 2.8.

FIGURE 2.7 KEY MAP OF THE PROJECT AREA

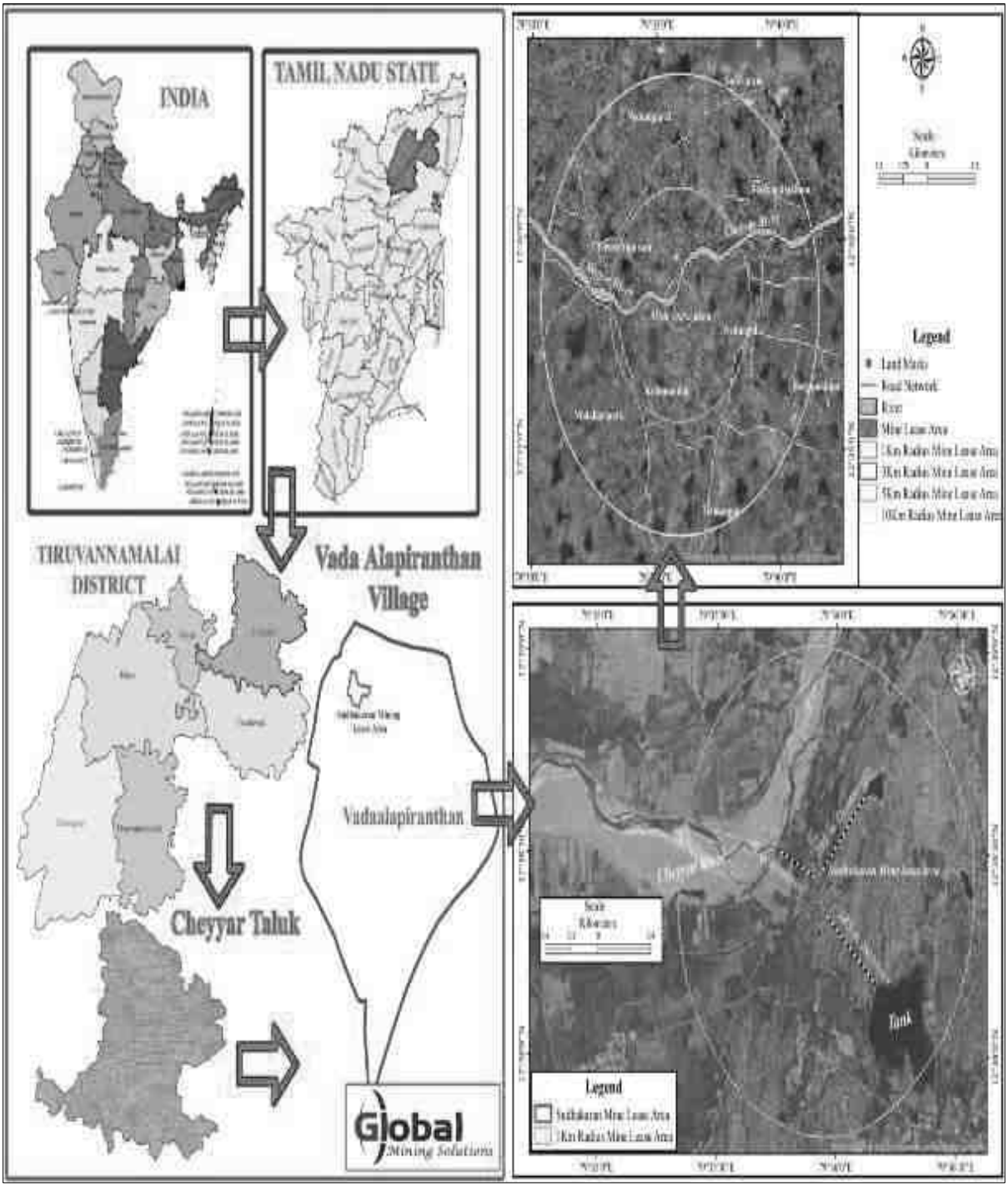
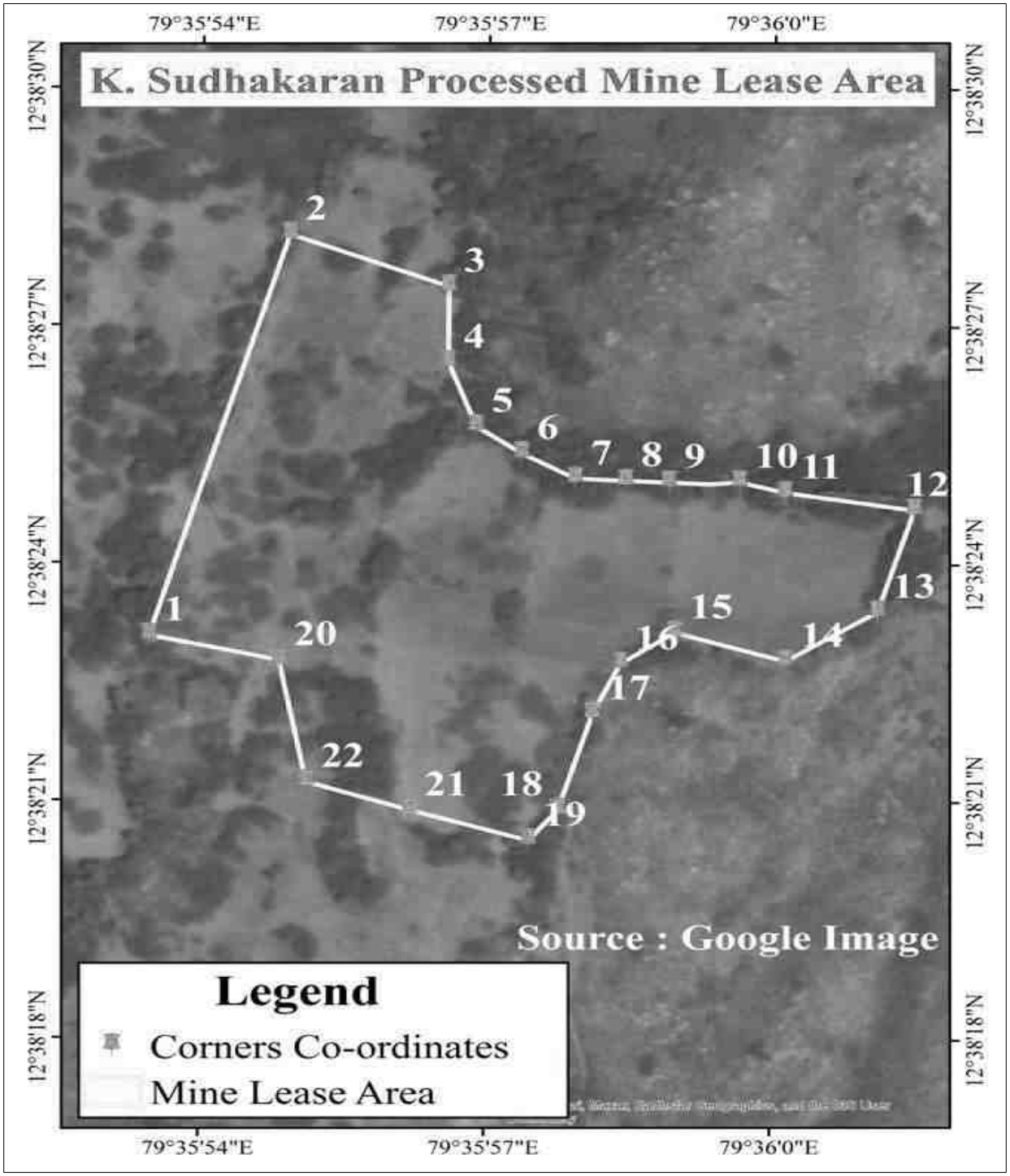


FIGURE 2.8 MAP OF THE PROJECT AREA



As shown in the map above, the project is approachable from Anappathur road which is located in the South side about 440m. The Anappathur road is connected to Kanchipuram - Vandavasi road (SH – 116) at a distance of 4.5km in the South Eastern side of the project site.

2.7 PROJECT BOUNDARY AND PROJECT SITE LAYOUT:

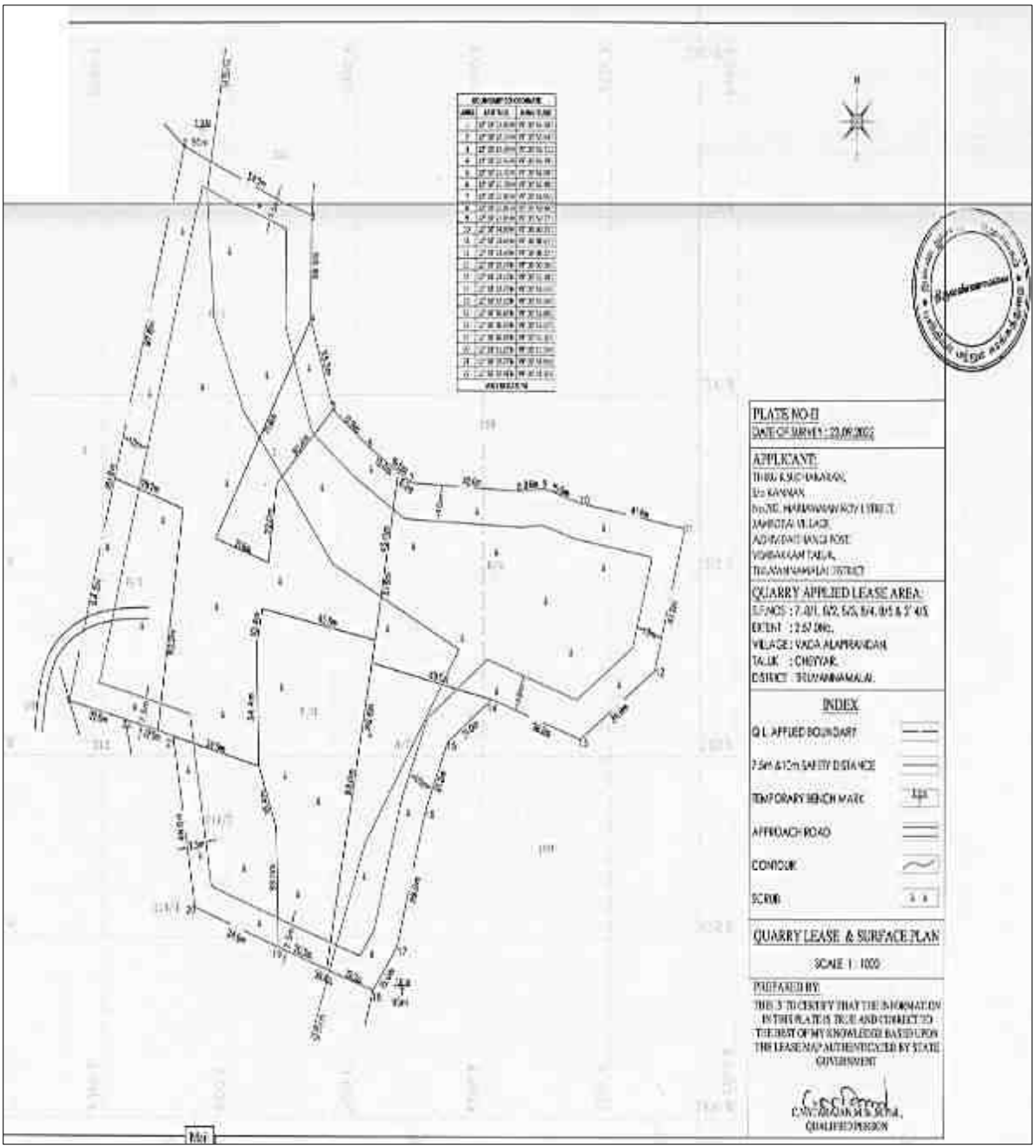
The lease area has 22 corners and the latitude and longitude values are given below.

Table 2.4 Co-Ordinates of the Project Site

Corners	Co-Ordinates		Distance between the corners
	Latitude	Longitude	
1	12° 38' 23.07'N	79° 35' 53.58'E	1-2 = 161.8m
2	12° 38' 28.14'N	79° 35' 55.04'E	2-3 = 54.2m
3	12° 38' 27.49'N	79° 35' 56.71'E	3-4 = 29.4m
4	12° 38' 26.53'N	79° 35' 56.70'E	4-5 = 25.2m
5	12° 38' 25.72'N	79° 35' 57.00'E	5-6 = 17.8m
6	12° 38' 25.38'N	79° 35' 57.48'E	6-7 = 19.6m
7	12° 38' 25.07'N	79° 35' 58.05'E	7-8 = 42.6m
8	12° 38' 25.01'N	79° 35' 59.46'E	8-9 = 9.6m
9	12° 38' 25.03'N	79° 35' 59.77'E	9-10 = 15.0m
10	12° 38' 24.90'N	79° 36' 00.25'E	10-11 = 41.4m
11	12° 38' 24.69'N	79° 36' 01.61'E	11-12 = 41.2m
12	12° 38' 23.40'N	79° 36' 01.22'E	12-13 = 34.8m
13	12° 38' 22.77'N	79° 36' 00.26'E	13-14 = 36.8m
14	12° 38' 23.13'N	79° 35' 59.10'E	14-15 = 21.0m
15	12° 38' 22.73'N	79° 35' 58.53'E	15-16 = 21.2m
16	12° 38' 22.10'N	79° 35' 58.24'E	16-17 = 39.0m
17	12° 38' 20.88'N	79° 35' 57.88'E	17-18 = 15.0m
18	12° 38' 20.50'N	79° 35' 57.57'E	18-19 = 39.4m
19	12° 38' 20.88'N	79° 35' 56.32'E	19-20 = 34.6m
20	12° 38' 21.23'N	79° 35' 55.24'E	20-21 = 48.0m
21	12° 38' 22.77'N	79° 35' 54.94'E	21-22 = 19.6m
22	12° 38' 22.91'N	79° 35' 54.31'E	22-1 = 22.6m

The site layout is shown below as Figure 2.9.

FIGURE 2.9 SURFACE PLAN OF THE PROJECT AREA



2.8 SIZE OR MAGNITUDE OF OPERATION

The proposed production is 2,37,440 m^3 of Rough Stone, 18,465 m^3 of Weathered Rock and 19,125 m^3 of Gravel for a period of five years by the opencast semi-mechanized mining method.

2.9 LAND USE OF THE PROJECT AREA

The proposed mine lease area is dry barren Patta land, and the land use pattern of the project site is given below in Table 2.5.

Table 2.5 Current Land Use Pattern

S. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1	Quarrying Pit	Nil	1.93
2	Infrastructure	Nil	0.01
3	Roads	Nil	0.01
4	Green Belt	Nil	0.20
5	Unutilized	2.57.0	0.42
	Total	**2.57.0**	**2.57**

2.10 LAND USE AT MINE CLOSURE STAGE

Table 2.6 Land Use at Mine Closure Stage

S. No.	Land Use	Area in use during the quarrying period (Hect)
1	Area left for water body	1.93
2	Green Belt	0.20
3	Remaining area	0.44
Total		**2.57**

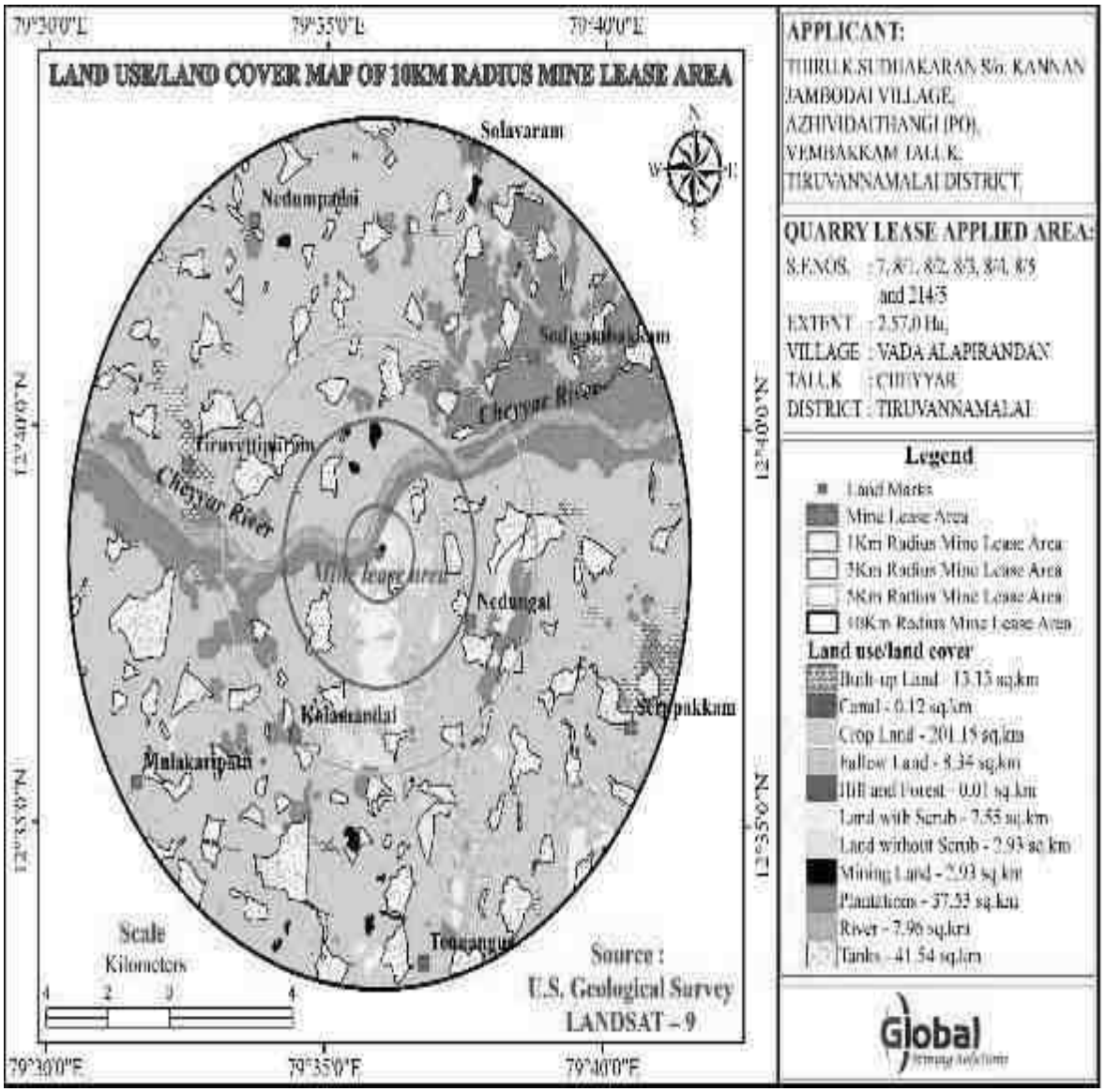
2.11 LAND USE OF THE STUDY AREA

Table 2.7 Land Use at Study Area

S. No	Land Use	Area in Sq.Km
1	Buildup area	13.13
2	Canal	0.12
3	Crop land	201.15
4	Fallow Land	8.34
5	Hill and Forest	0.01

6	Land with scrub	7.55
7	Mining land	2.93
8	Plantations	37.53
9	River	7.96
10	Tanks	41.54
Total		**320.66**

FIGURE 2.10 LAND USE OF THE STUDY AREA



2.12 METHOD OF MINING

Opencast Semi-mechanised mining with a bench height of 5 m, a bench width of 5 m and 800 slope is proposed. The quarry operation involves shallow jackhammer drilling, slurry blasting, excavation, loading, and transportation of Rough Stone to the needy customers. Occasionally, hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting.

2.13 TIMING

Mining will be done on a single-shift basis. Timing will be 8 hours from 8 a.m. to noon and 2 p.m. to 5 p.m. Lunch will be provided between 1 o'clock and 2 p.m. Timing may be variable from season to season depending on the sunrise and sunset. Weekly, one day will be declared a holiday.

2.14 BENCH GEOMETRY

The height (max) and width (max) of the benches will be maintained at 5m each, and the overall slope angle will be around 80^0 with the horizontal.

2.15 DEVELOPMENT OF MINING FACES

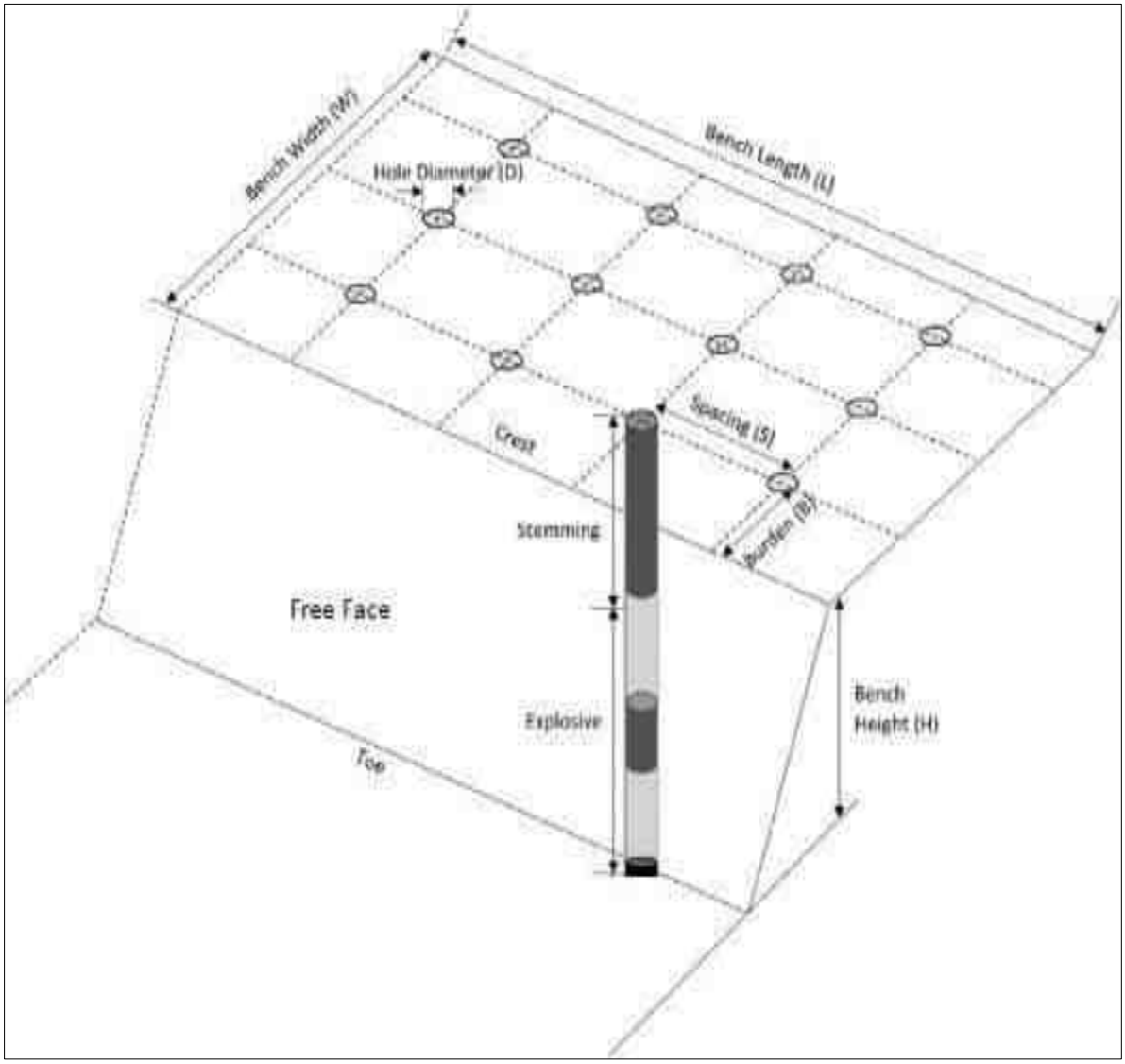
The proposed mining method is open-cast semi-mechanized mining. Site preparation, such as bush cleaning, approach roads, office, and sanitary facilities, will be done after obtaining all the statutory clearances, such as Environmental Clearance, Consent to Operate, Lease Deed, etc. Once the site is ready, we will start the quarrying operation, which is anticipated in the month of January 2024.

2.16 DRILLING & BLASTING

Drilling will be done up to a maximum depth of 1.5m at a 0.6m interval, and the drilling diameter will be 32–36 mm. A jackhammer will be used for drilling with water spray. The powder factor of explosives for breaking such hard rock shall be in the order of 6 to 7 tonnes per Kg of explosives. Small-diameter 25-mm slurry explosives

are proposed to be used for shattering and heaving effects for the removal of Rough Stone. The proposed blasting pattern is given in Figure 2.11.

FIGURE 2.11 BLASTING PATTERN

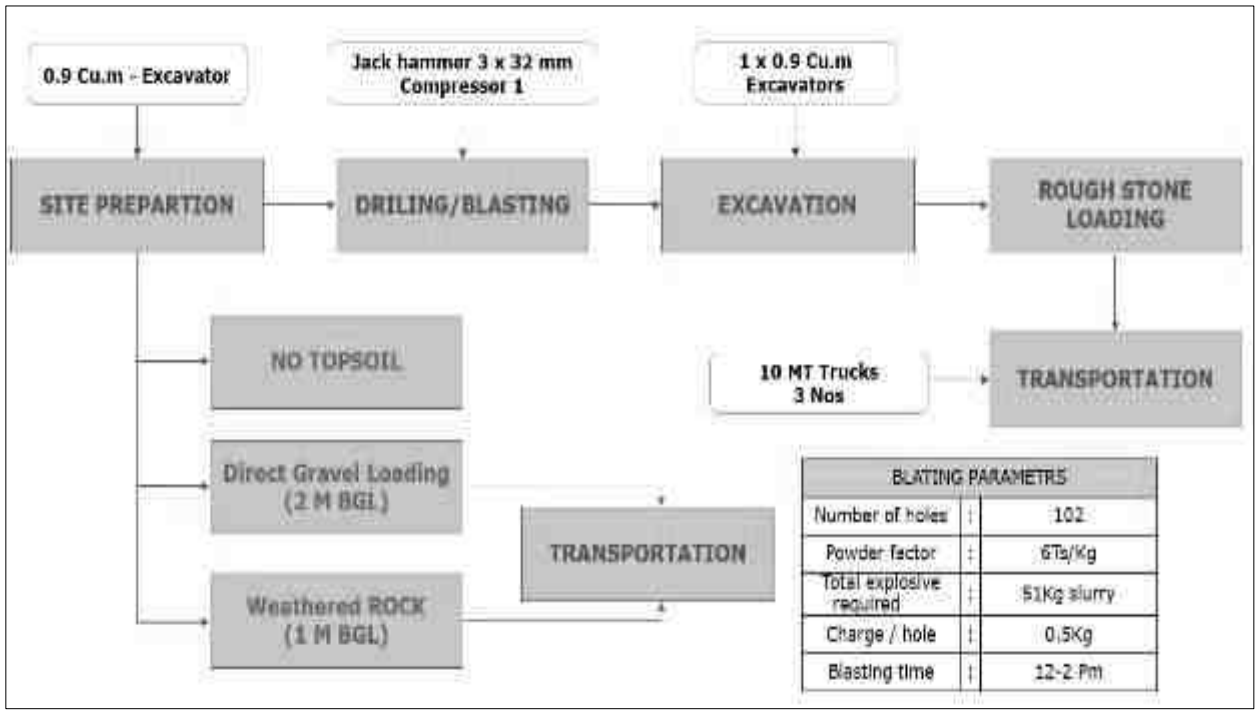


2.17 LOADING & TRANSPORTATION OF ROUGH STONE

A hydraulic excavator will be used for lifting and loading the rough stone. This excavator, in combination with Tippers (5/10Ts) capacity of 3 no's will be used.

2.18 PROCESS FLOW CHART FOR MINING OF DECORATIVE STONE

FIGURE 2.12 FLOW CHART OF THE QUARRY OPERATION



2.19 LAYOUT

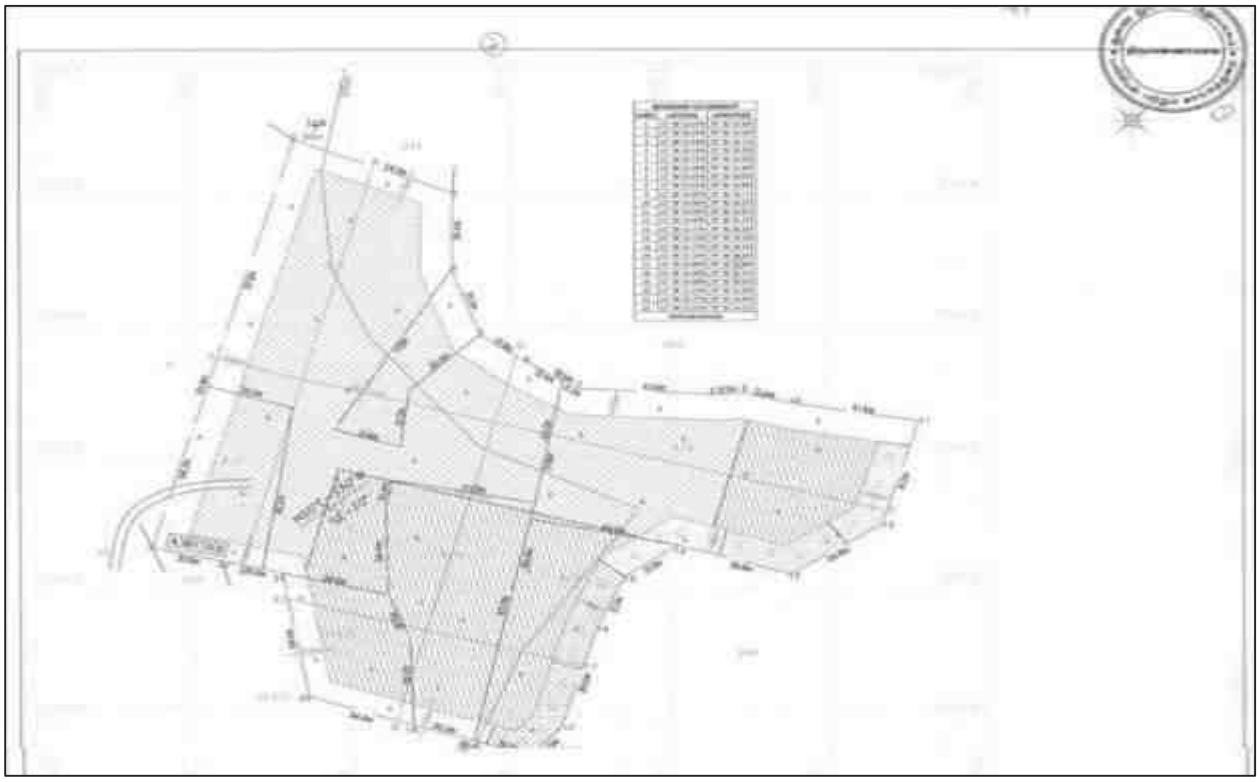
The layout of the proposed quarry work has been shown in the development plan and sections (Figure 2.13). The colouring has been done distinctly for easy identification of the year-wise excavation programme.

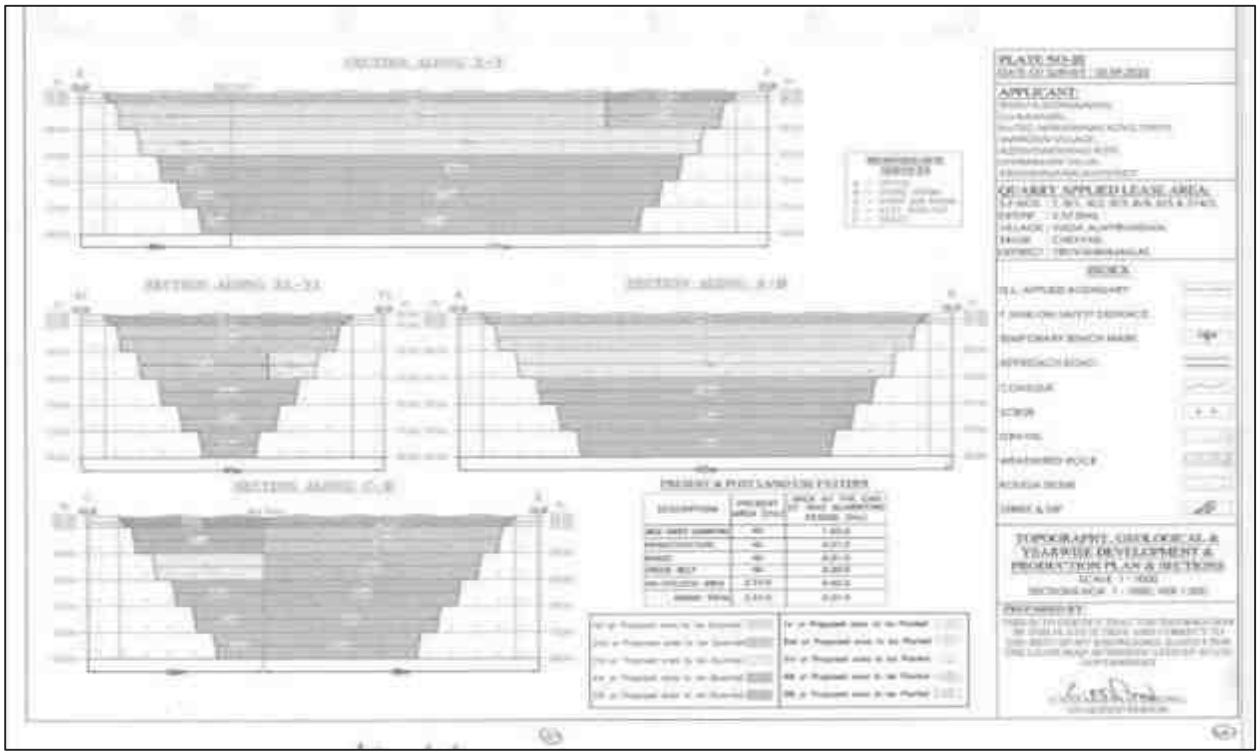
2.20 MACHINERY DETAILS

Table 2.8 Machineries Involved in the Project

S.No.	Activity	Machinery	Capacity	Numbers
1	Drilling	Jack hammer	1.2 to 6 m	6
2	Drilling	Compressor	400 psi	2
3	Loading	Excavator	0.90m^3	1
4	Transporting	Tipper	5/10T	3

FIGURE 2.13 PROJECT LAYOUT PLAN AND SECTIONS





2.21 PROPOSED SCHEDULE FOR IMPLEMENTATION

The project proponent has proposed to carry out 2,37,440m^3 of Rough Stone 18,465m^3 of Weathered rock and 19,125m^3 of Gravel at the rate of 100% recovery upto a depth of 27m below ground level for the period of five years.

Table 2.9: Proposed Year Wise Development

Year	Section	Bench	Length (m)	Width (m)	Depth (m)	Volume (m^3)	Gravel (m^3)	Weathered Rock (m^3)	Mineable reserve of Rough Stone (m^3)
I	XY-AB	I	40	141	1	5640	5640		
		II	39	139	1	5421		5421	
		III	36	132	5	23760			23760
	XY-CD	I	120	45	1	5400	5400		
		II	120	44	1	5280		5280	
		III	120	41	5	24600			24600
Total							11040	10701	48360
II	XY-CD	I	41	45	1	1845	1845		
		II	40	44	1	1760		1760	
		III	37	41	5	7585			7585
	X1Y1-CD	I	78	80	1	6240	6240		
		II	76	79	1	6004		6004	
		III	70	76	5	26600			26600
		IV	41	69	5	14145			14145
Total							8085	7764	48330
III	X1Y1-CD	IV	16	69	5	5520			5520
	XY-CD	IV	150	35	5	26250			26250
	XY-AB	IV	29	119	5	17255			17255
Total									49025
IV	XY-AB	V	23	106	5	12190			12190
	XY-CD	V	144	28	5	20160			20160
	X1Y1-CD	V	44	63	5	13860			13860
Total									46210
V	X1Y1-CD	VI	31	56	5	8680			8680
		VII	18	50	5	4500			4500
	XY-CD	VI	137	22	5	15070			15070
		VII	131	15	5	9825			9825
	XY-AB	VI	16	93	5	7440			7440
Total							0	0	45515
Grand Total							**19125**	**18465**	**237440**

The brief summary of production for the proposed 5 years is given below.

Table 2.10 Summary of production For 5 Years				
S.No.	**Year**	**Rough Stone (m^3)**	**Weathered rock (m^3)**	**Gravel (m^3)**
1	I	48360	10701	11040
2	II	48330	7764	8085
3	III	49025	-	-
4	IV	46210	-	-
5	V	45515	-	-
Total		**237440**	**18465**	**19125**

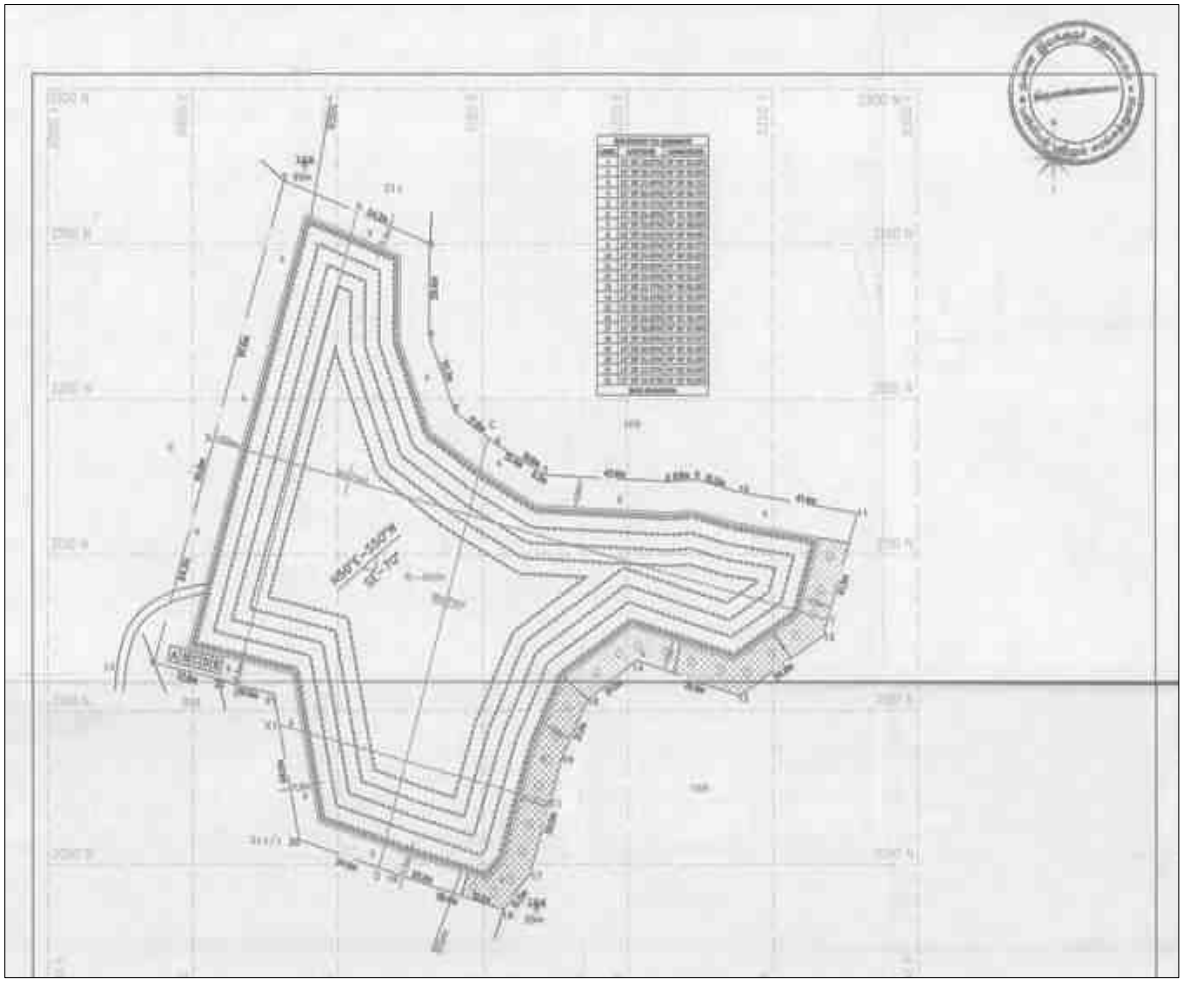
2.22 CONCEPTUAL PERIOD

As estimated, mineable reserve in the mine lease area are 2,37,440m^3 of Rough Stone, 18,465m^3 of Weathered rock formation and 19,125m^3 of Gravel upto a depth of 27m below ground level only. During current plan period a total of 2,37,440m^3 of Rough Stone, 18,465m^3 of Weathered Rock and 19,125m^3 of gravel to be produced for the period of five years. Hence after quarry reaches conceptual stage, mined out pit will be used as rainwater harvesting and to inherent entry of the public and cattle fencing will be provided all along the boundary of the mine lease area. Ultimate extent and size of the quarry at the conceptual stage is given below as Table 2.11 and Land Use pattern is given as Table 2.12. The conceptual plan is given as Figure 2.14

TABLE 2.11: Ultimate Pit Dimension			
Pit No.	**Length (max) (m)**	**Width (Avg) (m)**	**Depth (max) (m)**
I	201	96	27

TABLE 2.12 Land Use at Mine Closure Stage		
S. No.	**Land Use**	**Area in use during the quarrying period (Ha)**
1	Area left for water body	1.93
2	Green Belt	0.20
3	Remaining area	0.44
Total		**2.57**

FIGURE 2.14 CONCEPTUAL PLAN



2.23 GREENBELT DEVELOPMENT

Green belt development plan is proposed for the 5 year period.

S.No.	Year	Species	No. of trees	Spacing	Survival
1	I	Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indiaca	200	3m x 3m	80%
2	II		200		
3	III		200		
4	IV		200		
5	V		200		
		Total	**1000**		

2.24 TECHNOLOGY AND PROCESS DESCRIPTION

- It is proposed to quarry out rough stone with 5m bench height, 5m width with 80° slope using conventional opencast semi-Mechanized method.
- The quarry operation involves splitting of rock mass of considerable volume from the parent rock by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy customers.
- Occasionally hydraulic excavator is attached with rock breakers for fragmentation to avoid secondary blasting.

2.25 PROJECT REQUIREMENTS

TABLE 2.13 Project Requirements

S. No.	Nature of requirement	Description
1	Water requirement	Total water requirement of 5KLD which will be procured from the outside agencies. Out of 5.0KLD, drinking water requirement is 1.0KLD, Green belt development is 1.0 KLD and for dust suppression is 3.0 KLD.
2	Power requirement	No electricity is needed for mining operations. For office demand it will be met from the state grid.
3	Manpower requirement	Permanent employee – 15, Temporary employee – 10
4	Financial requirement	The total Project Cost as per AMP will be INR 75,62,000 including Operational cost, Fixed Asset cost and EMP cost
5	Funds for Socio economic development	INR 5,00,000 is allocated. In addition any demand raised by people during public hearing will also be met.

2.26 Project Cost

The budget of the project is given below.

TABLE 2.14 Budget of the Project

S.No.	Details	Cost (in INR)
FIXED ASSET COST		
1	Land Cost (600000/1Ha)	15,42,000
2	First aid room and accessories	1,00,000

3	Labour Shed	1,00,000
4	Sanitary Facility	1,00,000
TOTAL		**18,42,000**
OPERATIONAL COST		
1	Machineries	50,00,000
2	Fencing cost	2,00,000
TOTAL		**52,00,000**
EMP COST		
1	Air Quality Sampling	40,000
2	Water Quality Sampling	40,000
3	Noise Monitoring	20,000
4	Ground vibration test	20,000
5	Drinking water facility	1,20,000
6	Sanitary Arrangements	50,000
7	Safety kids	50,000
8	Water sprinkling	1,20,000
9	Afforestation	60,000
TOTAL		**5,20,000/-**

Total Project Cost – RS. 75,62,000

CHAPTER 3

DESCRIPTION OF THE ENVIRONMENT

3.1. DESCRIPTION OF THE STUDY AREA

The project area is located in Vada Alapirandan village, Cheyyar Taluk, Tiruvannamalai District over an extent of 2.57.0Ha. The project area is considered as Core zone and the area in the surrounding 10km radius is considered as Buffer Zone. Baseline values for various environmental components are discussed in this Chapter.

The components included are:

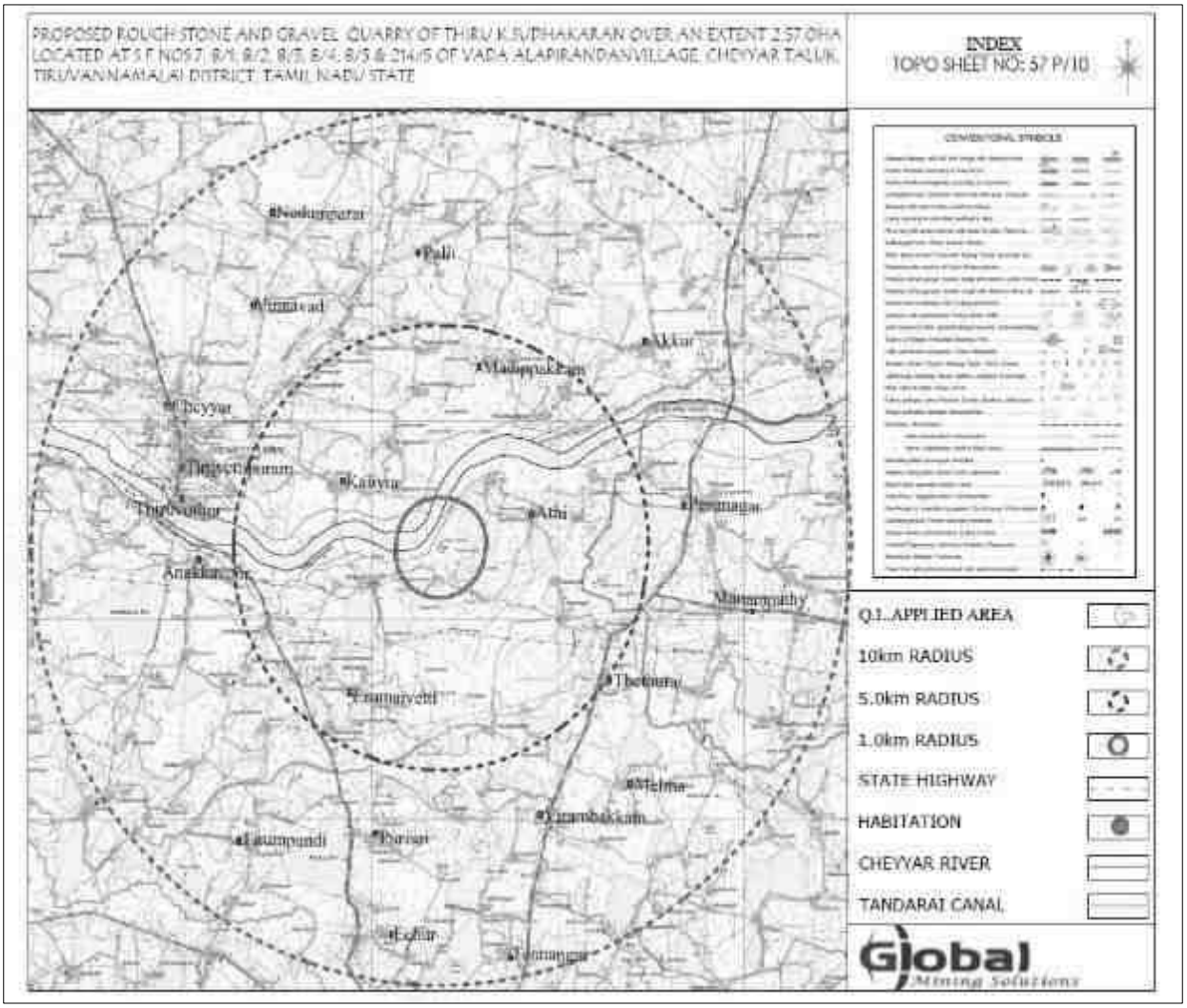
- Meteorological environment
- Air environment
- Water environment
- Noise environment
- Soil environment
- Biological environment
- Land use
- Socio economic environment
- Hydrogeology

3.2. Description of environment in the study area

Table 3.1 Description of the lease area		
S.No.	**Areas**	**Distance from project site**
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil within 15km radius
2	Areas which are important or sensitive for ecological reasons	

A	Wetlands, water courses or other water bodies,	**Water bodies** Tandarai Canal – 120m in NW, Cheyyar river – 296m in NW, Tank - 470m in SE
B	Coastal zone, biospheres,	Nil within 10km radius
C	Mountains, forests	Nil within 10km radius
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within 15km radius
4	Inland, coastal, marine or underground waters	Nil within 15km radius
5	State, National boundaries	Nil within 15km radius
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nil within 15km radius
7	Defence installations	Nil within 15km radius
8	Densely populated or built-up area	Cheyyar – 5.5km in W
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	All facilities are available in Cheyyar – 5.5km in W
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Nil
11	Areas already subjected to pollution or environmental damage.(those where existing legal environmental standards are exceeded)	Nil
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No. The area is not prone to earthquakes, floods, etc.

FIG 3.1 FEATURES OF ENVIRONMENT FOR 10 RADIUS FROM THE LEASE AREA



3.3. METEOROLOGICAL ENVIRONMENT

3.3.1 Meteorological conditions prevailing in the buffer zone is given below

Climate

The climate of Tiruvannamalai District is tropical. The period from April to June is generally hot. The average maximum and minimum temperature for district varies from 22°C to 42°C and 16°C to 31°C respectively.

Rainfall

Tiruvannamalai district generally experiences hot and humid climate conditions. The district receives rain under the influence of both southwest and northeast monsoons. Most of the precipitation occurs in the form of cyclonic storm caused due to depressions in Bay of Bengal chiefly during NE monsoon period. The SW monsoon is highly erratic and summer rains are negligible. During the period from March to May 2020, the actual rainfall was 243.2mm, the normal rainfall was 83.4mm. The excess rainfall is 192% (Source: Mausam.imd.gov.in)

Rainfall received from 2013 to 2017 is given below.

Table 3.2 Rainfall data

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

Relative Humidity

High relative humidities between 58% and 84% prevail throughout the year. Relative humidity is maximum in the morning and minimum in the evening.

Seismic information

The study area falls in Zone II, which comes under the least active zone. The seismic map of India is given as Fig 3.2.

FIG 3.2 SEISMIC MAP OF INDIA

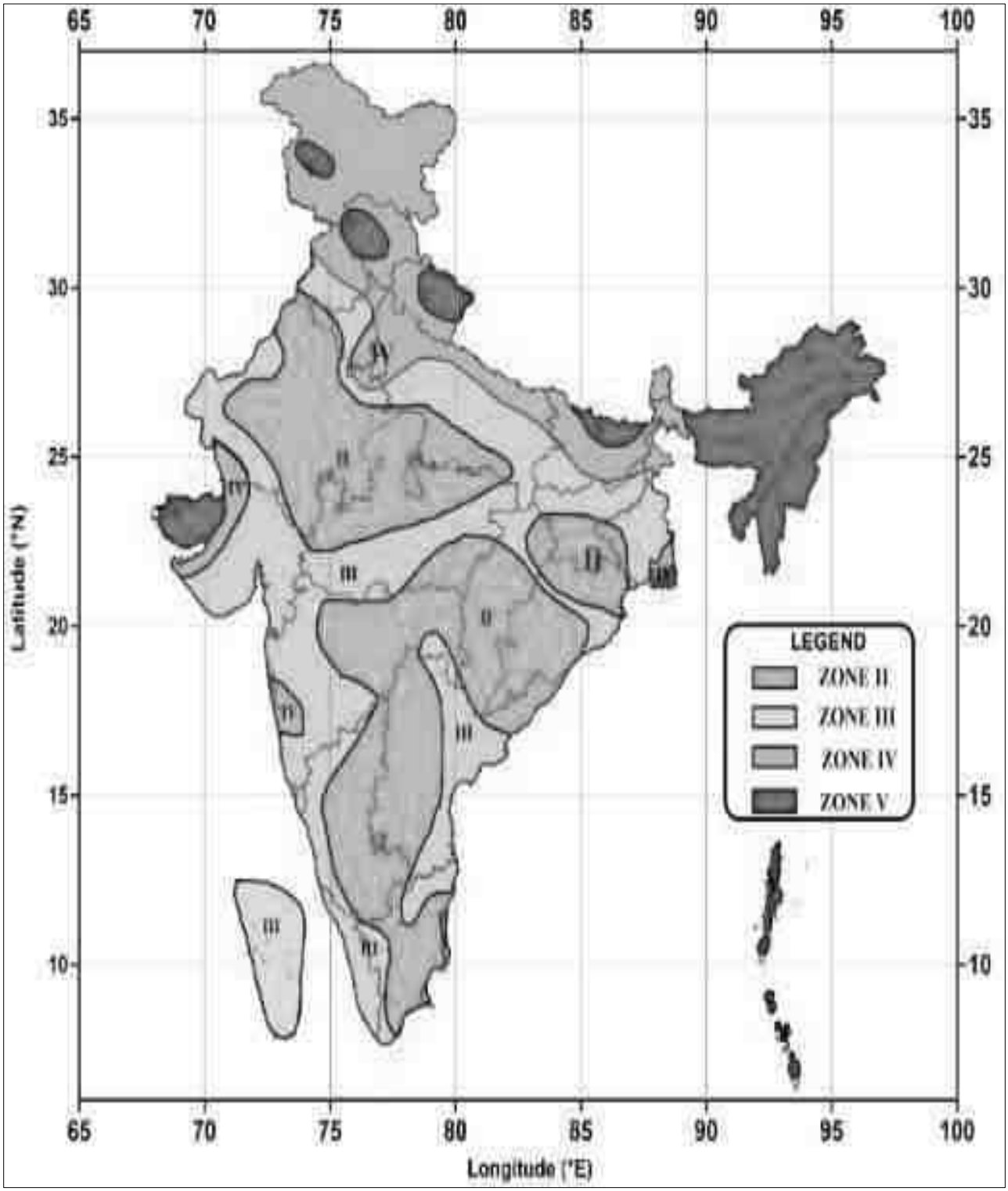
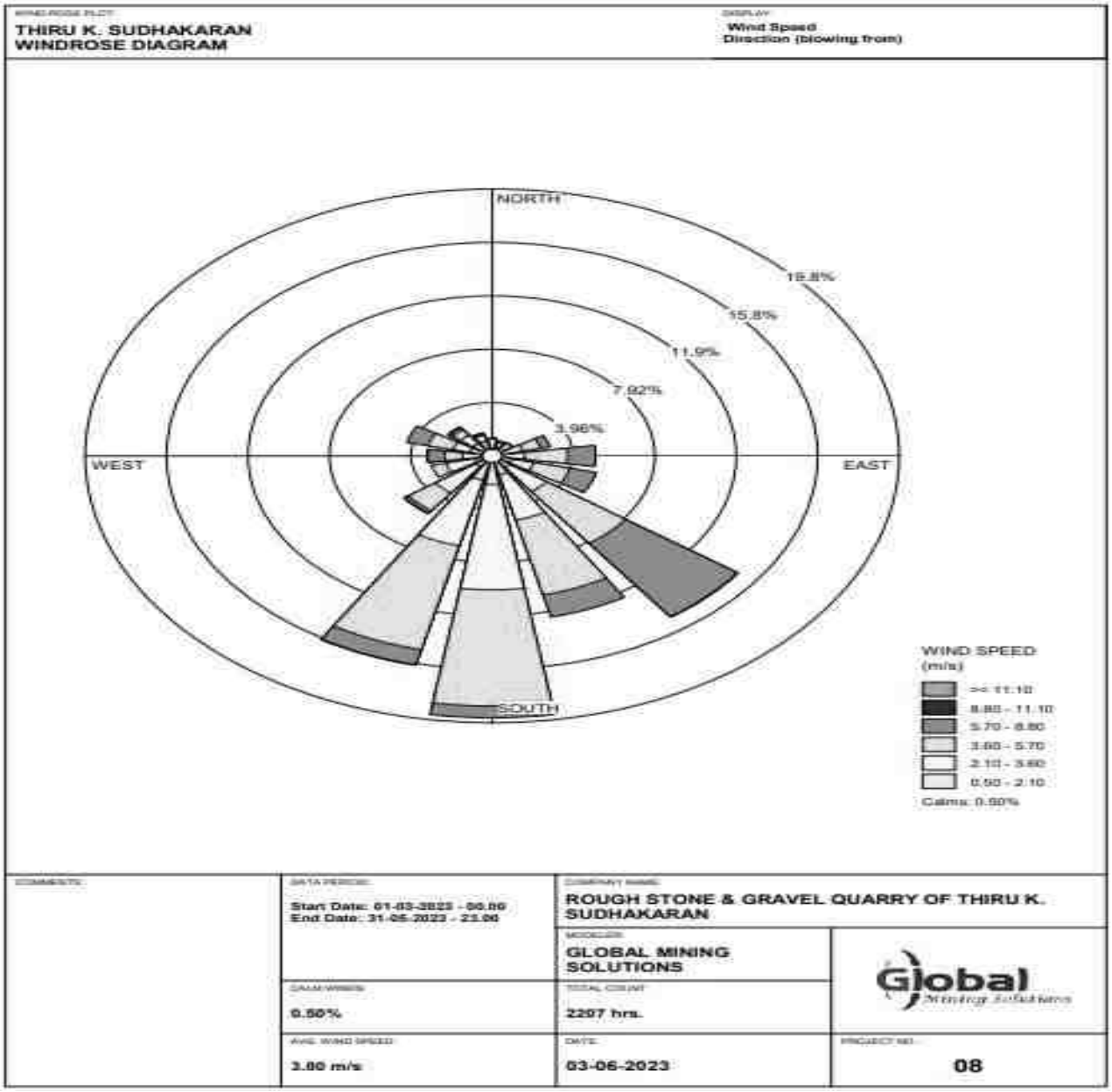


FIG 3.3 WIND ROSE PLOT DURING MARCH TO MAY 2023



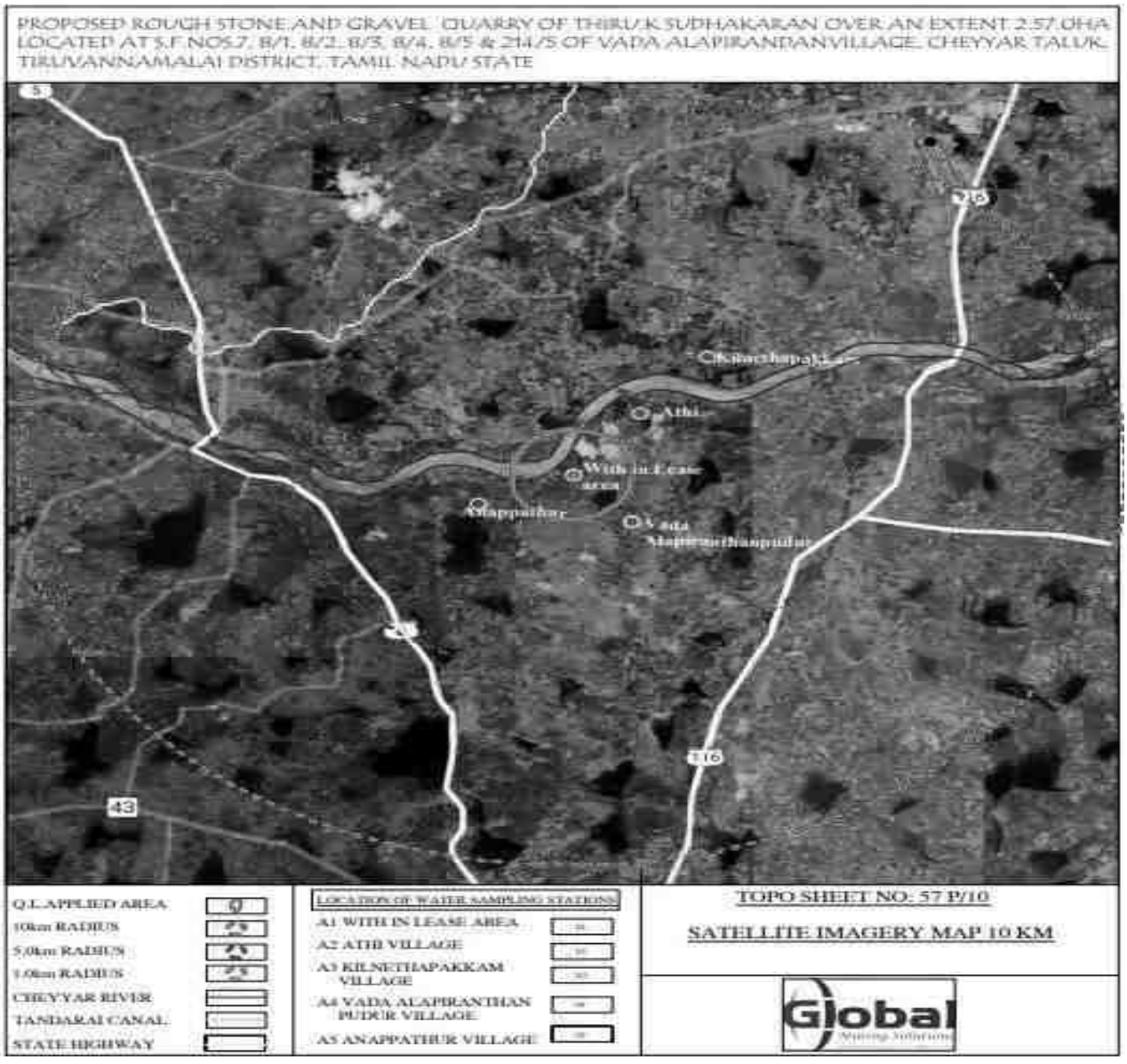
3.3.2 Meteorological data of the project area

The meteorological data collected in the study area from March to May 2023 which includes Temperature, Wind speed, Wind direction and Relative humidity. The predominant wind blow from West. Temperature range was from 20°C (minimum in night) to 45°C (maximum in day).

3.4. AMBIENT AIR MONITORING DATA

Ambient air quality monitoring has been carried out in 5 locations. One in the core zone and remaining four locations in the buffer zone areas. Monitoring locations have been chosen such that the measurement represents the overall air condition prevailing in the area. The monitoring locations for ambient air study is given in Figure 3.4 below.

FIG 3.4 AMBIENT AIR MONITORING LOCATIONS



The concentrations of various air pollutants at the 5 locations are given below. For all the components in the table, the unit are in µg/m^3

TABLE 3.3 Ambient Air Monitoring Results for Various Pollutants

S. No.	Parameters	A1		A2		A3		A4		A5		NAAQ limits
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
1	PM_{10}	42.4	54.5	45.1	56.4	43.1	57.2	45.4	60.2	47.2	61.3	100
2	$PM_{2.5}$	19.3	29.3	20.4	29.3	18.7	29.1	20.6	30.2	22.2	34.3	60
3	SO_2	3.4	5.8	3.7	6.4	4.0	6.4	3.8	8.4	4.2	7.6	80
4	NO_x	5.4	7.9	5.8	7.6	6.2	9.2	6.7	11.4	6.8	10.4	80
5	CO	BDL (DL – 1144)										2

A1 :**Near Mine lease area** A2 :**Athi village**

A3 :**Kil nethapakkam village** A4 :**Vada Alapirandan Pudur village**

A5 :**Anappathur village**

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

FIG 3.5 AMBIENT AIR DATA FROM A1 - MINE LEASE AREA

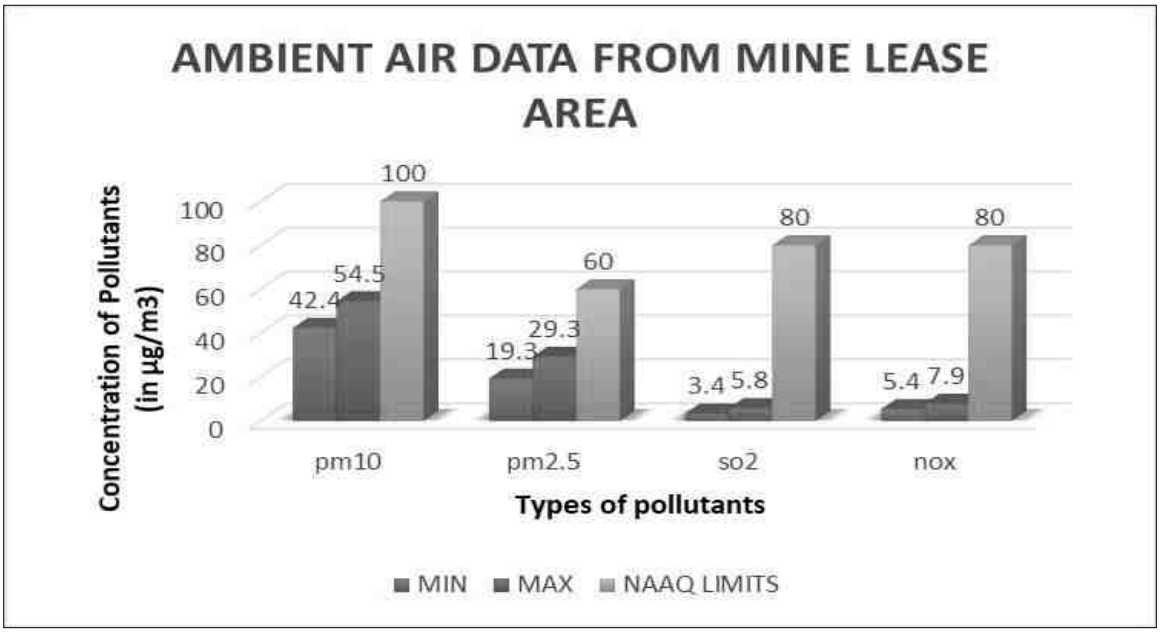


FIG 3.6 AMBIENT AIR DATA FROM A2 - ATHI VILLAGE

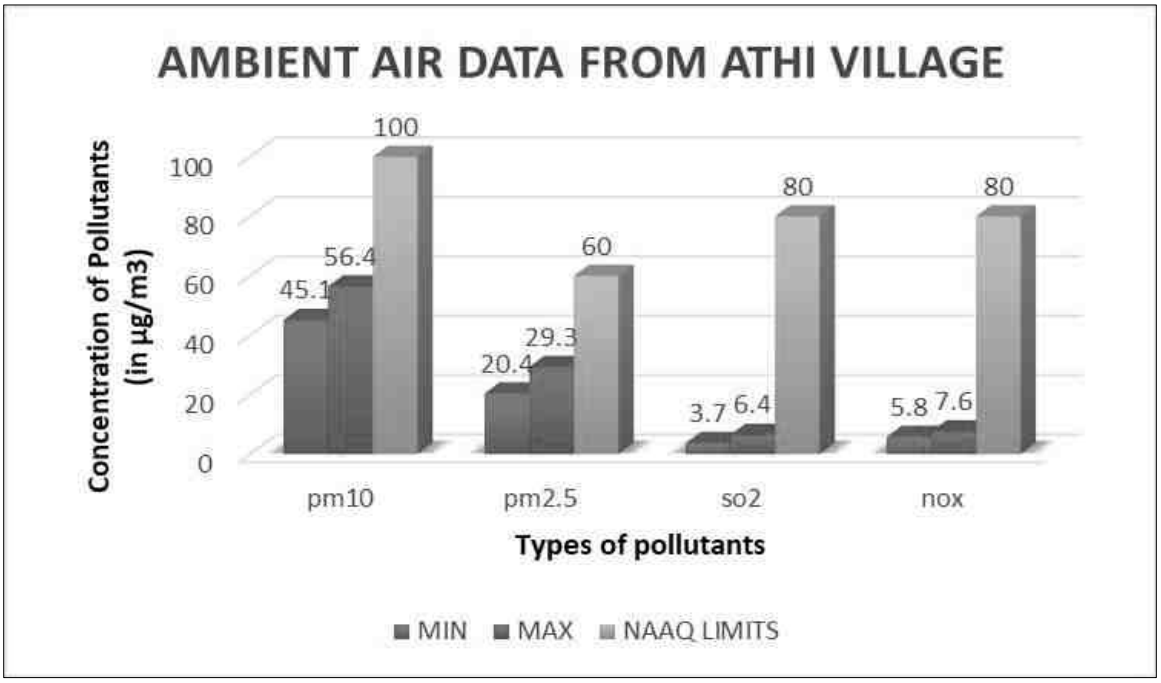


FIG 3.7 AMBIENT AIR DATA FROM A3 - KILNETHAPAKKAM VILLAGE

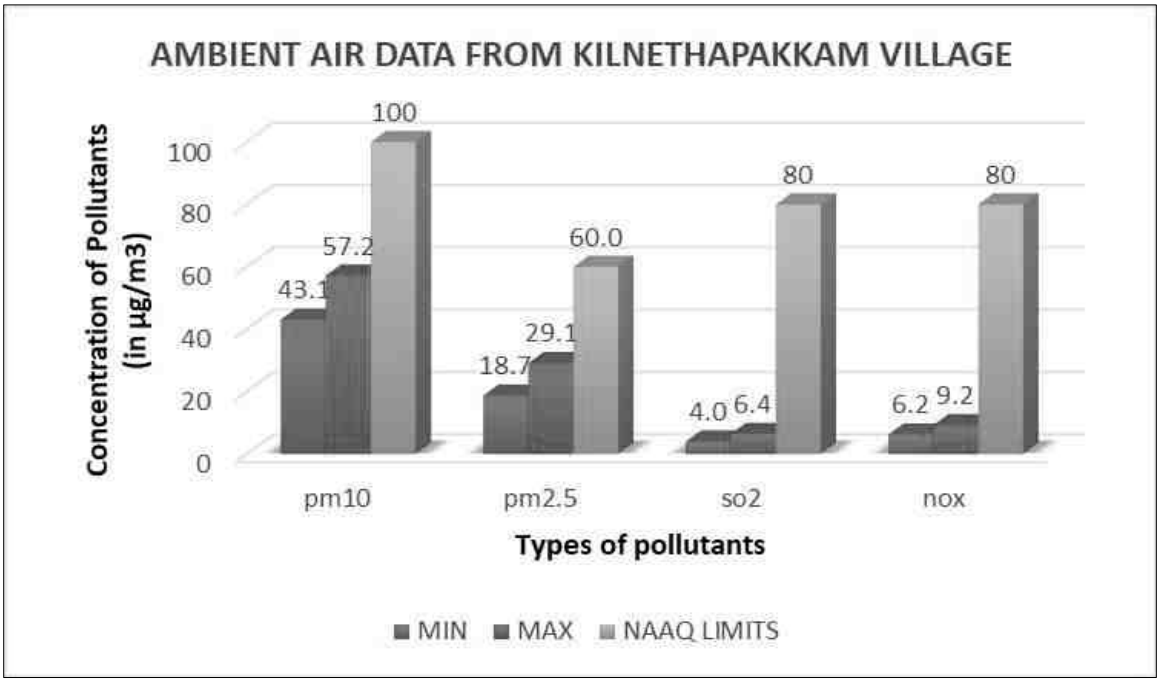


FIG 3.8 AMBIENT AIR DATA FROM A4 - VADA ALAPIRANDAN VILLAGE

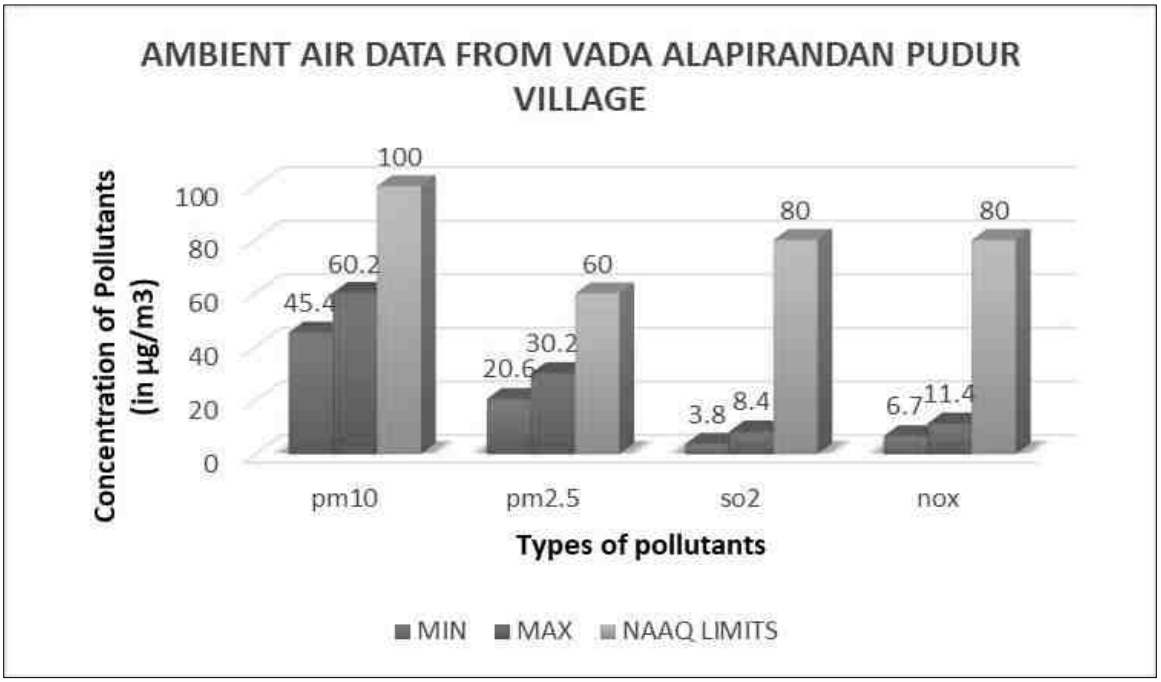
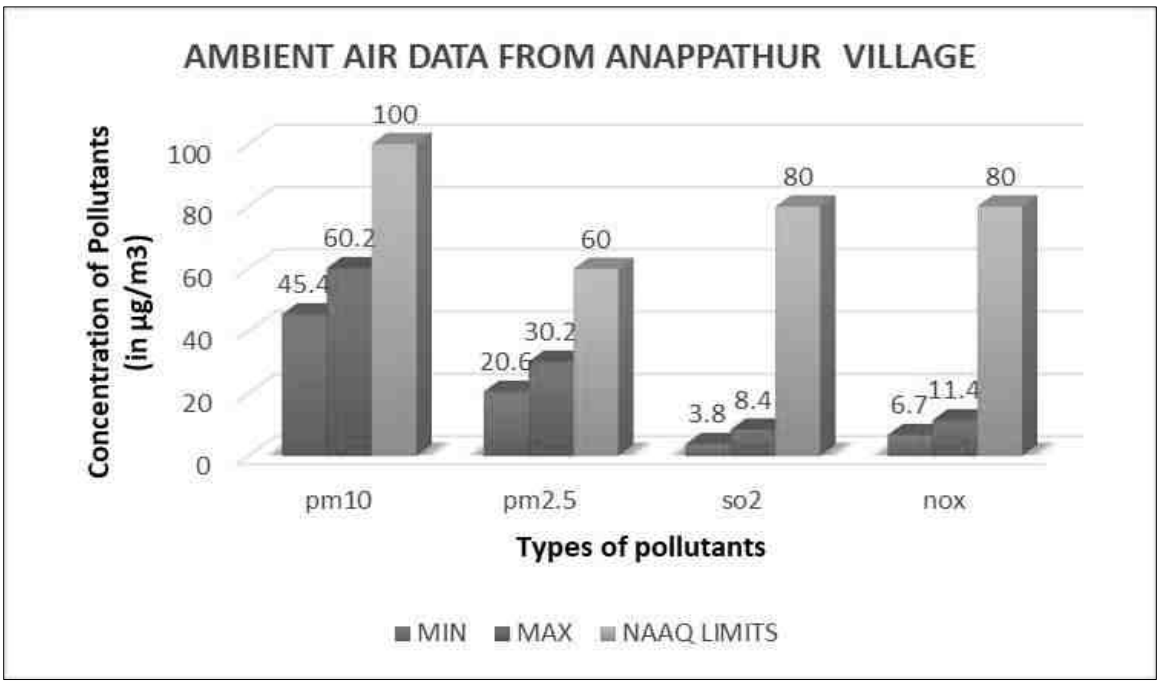


FIG 3.9 AMBIENT AIR DATA FROM A5 - ANAPPATHUR VILLAGE

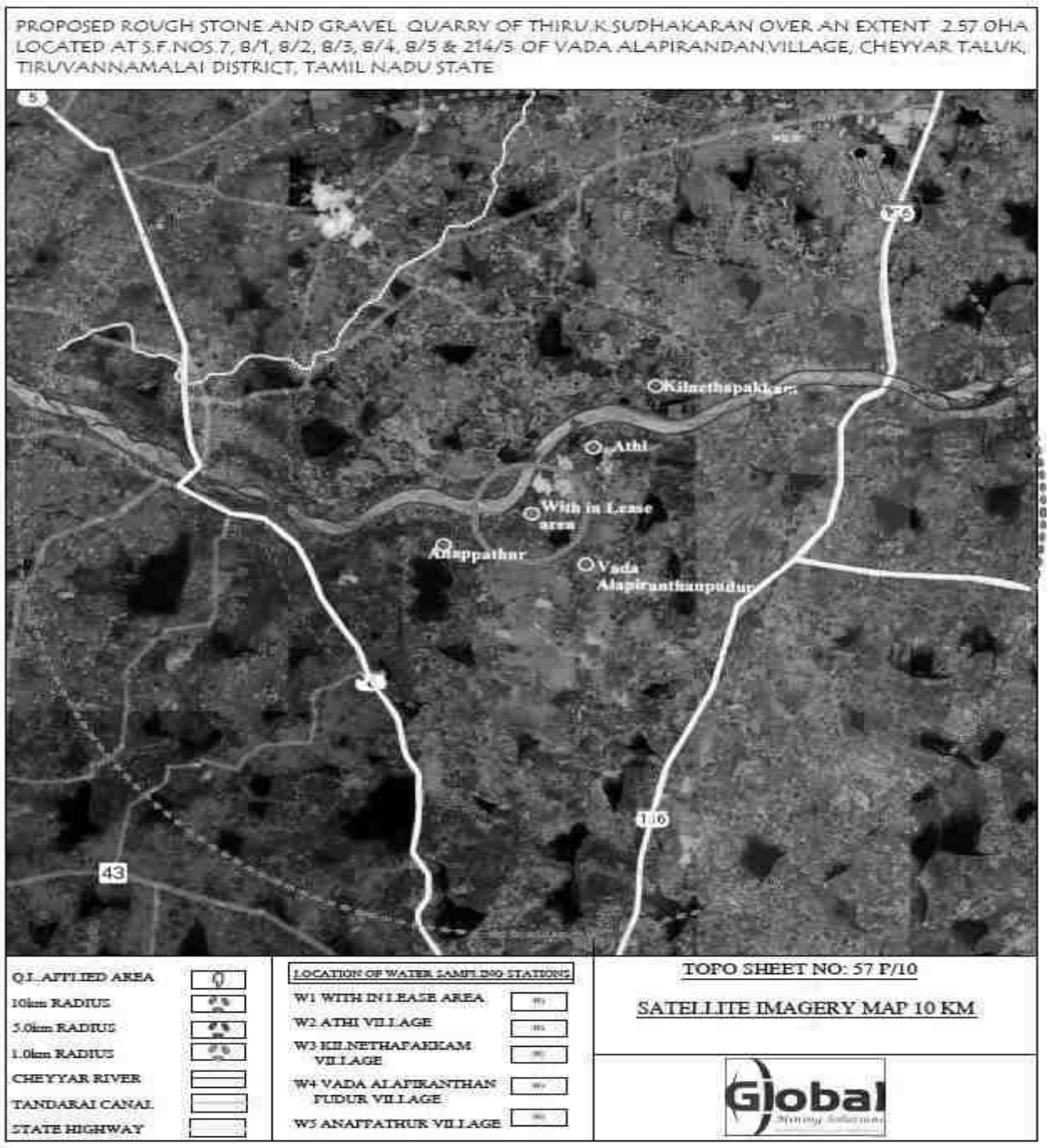


All the values were found to be within NAAQ limits.

3.5. WATER ENVIRONMENT

Water samples (bore wells) were collected from 5 different locations and they are shown in the picture below:

FIG 3.10 WATER SAMPLING LOCATIONS



The samples were analyzed by Swasti Enviro Solutions Pvt. Ltd and the results are summarized below.

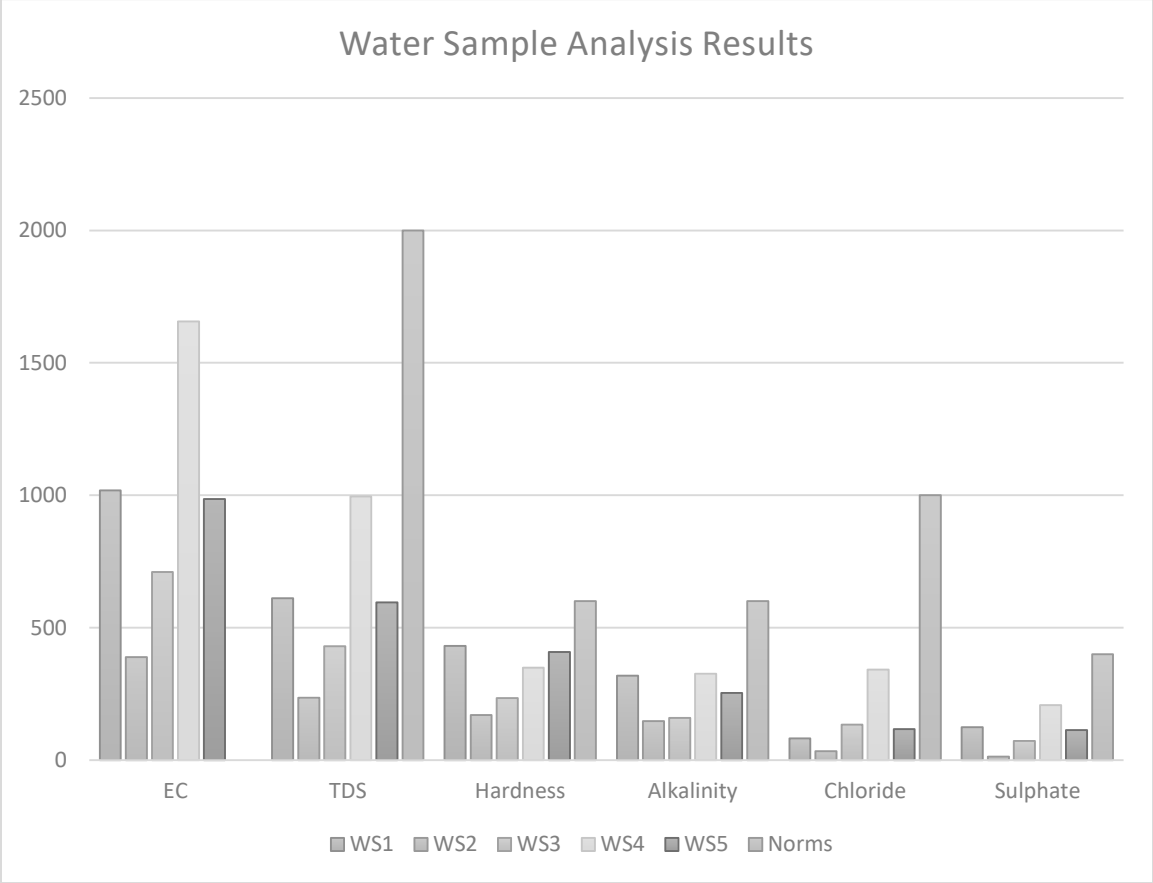
Table 3.4 Results of Water sampling Analysis in 5 locations

S. No.	Parameter	WS1	WS2	WS3	WS4	WS5	Limits	
		Near Mine lease area	Athi	Kilnethapakkam	Vada Alapirandan	Anappathur	Acceptable Limits	Permissible Limits
1	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
2	Turbidity	<1	<1	<1	<1.0	<1	1	5
3	pH at 25 °C	7.28	7.81	6.89	7.34	7.29	6.5- 8.5	No Relaxation
4	Electrical Conductivity	1018	389.4	710.5	1656	985.7	-	-
5	TSS	612	236	430	995	596	500	2000
6	Total hardness as $CaCO_3$	431	171	235	349	408	200	600
7	Calcium as Ca	83.1	43.1	56.8	64.3	74.5	75	200
8	Magnesium as Mg	53.6	15.1	22.3	45.2	53.2	30.0	100
9	Calcium as $CaCO_3$	208	108	142	161.0	186	-	-
10	Magnesium as $CaCO_3$	223	62.7	93.0	188	221	-	-
11	Total alkalinity as $CaCO_3$	319	147	160	326	254	200	600

12	Chloride as Cl^-	82.2	34.2	134	342	117	250	1000
13	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
14	Sulphates as SO_4^{2-}	124	13.6	72.6	208	114	200	400
15	Iron as Fe	0.09	0.08	0.05	0.15	0.12	0.3	No Relaxation
16	Nitrate as NO_3	3.26	BDL(D.L-1.0)	3.5	2.08	2.93	45	No Relaxation
17	Fluoride as F	0.36	0.13	0.21	0.39	0.24	1	1.5
19	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

Some of the common parameters including EC, TDS, Total Hardness, Total Alkalinity, Chlorides and Sulphates in the 5 locations were plotted and the graph is provided below.

FIG 3.11 VALUES OF FEW COMMON PARAMETERS IN WATER ANALYSIS



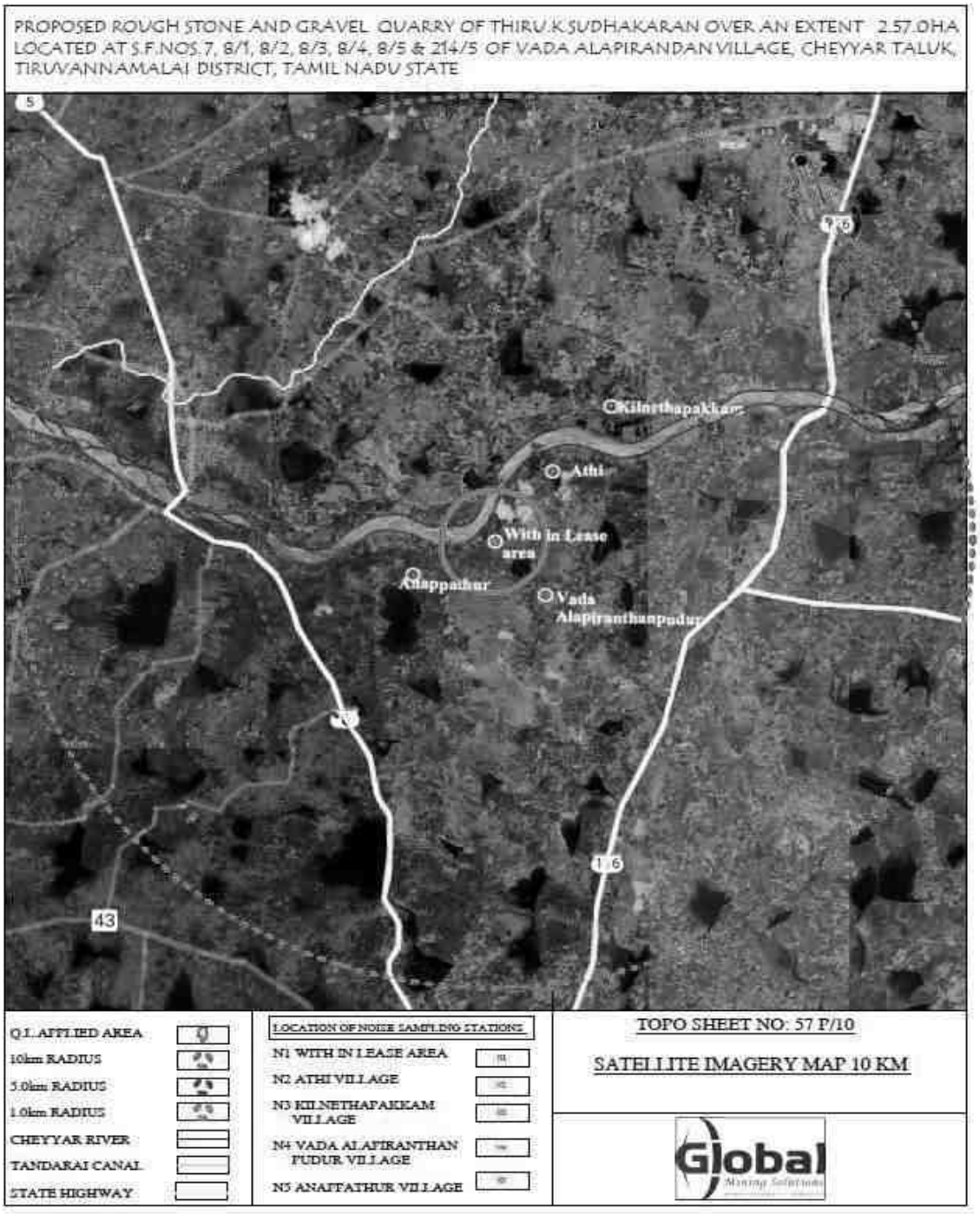
All the values were found to be within the permissible limits.

3.6. NOISE MONITORING

Noise level monitoring was calculated using a noise level meter by Swasti Enviro Solutions Pvt. Ltd. and the results are summarized below.

The noise monitoring locations are given in Fig 3.12

FIG 3.12 NOISE MONITORING LOCATIONS

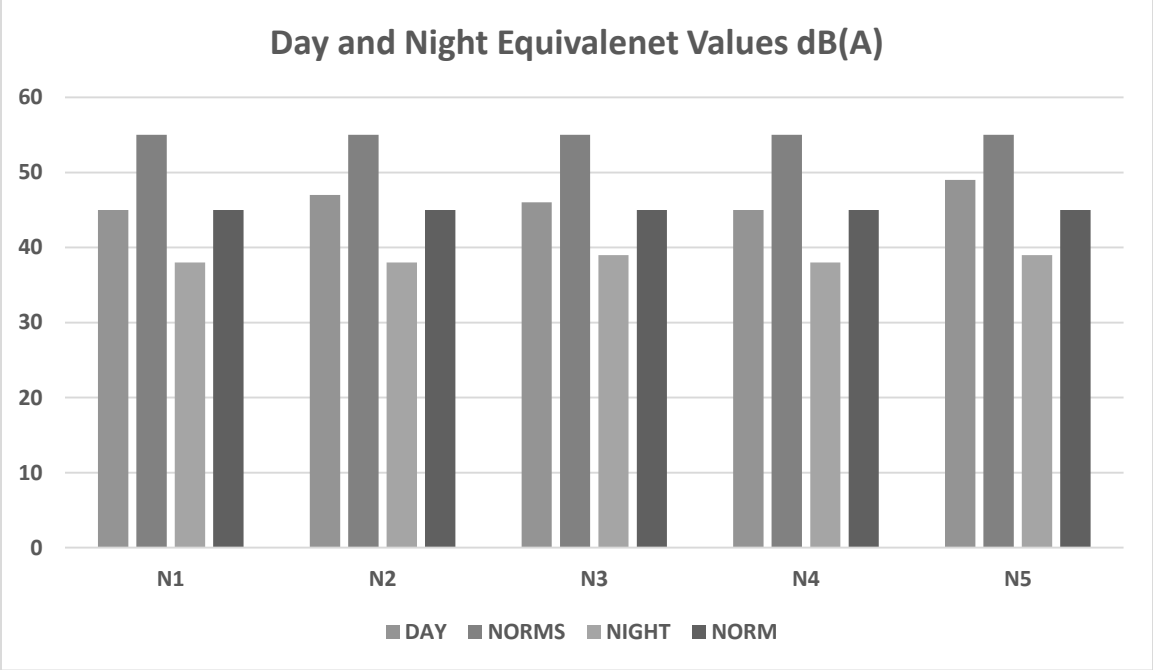


The results are given in Table below.

Table 3.5 Noise monitoring results						
S. No	**Location**	**Day equivalent**	**Night equivalent**	**Day and Night equivalent**	**Day equivalent limits by CPCB**	**Night equivalent limits by CPCB**
1	NM1 – Mine lease area	45	37.7	43.6	55	45
2	NM2 – Athi	47.3	38.1	45.8		
3	NM3 – Kilnethapakkam	46.2	39.0	44.8		
4	NM4 – Vada Alapirandan	45.2	37.5	43.8		
5	NM5 - Anappathur	48.7	38.7	47.2		

The results are plotted as below.

FIG 3.13 DAY EQUIVALENT VALUES IN 5 LOCATIONS

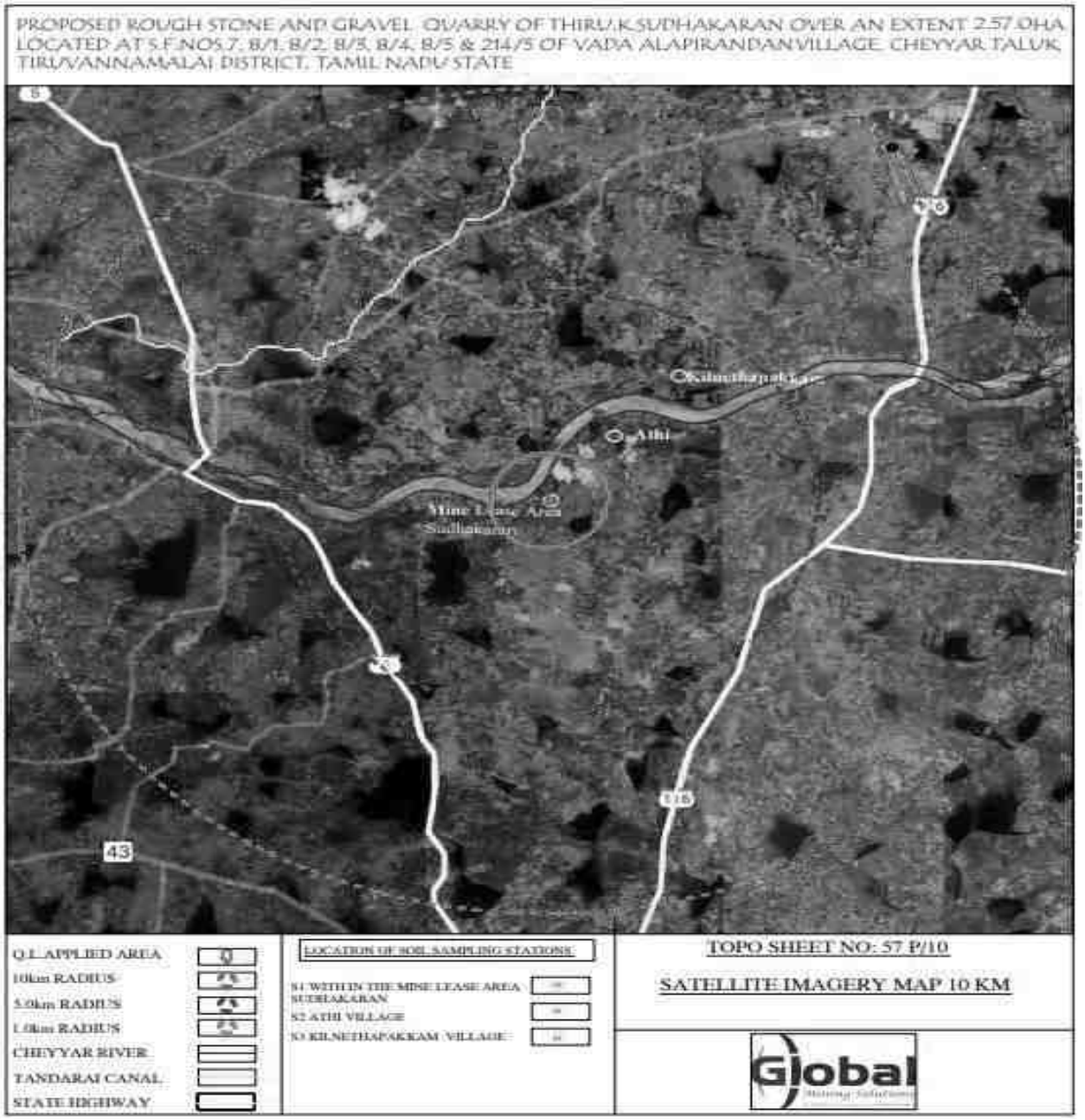


All the values are found to be within CPCB norms.

3.7. SOIL SAMPLING ANALYSIS

Soil samples have been collected from the mine lease area and 2 other locations from Athi village and Kilnethapakkam village. The locations are shown in figure below.

FIG 3.14 SOIL SAMPLING LOCATIONS



The results are summarized in the table below.

Table 3.6 Results of Soil Sample Analysis				
S. No.	**Parameter**	**SS1 Mine lease area**	**SS2 Athi**	**SS3 Kil Nethapakkam**
1	pH	7.95	7.25	7.67
2	Electrical Conductivity	184.9	156.7	110.2
3	Dry Content	97.6	96.5	98.3
4	Water Content	2.4	3.5	1.7
5	Organic Mater	0.15	0.22	0.32
6	Sulphur	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)
7	Phosphorus	4.5	3.2	2.7
8	Texture	sandy loam	clay	silt loam
9	Sand	55.64	32.57	36.58
10	Clay	28.95	26.44	52.47
11	Loam	15.41	40.99	10.95
12	Total Nitrogen	53	68	102
13	Sodium	476	540	386
14	Potassium	720	910	562
15	Water Holding Capacity	3.3	3.7	3.5
16	Porosity	16.4	18.6	16.9

3.8. BIOLOGICAL ENVIRONMENT

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

3.8.1 Flora in the study area

Field survey is done. For measuring the extent of flora present in the study area, the area is divided in to 4 quadrants. The flora population in each quadrant is summed up for the total population in the study area. Also, data from the State forest department is used. The quadrants used for each type are given below:

Table 3.7 Type of Quadrants		
S. No.	**Size of Quadrant**	**Type of flora**
1	10x10 m	Trees
2	5x5 m	Shrubs
3	1x1 m	Herbs

Core Zone

During the field visit, it is observed that there are no national parks / Sanctuaries / forests in the 10km buffer area. The study area is devoid of any major plantations. Here and there small bushes are found, which will be removed during mining. Common species found in the core zone are given below.

Table 3.8 Flora in Core Zone

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

Buffer zone

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

Table 3.9 Flora in Buffer zone

S. No.	Scientific name	Vernacular/English name	Type of flora
1	Azadirachta indica	Neem	Trees
2	Carica papaya	Papaya	
3	Mangifera indica	Mango	
4	Acacia leucophloea	Velamaram	
5	Acacia nilotica	Karu- velamaram	
6	Moringa oleifera	Murungai	
7	Tamarindus indica	Puli	
8	Tectona grandis	Theku	
9	Manilkara zapota	Sappota	
10	Musa paradisiaca	Valzhlai	
11	Borassus flabelliformis	Panna-maram	
12	Ficus benghalensis	Alamaram	
13	Ficus religiosa	Arasamaram	
14	Phyllanthus emblica	Nelli	
15	Calotropis gigantea	Yerukku	Shrubs
16	Cassia auriculata	Aavarai	
17	Ricinus communis	Aamanakku	
18	Tecoma stans	Arali	

19	Aloe vera	Kathalai	
20	Catharanthus roseus	Nithyakalyani	Herbs
21	Acalypha indica	Kuppaimeni	
22	Coccinia grandis	Kovai	Climbers
23	Cissus quadrangularis	Pirandai	
24	Jasminum angustifolium	malli	
25	Ziziphus oenoplia	Ilandai	
26	Cymbopogon	Kanam	Grasses
27	Cyperus rotundus	Kora grass	
28	Cynodon dactylon	Arugu	

3.8.2 Fauna in the study area

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

Table 3.10 Fauna in buffer zone

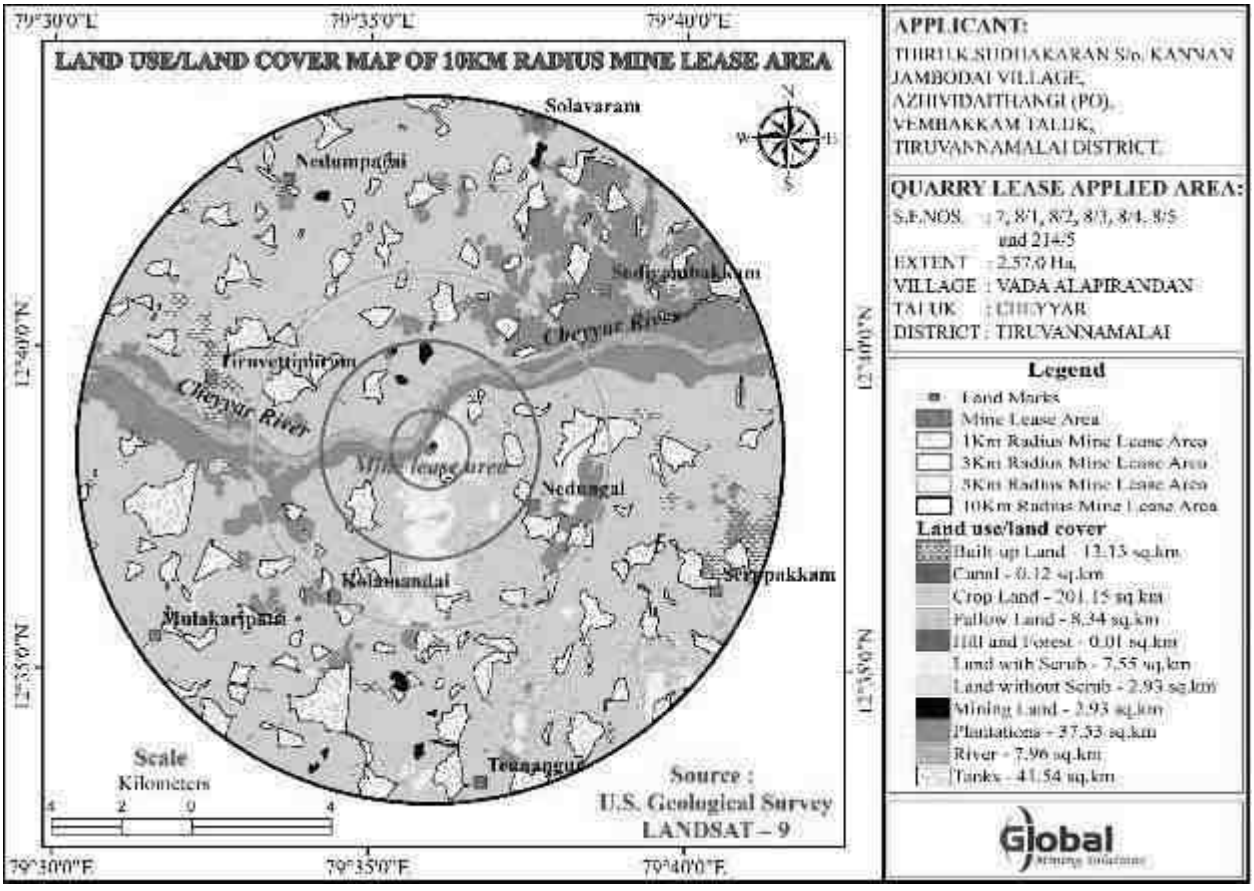
S.No.	Scientific name	Common name	Type of fauna	Schedule to which the species belong
1	Canis familiaris	Common dog	Mammals	IV
2	Felis catus domesticus	Domestic cat		IV
3	Golunda ellioti	Indian bush rat		IV
4	Funambuus palmarum	Squirrel		IV
5	Lepus nigricollis	Indian hare		IV
6	Bos indicus	Domestic cow		IV
7	Common Crow	Corvus splendens	Birds	V
8	House Sparrow	Passer domesticus		IV
9	Common Myna	Acridotheres tristis		IV
10	Streptopelia chinensis	Pigeon		IV

11	Calotes versicolar	Lizard	Amphibia	IV
12	Ptyas mucosa	Snake		IV
13	Rana hexadactyla	Frog		IV

3.9. LAND USE

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

FIG 3.15 LAND USE/LAND COVER MAP OF THE STUDY AREA



The 1km, 3km, 5km and 10km radius is shown above. The details are given below.

Table 3.11 Land use data		
S.No	**Type of land**	**Area in sq.km**

1	Built-up land	13.13
2	Canal	0.12
3	Crop land	201.15
4	Fallow land	8.34
5	Hill and forest	0.01
6	Land with scrub	7.55
7	Land without scrub	2.93
8	Mining land	2.93
9	Plantations	37.53
10	River	7.96
11	Tanks	41.54
	Total	323.19

3.10. SOCIOECONOMIC ENVIRONMENT

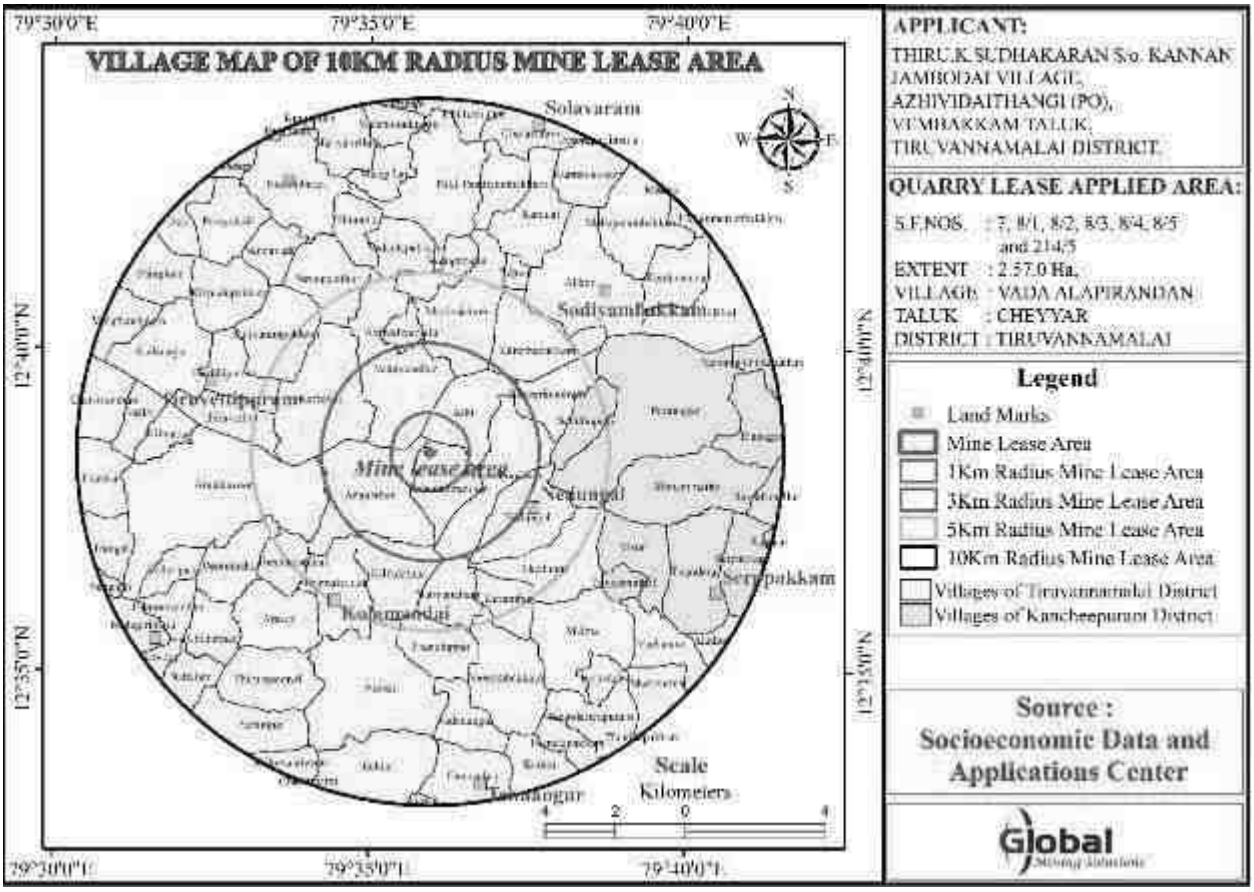
The socio economic environment of the study area is studied by conducting primary sites through site visits and conducting sample surveys. The secondary data obtained from Census 2011 is also used. The following data area collected from secondary data:

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

3.10.1 DETAILS OF VILLAGES

The profile of the villages located in the study area is given in Fig 3.16 below.

FIG 3.16 VILLAGE MAP OF THE STUDY AREA



DETAILS OF VILLAGES

The project is located in Cheyyar Taluk, Tiruvannamalai District. The total population is 24,64,875 which comprise of 12,35,889 males and 12,28,986 females. There are19 rural villages and one urban area in the study area. List of villages are given below:

Table 3.12 Village details in study area

S.No.	Village/Town Name	Radius	Taluk Name	District Name
1	Athi	0-5km	Cheyyar	Tiruvannamalai
2	Kazhiyur			
3	Madipakkam			
4	Erumaivetti			
5	Palli	5-10km		
6	Nedumpirai			
7	Vinnavadi			
8	Akkur			

9	Anakkavoor			
10	Thethurai			
11	Melma			
12	Veerampakkam			
13	Purisai			
14	Thirumpoondi			
15	Echur			
16	Tiruvethipuram (M)			
17	Thennangur		Vandavasi	Tiruvannamalai
18	Perunagar		Uthiramerur	Kancheepuram
19	Manampathy			
20	Thiruvadur		Cheyyur	Kancheepuram

Table 3.13 Population profile of the study area

Particulars	No of Population	Percentage (%)
A. Population break-up by Gender		
Male Population	41559	49.95
Female Population	41650	50.05
Total	83209	100
B. Population break-up by Caste		
Scheduled Caste	16931	20.35
Scheduled Tribes	1337	1.60
Others	64941	78.05
Total	83209	100
C. Literacy Level		
Total Literate Population	59509	71.52
Others	23700	28.48
Total	83209	100
D. Occupational structure		
Main workers	30625	36.80
Marginal workers	7999	9.61
Total Workers	38624	46.41
Total Non-workers	44585	53.59
Total	**83209**	**100**

The above table shows that the male and female population ratio are almost equal. Among the total population 1.60% belong to Scheduled Tribes, 20.35% are Scheduled Caste and the balance 78.05 % people belong to other castes. Among the total population, 71.52% of the people are literate. Among the total population, 54.56% are literate males and 45.44% are literate females. This shows that the male literates are higher than the female literates. The results are plotted in figures below.

FIG 3.17 GENDER-WISE POPULATION DISTRIBUTION

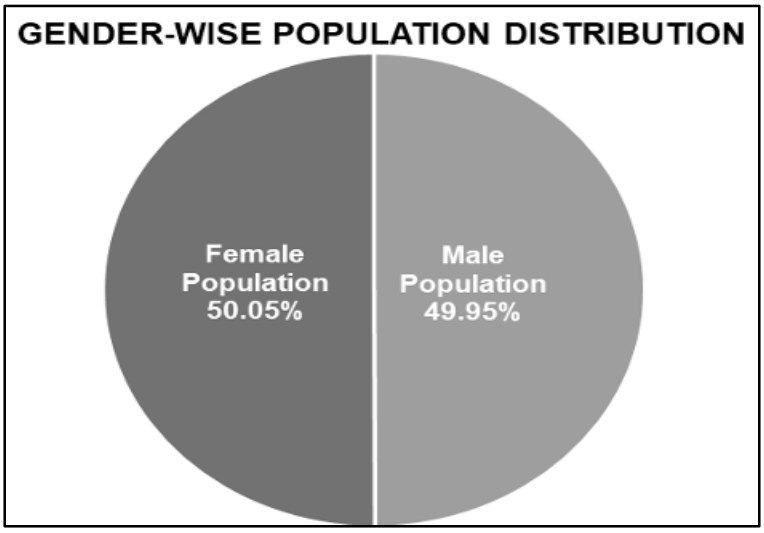


FIG 3.18 GENDER WISE LITERACY DISTRIBUTION

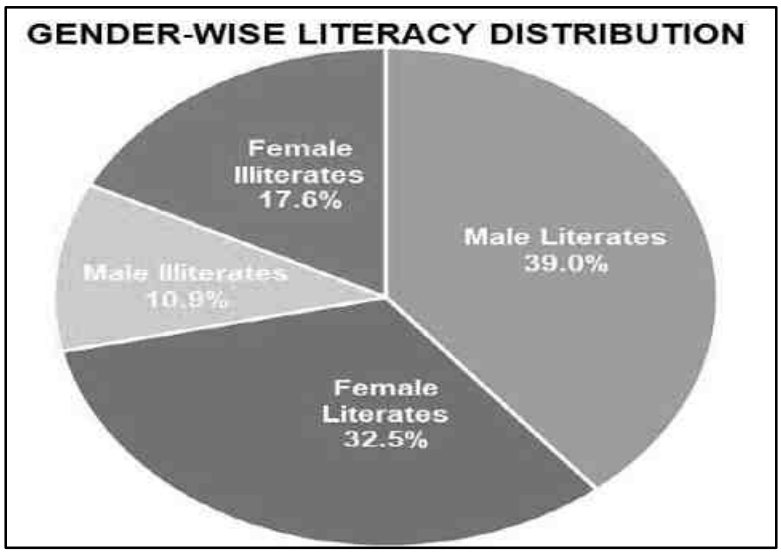
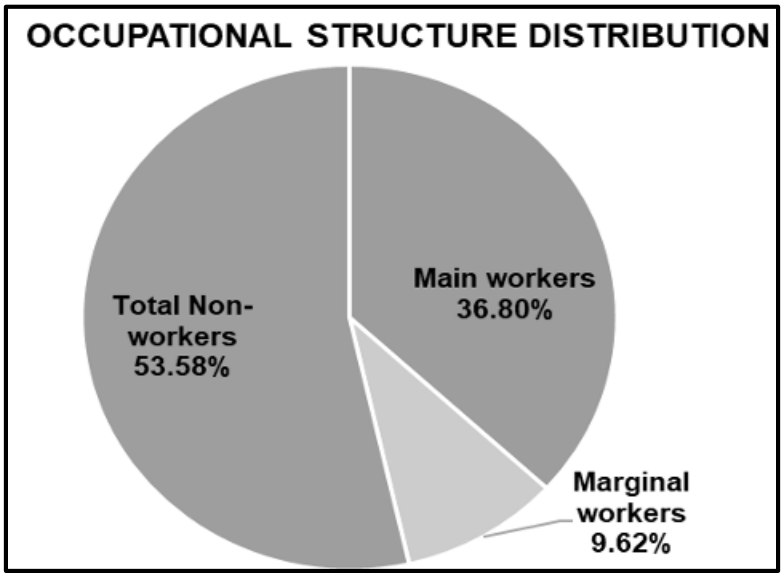


FIG 3.19 OCCUPATIONAL STRUCTURE WITHIN BUFFER ZONE



Infrastructure facilities in the study area

Education

Table 3.14 Educational infrastructure		
S. No.	**Particulars**	**Available in 10 KM radius of the project area (Nos)**
1	Govt. Primary School	38
2	Govt. Middle School	16
3	Govt. Secondary School	10
4	Govt. Senior Secondary School	6
5	Govt. Arts and Science Degree College	37
6	Govt. Engineering College	0
7	Govt. Medicine College	0
8	Govt. Management Institute	0
9	Govt. Polytechnic	0
10	Govt. Vocational Training School/ITI	0

In the study area, there are totally 38 Primary Schools functioning in these 19 rural villages. Among them 9 villages have 1 primary school, 5 villages have 2 primary schools & 2 villages have more than 2 primary school.

Healthcare

In the study area, the following facilities are available.

Table 3.15 Medical Infrastructure		
S. No.	**Particulars**	**Available in village (Nos)**
1	Community Health Centre	2
2	Primary Health Centre	4
3	Primary Heallth Sub Centre	15
4	Maternity And Child Welfare Centre	11
5	TB Clinic	4
6	Hospital Allopathic	0

Other Infrastructure

The other infrastructure facilities available are given below.

Table 3.16 Other Infrastructure		
S. No.	**Particulars**	**Available in village**
1	Tap Water-Treated	19
2	Covered Well	7
3	Hand Pump	5
4	Tube Wells/Borehole	11
5	Post office	4
6	Public bus services	18
7	Commercial Bank	2
8	Cooperative bank	7

Sample Survey

The expert visited 3 villages in the study area namely Athi, Vada Alapirandan Pudur and Kilnethapakkam villages. Discussions were held with the people from nearby locality to study the social and economic conditions prevailing in the area. The expert also visited nearby hospitals, primary health centres and Balwadis/Anganwadis. The following observations were made.

Primary schools are available in many villages. For hospital facilities, people in the locality have to go to hospital in Cheyyar which is about 5.5km from the lease area. Major schools with higher secondary and senior secondary schools are located in

Cheyyar. The major Panchayat Union located in the area is Cheyyar. Facilities like petrol pump stations, ATM facility are available in Cheyyar.

3.11. HYDROGEOLOGY OF THE STUDY AREA

Since there is a canal located at about 120m in the NW, and Cheyyar river is located at 296m in the NW, the hydrological and hydrogeological pattern of the study area is studied in detail using satellite imagery.

3.11.1 HYDROGEOLOGICAL STUDY

To assess the hydrogeological condition of the surrounding proposed mine lease area. The study area is located in Vada Aalapirandhan Village, Cheyyar Taluk, Tiruvannamalai District, and Tamil Nadu State is considered to understand the nature of the general hydrogeological conditions of the surrounding proposed mine lease area.

3.11.2 PHYSIOGRAPHY AND DRAINAGE

Physiography: The area applied for quarry lease is exhibits almost plain topography covered by Gravel formation. The massive Charnockite formation is noticed below 1m (Avg) Gravel and 1m weathered rock formation and sloping towards Southeastern side of the area, the altitude of the area is above 95m (maximum) from MSL.

Drainage: The drainage pattern study reveals that from the proposed mine lease area with around 1 Km radius and 10 Km study observed in Figure 3.20. There is Cheyyar river passing northwestern side of the area and is 296m away from the area, there is canal passing on northwestern side of the area and is 120m away from the area, there is tank situated on northeastern side of the area and is 470m away from the area.

3.11.3 GEOLOGY, GEOMORPHOLOGY AND SOIL

Geology: The Core and 10 Km buffered zone Geology map (Figure 3.21) shows that the Charnockite, Migmatite gneiss and sandstone. Major portion was covered in

Charnockite rock fallowed by Migmatite gneiss. A small portion were occurred in Sandstone rock; it is located in North-Western corner of the study area.

Geomorphology: The 10 Km radius of the area geomorphological features (Figure 3.22) shows that the fallowed by shallow burier pediplain covered an area is 175.58 sq.km. This feature mainly supports intensive agriculture activities in the study area. Moderate burier pediplain covered an area is 110.26 sq.km and Shallow flood plain covered an area is 23.97 sq.km and Pediment covered an area is 11.36 sq.km.

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

FIGURE 3. 20 10 KILOMETER RADIUS OF THE DRAINAGE MAP

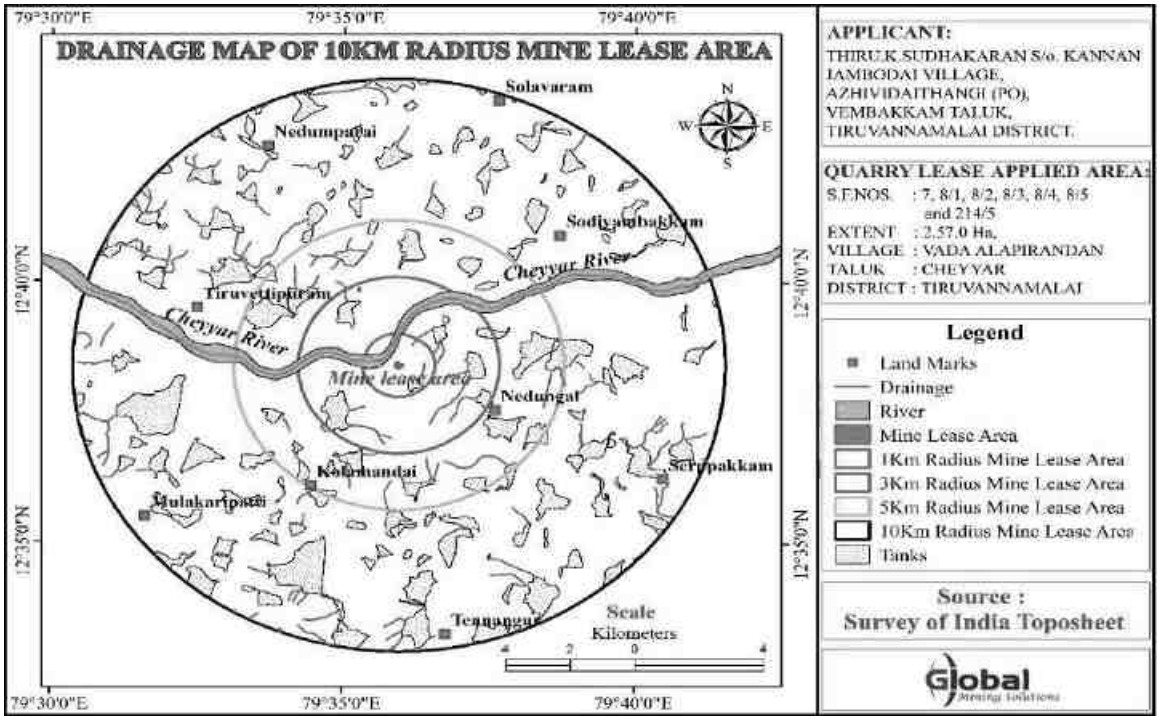


FIGURE 3. 21 10 KILOMETER RADIUS OF THE GEOLOGY MAP

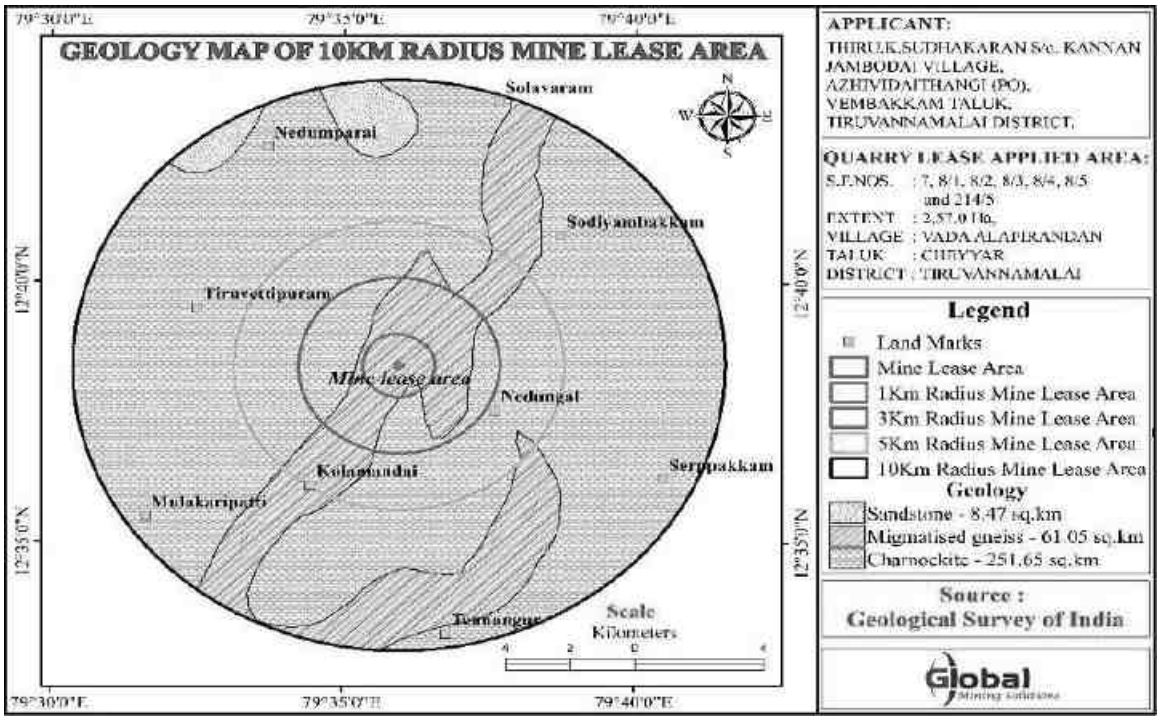


FIGURE 3. 22 10 KM RADIUS OF THE STUDY AREA GEOMORPHOLOGY MAP

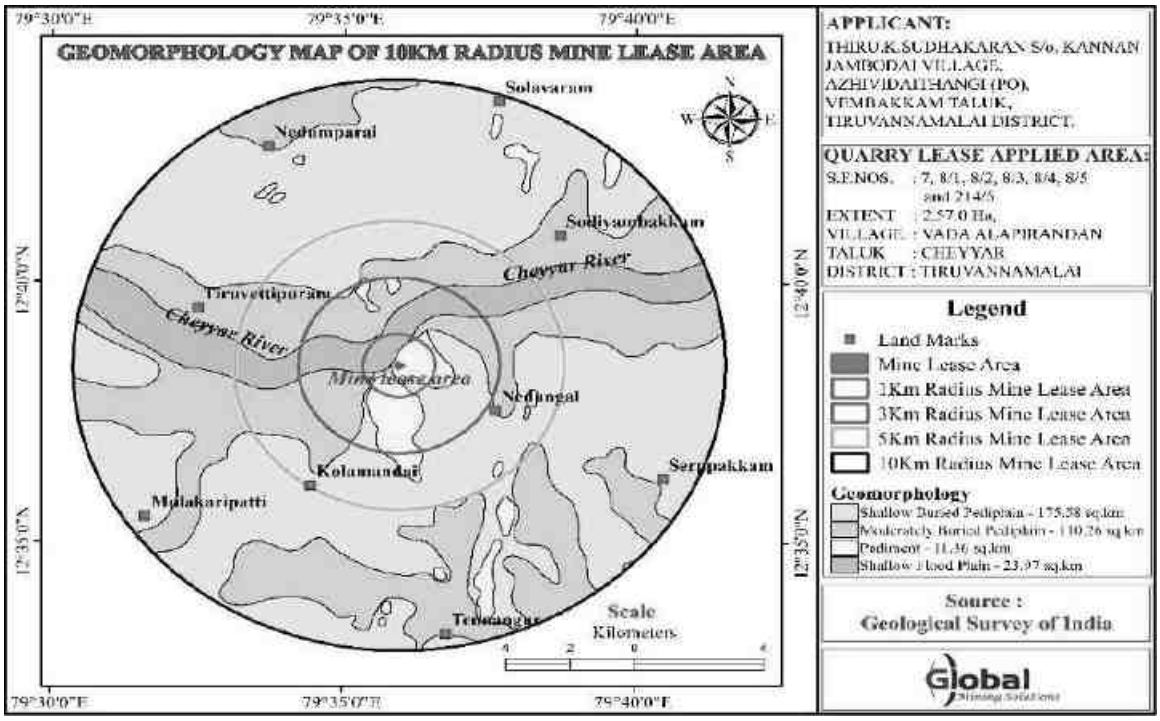
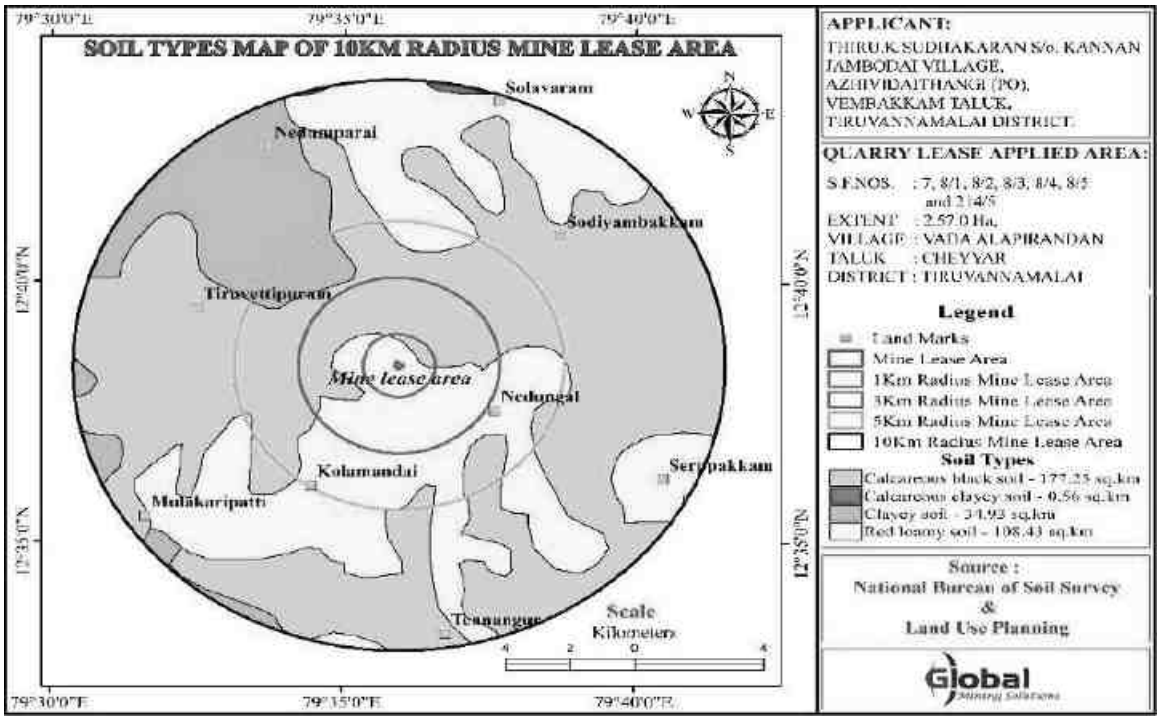


FIGURE 3.23 10 KM RADIUS OF THE STUDY AREA SOIL TYPE MAP



3.11.4 BELOW GROUND LEVEL (BGL)

Groundwater Level: The Ground Water levels from the 58 number of observation wells of TWAD have been analyzed for Post-Monsoon and Pre-Monsoon. Since 1991, the year's average Ground water level in m Below Ground Level for pre and post monsoon is as follows:

Table 3.17 and Figure 3.24 & 3.24 Average Seasonal Groundwater Level Fluctuation During 1991 to 2020.

FIGURE 3.24 NON-MONSOON WATER LEVEL MAP OF THE STUDY AREA

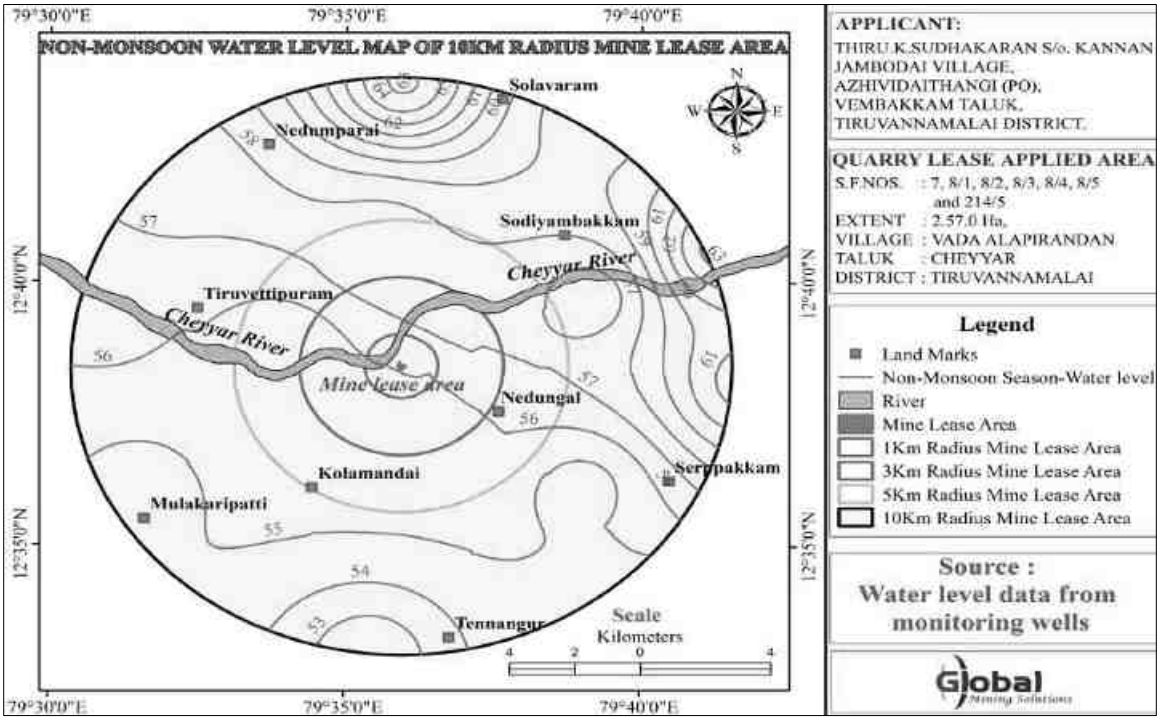
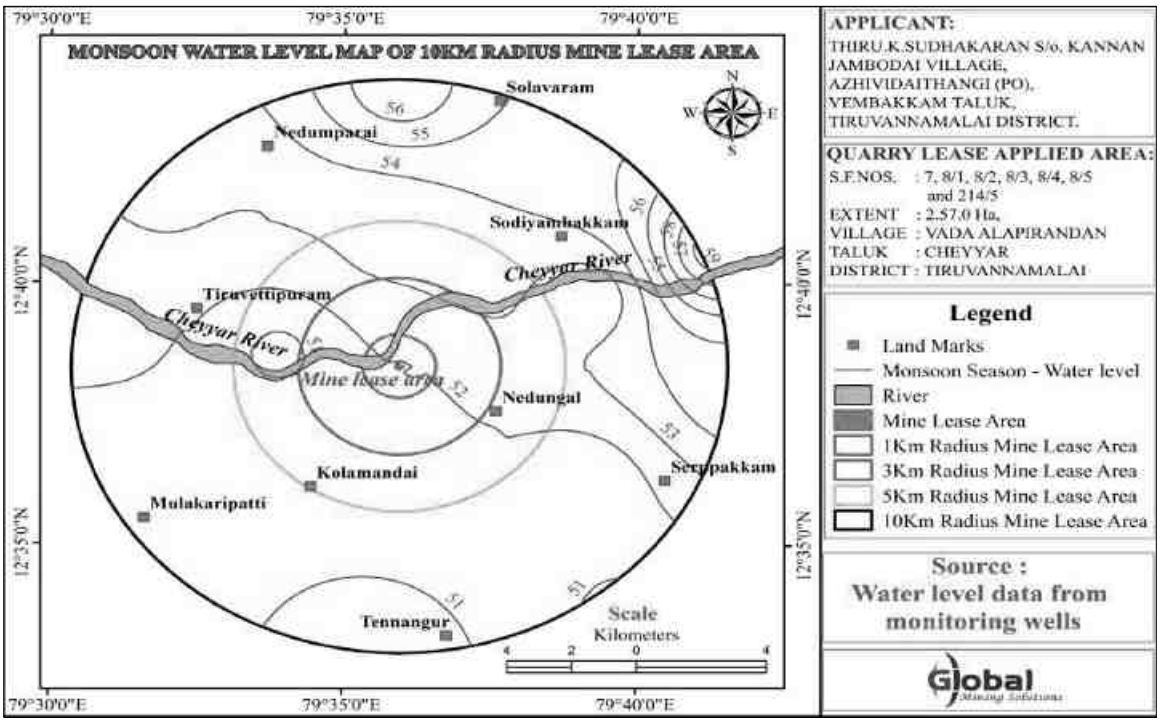


FIGURE 3.25 MONSOON WATER LEVEL MAP OF THE STUDY AREA



Annual average Pre-monsoon season water level varies from 47 m to 48 m. The Post-monsoon season water level varies from 44 m to 45 m.

3.11.5 FIELD INVESTIGATION

The temporary seasonal streams water flow from center to outer most area. There is Cheyyar river passing northwestern side of the area and is 296m away from the area, there is canal passing on northwestern side of the area and is 120m away from the area, there is tank situated on northeastern side of the area and is 470m away from the area. The water is temporarily found only during the rainy season.

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

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

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

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

CHAPTER 4

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1. INTRODUCTION

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

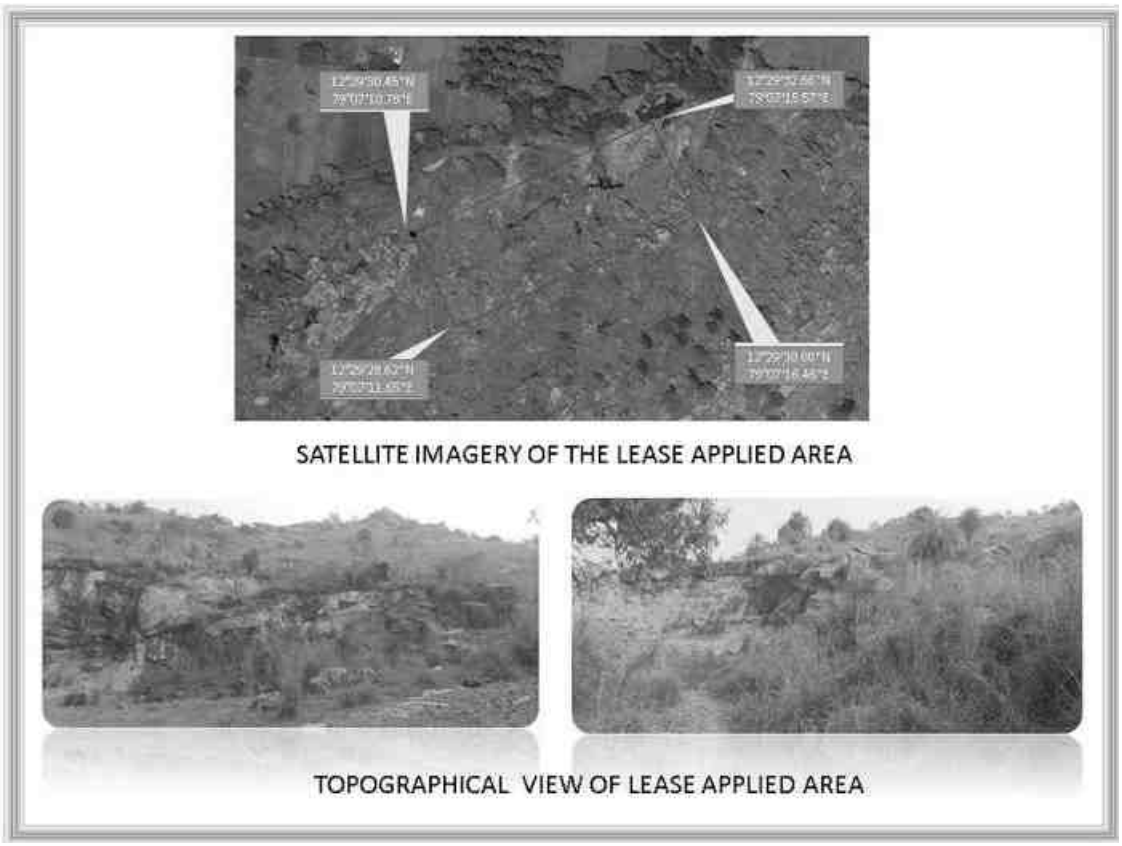
In order to maintain the existing environmental scenario of the proposed mine lease area it is mandatorily required to assess the present ecology and environment of the proposed mine lease area and buffer area of the project before starting mining operations. The various environmental impacts which are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

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

4.2. LAND ENVIRONMENT

This is a proposed Rough Stone and Gravel Quarry of Thiru.K.Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5 over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu. The method of mining is Opencast Semi mechanized with a bench width and height of 5m. It is proposed to excavate to 2,37,440 m^3 of Rough Stone, 18465 m^3 of Weathered rock and 19125 m^3 of gravel upto a depth of 27m BGL for the period of five years. There is no stream/odai within the mine lease area. The present proposed mine lease area is given below Figure 4.1.

FIG 4.1 PROPOSED MINE LEASE AREA



4.3. *Anticipated Impacts and mitigation measures*

<table>
<tr><th>Aspect</th><th>Impact</th><th>Mitigation measures</th></tr>
<tr><td>Topography</td><td>The area is exhibits hilly terrain covered by rough stone formation. Quarrying activity will lead to change in geological setting of the area i.e., Due to the quarrying activity in the mine lease area will leads to affect the aesthetic view on the environment. Further, due to the movement of heavy vehicles in and around the mine lease area will leads to affect the surrounding agricultural lands, ecology and biodiversity, human habitations due to the emissions from vehicles like SO_2, NO_x, PM_{10}, $PM_{2.5}$, etc., The existing land use pattern is given as under.
<table>
<tr><th>Land Use</th><th>Present Area (Hect)</th><th>Area in use during the quarrying period (Hect)</th></tr>
<tr><td>Quarrying Pit</td><td>Nil</td><td>1.93</td></tr>
<tr><td>Infrastructure</td><td>Nil</td><td>0.01</td></tr>
<tr><td>Roads</td><td>Nil</td><td>0.01</td></tr>
<tr><td>Green Belt</td><td>Nil</td><td>0.20</td></tr>
<tr><td>Unutilized</td><td>2.57.0</td><td>0.42</td></tr>
<tr><td>Total</td><td>2.57.0</td><td>2.57.0</td></tr>
</table></td><td>The major impact due to this project on land environment is the change in land use. Since this quarry is a small one and the production is less, mining activity will be carried out only up to depth of 27m BGL. At the end of mining period, the quarried pit will act as a water reservoir to store the rain water.
Land Use at the end of mine will be as follows.
<table>
<tr><th>Land Use</th><th>Area in use during the quarrying period (Hect)</th></tr>
<tr><td>Area left for water body</td><td>1.93</td></tr>
<tr><td>Green Belt</td><td>0.20</td></tr>
<tr><td>Remaining area</td><td>0.44</td></tr>
<tr><td>Total</td><td>2.57</td></tr>
</table>
At the mine closure stage, 1.93 Ha of lease area will be left as rain water harvesting pond. 0.20 Ha will be developed with green belt.
Greenbelt shall be developed around the mine lease area and the details has been given below.
<table>
<tr><th>Year</th><th>Species</th><th>No. of trees</th><th>Spacing</th><th>Survival</th></tr>
<tr><td>I</td><td rowspan="2">Azadirachta indiaca</td><td>200</td><td rowspan="2">3m x 3m</td><td rowspan="2">80%</td></tr>
<tr><td>II</td><td>200</td></tr>
</table></td></tr>
</table>

<table>
<tr>
<td></td>
<td>The ultimate pit dimension of the mine lease area is given below.
<table>
<tr><th colspan="4">Ultimate Pit dimension at the end of Mining plan Period</th></tr>
<tr><th>Pit No.</th><th>Length (max) (m)</th><th>Width (Avg) (m)</th><th>Depth (max) (m)</th></tr>
<tr><td>I</td><td>140</td><td>42</td><td>27m BGL</td></tr>
</table>
If mining is not done systematically it will leads to the dumping failure in the mining area.</td>
<td>
<table>
<tr><td>III</td><td rowspan="3"></td><td>200</td><td rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td>IV</td><td>200</td></tr>
<tr><td>V</td><td>200</td></tr>
<tr><td colspan="2">Total</td><td>1000</td><td></td><td></td></tr>
</table>
Due to the thick vegetation around the mine lease area and sprinkling of water around the haul roads the dust emissions arises from the vehicles will be controlled.
At the end of mining period, fencing will be provided around the mine lease area to arrest the entry of public/cattle to the mining area.
The rough stone is proposed to quarry 5m bench height and 5m width with 80^0 slope and with conventional opencast semi-Mechanized method. As per the approved mining plan a safety distance of 7.5m shall be provided. There is no overburden anticipated during the entire Rough Stone quarrying operation. The excavated rough stone will be directly loaded into tipper to the needy crusher/other buyers.</td>
</tr>
<tr>
<td>Drainage</td>
<td>Mine drainage is surface water or groundwater that drains from an active or abandoned mine. One of the adverse impact of mine drainage is it will contaminate the ground water.</td>
<td>As per the approved mining plan the ultimate pit limit is 27m BGL. The ground water table is reported as 48m BGL. In the proposed mining plan only 27m (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.</td>
</tr>
<tr>
<td>Soil Quality and Agriculture</td>
<td>In monsoon seasons due to the excavation of minerals soil erosion and sediment deposition will occur in the nearby water bodies.</td>
<td>It is proposed to quarry upto a depth of 27m BGL and the nearby water table is 48m BGL. So, the mining activity will not affect the ground water. To prevent the soil erosion during monsoon season, garland drain will be constructed with silt traps.</td>
</tr>
</table>

Visual impact on surrounding environment	Quarrying activities and rock extraction generally cause several environmental effects on the surrounding areas. The alteration of landscape due to activities like excavation, drilling or blasting, in particular, often generates a visual impact on the receptors set in the surroundings. Among these effects, the shape, extent, or chromatic contrast of the mining surface with the original land form may represent a huge loss of appeal for the growth of new urban settlements.	The reclamation of the post mined quarry surface is aimed at restoring the ecological balance taking into account geological parameters but also local flora and climate. Further the ultimate depth of mining is 27m BGL. In the post mining stage the quarried out pit will be used for rainwater harvesting.

4.4. SOLID WASTE GENERATION AND MANAGEMENT

The waste generation in the form of Solid waste (Municipal Waste) is very negligible. A detailed solid waste management system for the project area is given below 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.

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

4.5. WATER ENVIRONMENT

4.5.1. Impact on Surface Water Resources

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

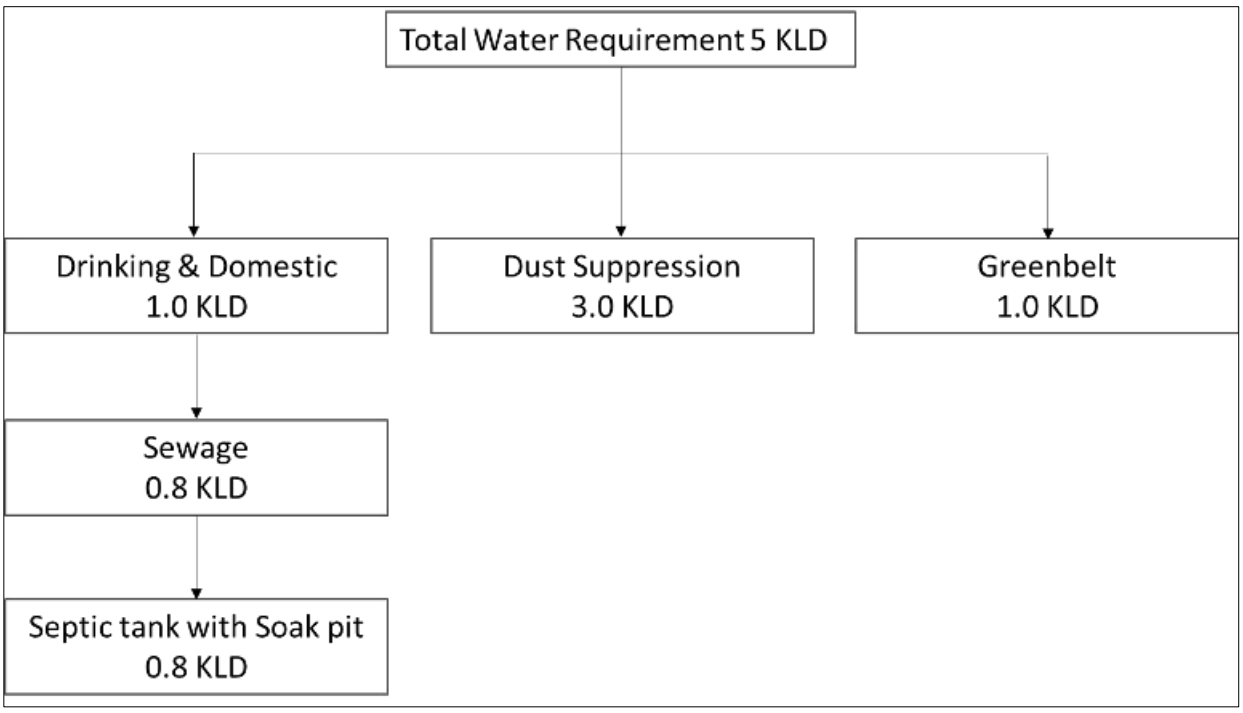
The nearest river is Cheyyar River flows from northwestern to northeastern at a distance of 296 m from the proposed ML area. There are other water bodies near to the proposed as such a Tandarai canal Northwestern side at distance of 120 m and a tank on Southeastern side at distance of 470 m. Water table is found at a depth of 48m in summer and 45m in rainy seasons.

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

4.5.2. Impact due to Water use in Mines

In the proposed mines water will be mainly used for domestic purpose, dust suppression & plantation. Total water requirement for the project is 5.0 KLD which will be sourced from outside agencies. Negligible sewage of 0.8 KLD will be generated, for which a septic tank with soak pit will be set up. The water balance diagram is given below.

FIG 4.2 WATER BALANCE DIAGRAM



4.5.3. Impact on Ground Water

The mining activity is not likely to intersect ground water as the ground water table occurs at 48 BGL in summer season and in Rainy season at 45 BGL. The mining will go up to the maximum depth of 27 BGL. So there will be no chance of intersecting the ground water table by the mining activity. So the impact of mining on the ground water is not envisaged.

4.5.4. Mitigation measures

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

4.5.5. Ground water environment in buffer zone

The scenario of ground water in Tiruvannamalai District, Cheyyar Taluk is given below.

TABLE 4.1 Ground Water Level Status in Cheyyar Firka

S. No.	Firka	Net Annual Ground water availability	Existing gross ground water consumption for irrigation	Existing gross ground water consumption for domestic and industrial water supply	Existing gross ground water consumption for all uses	Stage of ground water development	Category
1	Cheyyar	1522.95	1526.85	120.80	1647.65	108	Over Exploited

Source: nwm.gov.in

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

4.6. VEGETATION

4.6.1. VEGETATION IN THE CORE ZONE

The mine lease area is devoid of major plantation. Shrubs and bushes are majorly found within the lease area. The proponent has planned to develop green belt in an area of 0.20 Ha. Trees like Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indiaca will be planted around the mine lease area. A total of 1000 trees are planned to be planted. Spacing will be 3m x 3m.

4.6.2. FAUNA

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

Table 4.2 Impacts and mitigation measures for Fauna

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

4.7. AIR ENVIRONMENT

4.7.1. IMPACT DUE TO MINING OPERATION

Mining activities in the proposed lease area not only pollutes the air in the core zone but also the nearby areas. The major air pollutants due to mining operations are fugitive emissions like PM_{10}, $PM_{2.5}$. Other than these pollutants, gaseous emissions of sulfur dioxide (SO_2) and oxides of nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

Furthermore 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.

4.7.2. Mitigation measures for various impacts

TABLE 4.3 Impacts And Mitigation Measures for Air Environment

S. No.	Impact	Mitigation measures
1	Dust emission due to drilling	• Using Wet drilling methods • Allowing drilling only with PPE
2	Dust emission due to Blasting	• Carrying out blasting only during specified times • Avoiding blasting during unfavourable weather conditions • Using explosives of good quality
3	Transportation	• Using mist sprayers • Regular wetting of transport roads • Covering the materials carried in tippers with tarpaulin • Proper maintenance of vehicles used for transportation • Conducting regular emission tests for vehicles used for transport • Development of greenbelt is proposed in the safety zone of 10m and 7.5m barriers in the lease area.

4.8. AIR QUALITY IMPACT PREDICTION

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

4.8.1. IMPACT ON AIR ENVIRONMENT

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

4.8.2. Air Emissions

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

4.8.3. Quantitative Estimation of Impacts on Air Environment

An attempt has been made to predict the incremental rise of various ground level concentrations above the baseline status in respect of air pollution due to proposed is 2,37,440 m3 of rough stone, 18,465 m3 of weathered rock, and 19,125 m3 of gravel for a period of five years by the open-cast semi-mechanised mining method.

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

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

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

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

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

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

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

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

Salient features of the AERMOD model are given hereunder.

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

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

4.8.4. Sources of Dust Emission

The proposed mining is carried out by semi mechanized opencast method. The air borne particulate matter generated by ore handling operations, transportation and screening of ore is the main air pollutant. The emissions of sulphur dioxide (SO_2), Oxides of Nitogen (NOx) contributed by diesel operated excavation/loading equipment and vehicles plying on haul roads are marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions. Based on the various operations involved in the production of minerals, the various emission sources has been identified as given below.

a. Area sources.
b. Line sources.

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

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

4.8.5. Emission Details

All the emissions discussed above are quantified for proposed maximum production of 2,37,440 m3 of rough stone, 18,465 m3 of weathered rock, and 19,125 m3 of gravel for a period of five years by the open-cast semi-mechanised mining method. The existing air quality levels are covered in the baseline scenario.

Excavation, loading and transportation through tippers are the major sources, which are of significance. Therefore, the emissions considered for modeling are from drilling blasting, excavation & transportation rough stone and gravel.

The emissions are computed based on AP-42 emission factors. Operational hours, activity rate, wind speed and moisture content have been considered for estimation of emissions from point and area sources. For line source, apart from operational hours, activity rate, moisture, silt content and vehicle weight have been considered.

Predictions are carried out for the worst-case scenario of simultaneous operation of excavators (area sources) and tippers for transportation from mine pit to loading pit (line sources) over a distance of 500 m.

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

4.8.6. Meteorological Data

The meteorological data recorded continuously during the month of March 2023 - May 2023 on hourly basis on wind speed, wind direction and temperature has been processed to extract the 24- hourly mean meteorological data as per the guidelines of IMD and MoEF for application of AERMOD model. Stability classes computed for

the mean hours is based on guidelines issued by CPCB on modeling. Mixing heights representative of the region have been taken from the available published literature.

4.8.7. Summary Of Predicted Ground Level Concentrations

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

The maximum ground level concentration is estimated to be about 0.654 µg/m^3 of PM 2.5 & 3.00 µg/m^3 of PM 10 within the mine area, where mining operations are being carried out. The impact of mining operations would be negligible beyond 0.4 km.

Figure – 4.1 represents the spatial distribution of the predicted ground level concentrations of PM10 due to emissions from mine.

4.8.8. Emission sources & Quantification

Various point and non-point sources of emissions from Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran is quantified and presented below:

(I) POINT SOURCE EMISSION

Drill dust emission = 0.022 gm/sec

(I) Area Emissions – Total Material handling (Gravel)

Quantity, TPA	22080
Operational Hours Per Year	2400
Activity Rate, t/hr.	9.2
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	1.288
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000005724
Controlled emission rate g/s/m, PM10	0.0000000572
Controlled emission rate g/s/m, PM2.5	0.000000026

(II) Area Emissions – Total Material handling (Rough Stone)

Quantity, TPA	150540
Operational Hours Per Year	2400
Activity Rate, t/hr.	62.725
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	8.7815
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000039029
Controlled emission rate g/s/m, PM10	0.0000003903
Controlled emission rate g/s/m, PM2.5	0.000000176

(IV) Line Source – Transport of Rough Stone from Pit to Boundary

Quantity, TPA	123787.5
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	12378.75
Lead length/trip, Km	0.7
Total VKT/Year	8665.125
Emission Kg/VKT	0.26
Total emission Kg/Year	2252.9325
Uncontrolled emission rate g/s/m	0.745017361
Controlled emission rate g/s/m, PM10	0.074501736
Controlled emission rate g/s/m, PM2.5	0.033525781

(V) Line Source – Transport of waste from Pit to Dump

Quantity, TPA	26752.5
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	2675.25
Lead length/trip, Km	0.25
Total VKT/Year	668.8125
Emission Kg/VKT	0.26

Total emission Kg/Year	173.89125
Uncontrolled emission rate g/s/m	0.161010417
Controlled emission rate g/s/m, PM10	0.016101042
Controlled emission rate g/s/m, PM2.5	0.007245469

(IV) Line Source – Transport of Gravel from Pit to Boundary

Quantity, TPA	22080
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	2208
Lead length/trip, Km	0.25
Total VKT/Year	552
Emission Kg/VKT	0.26
Total emission Kg/Year	143.52
Uncontrolled emission rate g/s/m	0.132888889
Controlled emission rate g/s/m, PM10	0.013288889
Controlled emission rate g/s/m, PM2.5	0.005980000

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

+ Emission factor computed based on silt content of 10 % and moisture content of 10 %

FIG 4.3 Isopleth of GLC Prediction for $PM_{2.5}$

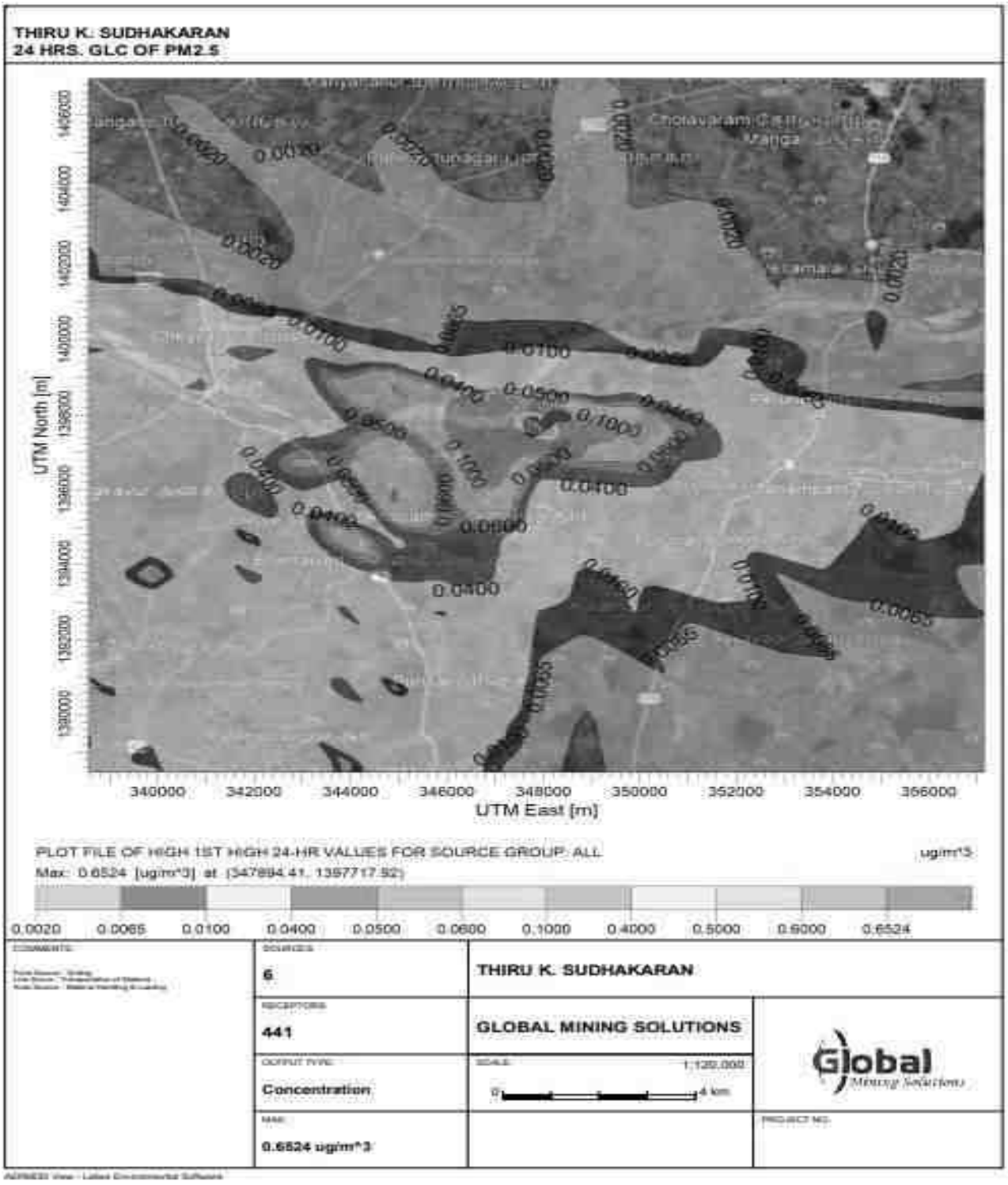
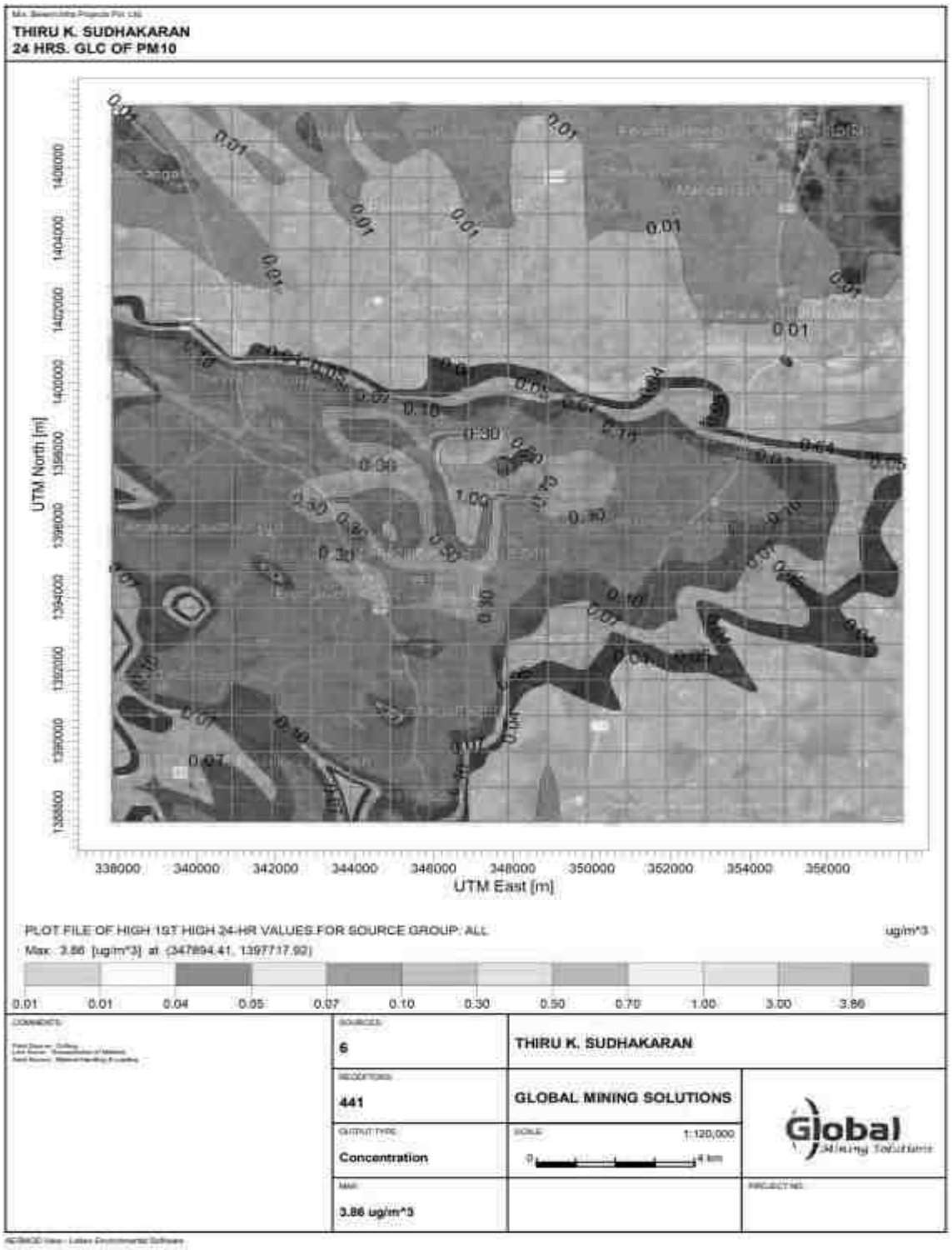


FIG 4.4 Isopleth of GLC Prediction for PM_{10}



4.8.9. Predicted emissions - Post Project Scenario:

Predicted maximum ground level concentrations considering micro meteorological data of March 2023 to May 2023 are superimposed on the maximum baseline concentrations obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase. The overall scenario with predicted concentrations over the maximum baseline concentrations is shown in the following table along with isopleths Figures 4.2. Various predicted emission levels in the villages surrounding site are presented in Table 4.4 & 4.5 below.

Table4.4: 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	Near Mine lease area	29.3	<1.0	30.3	60
2	Athi village	29.3	<1.0	30.3	
3	Kil nethapakkam village	29.1	<1.0	30.1	
4	Vada Alapirandan Pudur village	30.2	<1.0	30.2	
5	Anappathur village	34.3	<1.0	35.3	

Table 4.5: Concentrations of PM $_{10}$ after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m^3
1	Near Mine lease area	54.5	3.86	58.36	100
2	Athi village	56.4	<1.0	57.40	
3	Kil nethapakkam village	57.2	<1.0	58.20	
4	Vada Alapirandan Pudur village	60.2	<1.0	61.20	
5	Anappathur village	61.3	<1.0	62.30	

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 57.40 µg/m^3 to 62.30 µg/m^3 and for $PM_{2.5}$ are in the range of 30.1 µg/m^3 to 35.3 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.

4.9. NOISE ENVIRONMENT

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

4.9.1. Likely Noise Levels in Lease Area due to mining activity

Table 4.6: Noise Levels of the mining area

S. 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

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

Noise levels were measured in the lease area and in the nearby villages Athi, Kilnethapakkam, Vada Alapirandan and Anappathur. The values are given below.

TABLE 4.7 Noise Levels in Monitoring Locations

S. No.	Location	Distance and direction from Mine lease area	Day Equivalent (in dBA)	Night Equivalent (dBA)
1	Mine lease area	-	45	37.7
2	Athi	1.6km – SE	47.3	38.1
3	Kilnethapakkam	3.7km - NE	46.2	46.2
4	Vada Alapirandan	1.4 km - SW	45.2	37.5
5	Anappathur	1.7 km – SW	48.7	38.7

The noise levels are within the MoEF & CC limits of 55 dB(A) in the working area and in the buffer areas, the values are below the limit of 55 dB(A). Since, the residential area norm has been considered for all five locations mentioned above, during mining operation mine lease area will be considered as industrial area/quarry area for which DGMS norms 85 dB(A)/CPCB guidelines 75 dB(A)

4.9.2. Impact of Noise due to mining

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

4.9.3. Mitigation measures for Noise level control

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

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

4.10. IMPACTS DUE TO VIBRATION

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

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

Impacts

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

Mitigation measures

- The DG set will be kept within the acoustic enclosure made by the stone blocks.
- Drills will be equipped with sharp bits and wet drilling will be adopted.

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

4.11. SOCIO ECONOMIC IMPACT

The lease area is a private land jointly owned by the proponent and 4 other owners. The proponent has obtained Consent from other owners and got it registered. (Annexure 7). No rehabilitation is needed. Hence, there is no negative impact. The proponent has planned to spend INR 5, 00,000 for CER activities.

4.12. OCCUPATIONAL HEALTH

4.12.1. Impacts on humans due to various mining activities

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

- Dust generated during excavation, drilling, stone cutting, sizing and transportation may cause health problems like Silicosis, Asthma, Tuberculosis and other respiratory lungs disorders.

- Heavy weight lifting by the workers may cause injuries to arms, legs and back.
- Noise generated during the mining activity may cause Noise Induced Hearing Loss (NIHL).

Table 4.8 Impacts on humans due to various mining activities

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

Mitigation measures

- The mines worker will be provided with dust mask to minimize the inhalation of the dust.
- Water sprinkling twice in a day is in practice on the haul roads, near excavation and roads to reduce the fugitive dust emission.
- Wet drilling and drilling with dust extractor will be practiced.
- Ear muffs will be supplied to the workers working in the noise prone area
- The mining site will be supplied with first aid facilities and the entire mines worker will have access to that.
- The mines workers will be well trained about the safety practices in the mining activities.
- As per Mines Rules, 1955, medical examination of employees at the initial stage and periodically, shall be done by a team of qualified medical officers provided by the project proponent.
- Regular medical checkup camps shall also be arranged for detection of occupational diseases and minor disease in the nearby rural population.

- Free checkup and medicine for treatment for their acute and chronic illness shall be provided by the lessee. Conducting periodical Medical Examination as per DGMS.
- Making all first aid kits available in mines office
- Keeping fire extinguisher in place
- Educating the employees about how to handle unexpected happenings
- Posting information containing emergency contact numbers in mines office
- By adopting all these measures, the safety of the employees working in the quarry will be ensured.

CHAPTER 5

ANALYSIS OF ALTERNATIVES

5.1 ALTERNATE TECHNOLOGY

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

5.2 ALTERNATE SITE

The proposed 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.

CHAPTER 6

ENVIRONMENTAL MONITORING PROGRAMME

6.1 ENVIRONMENTAL MONITORING

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

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

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

6.2 OBJECTIVES OF ENVIRONMENTAL MONITORING

The objectives of Environmental Monitoring is as follows.

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

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

6.3 ENVIRONMENTAL MONITORING SCHEDULE

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

Table 6.1 Environmental Monitoring Schedule

Sl. No.	Description of Parameters	Parameters	Frequency
1	Air	Air Quality for SPM, PM-10, PM-2.5, SO2 and NOx	24 hour average samples Once in a 3 month
2	Water	General, Physical, and chemical parameters	Once per season
3	Noise	Leq. Lmax Lmin, Leq Day & Leq Night dB(A)	8 hour average samples Once in a 3 month
4	Soil	Physical and Chemical characteristics	Once per season

6.4 LOCATION

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

6.5 MEASUREMENT METHODOLOGY

(a) Ambient Air Quality

Ambient air quality will be monitored for SO_2, NO_x, PM_{10} and $PM_{2.5}$. The instruments like high volume air samplers and Respirable dust samplers would be used for this

purpose. These parameters will be monitored as mentioned in the monitoring schedule previously.

(b) Water Quality

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

(c) Noise Monitoring

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

(d) Green Belt and Afforested Areas

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

(e) Socio-Economics

Gravity modeling (traffic density) studies will be done with the objective to know about the interaction of nearby situated towns. Central Place Hierarchization studies (studies related to change in amenities/services etc.) would be conducted to know about the socio-economic status of the villages along with the above-mentioned studies at every five-year interval.

6.6 TECHNICAL ASPECTS OF MONITORING THE EFFECTIVENESS OF MITIGATION MEASURES

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

6.7 EMERGENCY PROCEDURES

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

6.8 REPORTS TO BE GENERATED

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

Table 6.2 Important Records to be maintained by PP

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

6.9 DETAILED BUDGET AND PROCUREMENT SCHEDULES

The budget planned for environmental monitoring is given below.

Table 6.3 Environmental Management Plan Budget

S. No.	Budget planned for	Amount (INR)
1	Air sampling	40,000
2	Water sampling	40,000
3	Noise monitoring	20,000

4	Ground vibration test	20,000
5	Drinking water facility	1,20,000
6	Sanitary arrangement	50,000
7	Safety kits	50,000
8	Water sprinkling	1,20,000
9	Afforestation	60,000
Total		**5,20,000**

A total amount of INR 5,20,000 is allotted in the budget for EMP.

CHAPTER 7

ADDITIONAL STUDIES

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

1. Public consultation
2. Risk Assessment
3. Social Impact Assessment, R&R Action Plans
4. Combined Environmental Impact Assessment Study
5. A detailed Hydrogeological Study
6. Slope Stability plan

7.1 PUBLIC CONSULTATION

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

7.2 RISK ASSESSMENT & MANAGEMENT

(a) Objectives

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

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

The major hazards related to the mining activities are as follows

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

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

Table 7.1 Hazards and Precautionary measures

S. No.	Hazard	Precautionary measures
1	Fire	Fire suppressants will be made available at mines office and explosive storage room.
2	Explosion	Controlled blasting will be done. DGMS norms will be strictly followed during blasting. Blasting will be done only by trained professionals.
3	Combustion of chemicals or hazardous substances	Combustible Substances are stored with all precautionary measures. Fire suppressant is made available at storage site

4	Landslide	Width, height and slope will be maintained as suggested by DGMS
5	Accidents during handlings	All vehicles will be properly maintained. Overloading will not be done. Only trained/certified people will be employed.
6	Accidental fall of people or animals	The lease area will be fenced properly. Only people working in the mines will be permitted to enter.

7.3 REHABILITATION AND RESETTLEMENT (R & R) PLAN

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

7.4 COMBINED ENVIRONMENTAL IMPACT ASSESSMENT STUDY

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

Table 7.2 Details of quarries within 500m radius (as per 500m certificate)

S. No.	Name and address of the Lessee	Village and S.F No	Extent in Hectare	Lease period	Remarks
i) Existing Quarries					
Nil					
ii) Abandoned quarries					
1	Smt.Poongothai W/O.Sundaramoorthy No.96 Road street Manamadhi Unthiramerur taluk Kancheepuram district	Athi 301 (part)	1.00.0	21.08.2008 to 20.08.2018	Quarry expired
iii) Present proposed quarries					
1	Thiru.Sudhakaran S/O.Kannan No.782, Mariamman koil street, Jambodai village Vembakkam taluk Tiruvannamalai District	Vada alapirandan 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5	2.57.0	-	-
iv) Future proposed quarries					

1	Thiru.R.Ganesan Director of SRC project Pvt Ltd No 47, Brindavan Porlands, Salem	Athi 301 (part 2)	4.50.0	-	-
2	Thiru.M.Ramachandran S/O.Mogili Naidu No 15B, Medutheru Old Perukozhathoor, Tambaram, Chennai	Athi 301 (part 3)	2.00.0	-	-
3	Tvl.JCK Mines Rep by its partner Thiru.J.K.Srinivasan, No.782 Mariamman Koil street Jambodai village, Azhivedanthangi post, Vembakkam taluk, Tiruvannamalai District	Vadaalapiran dan village 211/2B, 211/3B, 211/4, 211/5, 211/6, 211/7, 211/8 and 211/9	1.55.0	-	-

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

7.5 AIR QUALITY IMPACT PREDICTION FOR THE CLUSTER

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

Emission sources & Quantification of the cluster area.

SUDHAKARAN MINES
(I) POINT SOURCE EMISSION
Drill dust emission = 0.022 gm/sec
(I) Area Emissions – Total Material handling (Gravel)

Quantity, TPA	22080
Operational Hours Per Year	2400
Activity Rate, t/hr.	9.2
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	1.288
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000005724
Controlled emission rate g/s/m, PM10	0.0000000572
Controlled emission rate g/s/m, PM2.5	0.000000026

(II) Area Emissions – Total Material handling (Rough Stone)	
Quantity, TPA	150540
Operational Hours Per Year	2400
Activity Rate, t/hr.	62.725
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	8.7815
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000039029
Controlled emission rate g/s/m, PM10	0.0000003903
Controlled emission rate g/s/m, PM2.5	0.000000176

(IV) Line Source – Transport of Rough Stone from Pit to Boundary	
Quantity, TPA	123787.5
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	12378.75
Lead length/trip, Km	0.7
Total VKT/Year	8665.125
Emission Kg/VKT	0.26
Total emission Kg/Year	2252.9325
Uncontrolled emission rate g/s/m	0.745017361
Controlled emission rate g/s/m, PM10	0.074501736
Controlled emission rate g/s/m, PM2.5	0.033525781

(V) Line Source – Transport of waste from Pit to Dump	
Quantity, TPA	26752.5
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	2675.25
Lead length/trip, Km	0.25
Total VKT/Year	668.8125
Emission Kg/VKT	0.26
Total emission Kg/Year	173.89125
Uncontrolled emission rate g/s/m	0.161010417
Controlled emission rate g/s/m, PM10	0.016101042
Controlled emission rate g/s/m, PM2.5	0.007245469

(IV) Line Source – Transport of Gravel from Pit to Boundary	
Quantity, TPA	22080
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	2208
Lead length/trip, Km	0.25
Total VKT/Year	552
Emission Kg/VKT	0.26
Total emission Kg/Year	143.52
Uncontrolled emission rate g/s/m	0.132888889
Controlled emission rate g/s/m, PM10	0.013288889
Controlled emission rate g/s/m, PM2.5	0.005980000
Note: **Emission factor computed based on wind speed of 2 m/s, and moisture content of 10 %.*	
+ Emission factor computed based on silt content of 10 % and moisture content of 10 %	

JCK MINES

(I) POINT SOURCE EMISSION	
Drill dust emission = 0.022 gm/sec	
(I) Area Emissions – Total Material handling (Gravel)	
Quantity, TPA	7930
Operational Hours Per Year	2400
Activity Rate, t/hr.	3.304166667
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	0.462583333
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000002056
Controlled emission rate g/s/m, PM10	0.0000000206
Controlled emission rate g/s/m, PM2.5	0.000000009

(II) Area Emissions – Total Material handling (Rough Stone)	
Quantity, TPA	50460
Operational Hours Per Year	2400
Activity Rate, t/hr.	21.025
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	2.9435
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000013082
Controlled emission rate g/s/m, PM10	0.0000001308
Controlled emission rate g/s/m, PM2.5	0.000000055

(IV) Line Source – Transport of Rough Stone from Pit to Boundary	
Quantity, TPA	9097.5
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	909.75
Lead length/trip, Km	1.4
Total VKT/Year	1273.65

Emission Kg/VKT	0.26
Total emission Kg/Year	331.149
Uncontrolled emission rate g/s/m	0.054753472
Controlled emission rate g/s/m, PM10	0.005475347
Controlled emission rate g/s/m, PM2.5	0.002299646

(V) Line Source – Transport of waste from Pit to Dump	
Quantity, TPA	41362.5
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	4136.25
Lead length/trip, Km	0.6
Total VKT/Year	2481.75
Emission Kg/VKT	0.26
Total emission Kg/Year	645.255
Uncontrolled emission rate g/s/m	0.248940972
Controlled emission rate g/s/m, PM10	0.024894097
Controlled emission rate g/s/m, PM2.5	0.010455521

(IV) Line Source – Transport of Gravel from Pit to Boundary	
Quantity, TPA	7930
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	793
Lead length/trip, Km	0.6
Total VKT/Year	475.8
Emission Kg/VKT	0.26
Total emission Kg/Year	123.708
Uncontrolled emission rate g/s/m	0.047726852
Controlled emission rate g/s/m, PM10	0.004772685
Controlled emission rate g/s/m, PM2.5	0.002004528
Note: **Emission factor computed based on wind speed of 2 m/s, and moisture content of 10 %.*	

+ Emission factor computed based on silt content of 10 % and moisture content of 10 %

RAMACHANDRAN MINE

(I) POINT SOURCE EMISSION
Drill dust emission = 0.022 gm/sec

(I) Area Emissions – Total Material handling (Top Soil)	
Quantity, TPA	26442
Operational Hours Per Year	2400
Activity Rate, t/hr.	11.0175
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	1.54245
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000006855
Controlled emission rate g/s/m, PM10	0.0000000686
Controlled emission rate g/s/m, PM2.5	0.000000029

(II) Area Emissions – Total Material handling (Rough Stone)	
Quantity, TPA	141250
Operational Hours Per Year	2400
Activity Rate, t/hr.	58.8542
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	8.239583333
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000036620
Controlled emission rate g/s/m, PM10	0.0000003662
Controlled emission rate g/s/m, PM2.5	0.000000154

(IV) Line Source – Transport of Rough Stone from Pit to Boundary	
Quantity, TPA	141250
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10

Total No. of Tippers/ year	14125
Lead length/trip, Km	1.4
Total VKT/Year	19775
Emission Kg/VKT	0.26
Total emission Kg/Year	5141.5
Uncontrolled emission rate g/s/m	0.850115741
Controlled emission rate g/s/m, PM10	0.085011574
Controlled emission rate g/s/m, PM2.5	0.035704861

(V) Line Source – Transport of waste from Pit to Dump	
Quantity, TPA	26442
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	2644.2
Lead length/trip, Km	0.6
Total VKT/Year	1586.52
Emission Kg/VKT	0.26
Total emission Kg/Year	412.4952
Uncontrolled emission rate g/s/m	0.159141667
Controlled emission rate g/s/m, PM10	0.015914167
Controlled emission rate g/s/m, PM2.5	0.006683950
Note: **Emission factor computed based on wind speed of 2 m/s, and moisture content of 10 %.*	
+ Emission factor computed based on silt content of 10 % and moisture content of 10 %	

GANESAN MINE

(I) POINT SOURCE EMISSION
Drill dust emission = 0.022 gm/sec

(I) Area Emissions – Total Material handling (Top Soil)	
Quantity, TPA	66420
Operational Hours Per Year	2400
Activity Rate, t/hr.	27.675
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	3.8745
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000017220
Controlled emission rate g/s/m, PM10	0.0000001722
Controlled emission rate g/s/m, PM2.5	0.00000007

(II) Area Emissions – Total Material handling (Rough Stone)	
Quantity, TPA	589125
Operational Hours Per Year	2400
Activity Rate, t/hr.	245.46875
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	34.365625
Area of influence, m^2	625
Uncontrolled emission rate g/s/m^2	0.0000152736
Controlled emission rate g/s/m, PM10	0.0000015274
Controlled emission rate g/s/m, PM2.5	0.000000687

(IV) Line Source – Transport of Rough Stone from Pit to Boundary	
Quantity, TPA	589125
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	58912.5
Lead length/trip, Km	1.4
Total VKT/Year	82477.5

Emission Kg/VKT	0.26
Total emission Kg/Year	21444.15
Uncontrolled emission rate g/s/m	3.545659722
Controlled emission rate g/s/m, PM10	0.354565972
Controlled emission rate g/s/m, PM2.5	0.159554688

(V) Line Source – Transport of waste from Pit to Dump	
Quantity, TPA	66420
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	6642
Lead length/trip, Km	0.6
Total VKT/Year	3985.2
Emission Kg/VKT	0.26
Total emission Kg/Year	1036.152
Uncontrolled emission rate g/s/m	0.39975
Controlled emission rate g/s/m, PM10	0.039975
Controlled emission rate g/s/m, PM2.5	0.017988750
Note: **Emission factor computed based on wind speed of 2 m/s, and moisture content of 10 %.*	
+ Emission factor computed based on silt content of 10 % and moisture content of 10 %	

Predicted emissions of the cluster:

Predicted maximum ground level concentrations considering micro meteorological data of March 2023 to May 2023 are superimposed on the maximum baseline concentrations obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase. The overall scenario with predicted concentrations over the maximum baseline concentrations is shown in the following table along with isopleths Figures 7.1 & 7.2. Various predicted emission levels in the villages surrounding site are presented in Table 7.3 below.

FIG 7.1 Isopleth of GLC Prediction for PM_{10}

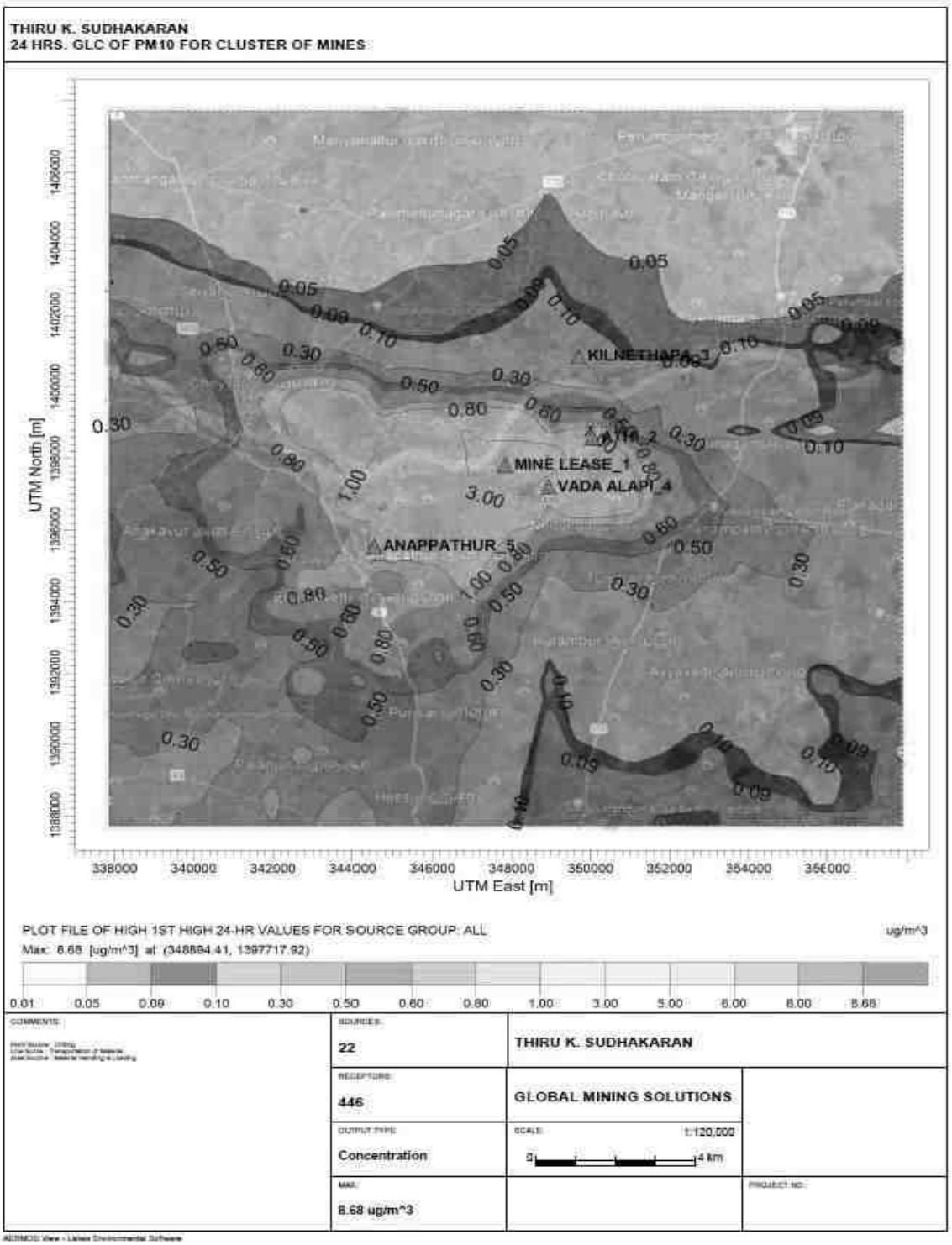


FIG 7.2 Isopleth of GLC Prediction for $PM_{2.5}$

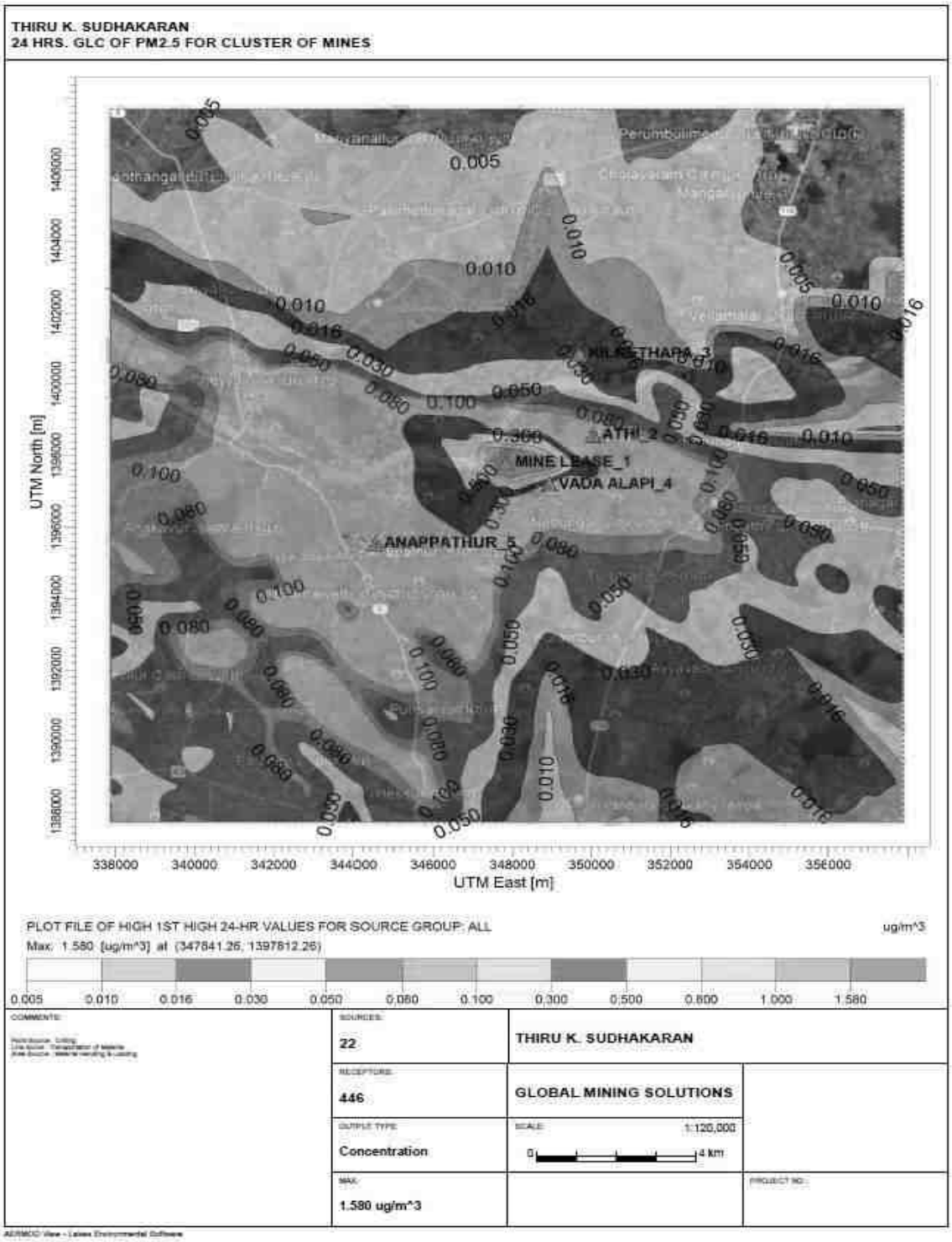


Table 7.3 Concentrations of PM $_{2.5}$ after Project Implementation					
SL. No	**Location**	**Background Concentration**	**Predicted incremental Concentration**	**Post Project Concentration**	**Statutory Limits in µg/m³**
1	Near Mine lease area	29.3	1.5	30.8	60
2	Athi village	29.3	<1.0	30.3	
2	Kil nethapakkam village	29.1	<1.0	30.1	
3	Vada Alapirandan Pudur village	30.2	<1.0	30.2	
4	Anappathur village	34.3	<1.0	35.3	

Table 7.8 Concentrations of PM $_{10}$ after Project Implementation					
SL. No	**Location**	**Background Concentration**	**Predicted incremental Concentration**	**Post Project Concentration**	**Statutory Limits in µg/m³**
1	Near Mine lease area	54.5	7.00	61.50	100
2	Athi village	56.4	<1.0	57.40	
2	Kil nethapakkam village	57.2	<1.0	58.20	
3	Vada Alapirandan Pudur village	60.2	<1.20	61.40	
4	Anappathur village	61.3	<1.36	62.66	

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 57.40 µg/m³ to 62.66 µg/m³ and for $PM_{2.5}$ are in the range of 30.1 µg/m³ to 35.3 µg/m³ which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below.

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

- Three layer plantation in the safety zone.
- DG sets shall be periodically maintained as per manufacturer's specifications.

7.6 HYDROGEOLOGICAL STUDY

There is a canal located at 120m in the North Western side of the lease area. Cheyyar River is located at 296m in the Northwestern part of the lease area. Due to the presence of these water bodies nearby, a detailed hydrogeological study has been done. As suggested in the precise Area Communication letter, safety distances of 10m is left on the West, Northeast, South eastern parts, and a safety distance of 7.5 is left on the North and Southwestern parts.

7.7 SLOPE STABILITY STUDY

The proposed quarry is a very small quarry and the production is also less. Opencast Semi-mechanized mining with a bench height of 5m and bench width of 5m and 80° Slope is proposed. The depth of mining is proposed as 27m BGL, which is the ultimate pit limit. Also, there is no overburden since the entire mined out material will be utilized.

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

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

7.8 DISASTER MANAGEMENT PLAN

Proper preventive mechanism exists already in the mines.

- Precautionary measures are well explained to all staff by the mines in-charge.

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

7.9 MINE CLOSURE PLAN

The quarrying operation is proposed up to a depth of 27m only, which will be achieved in 5 years. The ultimate pit dimension will be 201 x 96 x 27 m. After completion of quarrying operation, the mined out pit will be left as rain water harvesting pond. The quarry will be properly fenced with barbed wire.

CHAPTER 8

PROJECT BENEFITS

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

The mining activity at proposed Rough Stone & Gravel of Thiru. K. Sudhakaran cluster will create direct employment opportunity for 25 local people. The PP has proposed CER amount of Rs. 5,00,000 for project surrounding schools development.

CHAPTER 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.

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

10.1 OBJECTIVES

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

10.2 BASIS OF EMP

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

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

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

Table 10.1 Environmental Management Plan

Environmental Parameter	Mitigation Measures
Air	Wet drilling to suppress the dust emission from drill machine
	Regular water sprinkling on haulage road through fixed water sprinkler.
	3.0KLD 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.
Surface water	A canal is located at a distance of 120m in NW of lease area. Cheyyar river is located at a distance of 296m in the NW of lease area. Adequate safety distance is left. No dumping of material or discharge will be done in or near the canal or water body.
	Surface runoff management structures like garland drain of required length which is connected to a settling pond will be constructed around the quarry to collect the rain water. Monthly or after rainfall, inspection will done to ensure 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 27m maximum below ground level, Water table is found at a depth of 48m in summer and 45m in rainy seasons, hence the project will not intersect the Ground water table during entire quarry period.
Water Consumption and Wastewater generation	Water required for this project will be sourced from vendors.
	Domestic wastewater generation of 0.8 KLD will be treated in septic tank with soak pit.
	Conduct ground water and surface water monitoring for parameters specified by CPCB
Noise	The workers employed are provided with protection equipment, earmuffs and ear- plugs for the protection from high noise level generated at the mine site wherever required.
	Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
	Development of thick greenbelt all along the safety Zone (7.5 m and 10m) of the project area to attenuate the noise and the same will be maintained.
	Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation.
	Annual ambient noise level monitoring 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. Additional noise control measures will be adopted if required as per the observations during monitoring.
Ground Vibration and Fly Rock Control	Controlled blasting using delay detonators will be carried out to maintain the PPV value well within the prescribed standards of DGMS.
	Drilling and blasting will be carried under the supervision of qualified persons.
	Will be Ensured that blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material.
	To be Undertake noise or vibration monitoring.
Land Environment	At conceptual stage, the mining pits will be converted into Rain Water Harvesting pit. Remaining area will be converted into greenbelt area.

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

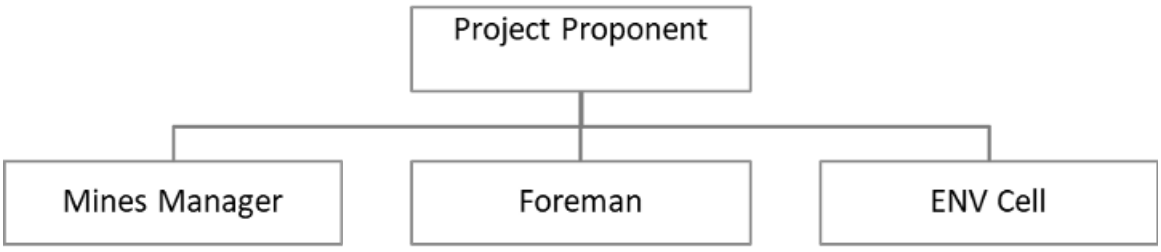
10.3 ADMINISTRATION AND TECHNICAL SETUP

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

- Monitoring of the water/ waste water quality, air quality and solid waste generated.
- Analysis of the water and air samples collected through external laboratory.

- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- Co-ordination of the environment related activities within the project as well as with outside agencies.
- Collection of health statistics of the workers and population of the surrounding villages.
- Green belt development.
- Monitoring the progress of implementation of the environmental monitoring programme.
- Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

Fig. 10.1 Organization Chart



10.4 ENVIRONMENTAL POLICY

- The Project Proponent has stipulated a well-defined Environmental policy by

which the lessee is committed to conducting business with a strong environmental conscience towards the community, customers, and employees. The Environment policy is given as below.

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

10.5 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

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

10.6 COST OF ENVIRONMENTAL CONTROL MEASURES

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

Table 10.2 Environmental Management Plan Budget

S.No.	Budget planned for	Amount (INR)
1	Air sampling	40,000
2	Water sampling	40,000
3	Noise monitoring	20,000
4	Ground vibration test	20,000
5	Drinking water facility	1,20,000
6	Sanitary arrangement	50,000
7	Safety kits	50,000
8	Water sprinkling	1,20,000
9	Afforestation	60,000
Total		5,20,000

10.7 CONCLUSION

Various aspects of mining activities were considered, and related impacts were evaluated. Considering all the possible ways to mitigate the Environmental concerns, an Environmental Management Plan was prepared, and INR 5,20,000 has been allocated for the same. The EMP is dynamic, flexible, and subjected to periodic review. For projects where major environmental impacts are associated, EMP will be under regular review. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP, and the project will have a positive impact on the study area.

CHAPTER 11

SUMMARY & CONCLUSION

11.1 INTRODUCTION

Thiru.K.Sudhakaran has obtained Precise Area Communication Letter from the Deputy Director, Department of Geology and Mining, Tiruvannamalai District to quarry out 2,37,440m^3 of Rough Stone, 18,465m^3 of Weathered rock and 19,125m^3 of Gravel from an extent of 2.57Ha located in S.F. Nos. 7, 8/1, 2, 3, 4, 5 and 214/5 at Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the proposed "Rough Stone & Gravel Quarry of Thiru.K.Sudhakaran" mines cluster falls under Schedule 1(a) of EIA Notification and its subsequent amendments the project comes under Category B1. The ToR for preparation of EIA/EMP report of the project was approved vide letter No.SEIAA-TN/F.No.9619/SEAC/ToR-1354/Dated 10.02.2023. This report has been prepared in line with the approved TOR for production of maximum excavation of 2,37,440 Cu.m of Rough Stone, 18,465 Cu.m of Weathered Rock and 19,125 Cu.m of Gravel.

S.No.	Description	Status/Remarks
1.	Sector	Non-coal mining
2.	Category of the project	B1 (Cluster)
3.	Proposed mineral	Rough Stone and Gravel
4.	Type of Lease	Fresh Lease
5.	Extent of the lease	2.57.00 Ha
6.	Proposed depth of Mining	27 m BGL
7.	Method of mining	Opencast Semi-mechanized
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years

10.	Proposed production quantity for five years	Rough stone - 2,37,440 m^3, weathered rock - 18,465 m^3 and gravel - 19,125 m^3

The Lessee Thiru.K.Sudhakaran is an individual with sound experience in the identification, quarrying and marketing of Rough Stone & Gravel. The proposed land is a private Consent Patta land and the lessee has obtained consent from land owners to carry out Rough Stone and Gravel mining and the same has been registered and attached as Annexure 08.

11.2 LOCATION

This project site is located in Vala Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District with Latitude 12°38'20.50"N to 12°38'28.14"N & Longitude 79°35'53.58"E to 79°36'01.61"E with Survey of India Topo Sheet No. 57P/10. To conduct the study, the proposed mine lease area (core zone) and an impact zone of 10 km radius (called buffer zone) around the proposed mine site were considered. The EIA report is based on three months baseline data (Summer season i.e. March 2023 to May 2023)

11.3 GEOLOGY

The rock type noticed in the lease area 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 $N50^0E$ – $S50^0W$ with dipping towards $SE70^0$.

11.4 PROJECT DESCRIPTION

This is a proposed Rough Stone and Gravel quarry by Opencast Semni-mechanized mining method with drilling and blasting. The quarrying is restricted up to a depth of 27m below ground level only. The geological reserves is estimated to be 25,648m^3 of Gravel, 25,648m^3 of Weathered rock and 6,41,200m^3 of Rough stone. The mineable reserve calculated by deducting 7.5m and 10m safety distance and bench loss. The mineable reserves is 2,37,440m^3 of Rough Stone 18,465m^3 of Weathered rock and

19,125m^3 of Gravel which will be recovered at the rate of 100% recovery upto a depth of 27m below ground level for the period of five years.

- It is proposed to quarry out rough stone with 5m bench height, 5m width with 80° slope using conventional opencast semi-Mechanized method. The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough Stone.
- The overburden in the form of Gravel and Weathered rock mass 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 customers.

S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	Fresh project
3	Category	B1, because of cluster condition
4	Nature of mineral	Minor mineral, Rough stone, weathered rock and gravel
5	Production	19125 m^3 of Gravel, 18465 m^3 of Weathered rock and 237440m^3 of Rough Stone
6	Life	5 years
7	Waste generation and management	Everything mined out, including gravel in the form of overburden will be sold to needy customers. Hence, no waste generation.
8	Bench height and width	Height and Width – 5m
9	Ultimate pit depth	27m (from 95mRL to 68m RL)
10	End use	Rough Stone and Weathered rock will be loaded in to tippers to needy buyers for producing aggregates, M-sand. Gravel will be supplied to needy customers.

11.5 PROJECT REQUIREMENTS

The requirements of the project is given below.

S.No.	Nature of requirement	Description
1	Water requirement	Requirement is 5KLD, which will be procured from outside agencies. Out of 5.0KLD, drinking water requirement is 1.0KLD, Green belt requirement is 1.0 KLD and for dust suppression, 3.0 KLD is required. Rain water harvested from mine pit will be used.
2	Power requirement	No electricity is needed for mining operations, for office demands, it will be met from the state grid.
3	Manpower requirement	Permanent employees – 10, temporary employees – 10
4	Financial requirement	The total project cost as per AMP will be INR 75,62,000, including operational cost, fixed asset and EMP cost
5	Funds for Socio economic development	INR 5,00,000 is allocated. In addition, any demand raised by people during public hearing will also be met.

11.6 DESCRIPTION OF LEASE AREA

The features in the study area is given below.

S. No.	Areas	Distance from proposed project
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil within 15km radius
2	Areas which are important or sensitive for ecological reasons	

A	Wetlands, water courses or other water bodies,	Nearest water body: Tandarai Canal – 120m in NW, Cheyyar River – 290m in NW, Tank - 470m in SE, Canal – 5.4km in NW
B	Coastal zone, biospheres,	None in 10km radius
C	Mountains, forests	None in 10km radius
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within 15km radius
4	Inland, coastal, marine or underground waters	Nil within 15km radius
5	State, National boundaries	Nil within 15km radius
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nil within 15km radius
7	Defence installations	Nil within 15km radius
8	Densely populated or built-up area	Cheyyar – 5.5km in W
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	All facilities are available in Cheyyar – 5.5km in W
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	The area contains rock in many places in the surrounding area
11	Areas already subjected to pollution or environmental damage (those where existing legal environmental standards are exceeded)	Nil
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No. The area is not prone to earthquakes, floods, etc

The baseline data collection for meteorology, air, water, noise and soil environments have been carried out during March to May 2023. Air, water, noise and soil samples are collected and analyzed by Swasti Enviro Solutions Pvt. Ltd.

11.7 AIR ENVIRONMENT

The air monitoring have been carried out in 5 locations and the results are given below.

S. No.	Parameter	A1- Near Mine lease area		A2 – Athi village		A3 – Kilnethapakkam village		A4 – Vada Alapirandan Pudur village		A5 – Anappathur village		NAAQ limits
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
1	PM_{10}	42.4	54.5	45.1	56.4	43.1	57.2	45.4	60.2	47.2	61.3	100
2	$PM2._5$	19.3	29.3	20.4	29.3	18.7	29.1	20.6	30.2	22.2	34.3	60
3	SO_2	3.4	5.8	3.7	6.4	4.0	6.4	3.8	8.4	4.2	7.6	80
4	NO_x	5.4	7.9	5.8	7.6	6.2	9.2	6.7	11.4	6.8	10.4	80
5	CO	BDL (DL – 1144)										2

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

11.8 WATER ENVIRONMENT

S. No.	**Parameters**	**WS1**	**WS2**	**WS3**	**WS4**	**WS5**	**Limits**	
		Near Mine lease area	**Athi**	**Kilnethapakkam**	**Vada Alapirandan**	**Anappathur**	**Acceptable Limits**	**Permissible Limits**
1	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	**Agreeable**	**Agreeable**
2	Turbidity	<1	<1	<1	<1.0	<1	**1**	**5**

3	pH at 25 °C	7.28	7.81	6.89	7.34	7.29	**6.5- 8.5**	**No Relaxation**
4	Electrical Conductivity	1018	389.4	710.5	1656	985.7	**-**	**-**
5	Total Dissolved Solids	612	236	430	995	596	**500**	**2000**
6	Total hardness as $CaCO_3$	431	171	235	349	408	**200**	**600**
7	Calcium as Ca	83.1	43.1	56.8	64.3	74.5	**75**	**200**
8	Magnesium as Mg	53.6	15.1	22.3	45.2	53.2	**30.0**	**100**
9	Calcium as $CaCO_3$	208	108	142	161.0	186	**-**	**-**
10	Magnesium as $CaCO_3$	223	62.7	93.0	188	221	**-**	**-**
11	Total alkalinity as $CaCO_3$	319	147	160	326	254	**200**	**600**
12	Chloride as Cl^-	82.2	34.2	134	342	117	**250**	**1000**
13	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**
14	Sulphates as SO_4^{2-}	124	13.6	72.6	208	114	**200**	**400**

15	Iron as Fe	0.09	0.08	0.05	0.15	0.12	**0.3**	**No Relaxation**
16	Nitrate as NO_3	3.26	BDL(D.L-1.0)	3.5	2.08	2.93	**45**	**No Relaxation**
17	Fluoride as F	0.36	0.13	0.21	0.39	0.24	**1**	**1.5**
19	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**

All the values were found to be within permissible limits

11.9 NOISE ENVIRONMENT

Noise levels were measures in 5 locations and the results are given below.

S. No.	Location	Day equivalent	Night equivalent	Day and Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	NM1 – Mine lease area	45	37.7	43.6	55	45
2	NM2 – Athi	47.3	38.1	45.8		
3	NM3 – Kilnethapakkam	46.2	39.0	44.8		
4	NM4 – Vada Alapirandan	45.2	37.5	43.8		
5	NM5 - Anappathur	48.7	38.7	47.2		

11.10 SOIL ENVIRONMENT

Soil samples are collected from 3 locations and the results are given below.

S.No.	Parameter	SS1 – Mine lease area	SS2 - Athi	SS3 – Kil Nethapakkam
1	pH	7.95	7.25	7.67
2	Electrical Conductivity	184.9	156.7	110.2
3	Dry Content	97.6	96.5	98.3
4	Water Content	2.4	3.5	1.7
5	Organic Matter	0.15	0.22	0.32
6	Sulphur	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)
7	Phosphorus	4.5	3.2	2.7
8	Texture	sandy loam	clay	silt loam
9	Sand	55.64	32.57	36.58
10	Clay	28.95	26.44	52.47
11	Loam	15.41	40.99	10.95
12	Total Nitrogen	53	68	102
13	Sodium	476	540	386
14	Potassium	720	910	562
15	Water Holding Capacity	3.3	3.7	3.5
16	Porosity	16.4	18.6	16.9

11.11 BIOLOGICAL ENVIRONMENT

FLORA

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

FAUNA

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

11.12 LAND USE

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

S. No.	Type of land	Area in sq.km
1	Built-up land	13.13
2	Canal	0.12
3	Crop land	201.15
4	Fallow land	8.34
5	Hill and forest	0.01
6	Land with scrub	7.55
7	Land without scrub	2.93
8	Mining land	2.93
9	Plantations	37.53
10	River	7.96
11	Tanks	41.54
	Total	**323.19**

11.13 SOCIO ECONOMIC ENVIRONMENT

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

The following data area collected from secondary data.

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

- The expert visited 3 villages in the study area namely Athi, Vada Alapirandan Pudur and Kilnethapakkam villages.
- Discussions were held with the people from nearby locality to study the social and economic conditions prevailing in the area. The expert also visited nearby hospitals, primary health centres and Balwadis/Anganwadis.
- The following observations were made:
- Primary schools are available in many villages.
- For hospital facilities, people in the locality have to go to hospital in Cheyyar which is about 5.5km from the lease area.
- Major schools with higher secondary and senior secondary schools are located in Cheyyar.
- The major Panchayat Union located in the area is Cheyyar
- Facilities like petrol pump stations, ATM facility are available in Cheyyar.

11.14 HYDROGEOLOGY OF THE LEASE AREA

Since there is a canal located at about 120m in the NW, and Cheyyar River is located at 296m in the NW, the hydrological and hydrogeological pattern of the study area is studied in detail using satellite imagery.

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

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

11.15 GROUND WATER STUDY

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

The water level in the wells immediately around the lease area range from 45m bgl to 47 m BGL.

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

As far as the mining lease area is considered, the area is rocky and no major seepage is envisaged. The production quantity is very less and the depth proposed is only 27m. Hence, there will not be any major impact due to mining on water levels or ground water levels in the area.

Environmental impacts on the following environments are identified

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

11.16 LAND ENVIRONMENT: IMPACT AND MITIGATION MEASURES

The major impact due to this project on land environment is the change in land use. Since this quarry is a small one and the production is less, mining activity will be carried out only up to 27m only. Other than quarrying of minerals, no other change will be done since there is no dumping. To prevent soil erosion during monsoon season, garland drain will be constructed with silt traps. At the mine closure stage, 1.93 Ha of lease area will be left as rain water harvesting pond. 0.20 Ha will be developed with green belt. For this, plants like Pongamia pinnata, Syzigium cumini,

Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indiaca are selected. A total of 1000 trees are planned to be planted. Spacing will be 3m x 3m.

11.17 WATER ENVIRONMENT: IMPACT AND MITIGATION MEASURES

There is no water body present inside the lease area. The entire water requirement for the project is 5.0KLD which will be sourced from outside agencies. Negligible sewage of 0.8 KLD will be generated, for which a septic tank with soak pit will be set up.

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

Since the mining operation will be limited to only up to 27m, there will not be any seepage. However, the rain water percolation and collection of water from seepage shall be less than 300lpm and it shall be pumped out periodically by a stand by diesel powered Centrifugal pump motivated with 7.5H.P.Motor. The quality of water is expected to be potable. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water can also be used for plantation purposes

The major water bodies found in the buffer zone are.

- Canal – 120m – NW
- Cheyyar River – 296m – NW
- A tank – 470m – SE
- Canal – 5.4km – NW

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

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

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

11.18 BIOLOGICAL ENVIRONMENT: IMPACT AND MITIGATION MEASURES

Impacts

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

Mitigation measures

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

11.19 AIR ENVIRONMENT: IMPACT AND MITIGATION MEASURES

The major air pollutants due to mining operations are fugitive emissions like PM_{10}, $PM_{2.5}$. Other than these pollutants, gaseous emissions of sulfur dioxide (SO_2) and

oxides of nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

The major impacts are Dust emission due to drilling, blasting and transportation. The major mitigation measures include Using Wet drilling methods, Allowing drilling only with PPE, Carrying out blasting only during specified times, Avoiding blasting during unfavourable weather conditions, Using explosives of good quality, Using mist sprayers Regular wetting of transport, Covering the materials carried in tippers with tarpaulin, Proper maintenance of vehicles used for transportation, Conducting regular emission tests for vehicles used for transport Development of greenbelt is proposed in the safety zone of 10m and 7.5m barriers in the lease area.

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

11.20 NOISE ENVIRONMENT: IMPACT AND MITIGATION MEASURES

Impacts

- Noise generation in mining is due to operation like drilling, blasting and transportation of minerals within and outside the lease area.
- As per DGMS (Directorate General of Mines Safety) and OSHA (Occupational Safety and Health Administration) limits, the acceptable noise level is 90 dB(A) for an exposure period of 8 hours.
- Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress. Noise pollution also impacts the health and well-being of wildlife.
- Noise exceeding prescribed limits may cause impairment like abnormal loudness perception, tinnitus, which causes a persistent high-pitched ringing in the ears, paracusis or distorted hearing

Mitigation measures

- As the distance between the source and receptor increases, the noise level also decreases. Hence, there will be a natural attenuation

- The proposed has planned to develop green belt in the periphery of the lease area, which diminishes sound volume by dampening them.
- All the equipment/machinery/trucks involved will be properly maintained to control noise generation
- Conducting regular health checkups for employees involved
- Employees will be made to work on shifts to reduce their exposure time
- Providing earplugs to all employees

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

11.21 NOISE ENVIRONMENT: IMPACT AND MITIGATION MEASURES

Impacts

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

Mitigation measures

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

11.22 SOCIO ECONOMIC ENVIRONMENT

Impact and Mitigation measures

No land is acquired from anyone. No rehabilitation is needed. Hence, there is no negative impact. The proponent has planned to spend INR 5,00,000 for CER activities. This amount will be subjected to change after public hearing.

11.23 OCCUPATIONAL HEALTH

Impacts

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

Mitigation measures

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

11.24 ENVIRONMENTAL MONITORING PROGRAMME

Monitoring is done to measure the efficiency of control measures implemented. Regular monitoring of various environmental parameters like air, water, noise and

soil environments is needed to assess the status of environment during the project operation. A schedule is framed with timeline to monitor various parameters during the operation of the project. To evaluate the effectiveness of environmental management programme, regular monitoring of the important environmental parameters will be taken up. Air monitoring will be carried out once in 3 months, water sample will be collected once in a season, noise will be monitored once in 3 months, soil samples will be analyzed once per season. For EMP, a budget of INR 5,20,000 is allocated.

11.25 PROJECT BENEFITS

Financial benefits

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

Social benefits

- This project provides employment to 25 people directly. Local people will be hired for unskilled labour.
- Through CSR, nearby schools, hospitals will be benefitted.
- For CSR, INR 5,00,000 is allocated.
- Based on the demand of the people during public hearing, further funds will be allocated, if necessary.
- Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and INR 5,20,000 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. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

CHAPTER 12

DISCLOSURE OF CONSULTANTS

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

Declaration by Experts contributing to the proposed Rough Stone & Gravel Quarry over an extent of 2.57.0 Ha, while total cluster area of 10.62 Ha at Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu.

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

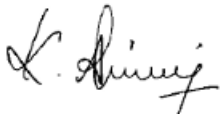
EIA Coordinator Name: M. Manikandan

Signature & Date

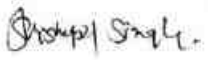
Period of involvement: March 2023 to May 2023.

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.* *Period: March 2023 to May 2023.*	
5	*EB*	*Saravanan S*	*Baseline data collection of related to ecology of the area.* *Period: March 2023 to May 2023.*	

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.* *<u>Period: March 2023 to May 2023.</u>*	
9	*LU*	*Dhanalakshmi Ramanathan*	*Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment.* *<u>Period: March 2023 to May 2023.</u>*	

10	*RH*	*S.V. Prashant*	*Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker.* *<u>Period: March 2023 to May 2023.</u>*	
11	*SC*	*Shisupal Sing*	*Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil.* *<u>Period: March 2023 to May 2023.</u>*	
12	*GEO*	*Valliappan Meyyappan*	*Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area.* *<u>Period: March 2023 to May 2023.</u>*	

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	
		AP	Dhanalakshmi		Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	
		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	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	
		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 1

நக.எண்:155/கனிமம்/2022

துணை இயக்குநர் அலுவலகம்,
(புவியியல் மற்றும் சுரங்கத்துறை),
திருவண்ணாமலை-4.
நாள்: 21.09.2022.

அறிவிக்கை

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - திருவண்ணாமலை மாவட்டம் - செய்யார் வட்டம் - வடஆளப்பிறந்தான் கிராம புல எண்கள்.7 (0.07.5), 8/1 (0.92.0), 8/2 (0.21.0), 8/3 (0.31.5) மற்றும் சிலவற்றின் மொத்தப்பரப்பு 2.57.0 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க - குவாரி குத்தகை உரிமம் வழங்கக்கோரி திரு.K.சுதாகரன் என்பவர் விண்ணப்பம் செய்தது - பரிந்துரை அறிக்கை வரப்பெற்றது - சுரங்கத் திட்டம் (Mining Plan) தயார் செய்து சமர்ப்பிக்க கோருவது - தொடர்பாக.

பார்வை:
1. திரு.K.சுதாகரன் த.பெ. கண்ணன், நெ.782 மாரியம்மன் கோவில் தெரு, ஜம்போடை கிராமம், அழிவிடைதாங்கல் அஞ்சல், வெம்பாக்கம் வட்டம் என்பவரின் விண்ணப்ப நாள் 08.07.2022.
2. இவ்வலுவலக கடிதம் நக.எண் 155/கனிமம்/2022, நாள் 08.06.2022.
3. வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் கடிதம் நக.அ5/3498/2022, நாள் 12.09.2022.
4. திரு.K.சுதாகரன் த.பெ. கண்ணன், என்பவரின் கடித நாள் 19.09.2022.
5. உதவி புவியியலாளர் மற்றும் தனி வருவாய் ஆய்வாளர், புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களின் புலத்தணிக்கை அறிக்கை நாள் 20.09.2022.
6. அரசாணை (MS).எண் 169 தொழில்துறை (எம்.எம்.சி1) துறை நாள் 04.08.2020.
7. தொடர்புடைய ஆவணங்கள்.

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திருவண்ணாமலை மாவட்டம், செய்யார் வட்டம், வடஆளப்பிறந்தான் கிராம புல எண்கள்.7 (0.07.5), 8/1 (0.92.0), 8/2 (0.21.0), 8/3 (0.31.5), 8/4 (0.60.5), 8/5 (0.28.5) & 214/5 (0.16.0) ஆகியவற்றில் மொத்தம் 2.57.0 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரி திரு.K.சுதாகரன் த.பெ. கண்ணன் அளித்த பார்வை 1-ல் கண்ட விண்ணப்பத்தின் மீது பார்வை 3-ல் கண்ட வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் அறிக்கை வரப்பெற்றது.

2. இந்நிலையில் பார்வை 4-ல் காணும் விண்ணப்பதாரரின் கடிதத்தில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு கல்குவாரி குத்தகை உரிமம் வழங்க கோரியதை 5 ஆண்டுகளுக்கு மட்டும் குத்தகை உரிமம் வழங்குமாறு கோரியுள்ளார்.

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

4. திரு.K.சுதாகரன் த/பெ. கண்ணன் என்பவர் சாதாரணக்கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க 5 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரி விண்ணப்பித்துள்ள செய்யார் வட்டம், வடஆளப்பிறந்தான் கிராம புல எண்கள்.7 (0.07.5), 8/1 (0.92.0), 8/2 (0.21.0), 8/3 (0.31.5), 8/4 (0.60.5), 8/5 (0.28.5) & 214/5 (0.16.0) ஆகியவற்றில் மொத்தம் 2.57.0 ஹெக்டேர் நிலப்பரப்பில் எவ்வித தடையும் இன்றி குவாரிப்பணி செய்ய வாய்ப்பு உள்ளதால், மேற்படி விண்ணப்பதாரார் திரு.K.சுதாகரன் த/பெ. கண்ணன் என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க குவாரி குத்தகை உரிமம் வழங்க பரிந்துரை செய்யப்பட்ட **2.57.0** ஹெக்டேர் பரப்பினை கற்குவாரி செய்ய உகந்த புலம் **(Precise Area)** என தீர்மானித்து கீழ்கண்ட நிபந்தனைகளுக்கு உட்பட்டு அறிவிப்பு செய்யப்படுகிறது.

நிபந்தனைகள்

1) விண்ணப்ப புலத்திற்கு வடக்கு மற்றும் கிழக்கில் புல எண்.169-ல் அமைந்துள்ள மலைப்புறம்போக்கிற்கு 10மீ பாதுகாப்பு இடைவெளி விடவேண்டும் மற்றும் அரசு புறம்போக்கு புலத்தில் குவாரி கழிவுகள் கொட்டி ஆக்கிரமணம் செய்யக்கூடாது.
2) பிரஸ்தாப புலத்திற்கு மேற்கில் புல எண்.6-ல் உள்ள அனாதீனத்திற்கு 10மீ பாதுகாப்பு இடைவெளி விட வேண்டும்.
3) அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5மீ பாதுகாப்பு இடைவெளி விடவேண்டும்.
4) பொதுமக்களுக்கும் அருகிலுள்ள நிலங்களுக்கும் எவ்வித பாதிப்பும் ஏற்படுத்தக்கூடாது.
5) குவாரிப்பணி தொடங்குவதற்கு முன்பாக குவாரியை சுற்றி முள் கம்பிவேலி அமைத்து குவாரிப்பணி தொடங்க வேண்டும்.
6) முறைப்படியும், விஞ்ஞானபூர்வமாகவும் குவாரிப்பணி செய்யவேண்டும்.
7) சான்றிதழ் பெறப்பட்ட போர்மேன், வெடிப்பாளர் மற்றும் சுரங்க மேலாளர் மூலம் முறையே குவாரிப்பணி செய்யப்பட வேண்டும்.
8) குவாரிப்பணி தொடங்குவதற்கு முன் சுரங்க பாதுகாப்பு இயக்குநர், சென்னை அவர்களுக்கு தகவல் தெரிவிக்கபட வேண்டும்.
9) பாறைகளைத் தகர்க்க கைத்துளைப்பான்களை கொண்டு பாறைகளை துளையிட்டு குறைவான வெடிபொருட்கள் பயன்படுத்த வேண்டும்

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.

துணை இயக்குநர் அலுவலகம் திருவண்ணாமலை புவியியல் மற்றும் சுரங்கத்துறை

6. எனவே, திரு.K.சுதாகரன் த.பெ. கண்ணன் என்பவர் ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மைச் சான்றினை பெற்று சமர்ப்பிக்கும் பட்சத்தில் செய்யார் வட்டம், வடஆளப்பிறந்தான் கிராம புல எண்கள்.7 (0.07.5), 8/1 (0.92.0), 8/2 (0.21.0), 8/3 (0.31.5), 8/4 (0.60.5), 8/5 (0.28.5) & 214/5 (0.16.0) ஆகியவற்றில் மொத்தம் 2.57.0 ஹெக்டேர் பரப்பில் கற்குவாரி செய்ய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண்19(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.K.சுதாகரன்
த.பெ. கண்ணன்,
நெ.782 மாரியம்மன் கோவில் தெரு,
ஜம்போடை கிராமம்,
அழிவிடைதாங்கல் அஞ்சல்,
வெம்பாக்கம் வட்டம்.

21/9/22

ANNEXURE-2

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

To
Thiru.K.Sudhakaran
S/o.Kannan,
No.782, Mariamman Kovil Street,
Jambodai Village, Azhivedaithangi Post,
Vembakkam Taluk,
Tiruvannamalai District.

Rc.No. 155/Kanimam/2022, dated:03.10.2022

Sir,

Sub: Quarries and Minerals – Minor Mineral Rough Stone and Gravel – Tiruvannamalai District – Cheyyar Taluk – Vadalapiranthan village – Patta SF.Nos. 7, 8/1, 8/2, etc., over an extent 2.57.0 hects., - Application preferred by **Thiru.K.Sudhakaran** – Precise area communicated – Submission of Mining Plan for approval - Approved - Regarding.

Ref:
1. Application from Thiru.Sudhakaran S/o.Kannan, No.782, Mariamman Kovil Street, Jambodai Village, Azhivedaithangi Post Vembakkam Taluk dated.08.07.2022.
2. Precise Area Communication Notice Rc.No.155/Kanimam/2022, dated.21.09.2022.
3. Mining Plan submitted by Thiru.Sudhakaran S/o.Kannan, Vembakkam Taluk dated.03.10.2022.

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In the reference 2nd cited, the Deputy Director, Geology and Mining Tiruvannamalai has communicated the SF.Nos.7 (0.07.5), 8/1 (0.92.0), 8/2 (0.21.0), 8/3 (0.31.5), 8/4 (0.60.5), 8/5 (0.28.5) & 214/5 (0.16.0) over an extent 2.57.0 hects., of Vadalapiranthan village, Cheyyar Taluk, as precise area to the applicant **Thiru.Sudhakaran S/o. Kannan**, 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 21.09.2022.

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.155/Kanimam/2022 dated:21.09.2022 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
27m below ground level (1m Gravel + 1m Weathered Rock + 20m Rough Stone)	Rough Stone : 6,41,200 Weathered Rock : 25,648 Gravel : 25,648	Rough Stone : 2,41,440 Weathered Rock : 18,465 Gravel : 19,125

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.Sudhakaran S/o.Kannan, 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.

3/10/12

Deputy Director,
Geology and Mining,
Tiruvannamalai.

Copy submitted to:

3/10/12

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 VADA ALAPIRANDAN ROUGH STONE & GRAVEL QUARRY

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

LOCATION OF THE QUARRY LEASE APPLIED AREA

STATE	:	TAMIL NADU
DISTRICT	:	TIRUVANNAMALAI
TALUK	:	CHEYYAR
VILLAGE	:	VADA ALAPIRANDAN
S.F.NOS	:	7,8/1,8/2,8/3,8/4, 8/5 and 214/5
EXTENT	:	2.57.0Ha

FOR

APPLICANT

Thiru.K.Sudhakaran,
S/o.Kannan,
N.782, Mariamman kovil street,
Jambodai village,
Azhividaithangi post,
Vembakkam Taluk,
Tiruvannamalai District

ECO-FRIENDLY

SUSTAINABILITY

SAFETY

(PPE)

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.

K.Sudhakaran
S/o.Kannan,
No.782, Mariamman kovil street,
Jambodai village,
Azhividaithangi post,
Vembakkam Taluk,
Tiruvannamalai District.

CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 2.57.0hectares of Patta lands in S.F.Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5 of Vada Alapirandan Village, Cheyyar 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

K.Sudhakaran

Place: Tiruvannamalai

Date: 23.09.2022

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K.Sudhakaran
S/o.Kannan,
No.782, Mariamman kovil street,
Jambodai village,
Azhividaithangi post,
Vembakkam Taluk,
Tiruvannamalai District.

DECLARATION

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 2.57.0hectares of Patta lands in S.F.Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5 of Vada Alapirandan Village, Cheyyar 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

K.Sudhakaran

Place: Tiruvannamalai
Date: 23.09.2022

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 2.57.0hectares of Patta lands in S.F.Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5 of Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State applied by Thiru.K.Sudhakaran 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: 24.09.2022

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 2.57.0hectares of Patta lands in S.F.Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5 of Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State Thiru.K.Sudhakaran, 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: 24.09.2022

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 2.57.0Ha of (Patta lands) in S.F.Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5 of Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District by Thiru.K.Sudhakaran, 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

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

Place: Salem
Date: 24.09.2022

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MINING PLAN FOR MINOR MINERALS

ROUGH STONE AND GRAVEL

Over an extent of 2.57.0hectares of Patta land in S.F.Nos.7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5 of Vada Alapirandan Village, Cheyyar 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.K.Sudhakaran S/o.Kannan, residing at no.782, Mariamman kovil street, Jambodai village, Azhividaithangi post, Vembakkam Taluk, Tiruvannamalai District.
2. The application was processed by the Deputy Director, Department of Geology and Mining, Tiruvannamalai, and passed an order vide Rc.No.155/Kanimam/2022 dated 21.09.2022 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 2.57.0 hectares of Patta lands in S.F.Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5 of Vada Alapirandan Village, Cheyyar 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) A safety distance 10m provided to Government (S.F.No.169 Malai Poramboke) land situated on north and eastern side and applicant should not dump any quarry waste in adjacent Government land.
   b) A safety distance 10m provided to Anadheenam situated on western side.
   c) A safety distance of 7.5m should be provided to the adjoining patta lands.
   d) Applicant should not cause any hindrance to public and adjacent lands.

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

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

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

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

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

4. Geological Resources is estimated at 6,41,200m^3 of Rough stone, 25,648m^3 of Weathered Rock and 25,648m^3 of gravel formation and Mineable Reserves is estimated at 2,41,440m^3 of Rough Stone, 18,465m^3 of Weathered Rock and 19,125m^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 2,41,440m^3 of Rough Stone, 18,465m^3 of Weathered Rock and 19,125m^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 9.8Kms 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	:	Vada Alapirandan
b.	Name of the Panchayat Union	:	Anakavoor
c.	The proposed total Minable Reserves	:	2,41,440m³ of Rough Stone, 18,465m³ of Weathered Rock 19,125m³ of gravel formation
d.	The proposed quantity of reserves (level of production) for Five years to be mined is(Recoverable reserves)	:	2,41,440m³ of Rough Stone, 18,465m³ of Weathered Rock 19,125m³ of gravel formation
e.	Total extent of the area	:	2.57.0Ha
f.	Proposed Period of mining	:	Five Years
g.	Existing depth	:	It is fresh quarry lease applied area
h.	Proposed Depth of mining	:	27m (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 80° 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. 18,42,000/- Rs. 52,00,000/- Rs. 5,20,000/- Total Project cost(A+B+C)=**Rs. 75,62,000/-**

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

Corners	Co- ordinates		Distance between the corners
	Latitude	Longitude	
1	12° 38' 23.07'N	79° 35' 53.58'E	1-2 = 161.8m
2	12° 38' 28.14'N	79° 35' 55.04'E	2-3 = 54.2m
3	12° 38' 27.49'N	79° 35' 56.71'E	3-4 = 29.4m
4	12° 38' 26.53'N	79° 35' 56.70'E	4-5 = 25.2m
5	12° 38' 25.72'N	79° 35' 57.00'E	5-6 = 17.8m
6	12° 38' 25.38'N	79° 35' 57.48'E	6-7 = 19.6m
7	12° 38' 25.07'N	79° 35' 58.05'E	7-8 = 42.6m
8	12° 38' 25.01'N	79° 35' 59.46'E	8-9 = 9.6m
9	12° 38' 25.03'N	79° 35' 59.77'E	9-10 = 15.0m
10	12° 38' 24.90'N	79° 36' 00.25'E	10-11 = 41.4m
11	12° 38' 24.69'N	79° 36' 01.61'E	11-12 = 41.2m
12	12° 38' 23.40'N	79° 36' 01.22'E	12-13 = 34.8m

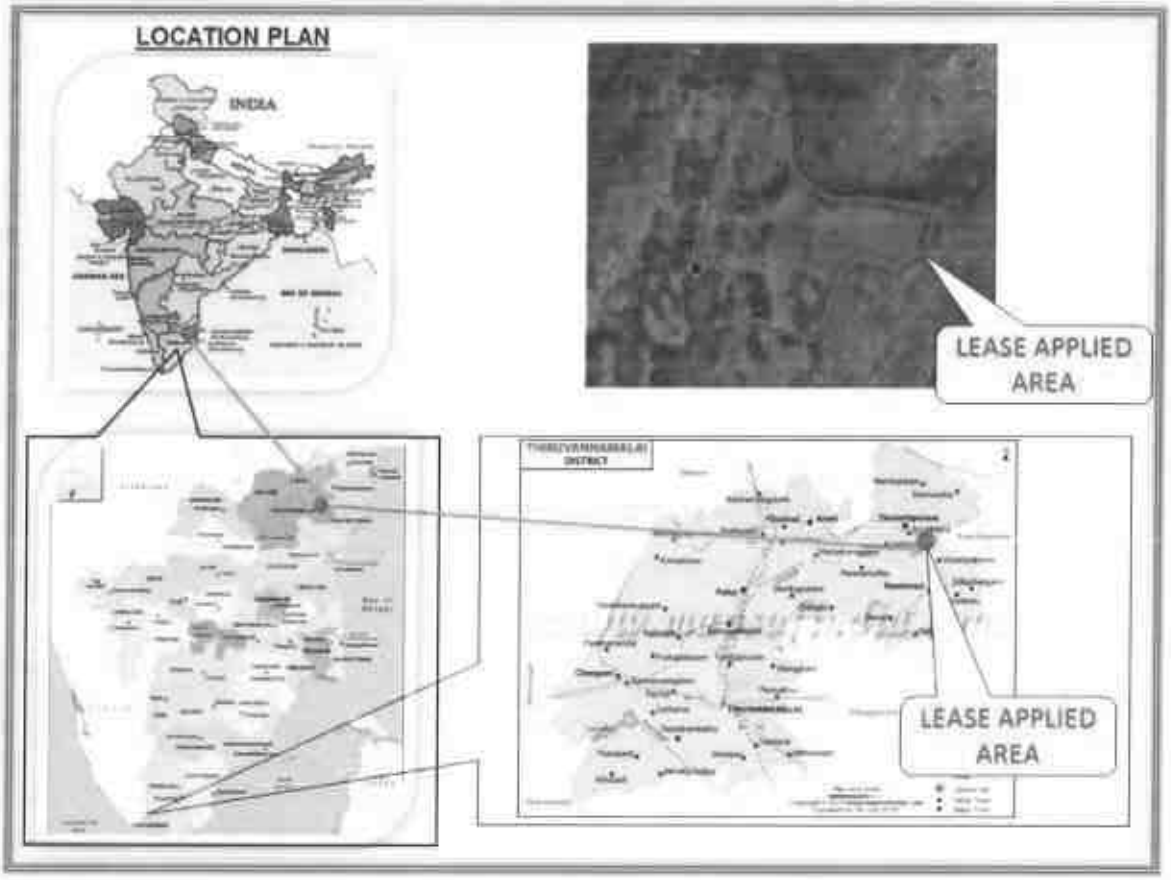
13	12° 38' 22.77"N	79° 36' 00.26"E	13-14 =	36.8m
14	12° 38' 23.13"N	79° 35' 59.10"E	14-15 =	21.4m
15	12° 38' 22.73"N	79° 35' 58.53"E	15-16 =	21.2m
16	12° 38' 22.10"N	79° 35' 58.24"E	16-17 =	39.0m
17	12° 38' 20.88"N	79° 35' 57.88"E	17-18 =	15.0m
18	12° 38' 20.50"N	79° 35' 57.57"E	18-19 =	39.4m
19	12° 38' 20.88"N	79° 35' 56.32"E	19-20 =	34.6m
20	12° 38' 21.23"N	79° 35' 55.24"E	20-21 =	48.0m
21	12° 38' 22.77"N	79° 35' 54.94"E	21-22 =	19.6m
22	12° 38' 22.91"N	79° 35' 54.31"E	22-1 =	22.6m

2.0 General Information:

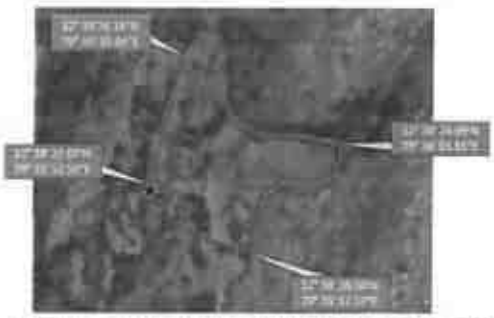
2.1	a.	Name of the Applicant	:	Thiru.K. Sudhakaran
	b.	Address of the Applicant with phone No and e-mail id if any	:	S/o.Kannan, No.782, Mariamman kovil street, Jambodai village, Azhividaithangi post, Vembakkam Taluk, Tiruvannamalai District. Pincode:604402. Cell No.: 9786228696.
	c.	Status of the Applicant	:	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.155/Kanimam/2022 dated 21.09.2022
	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°38'20.50"N to 12°38'28.14"N Longitude :79°35'53.58"E to 79°36'01.61"E
2	Toposheet Number	57 P/10
3	The altitude of the area	95m (MSL)
4	Extent	2.57.0Ha
5	Survey Nos	7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5
6	Village	Vada Alapirandan
7	Taluk	Cheyyar
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 Thiru.Srinivasan, Thiru.Boopalan, Thiru.Gopalan, Thiru.Vettrivelan and Thiru.Sudhakaran vide patta no.765 and 845, the applicant has obtained consent from the pattadars. Please refer Annexure No: IV and VII.
c.	Toposheet No. with Latitude and Longitude	: : :	Topo Sheet No: 57 P/10 Latitude :12°38'20.50"N to12°38'28.14"N Longitude :79°35'53.58"E to79°36'01.61"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 Nedungal - Anappathur village road on southern side of the area. The Nearest Railway line is Kanchipuram – Chengalpattu line which is about 25Km 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 1m (Avg) Gravel and 1m weathered rock formation and sloping towards Southeastern side of the area, the altitude of the area is above 95m (maximum) from MSL. ➢ No major river is found nearby the lease applied area. ➢ Water table is found at a depth of 48m in summer and 45m 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 N50°E – S50°W with dipping towards SE70°.

				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 outcrops surrounding the lease applied area.
4.3	a.	Estimation of Reserves	:	The Geological and Recoverable reserves are estimated by cross sectional method. Totally four sections have been drawn, two sections drawn length wise as (X-Y), (X1-Y1) and another two section drawn width wise as (A-B) and (C-D) to cover maximum area considered for lease. The Plans and Sections have been drawn with a scale of 1:1000 and 1:500 respectively. Please refer plate No.III.

a. Geological Resources

The quarrying is restricted up to a depth of 27m 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 formation in m^3	Weathered Rock in m^3	Geological Resources of Rough stone in m^3
XY-AB	48	157	1	7536	7536		
	48	157	1	7536		7536	
	48	157	25	188400			188400
	Total				**7536**	**7536**	**188400**
XY-CD	171	56	1	9576	9576		
	171	56	1	9576		9576	
	171	56	25	239400			239400
	Total				**9576**	**9576**	**239400**
X1Y1-CD	97	88	1	8536	8536		
	97	88	1	8536		8536	
	97	88	25	213400			213400
	Total				**8536**	**8536**	**213400**
	Grand Total				**25648**	**25648**	**641200**

Gravel Formation : 25,648m^3
Weathered Rock Formation : 25,648m^3
The Geological Resources of Rough stone : 6,41,200m^3

b. Mineable Reserve

The mineable reserve calculated by deducting 7.5m and 10m safety clearance and bench loss.

Table No-2

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m^3	Gravel formation in m^3	Weathered Rock in m^3	Mineable Reserves of Rough stone in m^3
XY-AB	I	40	141	1	5640	5640		
	II	39	139	1	5421		5421	
	III	36	132	5	23760			23760
	IV	29	119	5	17255			17255
	V	23	106	5	12190			12190
	VI	16	93	5	7440			7440
	VII	10	80	5	4000			4000
Total						**5640**	**5421**	**64645**
XY-CD	I	161	45	1	7245	7245		
	II	160	44	1	7040		7040	
	III	157	41	5	32185			32185
	IV	150	35	5	26250			26250
	V	144	28	5	20160			20160
	VI	137	22	5	15070			15070
	VII	131	15	5	9825			9825
Total						**7245**	**7040**	**103490**
X1Y1-CD	I	78	80	1	6240	6240		
	II	76	79	1	6004		6004	
	III	70	76	5	26600			26600
	IV	57	69	5	19665			19665
	V	44	63	5	13860			13860
	VI	31	56	5	8680			8680
	VII	18	50	5	4500			4500
Total						**6240**	**6004**	**73305**
Grand Total						**19125**	**18465**	**241440**

The mineable reserve is computed as 2,41,440m^3 of Rough stone, 18,465m^3 of Weathered rock formation and 19,125m^3 of Gravel formation upto a depth of 27m 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 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 80° 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 80° 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 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	40	141	1	5640	5640		
		II	39	139	1	5421		5421	
		III	36	132	5	23760			23760
	XY-CD	I	120	45	1	5400	5400		
		II	120	44	1	5280		5280	
		III	120	41	5	24600			24600
Total							**11040**	**10701**	**48360**
II	XY-CD	I	41	45	1	1845	1845		
		II	40	44	1	1760		1760	
		III	37	41	5	7585			7585
	X1Y1-CD	I	78	80	1	6240	6240		
		II	76	79	1	6004		6004	
		III	70	76	5	26600			26600
		IV	41	69	5	14145			14145
Total							**8085**	**7764**	**48330**
III	X1Y1-	IV	16	69	5	5520			5520
	XY-CD	IV	150	35	5	26250			26250
	XY-AB	IV	29	119	5	17255			17255
Total									**49025**
IV	XY-AB	V	23	106	5	12190			12190
	XY-CD	V	144	28	5	20160			20160
	X1Y1-	V	44	63	5	13860			13860
Total									**46210**
V	X1Y1-CD	VI	31	56	5	8680			8680
		VII	18	50	5	4500			4500
	XY-CD	VI	137	22	5	15070			15070
		VII	131	15	5	9825			9825
	XY-AB	VI	16	93	5	7440			7440
		VII	10	80	5	4000			4000
Total									**49515**
Grand Total							**19125**	**18465**	**241440**

The applicant has proposed to carry out 2,41,440m^3 of Rough stone 18,465m^3 of Weathered rock formation and 19,125m^3 of Gravel formation at the rate of 100% recovery upto a depth of 27m 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	6	32	1.2m to 6m	Atlas Copco	Compressed air
2	Compressor	2	-	400 psi	Atlas Capco	Diesel Drive

	b.	Loading	:	Excavator of 0.90m³ bucket capacity (with Rock breaker attachment) (1No).
	c.	Transportation	:	Tipper 3Nos (5/10Ts) capacity.
5.6		Disposal of Overburden	:	The overburden in the form of Gravel and weathered rock mass after the excavation of weathered rock mass 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	201	96	27m

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.

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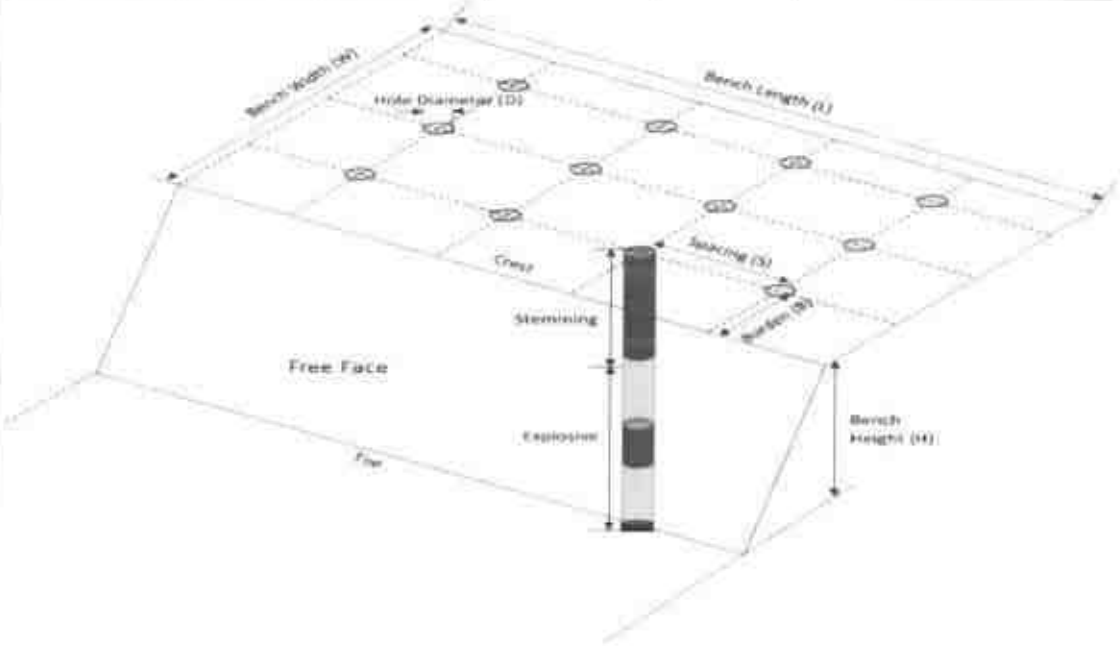
6.0 Blasting:

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	:	140
Powder factor	:	6Ts/Kg of explosives
Total explosive required	:	70Kg slurry explosives
Charge / hole	:	0.5Kg
Blasting time	:	12-2 Pm

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

7.0 Mine Drainage:

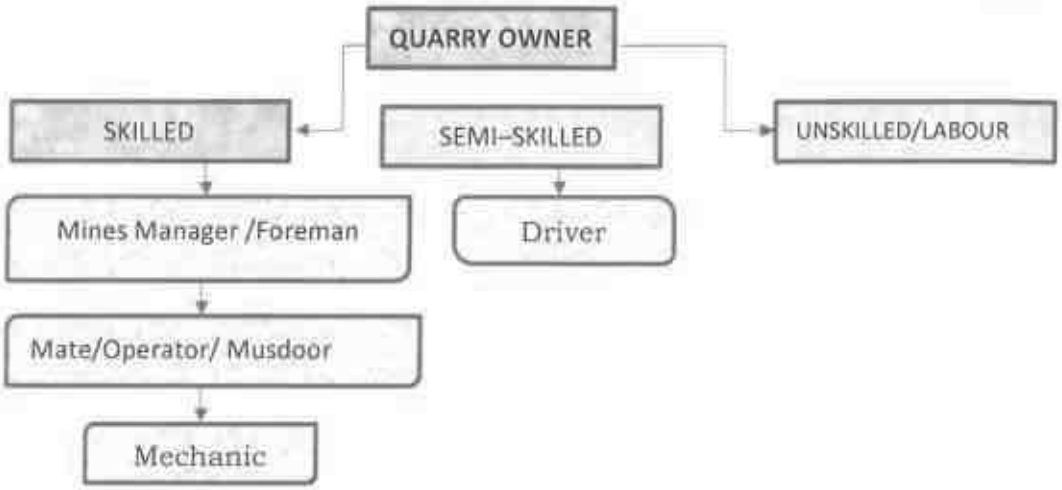
7.1	Depth of Water table	:	The ground water table is reported as 48m below ground level. In the proposed mining plan only 27m Below ground level depth has been envisaged as workable depth for safe & economic quarrying for the entire lease period. Hence the quarrying operation may not affect the ground 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 no HT or LT line located within the radius of 50m.
8.3	Water bodies (River, Pond, Lake, Odai, Channel etc)	:	There is Cheyyar river passing northwestern side of the area and is 270m away from the area, There is canal passing on northwestern side of the area and is 120m away from the area, there is tank situated on northeastern side of the area and is 470m away from the area.
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 26Km on the Northern side of the area. The State Highway (SH-116) Kanchipuram – Vandavasi is about 4.5Km on southeastern 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	Mines Manager/ Foreman	2 No.
		Mate	1 No.
		Operator	8 No
		Mechanic	1 No.
2.	Semi-skilled	Driver	3 No.
3.	Unskilled	Labours	10Nos
		Total =	25Nos

Allowing 10% absentee, the no. of men of roll will be around 23.

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 Vada Alapirandan village which is about 1.5km on southeastern side of the area.

	b.	Sanitary facilities	:	Semi-permanent latrines & urinals shall be maintained at convenient places for use of labours 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 6.5Km (NW) in Cheyyar 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 27m Below ground level for the proposed mining plan period. 3. Fluctuation of Water table in this area is in between 48m and 45m 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	1.93.0
2.	Infrastructure	Nil	0.01.0
3.	Roads	Nil	0.01.0
4.	Green Belt	Nil	0.20.0
5.	Unutilized	2.57.0	0.42.0
	Total =	**2.57.0**	**2.57.0**

10.2	Water Regime	:	Water table in this area is noticed at a depth of 48m and presently, in the proposed mining plan only 27m 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>Athi</td><td>1.6km - NE</td><td>150</td></tr>
<tr><td>2.</td><td>Velianallur</td><td>2.3km - NW</td><td>350</td></tr>
<tr><td>3.</td><td>Vada Alapirandan</td><td>1.5Km – SE</td><td>250</td></tr>
<tr><td>4.</td><td>Anappathur</td><td>1.7Km-SW</td><td>300</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 27m (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 27m 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 and 10m 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	30	80%	400	Neem/Pungan	24
II	30	80%	400	Neem/Pungan	24
III	30	80%	400	Neem/Pungan	24
IV	30	80%	400	Neem/Pungan	24
V	30	80%	400	Neem/Pungan	24

Nearly 2000Sqm area is proposed to use under afforestation by planting 30nos. 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)=	:	Rs15,42,000
2. First aid room and accessories	:	Rs.1,00,000
3. Labour Shed		Rs.1,00,000
4. Sanitary Facility		Rs.1,00,000
Total=		**Rs.18,42,000/-**

	B.Operational Cost:		
	1. Machineries	:	Rs.50,00,000-
	2. Fencing cost	:	Rs. 2,00,000
	Total	:	**Rs.52,00,000/-**
	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	:	Rs.1,20,000/-
	2. Sanitary Arrangments	:	Rs. 50,000/-
	3. Safety kids	:	Rs. 50,000/-
	4. Water sprinkling	:	Rs. 1,20,000/-
	5. Afforestation	:	Rs. 60,000/-
	Total=		**Rs. 5,20,000/-**
	Total Project Cost (A+B+C)	:	**Rs. 75,62,000/-**
	CSR Cost(2% of Total Project Cost)	:	**Rs. 1,51,240/-**

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.

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12.0 Any Other Details Intend to Furnish by the Applicant:

(i) Permission will be obtained from the District Mines Office for extraction of 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 : 24.09.2022.

This Mining Plan is Approved Subject to the Conditions/Stipulation Indicated In The Mining Plan Approval Letter No. 155 /mines/2022. Dt: 03.10.2022 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 Miner Mineral Concession Rules.1959.

Deputy Director
Dept.of Geology and Mining
Tiruvannamalai.

3/10/22

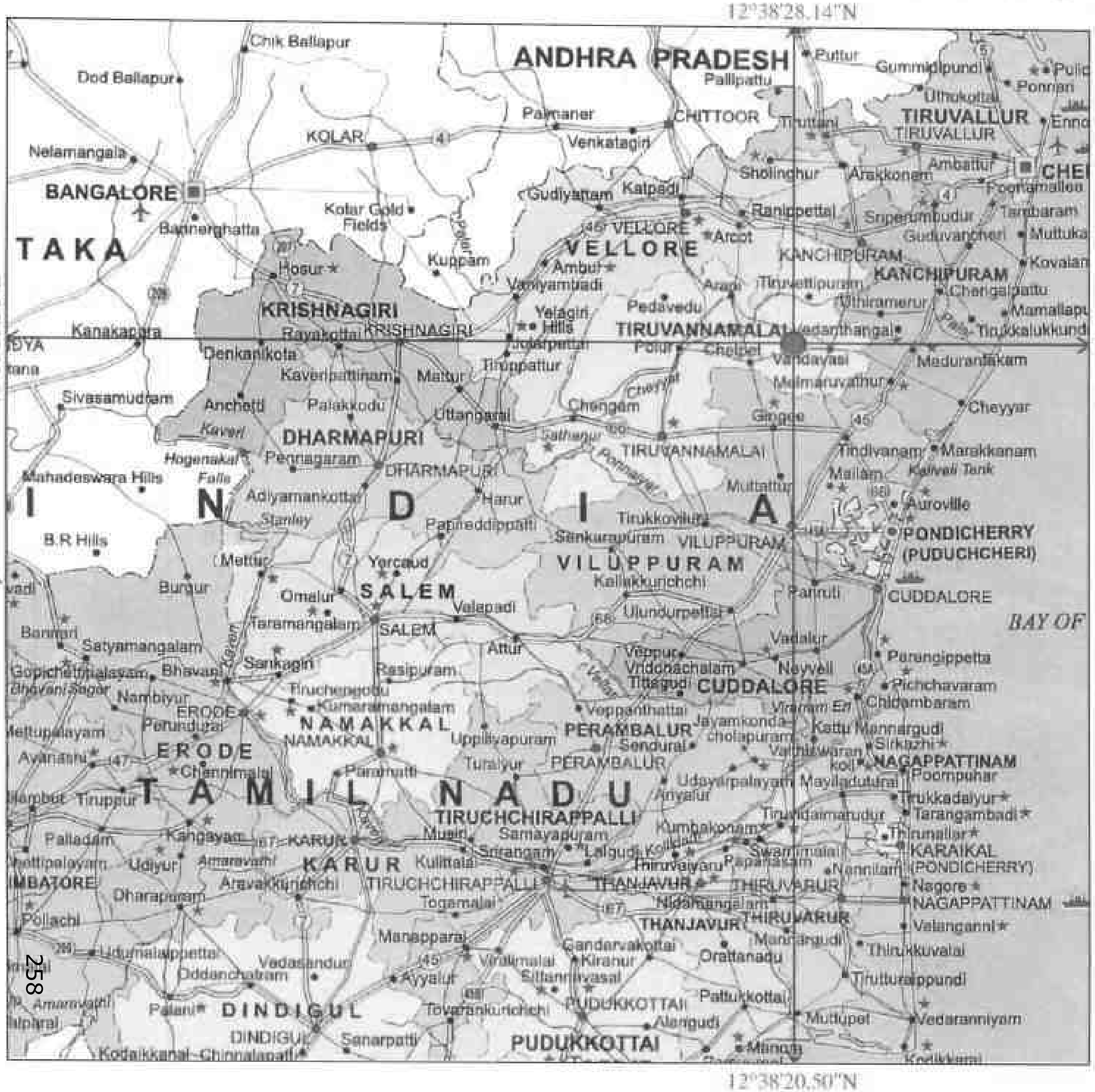

PLATE NO: I

DATE OF SURVEY : 23.09.2022

APPLICANT:

THIRU.K.SUDHAKARAN,
S/o.KANNAN,
No.782, MARIAMMAN KOVIL STREET,
JAMBODAI VILLAGE,
AZHIVIDAITHANGI POST,
VEMBAKKAM TALUK,
TIRUVANNAMALAI DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 7, 8/1, 8/2, 8/3, 8/4, 8/5 & 214/5,
EXTENT : 2.57.0Ha.
VILLAGE : VADA ALAPIRANDAN,
TALUK : CHEYYAR,
DISTRICT : TIRUVANNAMALAI.

INDEX

Q. L. A. AREA :

TOPO SHEET NO : 57 P/10

LATITUDE :12°38'20.50"N to 12°38'28.14"N

LONGITUDE :79°35'53.58"E to 79°36'01.61"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.NATARAJAN.M.Sc.,M.Phil.,
QUALIFIED PERSON

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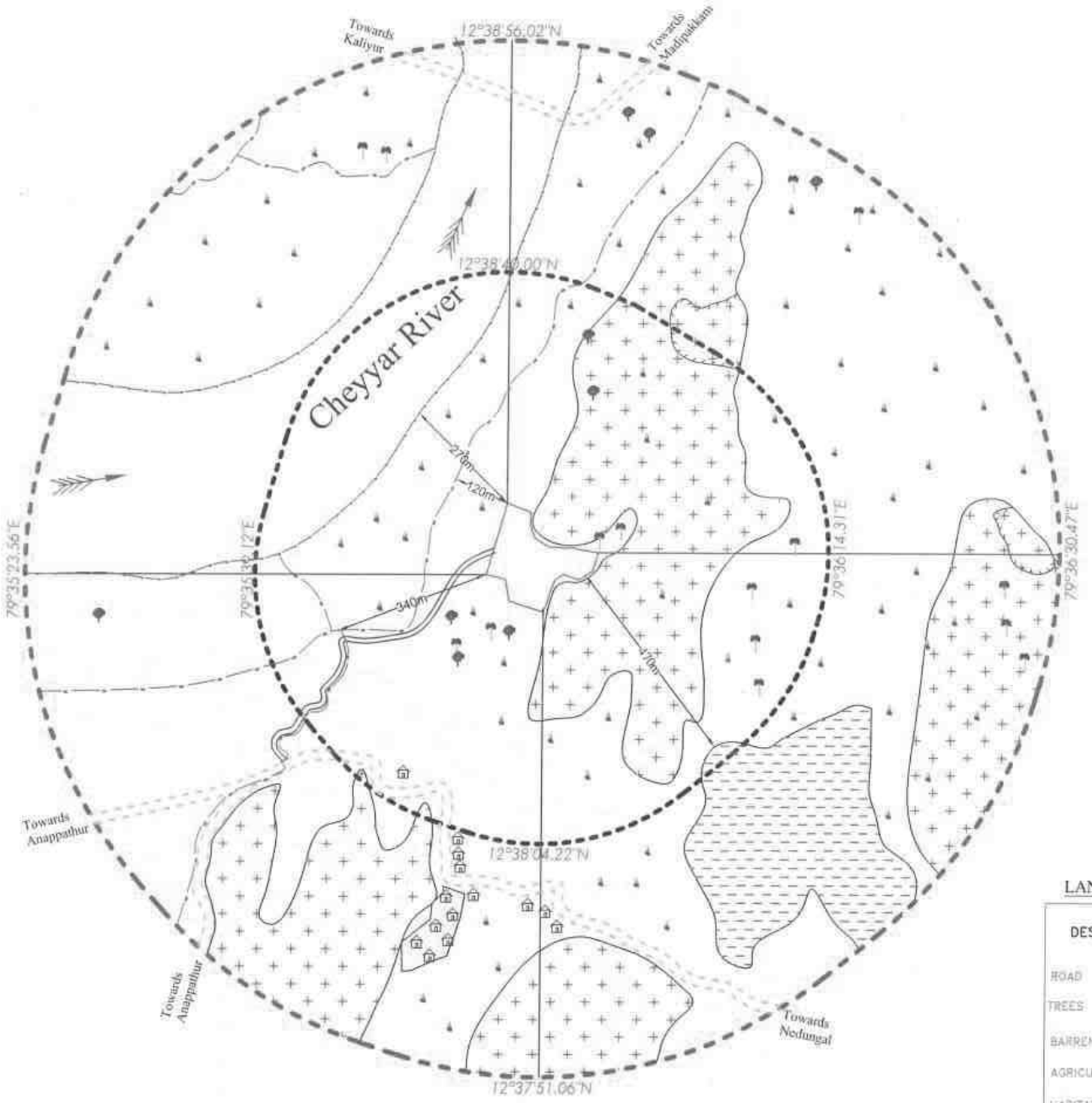
PLATE NO: 1A
DATE OF SURVEY : 23.09.2022



APPLICANT:
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QUARRY LEASE APPLIED AREA:
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EXTENT : 2.57.0Ha,
VILLAGE : VADA ALAPIRANDAN,
TALUK : CHEYYAR,
DISTRICT : TIRUVANNAMALAI.

INDEX
TOPO SHEET NO : 57 P/10

LATITUDE :12°38'20.50"N to 12°38'28.14"N

LONGITUDE :79°35'53.58"E to 79°36'01.61"E

Q.L.APPLIED AREA	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
PANCHAYAT ROAD	
CANAL	
BARREN LAND	
TREES	
SEASONAL AGRICULTURE	
HABITATIONS	
QUARRY PIT	
TANK	
CHEYYAR RIVER	
HILLOCK	

LAND USE PATTERN

DESCRIPTION	AREA IN (%)
ROAD	10
TREES	05
BARREN LAND	50
AGRICUTURE LAND	15
HABITATIONS	10
WATER BODIES	02
HILLOCK	28

ENVIRONMENTAL PLAN
SCALE 1: 10,000

PREPARED BY :
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C.NATARAJAN,M.Sc.,M.Phil.,
QUALIFIED PERSON

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திருவண்ணாமலை

PLATE NO: 1B

DATE OF SURVEY : 23.09.2022

APPLICANT:

THIRU.K.SUDHAKARAN,
S/o.KANNAN,
No.782, MARIAMMAN KOVIL STREET,
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AZHIVIDAITHANGI POST,
VEMBAKKAM TALUK,
TIRUVANNAMALAI DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 7, 8/1, 8/2, 8/3, 8/4, 8/5 & 214/5,
EXTENT : 2.57.0Ha,
VILLAGE : VADA ALAPIRANDAN,
TALUK : CHEYYAR,
DISTRICT : TIRUVANNAMALAI.

INDEX

TOPO SHEET NO : 57 P/10

LATITUDE :12°38'20.50"N to 12°38'28.14"N

LONGITUDE :79°35'53.58"E to 79°36'01.61"E

Q.L.APPLIED AREA	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
PANCHAYAT ROAD	

SATELLITE IMAGERY MAP

SCALE 1: 10,000

PREPARED BY :

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

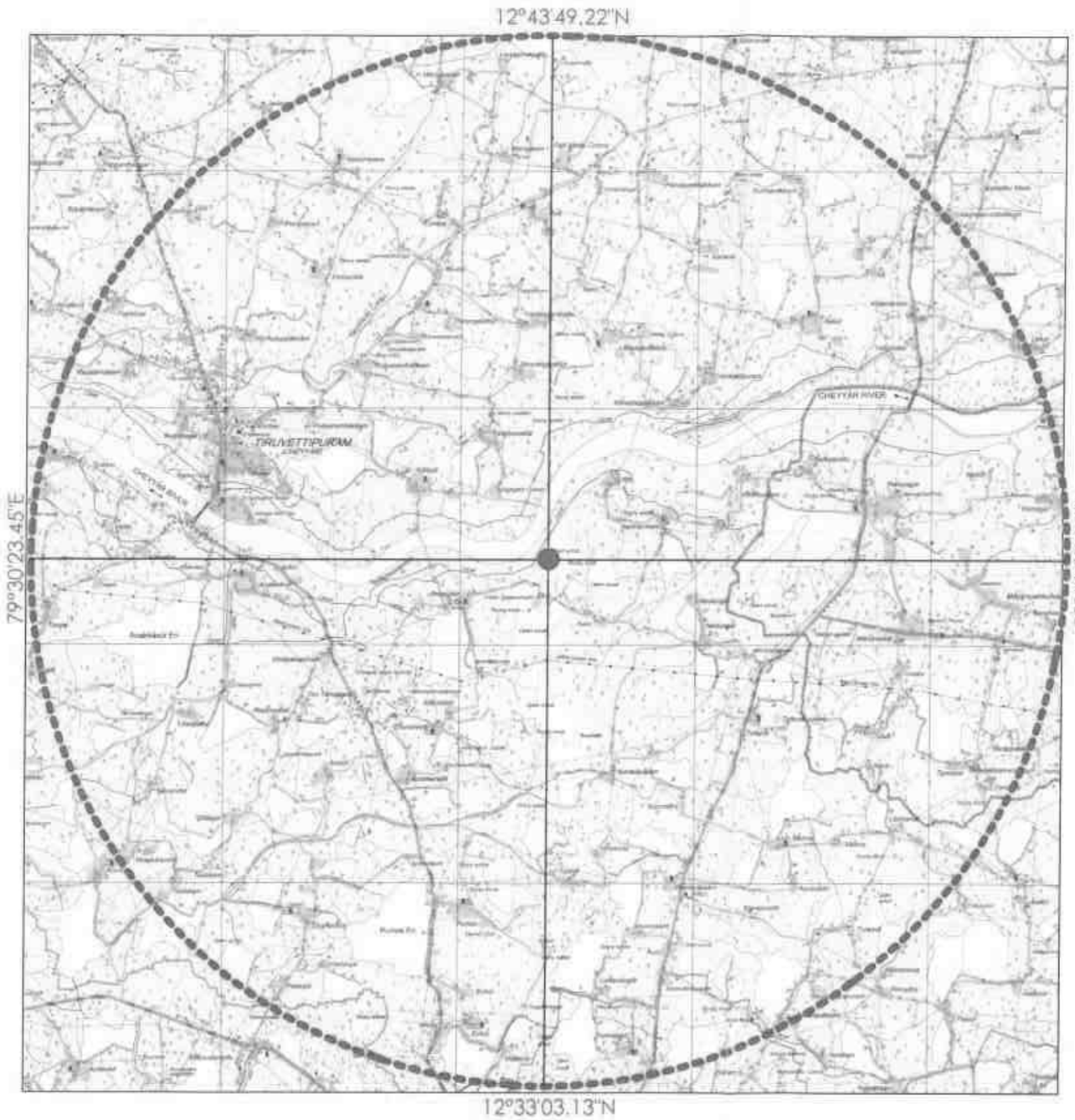

PLATE NO-I C

DATE OF SURVEY :23.09.2022

APPLICANT:

THIRU.K.SUDHAKARAN,
S/o.KANNAN,
No.782, MARIAMMAN KOVIL STREET,
JAMBODAI VILLAGE,
AZHIVIDAITHANGI POST,
VEMBAKKAM TALUK,
TIRUVANNAMALAI DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 7, 8/1, 8/2, 8/3, 8/4, 8/5 & 214/5,
EXTENT : 2.57.0Ha,
VILLAGE : VADA ALAPIRANDAN,
TALUK : CHEYYAR,
DISTRICT : TIRUVANNAMALAI.

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TOPO SHEET NO : 57 P/10

LATITUDE :12°38'20.50"N to 12°38'28.14"N

LONGITUDE :79°35'53.58"E to 79°36'01.61"E

Q.L.APPLIED AREA

10KM RADIOUS

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 10Km RADIUS

SCALE– 1:100000

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

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

KEY PLAN

PLATE NO:ID

DATE OF SURVEY : 23.09.2022

APPLICANT:

THIRU.K.SUDHAKARAN,
S/o.KANNAN,
No.782, MARIAMMAN KOVIL STREET,
JAMBODAI VILLAGE,
AZHIVIDAITHANGI POST,
VEMBAKKAM TALUK,
TIRUVANNAMALAI DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 7, 8/1, 8/2, 8/3, 8/4, 8/5 & 214/5,
EXTENT : 2.57.0Ha,
VILLAGE : VADA ALAPIRANDAN,
TALUK : CHEYYAR,
DISTRICT : TIRUVANNAMALAI.

INDEX

Q.L.APPLIED AREA

APPROACH ROAD

PANCHAYAT ROAD

STATE HIGHWAY

HABITATIONS

KEY PLAN

Not To Scale

PREPARED BY:

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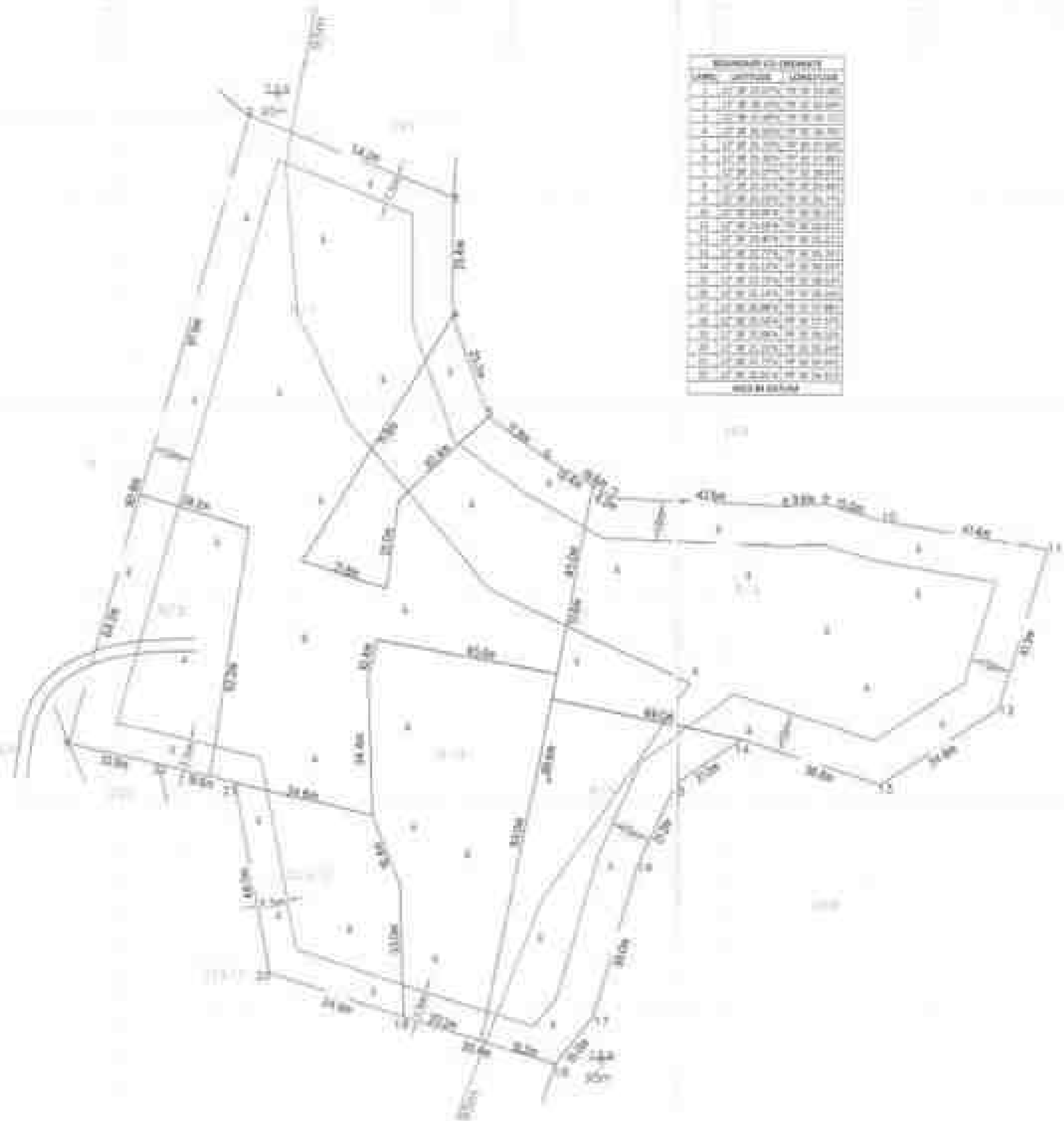


PLATE NO-II

DATE OF SURVEY : 23.09.2022

APPLICANT:

THIRU K.SUDHAAKARAN,
S/o KANNAN,
No.082, PANGANATHAN KOVIL STREET,
JANGODAI VILLAGE,
ASHIVIITHANGI POST,
VEMBAKKAM TALUK,
TIRUVANNAMALAI DISTRICT.

QUARRY APPLIED LEASE AREA:

S.F.NOS : 7, 8/1, 8/2, 8/3, 8/4, 8/5 & 214/3.
EXTENT : 2.57.0Ha.
VILLAGE : VADA ALAPIRANDAN,
TALUK : CHEYYAR,
DISTRICT : TIRUVANNAMALAI.

INDEX

Q.L. APPLIED BOUNDARY
7.5m &10m SAFETY DISTANCE
TEMPORARY BENCH MARK
APPROACH ROAD
CONTOUR
SCRUB

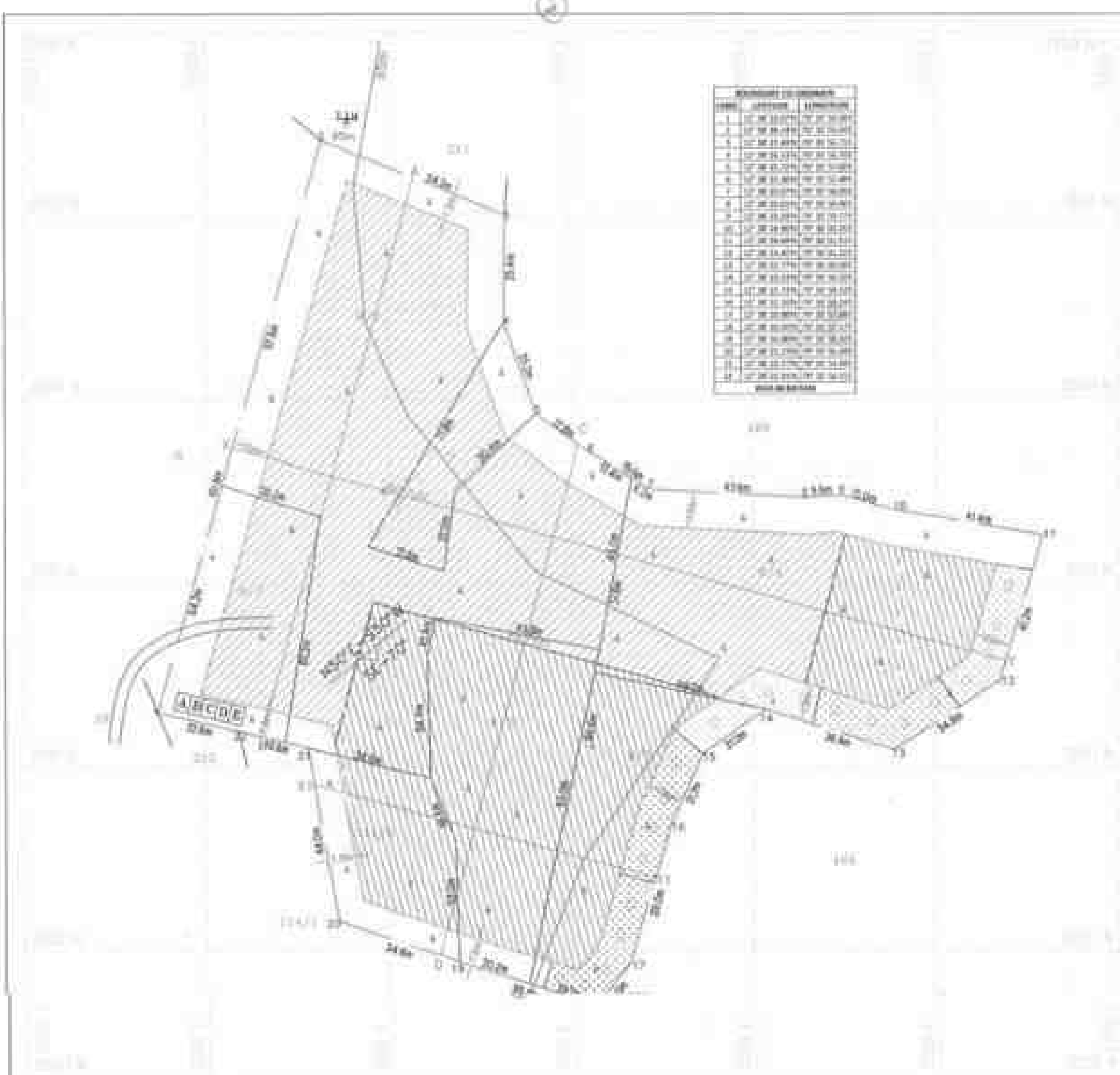
QUARRY LEASE & SURFACE PLAN

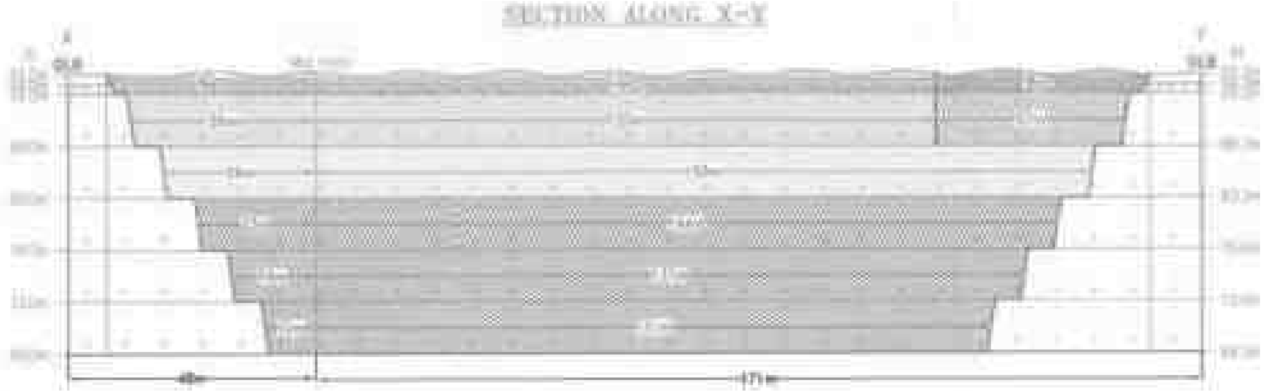
SCALE 1 : 1000

PREPARED BY:

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

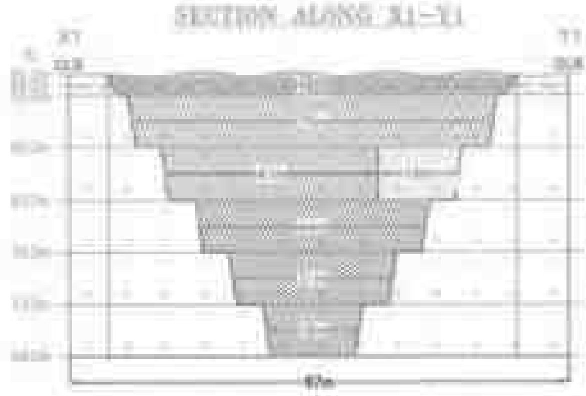
QUALIFIED PERSON

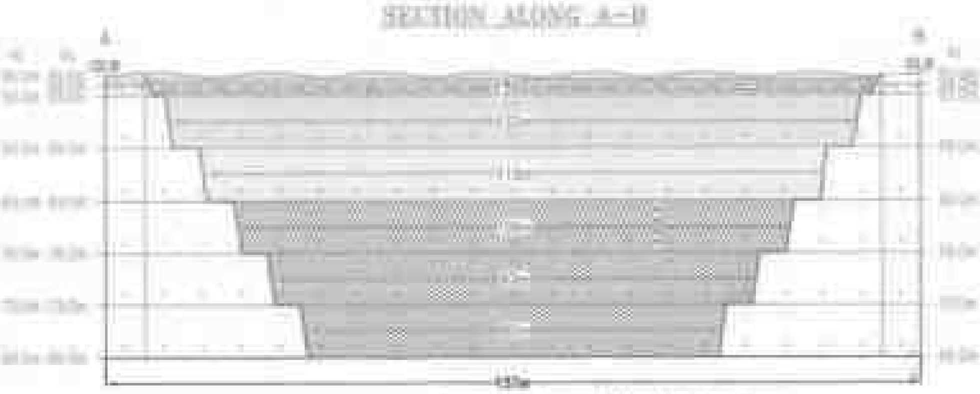


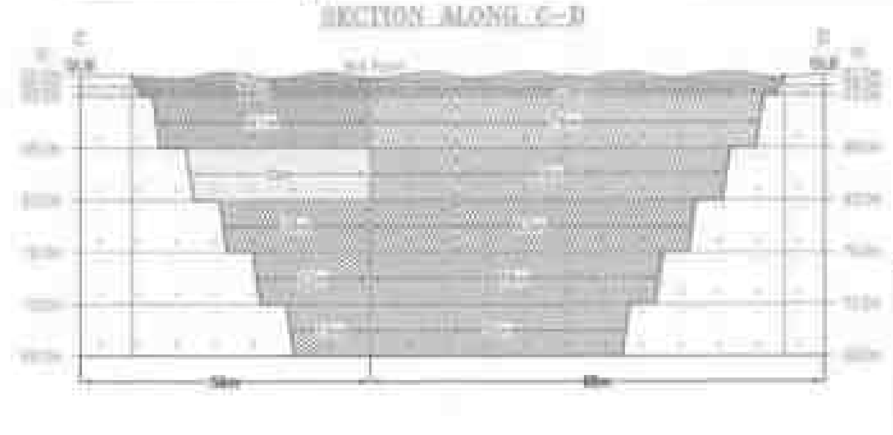


PROPOSED SITE SERVICES

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







PRESENT & POST LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Ha)	AREA AT THE END OF THIS QUARRYING PERIOD (Ha)
AREA UNDER QUARRYING	Nil	1.83.0
INFRASTRUCTURE	Nil	0.01.0
ROADS	Nil	0.01.0
GREEN BELT	Nil	0.30.0
UN-UTILIZED AREA	2.57.0	0.42.0
GRAND TOTAL	2.57.0	2.57.0

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

PLATE NO-III
DATE OF SURVEY : 23.09.2022

APPLICANT:
THIRU K.SUDHAKARAN,
S/o.KANNAN,
No.7/82, MARIAMMAN KOVIL STREET,
JAMBODAI VILLAGE,
AZHIVIDAITHANGI POST,
VEMBAKKAM TALUK,
TIRUVANNAMALAI DISTRICT.

QUARRY APPLIED LEASE AREA:
S.F.NOS : 7, 8/1, 8/2, 8/3, 8/4, 8/5 & 214/3,
EXTENT : 2.57.0Ha
VILLAGE : VADA ALAPIRANDAN
TALUK : CHEYYAR
DISTRICT : TIRUVANNAMALAI

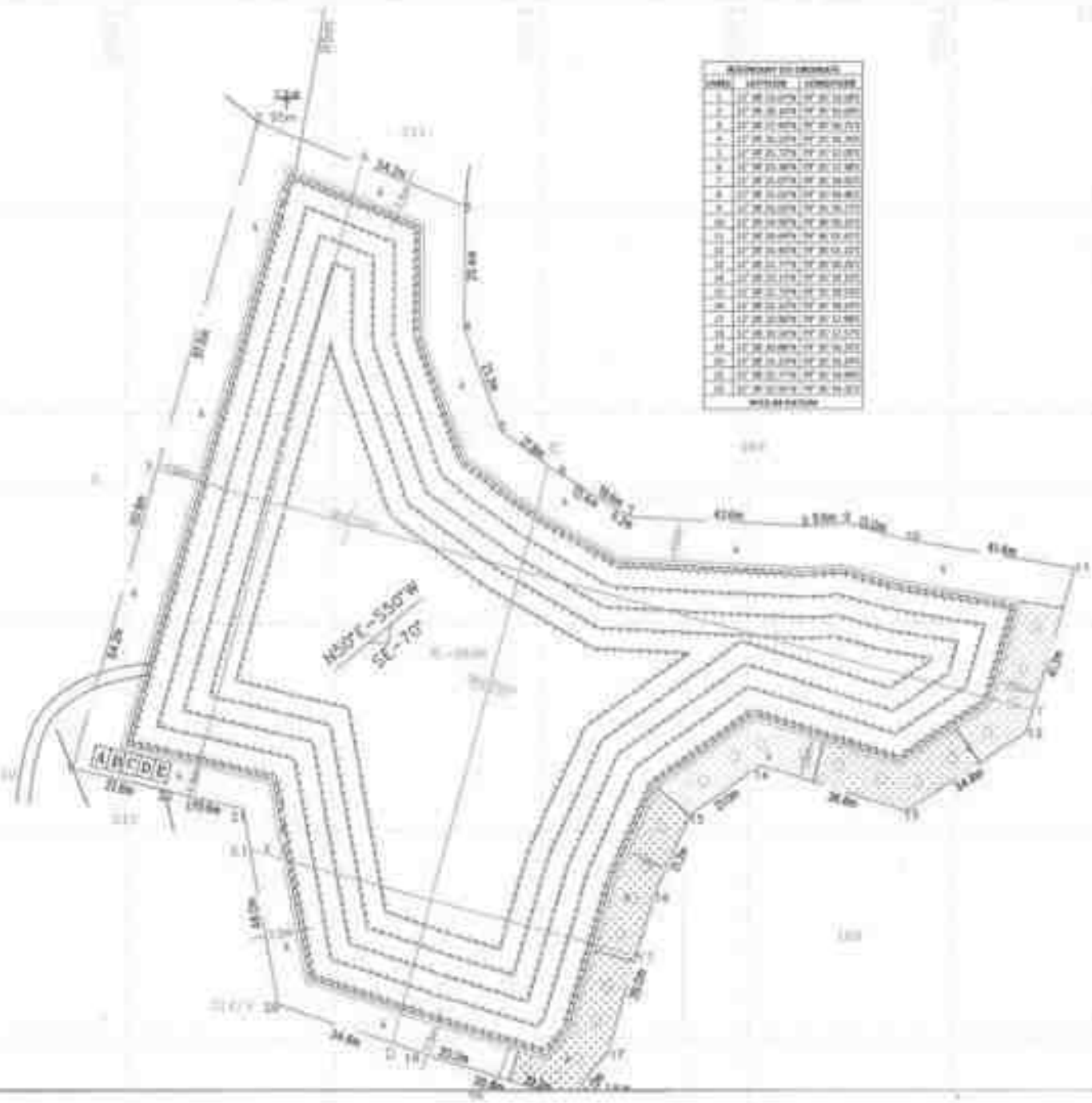
INDEX

Q.L APPLIED BOUNDARY
7.5m&10m SAFETY DISTANCE
TEMPORARY BENCH MARK
APPROACH ROAD
CONTOUR
SCRUB
GRAVEL
WEATHERED ROCK
ROUGH STONE
STRIKE & DIP

TOPOGRAPHY, GEOLOGICAL & YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS
SCALE 1 : 1000
SECTIONS HOR 1 : 1000, VER 1:500

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

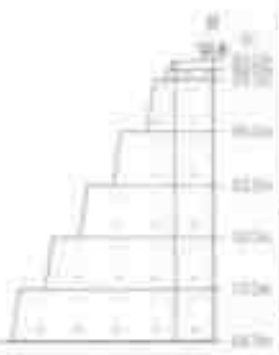
QUALIFIED PERSON



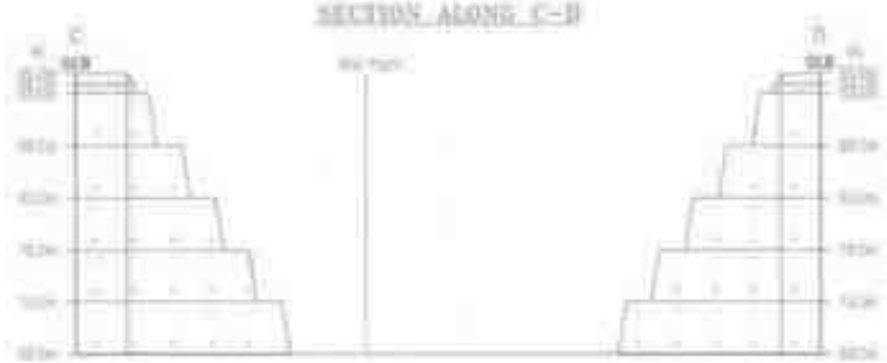
SECTION ALONG X-Y

SECTION ALONG X1-Y1

SECTION ALONG A-B



SECTION ALONG C-D



PROPOSED SITE SERVICES

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

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

ULTIMATE PIT DIMENSION
L201m(Max)108m(Avg)RD27m(Max)

PLATE NO:IV
DATE OF SURVEY : 23.09.2022

APPLICANT:
THIRU K.SUDHAKARAN,
S/o KANNAN,
No:78C, MARIAMMAN KOVIL STREET,
VAMADAM VILLAGE,
AZHIYUR(THANGI) POST,
VEMBAKKAM TALUK,
TIRUVANNAMALAI DISTRICT

QUARRY APPLIED LEASE AREA:
S.F.NOS : 7, 8/1, 8/2, 8/3, 8/4, 8/5 & 214/3,
EXTENT : 2.57.0Hq,
VILLAGE : VADA ALAPPAKKAM,
TALUK : CHEYYAR,
DISTRICT : TIRUVANNAMALAI.

INDEX

G.L. APPLIED BOUNDARY	
7.5m& 10m SAFETY DISTANCE	
TEMPORARY BENCH MARK	TBM
APPROACH ROAD	
CONTOUR	
SCRUB	
GRAVEL	
WEATHERED ROCK	
ROUGH STONE	
STRIKE & DIP	
PROPOSED QUARRY PIT	

CONCEPTUAL PLAN & SECTIONS
SCALE 1 : 1000
SECTIONS HOR. 1:1000, VER 1:200

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

CAUTAION & ENVIRONMENTAL QUALIFIED PERSON

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Annexure - D

From

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

To

Thiru.K.Sudhakaran,
S/o. Kannan,
No.782, Mariyamman Koil Street,
Jambodai village,
Vembakkam Taluk,
Tiruvannamalai District.

Rc.No.155/Kanimam/2022, dated:13.10.2022

Sub: Quarries and Minerals - Minor Mineral Rough Stone and Gravel - Tiruvannamalai District - Cheyyar Taluk - Vadaalapiranthan village - Patta SF.Nos.7 & etc., over an extent 2.57.0 hects., - Application preferred by Thiru.K.Sudhakaran - Details of quarries located in 500m radius- requested - Regarding.

Ref: Thiru.K.Sudhakaran S/o. Kannan, Letter dated.13.10.2022.

*****

In the reference cited, applicant Thiru.K.Sudhakaran S/o. Kannan, the applicant of proposed Rough Stone quarry lease in SF.Nos. 7 (0.07.5), 8/1 (0.92.0), 8/2 (0.21.0), 8/3 (0.31.5), 8/4 (0.60.5), 8/5 (0.28.5) & 214/5 (0.16.0) over an extent 2.57.0 hects., of Vadaalapiranthan Village, Cheyyar 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
--Nil--					

ii). Abandoned quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
1	Tmt.Poongodhai, W/o.Sundaramoorthy No.96, Road Street, Manamadhi, Unthiramerur Taluk, Kancheepuram District	Athi 301 (Part)	1.00.0	21.08.2008 to 20.08.2018	Quarry Exired

ANNEXURE-3

iii). Present Proposed quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.
1	Thiru.K.Sudhakaran, S/o. Kannan, No.782, Mariyamman Koil Street, Jambodai village, Vembakkam Taluk, Tiruvannamalai District.	Vadaalapiranthan 7, 8/1, 8/2, 8/3, 8/4, 8/5 & 214/5	2.57.0

iv). Future Proposed quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.
1	Thiru.R.Ganesan, Director of SRC Project Pvt. Ltd., No.47, Brunthavan, Porlands, Salem.	Athi 301 (Part-2)	4.50.0
2	Thiru.M.Ramchandran, S/o. Mogili Nadu, No.15B, Medutheru, Old Perukozhathuvoor, Tambaram, Chennai.	Athi 301 (Part-3)	2.00.0
3	Tvl.JCK Mines, Rep. by its partner of Thiru.J.K.Srinivasan, No.782, Mariamman Kovil Street, Jambodai Village, Azhivedaithangi Post, Vembakkam Taluk, Tiruvannamalai District.	Vadalapiranthan & 211/2B, 211/3B, 211/4, 211/5, 211/6, 211/7, 211/8 & 211/9	1.55.0

Deputy Director,
Geology and Mining,
Tiruvannamalai.

ANNEXURE-4

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Annexure - VII

தமிழ்நாடு வனத்துறை

விடுநர்
திரு.பு.கோ.அருண்லால், இ.வ.ப.,
மாவட்ட வன அலுவலர்,
திருவண்ணாமலை வனக்கோட்டம்,
திருவண்ணாமலை.

பெறுநர்
மாவட்ட ஆட்சித்தலைவர்,
திருவண்ணாமலை மாவட்டம்,
திருவண்ணாமலை.

ந.க.எண்.8916/2022/வ, நாள்: 03.11.2022.

அய்யா,

பொருள் : கனிமங்களும் குவாரிகளும் - திருவண்ணாமலை மாவட்டம் - திரு.K.சுதாகரன் 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 ஆட்சியர் கடிதம் ந.க.எண்:155/கனிமம்/2022, நாள்: 10.10.2022.
2. திரு.K.சுதாகரன், த.பெ.கண்ணன், ஜம்போடை கிராமம், அழிவிடைத்தாங்கி அஞ்சல், வெம்பாக்கம் வட்டம் என்பவரின் மனு நாள்:10.10.2022.
3. வனச்சரக அலுவலர், ஆரணி வனச்சரகம், ஆரணி க.எண்.529/2022 நாள்:01.11.2022.

****

பார்வை-1ல் காணும் கடிதத்தில் திரு.K.சுதாகரன், த.பெ.கண்ணன் என்பவரது மனுவில் திருவண்ணாமலை மாவட்டம், செய்யார் வட்டம், வடஆளப்பிறந்தான் கிராம புல எண்கள்.7 (0.07.5), 8/1 (0.92.0), 8/2 (0.21.0), 8/3 (0.31.5), 8/4 (0.60.5), 8/5 (0.28.5) & 214/5 (0.16.0) ஆகியவற்றில் மொத்தம் 2.57.0 எக்டர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க 5 ஆண்டுகளுக்கு குவாரிக் 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 வெங்குணம் காப்புக்காட்டு எல்லையிலிருந்து சுமார் 10.6 கி.மீ தொலைவில் அமைந்துள்ளது.
2. மேற்கண்ட புலத்திலிருந்து 25 கி.மீ சுற்றளவிற்குள் வனவிலங்கு சரணாலயம், யானை வழித்தடங்கள், புலிகள் காப்பகம் ஏதுமில்லை.

தங்கள் உண்மையுள்ள,
ஒம்/-பு.கோ.அருண்லால்,
மாவட்ட வன அலுவலர்,
திருவண்ணாமலை வனக்கோட்டம்,
திருவண்ணாமலை.

//உ.ந.உ.ப.//

3/11/22

வரைதொழில் அலுவலர்.

ANNEXURE-5

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Annexure - III

சான்று

திருவண்ணாமலை மாவட்டம் ,செய்யார் வட்டம் , வடஆளபிறந்தான் கிராமம் புல எண்கள். 7, 8/1, 8/2, 8/3, 8/4, 8/5 மற்றும் 214/5இல் 2.57.0ஹெக்டர் பரப்பளவில் திரு. K சுதாகரன் த/பெ.கண்ணன், No. 782, மாரியம்மன் கோவில் தெரு, இம்போடை கிராமம்,அழிவிடைந்தாங்கி அஞ்சல் ,வெம்பாக்கம் வட்டம் மற்றும் திருவண்ணாமலை மாவட்டம் முகவரியைச் சேர்ந்தவர் சாதாரண கல் மற்றும் கிராவல் குவாரி பணிமேற்கொள்ள விண்ணப்பித்துள்ளார் .மேற்கொண்ட இடத்தில் சுமார் 300 மீட்டர் சுற்றளவில் குடியிருப்புகளோ, புராதனச் சின்னங்களோ, உயர்மின்னழுத்த கம்பிகளோ எதுவும் இல்லை.

21/10/22

SEAL & SIGN

வே. 145, அத்தி கிராமம்,
ரு. 153, வட ஆளப்பிறந்தான் கிராமம்
செய்யார் வட்டம், திருவண்ணாமலை மாவட்டம்

TOPOGRAPHICAL VIEW OF VADA ALAPIRANDAN VILLAGE,

ROUGH STONE AND GRAVEL QUARRY

NAME OF THE APPLICANT	:	K.SUDHAKARAN
DISTRICT	:	TIRUVANNAMALAI
TALUK	:	CHEYYAR
VILLAGE	:	VADA ALAPIRANDAN
S.F.NO	:	7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5
EXTENT	:	2.57.0Ha.

VAO SIGN & SEAL

Place:

Date:

ANNEXURE-6

Annexure - V 98

தமிழ்நாடு तमिलनाडु TAMIL NADU

82AB 662052

21/08/21

TMK EXPLOSIVES
Vellore

G. Th.

G. திருநாவுக்கரசு
முத்திரைதாள் விற்பனையாளர்
L. No. 22/VLR/2021
வேலூர்.

DEED OF AGREEMENT

This agreement entered in to at **Vellore** on this day of **25th October '2022** between **Mr . K . SUDHAKARAN S/o Kannan , No; 782 , Mariamman Kovil Street, Jampodai Village , Azhividaithangi post , Vembakkam Tk , Tiruvannamalai -DT. PAN No : BEKPS4046F** here in after referred to as part of the First Part and **M /s T.M.K.Explosives , Plot No. 42, Golden Nager , 3rd Cross , Old Katpadi , Katpadi Tk , Vellore-632014 .** here in after referred to as part of the Second Part.

The party of first part is operating **Crusher** and is mining **Blue metal** in the area of over an extent of **2.57.0 hectares** in **Survey Nos . 7 (0.07.5), 8/1 (0.92.0), 8/2 (0.21.0), 8/3 (0.31.5), 8/4 (0.60.5), 8/5 (0.28.5) & 214/5 (0.16.0) Vadalapiranthan Village , Cheyyar Tk , Tiruvannamalai DT .**

K Sudhakaran

For TMK EXPLOSIVES

PROPRIETOR

Whereas the part of the First Part wants blasting to be done at Quarry to excavate the **Blue metal Blocks**. The blasting work is so intensive and large that the part of the first part has decided to entrust the work involved to the party of the Second Part on contract basis is follows:

The Party of the first part will allot the blasting operations in the above said areas to the party of the Second Part who is responsible for blasting rocks and also making his own arrangements for the explosives and exploding equipments required for the work. The entire blasting in the above quarry and the possessment of the blasting equipment will be handled by the party of the second part having valid Explosives **Licence No. E/SC/TN/22/115(E10358) ,E/SV/TN/22/16(E95709), E/SV/TN/22/17(E95711)** and the Explosives Magazine situated at **S.F.No:56/2V2 Elayanallur Village, Katpadi Tk, Vellore-Dt** issued by the Joint Chief Controller of Explosives, South Circle, Chennai .

Payments will be made periodically by the party of the first part for the quantity used, explosives consumed and hours and time of the exploding equipments put into use. Calculations will be made and settlement will be arrived at every month. The rates for the items of work will as mutually agreed as marginal cost which includes cost of Explosives, Transportation Cost and Other Charges for blasting work. This agreement is made for all blasting done in the said area.

This agreement is valid from the date of execution till validity of quarrying leases granted by the State Government to the party of the first part or terminable earlier by mutual consent with a month's notice.

Place: Vellore

Date: 25.10.2022

FOR T.M.K. EXPLOSIVES

PROPRIETOR

Witness:

1. N. Manivannan
   42, Kumaran St.
   Salem

2. K. Mahendran
   No: 782, Mariamman Kovil Street
   Jambodai.

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अनुज्ञप्ति प्ररूप एल. ई.-3 | LICENCE FORM LE-3

(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।)
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1,2,3,4,5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने के लिए अनुज्ञप्ति
Licence to possess : (c) for use,explosives of class 1. 2,3,4.5.6 or 7 in a magazine

अनुज्ञप्ति सं. (Licence No.) : E/SC/TN/22/115(E10358)
वार्षिक फीस रुपए (Annual Fee Rs): 9200/-

1. Licence is hereby granted to

M/s. T.M.K.EXPLOSIVES (अधिभोगी / Occupier : T.K.Gowtham), No.3/13, Ramar Kovil Street, GOVINDAPURAM VILLAGE SETHUVANDAI Post, Gudiyattam Taluk, Town/Village - GOVINDAPURAM, District-VELLORE, State-Tamil Nadu, Pincode - 635803

को अनुज्ञप्ति अनुदत्त की जाती है।

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

3. अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमान्य है।
Licence is valid only for the following purpose. possess for use of **Nitrate Mixture, Safety Fuse, Detonating Fuse, Detonators,** - के उपयोग के लिए

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	2 ,0	0	4500 Kg
2	Safety Fuse	6 ,1	0	10000 Mtrs
3	Detonating Fuse	6 ,2	0	10000 Mtrs
4	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)
(b) Quantity of explosives to be purchased in a calendar month(applicable for licence under article 3(b) and (c)) : 20 times as above.

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञप्त परिसर की पुष्टि होती है।
The licensed premises shall conform to the following drawing(s): रेखाचित्र सं. (Drawing No.) E/SC/TN/22/115(E10358) दिनांक (Dated) 02/02/2022

6. अनुज्ञप्ति परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address:
Survey No(s). 56/2V,26/7 & 26/8 , ग्राम (Town/Village) : **Elayanallur village** पुलिस थाना (Police Station) : **MELPADI**
जिला (District) **VELLORE** राज्य (State) **Tamil Nadu** पिनकोड (Pincode)
दूरभाष (Phone) ई मेल (E-Mail) फैक्स (Fax)

7. अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट है।
The licensed premises consist of following facilities. : **A MAGAZINES WITH DETONATORS ANNEX AND A LOBBY**

8. अनुज्ञप्ति समय – समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबद्धों 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 कथित रेखाचित्र (स्थान, सन्निर्माण संबंधी और अन्य विवरण दर्शित करते हुए)।
   Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
   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 प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञप्ति तारीख 31 मार्च 2004 तक विधिमान्य रहेगी। This licence shall remain valid till 31st day of March 2004.
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 अधिक्रमण करने या यदि अनुज्ञप्त परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंहृत की जा सकती है, जहां वह लागू हो।
This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख | The Date - 11/02/2003

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives
South Circle, Chennai

Amendments :
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 24/07/2014
- Change in Authorized Signatory/Occupier/Partners/Directors dated : 29/07/2016
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 02/02/2018
- Amendment in Drawings/Facilities/Premises dated : 02/02/2022
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 02/02/2022

Transfers :
- Change in Licensee Name/Address/Status dated : 25/07/2016
- Change in Licensee Name/Address/Status dated : 25/07/2016
- Change in Licensee Name/Address/Status dated : 25/07/2016
- Change in Licensee Name/Address/Status dated : 29/10/2021

नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of licensing authority and stamp
01/02/2019	31/03/2024	Sd/- Controller of Explosives, Vellore

ANNEXURE-7

ANNEXURE P7

தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 19(1) பிரிவு

துணை இயக்குநர் அலுவலகம் * நிலஅளவை மற்றும் நிலஆவணங்கள் துறை * திருவண்ணாமலை

மாவட்டம் : திருவண்ணாமலை

வட்டம் : செய்யார்

வருவாய் கிராமம் : வடாஅளபிறந்தான்

பட்டா எண் : 765

உரிமையாளர்கள் பெயர்

1.	கண்ணன்	மகன்	சீனிவாசன்
2.	கண்ணன்	மகன்	பூபாலன்
3.	கண்ணன்	மகன்	கோபாலன்
4.	கண்ணன்	மகன்	வெற்றிவேலன்
5.	கண்ணன்	மகன்	சுதாகரன்

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	
11	-	0 - 20.00	0.55	--	--	--	--	2019/0103/06/109421-- -- 26-01-2019
211	2	0 - 58.00	1.50	--	--	--	--	2019/0103/06/109421-- -- 26-01-2019
211	3	0 - 10.00	0.25	--	--	--	--	2019/0103/06/109421-- -- 26-01-2019
211	4	0 - 8.50	0.20	--	--	--	--	2019/0103/06/109421-- -- 26-01-2019
211	5	0 - 5.50	0.15	--	--	--	--	2019/0103/06/109421-- -- 26-01-2019
211	6	0 - 8.00	0.20	--	--	--	--	2019/0103/06/109421-- -- 26-01-2019
211	7	0 - 13.00	0.35	--	--	--	--	2019/0103/06/109421-- -- 26-01-2019
211	8	0 - 32.50	0.85	--	--	--	--	2019/0103/06/109421-- -- 26-01-2019
211	9	0 - 30.00	0.80	--	--	--	--	2019/0103/06/109421-- -- 26-01-2019
214	5	0 - 16.00	0.46	--	--	--	--	2019/0103/06/137668-- -- 22-08-2019
3	-	0 - 90.00	2.35	--	--	--	--	2019/0103/06/137668-- -- 22-08-2019
4	1	0 - 12.50	0.35	--	--	--	--	2019/0103/06/137668-- -- 22-08-2019
4	2	0 - 14.00	0.40	--	--	--	--	2019/0103/06/137668-- -- 22-08-2019
5	-	0 - 24.50	0.65	--	--	--	--	2019/0103/06/137668-- -- 22-08-2019
7	-	0 - 7.50	0.20	--	--	--	--	2019/0103/06/137668-- -- 22-08-2019
8	1	0 - 92.00	2.40	--	--	--	--	2019/0103/06/137668-

8	2	0 - 21.00	0.55	--	--	--	--	2019/0103/06/137668- -- -- 22-08-2019
8	3	0 - 31.50	0.85	--	--	--	--	2019/0103/06/137668- -- -- 22-08-2019
8	5	0 - 28.50	0.75	--	--	--	--	2019/0103/06/137668- -- -- 22-08-2019
9	1	0 - 5.50	0.15	--	--	--	--	2019/0103/06/137668- -- -- 22-08-2019
9	2	0 - 11.50	0.30	--	--	--	--	2019/0103/06/137668- -- -- 22-08-2019
13	-	--	--	0 - 17.00	1.85	--	--	2019/0103/06/137668- -- -- 22-08-2019
18	-	--	--	0 - 21.00	2.25	--	--	2019/0103/06/137668- -- -- 22-08-2019
		5 - 40.00	14.26	0 - 38.00	4.10			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **06/04/153/00765/90398** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 07-07-2022 அன்று 07:29:13 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

5/7/2022

NOTARY GOVT. OF TAMILNADU K.RAGOTHAMAN Thiruvannamalai Dist. GO MS No.44 Dt 21-02-2019

K.RAGOTHAMAN, M.A.,B.L.,
Advocate & Notary,
No.398A, Jeeyar Street,
Cheyyar-604407, T.V.Malai Dt.
Mobile: 9443963509

தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : திருவண்ணாமலை

வட்டம் : செய்யார்

வருவாய் கிராமம் : வடாஅளபிறந்தான்

பட்டா எண் : 845

உரிமையாளர்கள் பெயர்

1. கண்ணன் மகன் க சுதாகரன்

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	
8	4	0 - 60.50	1.60	--	--	--	--	2022/0103/06/236376-- -- 08-06-2022
		0 - 60.50	1.60					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **06/04/153/00845/100397** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 07-07-2022 அன்று 07:25:04 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

5/7/2022

K.RAGOTHAMAN, M.A.,B.L.,
Advocate & Notary,
No.208A, Jeeyar Street,
Ch... TV Malai Dt.
Mob... 9...63509

ANNEXURE

கிராமக் கணக்கு எண் 2

1431 - ஆம் பசலியில் திருவண்ணாமலை மாவட்டம் செய்யார் வட்டம் 108. ஆனைப்பிறந்தான் கிராமத்தில் வருடவாரி புலவாரி கைப்பற்று சாகுபடி அடங்கல் கணக்கு

நில வரித் திட்டத்தின்படி புலன்களின் விபரம்.						சாகுபடியாளரின் பெயர்.	முதல் போகம்.					இரண்டாம் போகம்.							
நில அளவை எண். (1)	உட்பிரிவு எண். (2)	பரப்பு. (3)	தீர்வை. (4)	ஒரு போகம் அல்லது இரு போகம். (5)	கைப்பற்று தாரருடைய பெயரும் எண்ணும் அல்லது அனுபோக தாரருடைய பெயர். (6)	நிலத்தின் எந்த பகுதி யாரது சாகுபடியாளரால் பயிரிடப்பட்டுள்ளது. (7)	எந்த மாதத்தில் பயிர் செய்யப்பட்டது எந்த மாதத்தில் அறுவடை செய்யப்பட்டது. (8)	பயிரின் பெயர். (9)	பயிரான / அறுவடையான பரப்பு. (10)	உண்மையான பாய்ச்சல் ஆதாரம். (11)	விளைச்சல் அளவு விழுக்காடு. (12)	எந்த மாதத்தில் பயிர் செய்யப்பட்டது எந்த மாதத்தில் அறுவடை செய்யப்பட்டது. (13)	பயிரின் பெயர். (14)	பயிரான / அறுவடையான பரப்பு. (15)	உண்மையான பாய்ச்சல் ஆதாரம். (16)	விளைச்சல் அளவு விழுக்காடு. (17)	கிராம அலுவலரின் குறிப்புரை (18)	கீழ்க்கண்ட வகையில் பயிரிடப்படாது உள்ள நிலத்தின் தன்மை மற்றும் பரப்பின் விவரங்கள் ஒவ்வொரு நில அளவை எண் அல்லது உட்பிரிவு பகுதியில். (அ) வனம், (ஆ) பயனற்ற பயிர் செய்ய இயலாத நிலம், (இ) விவசாயம் அல்லாத இதர காரியங்களுக்கு பயன்படுத்தும் நிலம், (ஈ) பயிரிடத்தக்க தரிசு, (உ) நிலையான புல் தரைகளும் மற்றும் இதர மேய்ச்சல் நிலங்களும், (ஊ) விதைக்கப்பட்ட நிகர பரப்பில் சேர்க்கப்படாத மரவகைப் பயிர்களும் தோப்புகளும், (எ) நடப்புத் தரிசுகள், (ஏ) இதர தரிசு நிலங்கள். (18அ)	(19)
8	1	0.92.0	2.40		765. சீனிவாசன்		—	—	—	—							தரிசு		
	2	21.0	0.55		765. -do-		—	—	—	—							,,		
	3	31.50	0.85		765. -do-		—	—	—	—							,,		
	5	28.50	0.75		765. -do-		—	—	—	—							,,		
7	-	07.5	0.20		765 -do-		—	—	—	—							,,		
214	5	016.0	0.46		765 -do-		—	—	—	—							,,		

(உண்மை நகல்)

க. [signature] 5/7/22

கிராம நிர்வாக அலுவலர்
எண். 145 ... கிராமம்,
பொ. 153 ... ஆனைப்பிறந்தான் கிராமம்,
செய்யார் வட்டம், திருவண்ணாமலை மாவட்டம்.

NOTARY ★ K.RAGOTHAMAN Tiruvannamalai Dist. Dt: 21-02-2019 ★ GOVT. OF TAMILNADU

Attested
[signature]
5/7/2022

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Mobile: 9443963509

கிராமக் கணக்கு எண் 2

1432 – ஆம் பசலியில் திருவண்ணாமலை மாவட்டம் செய்யாறு வட்டம் 108. புடையூர் கிராமத்தில் வருடவாரி புலவாரி கைப்பற்று சாகுபடி அடங்கல் கணக்கு

நில வரித் திட்டத்தின்படி புலன்களின் விபரம்.					கைப்பற்று தாரருடைய பெயரும் என்னும் அல்லது அனுபோக தாரருடைய பெயர்.	சாகுபடியாளின் பெயர்.	முதல் போகம்.					இரண்டாம் போகம்.					கிராம அலுவலரின் குறிப்புரை :- (1) புலன்களின் பருதிகளில் மட்டும் பயிரிடப்பட்ட இனங்களில் விபரங்கள் குறிப்பிடவும். (2) கைப்பற்றில் இல்லாத பயிர்களின் பரப்பு தனியாகவும் (3) முந்தைய மாதத்தில் பயிரிடப்பட்டவை உதவியிருந்தி பதிவாகியுள்ள எனில் பதிவாகியுள்ள மாதங்களில் நீர் பாய்ச்சப்பட்ட விவரங்கள்.	கிழக்கண்டவகையில் பயிரிடப்பட்டது உள்ள நிலத்தின் தன்மை மற்றும் பயிரின் விவரங்கள் ஒவ்வொரு நில அளவை என் அல்லது அதன் பகுதியில். (அ) வளம், (ஆ) பயனற்ற பயிர் செய்ய இயலாத நிலம், (இ) விவசாயம் மற்றும் இதர காரியங்களுக்கு பயன் படுத்தப் படும் நிலம், (ஈ) பயிரிடத்தக்க தரிசு (உ) நிலையான புல் தரைகளும் மற்றும் இதர மேய்ச்சல் நிலங்களும், (ஊ) விதைக்கப்பட்ட நிகர பரப்பில் சேர்க்கப்படாத மரவகைப் பயிர்களும் சோப்புகளும், (எ) நடப்புத் தரிசுகள் (ஏ) இதர தரிசு நிலங்கள்.	பயிர் பார்வையிட்ட அலுவலர்
நில எண்ணை எண்.	உட்பிரிவு எண்.	பரப்பு.	தீர்வை.	ஒரு போகம் அல்லது இரு போகம்.		நிலத்தின் எந்த பகுதி யாரது சாகுபடியாளரால் பயிரிடப்பட்டுள்ளது.	எந்த மாதத்தில் பயிர் செய்யப்பட்டது எந்த மாதத்தில் அறுவடை செய்யப்பட்டது.	பயிரின் பெயர்.	பயிரான / அறுவடையான பரப்பு.	உள்ளபடியான பாய்ச்சல் ஆதாரம்.	விவசாயி அளவு விழுக்காடு.	எந்த மாதத்தில் பயிர் செய்யப்பட்டது அறுவடை செய்யப்பட்டது.	பயிரின் பெயர்.	பயிரான / அறுவடையான பரப்பு.	உள்ளபடியான பாய்ச்சல் ஆதாரம்.	விவசாயி அளவு விழுக்காடு.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(18அ)	(19)
8	4	0.05	1.60		திரு.க.சிதானந்தம்		—	—	—	—							தரிசு		

(இரண்டு நூறு)

கு. முத்து
கிராம நிர்வாக அலுவலர்
நெ. 145, சந்தி கிராமம்,
நெ. 153, உ ஆலம்பாடி கிராமம்
செய்யார் வட்டம், தி.மலை மாவட்டம்.

5/1/2022

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GO.MS.No.14
Dt. 21-02-2019
GOVT. OF TAMILNADU

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380/12-RF III-A10-20,00,000 Cps.-GBP-MDU-7-2019

ANNEXURE VI

அ-பதிவேடு

District :Tiruvannamalai Taluk :CHEYYAR Village :VADAALAPIRAN THAN

	1	அ	புறம்போக்கு	0 -	0	0	0	0	41.50	0	00	0		கால்வாய்
	2	அ	புறம்போக்கு	0 -	0	0	0	0	34.50	0	00	0		காலவாய்
	3	ர	புஞ்சை	4 - 5	5	2	62	0	90.00	2	35	170-பஞ்சட்சரகவுண்டர் மற்றும் 4 நபர்(கள்)		
1	4-1	ர	புஞ்சை	8 - 3	5	2	62	0	12.50	0	35	118-முனிரத்தினகவுண்டர் மற்றும் 1 நபர்(கள்)		
2	4-2	ர	புஞ்சை	8 - 3	5	2	62	0	14.00	0	40	118-முனிரத்தினகவுண்டர் மற்றும் 1 நபர்(கள்)		
			Total For Survey Number- 4					0	26.5	0	75			
	5	ர	புஞ்சை	8 - 3	5	2	62	0	24.50	0	65	164-பஞ்சாட்சரகவுண்டர் மற்றும் 3 நபர்(கள்)		
	6	அ	புறம்போக்கு	8 - 3	5	2	62	0	30.50	0	80	0		அவாதீனம்
	7	ர	புஞ்சை	8 - 3	5	2	62	0	7.50	0	20	120-கமலநாதகவுண்டர் மற்றும் 1 நபர்(கள்)		ANATHINAM
1	8-1	ர	புஞ்சை	8 - 3	5	2	62	0	92.00	2	40	217-தங்கவேல் கவுண்டர் மற்றும் 1 நபர்(கள்)		
2	8-2	ர	புஞ்சை	8 - 3	5	2	62	0	21.00	0	55	76-பாலசுந்தரம்		
3	8-3	ர	புஞ்சை	8 - 3	5	2	62	0	31.50	0	85	122-தங்கவேல்கவுண்டர் மற்றும் 2 நபர்(கள்)		
4	8-4	ர	புஞ்சை	8 - 3	5	2	62	0	60.50	1	60	665-சரஸ்வதி		
5	8-5	ர	புஞ்சை	8 - 3	5	2	62	0	28.50	0	75	153-கமலகவுண்டர் மற்றும் 3 நபர்(கள்)		
			Total For Survey Number- 8					2	33.5	6	15			
1	9-1	ர	புஞ்சை	8 - 3	5	2	62	0	5.50	0	15	8-பாலசுந்தரம்		
2	9-2	ர	புஞ்சை	8 - 3	5	2	62	0	11.50	0	30	8-பாலசுந்தரம்		
			Total For Survey Number- 9					0	17.0	0	45			
	10	அ	தரிக	0 - 0	0	0	0	0	8.00	0	00	0		கல்லாங்குத்து
	11	ர	புஞ்சை	8 - 3	5	2	62	0	20.00	0	55	222-முருகேசன்		UNNECESSARY WASTE
	12	அ	தரிக	0 - 0	0	0	0	0	66.00	0	00	0		கல்லாங்குத்து
	13-1	ர	நஞ்சை a	4 - 5	14	10	79	0	17.00	1	85	164-பஞ்சாட்சரகவுண்டர் மற்றும் 3 நபர்(கள்)		SNO 72/8 WELL HELP
	14	அ	புறம்போக்கு	0 - 0	0	0	0	0	35.50	0	00	0		காலவாய்
	15	ர	புஞ்சை	45 - 5	5	2	62	0	5.50	0	15	1-அர்ச்சனாதம்பிரான்		CHANNEL
	16	ர	புஞ்சை	4 - 5	5	2	62	1	24.00	3	30	95-கன்னியப்பன்		
	17	அ	புறம்போக்கு	0 - 0	0	0	0	0	26.50	0	00	0		காலவாய்
	18	ர	நஞ்சை a	4 - 5	14	10	79	0	21.00	2	25	164-பஞ்சாட்சரகவுண்டர் மற்றும் 3 நபர்(கள்)		
	19	ர	நஞ்சை A	4 - 5	14	10	79	0	14.00	1	55	56-பாலசுந்தரம்		
	20	ர	நஞ்சை A	4 - 5	14	10	79	0	14.00	1	55	56-பாலசுந்தரம்		
	21	ர	நஞ்சை A	4 - 5	14	10	79	0	12.50	1	35	124-வெங்கிடேசஅய்யர் மற்றும் 1 நபர்(கள்)		
	22	ர	நஞ்சை A	4 - 3	8	19	28	0	22.00	4	25	76-பாலசுந்தரம்		CHANNEL
	23	அ	புறம்போக்கு	0 - 0	0	0	0	0	24.50	0	00	0		காலவாய்
1	24-1	ர	புஞ்சை	45 - 5	5	2	62	0	18.00	0	50	212-பத்குணம்		
2	24-2	ர	புஞ்சை	45 - 5	5	2	62	0	12.00	0	30	153-கமலகவுண்டர் மற்றும் 3 நபர்(கள்)		
3	24-3	ர	புஞ்சை	45 - 5	5	2	62	0	10.50	0	30	154-பரசுராமகவுண்டர் மற்றும் 3 நபர்(கள்)		
4	24-4	ர	புஞ்சை	4 - 5	5	2	62	0	6.00	0	15	165-மாணிக்ககவுண்டர் மற்றும் 4 நபர்(கள்)		
5	24-5	ர	புஞ்சை	4 - 5	5	2	62	0	5.50	0	20	126-பெரியதம்பிகவுண்டர்		

திருவண்ணாமலை இயக்குநர் அலுவலகம் * பெரியபாளையம் மற்றும் கரந்தமலை

KRAGOTHAMAN, B.E., Advocate & Notary, No.398A, Jeeyar Street, [illegible] T.V.Malai Dt [illegible]

NOTARY GOVT OF TAMILNADU

அ-பதிவேடு

District :Tiruvannamalai Taluk :CHEYYAR Village :VADAALAPIRAN THAN

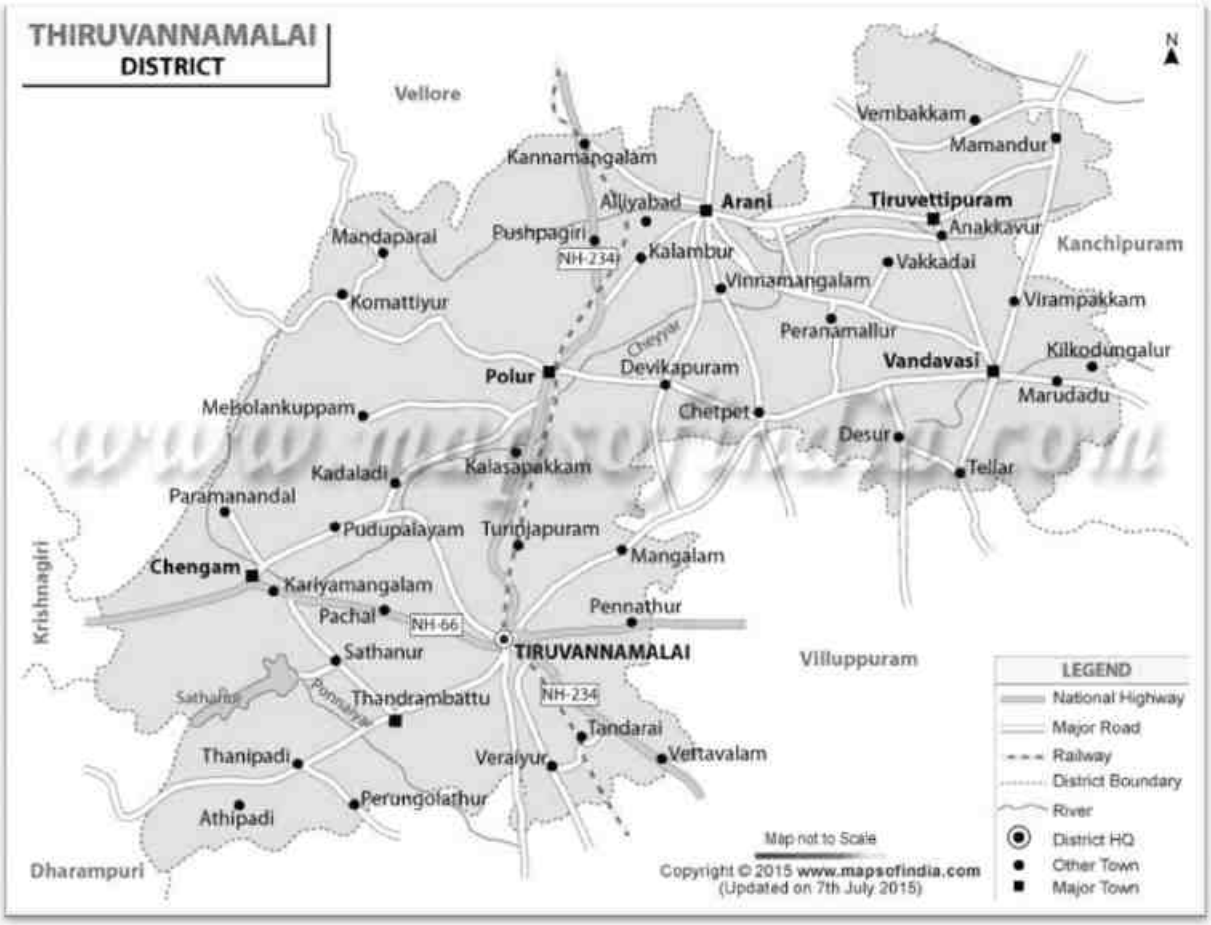
	4	211-4		ஏ	புஞ்சை	8 - 3	5	2	62	0	8.50	0	20	17-குப்பன் மற்றும் 1 நபர்(கள்)	CHANNEL
	5	211-5		ஏ	புஞ்சை	8 - 3	5	2	62	0	5.50	0	15	17-குப்பன் மற்றும் 1 நபர்(கள்)	
	6	211-6		ஏ	புஞ்சை	8 - 3	5	2	62	0	8.00	0	20	17-குப்பன் மற்றும் 1 நபர்(கள்)	
	7	211-7		ஏ	புஞ்சை	8 - 3	5	2	62	0	13.00	0	35	17-குப்பன் மற்றும் 1 நபர்(கள்)	
	8	211-8		ஏ	புஞ்சை	8 - 3	5	2	62	0	32.50	0	85	17-குப்பன் மற்றும் 1 நபர்(கள்)	
	9	211-9		ஏ	புஞ்சை	8 - 3	5	2	62	0	30.00	0	80	17-குப்பன் மற்றும் 1 நபர்(கள்)	
211	10	211-10	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	45.50	1	20	0	கால்வாய்
211	11	211-11	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	12.50	0	35	0	அனாதீனம்
211	12	121-12	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	13.00	0	35	0	அனாதீனம்
211	13	211-13	P	அ	புஞ்சை	8 - 3	5	2	62	0	24.50	0	65	0	அனாதீனம்
					Total For Survey Number- 211					2	69.0	6	85		
212	1	212-1	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	30.50	0	80	0	அனாதீனம்
212	2	212-2	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	24.50	0	65	0	அனாதீனம்
212	3	212-3	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	75.50	2	00	0	அனாதீனம்
212	4	212-4	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	11.50	0	30	0	அனாதீனம்
212	5	212-5	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	38.00	1	00	0	அனாதீனம்
					Total For Survey Number- 212					1	80.0	4	75		
213	1	213-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	15.50	0	40	76-பாலசுந்தரம்	ANATHINAM
213	2	213-2	P	அ	புறம்போக்கு	0 - 0	0	0	0	1	81.50	0	00	0	யற்றவை
					Total For Survey Number- 213					1	97.0	0	40		
214	1	214-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	78.00	2	00	626-மாணிக்கம்	ANATHINAM
214	2	214-2	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	1.00	0	06	0	அனாதீனம்
214	3	214-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	37.50	1	05	627-கன்னியம்மாள்	ANATHINAM
214	4	214-2		ஏ	புஞ்சை	8 - 3	5	2	62	0	52.00	1	40	628-கோவிந்தன்	ANATHINAM
214	5	214-2		ஏ	புஞ்சை	8 - 3	5	2	62	0	16.00	0	46	629-ஜெயம்மாள்	ANATHINAM
214	6	214-2		ஏ	புஞ்சை	8 - 3	5	2	62	0	21.00	0	55	630-நடராஜன்	ANATHINAM
					Total For Survey Number- 214					2	5.5	5	52		
215	-	215		அ	புறம்போக்கு	8 - 3	5	2	62	1	39.00	3	65	0	அனாதீனம்
216	-	216		அ	புறம்போக்கு	8 - 3	5	2	62	0	22.50	0	60	0	அனாதீனம்
217	1	217-1	P	அ	புறம்போக்கு	8 - 3	5	2	62	0	9.00	0	25	0	அனாதீனம்
217	2	217-2		ஏ	புஞ்சை	8 - 3	5	2	62	0	55.50	1	45	41-குருநாதன்	ANATHINAM
					Total For Survey Number- 217					0	64.5	1	70		
218	1	218-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	40.50	1	10	237-மல்லிகா	
218	2	218-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	40.50	1	10	238-செல்வம்	
218	3	218-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	40.50	1	10	238-செல்வம்	
218	4	218-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	40.50	1	10	239-புண்ணியக்கோட்டி	
218	5	218-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	81.00	2	10	240-மாலா	
218	6	218-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	81.00	2	10	241-விங்கேசன்	
218	7	218-1		ஏ	புஞ்சை	8 - 3	5	2	62	0	87.00	2	30	242-ராணி	
					Total For Survey Number- 218					4	11.0	10	90		
219	1	219-1		அ	புஞ்சை	8 - 3	5	2	62	0	65.50	1	75	0	அனாதீனம்
219	2	219-2		ஏ	புஞ்சை	8 - 3	5	2	62	0	22.50	0	60	219-மகேந்திரகுமார்	
219	3	219-3		ஏ	புஞ்சை	8 - 3	5	2	62	0	81.00	2	10	219-மகேந்திரகுமார்	ANATHINAM
219	4	219-4		ஏ	புஞ்சை	8 - 3	5	2	62	0	53.50	1	40	219-மகேந்திரகுமார்	ANATHINAM
219	5	219-5		ஏ	புஞ்சை	8 - 3	5	2	62	0	48.00	1	25	206-பரதராஜன் மற்றும் 1 நபர்(கள்)	ANATHINAM

ANNEXURE-8

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

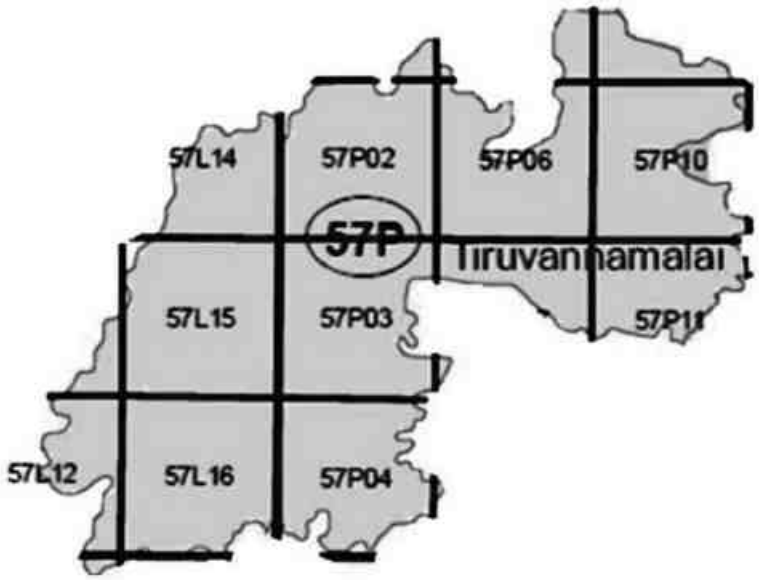
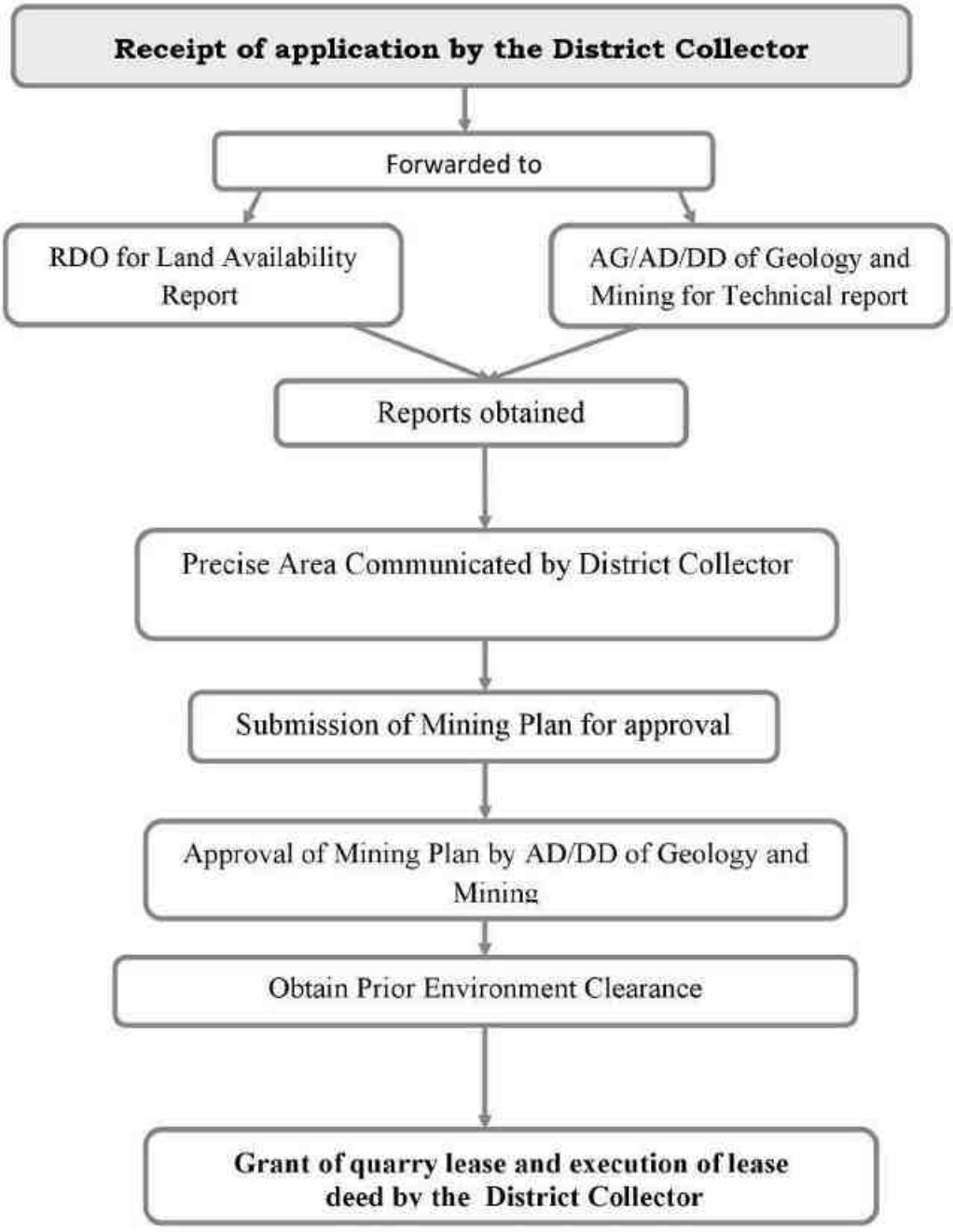


Fig.1.1 Toposheet in Tiruvannamalai District

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.

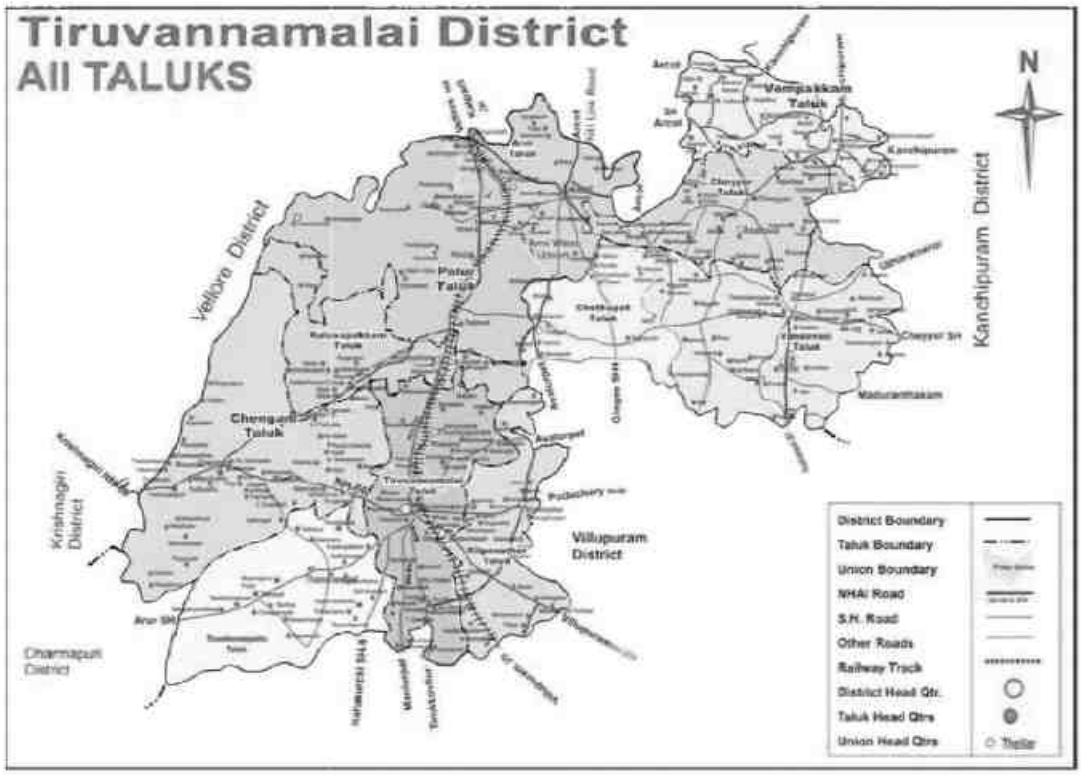


Fig.3.1 Tiruvannamalai District (Taluk wise)

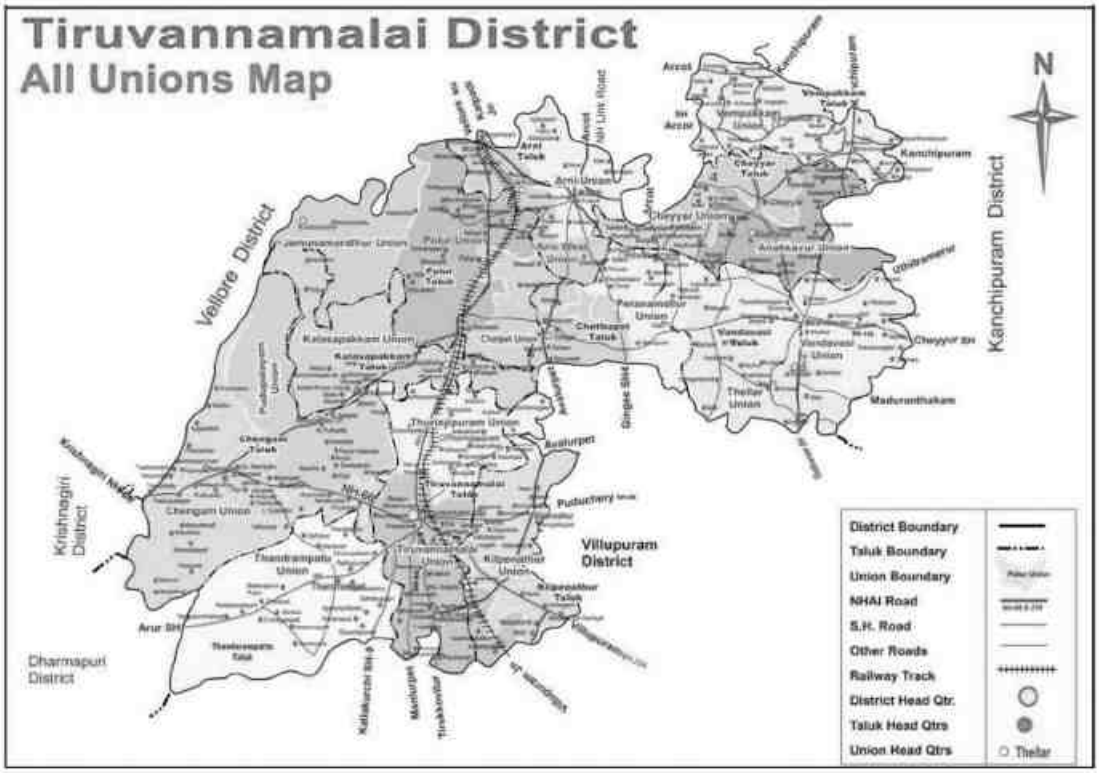


Fig.3.2 All Union Map, Tiruvannamalai District

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.

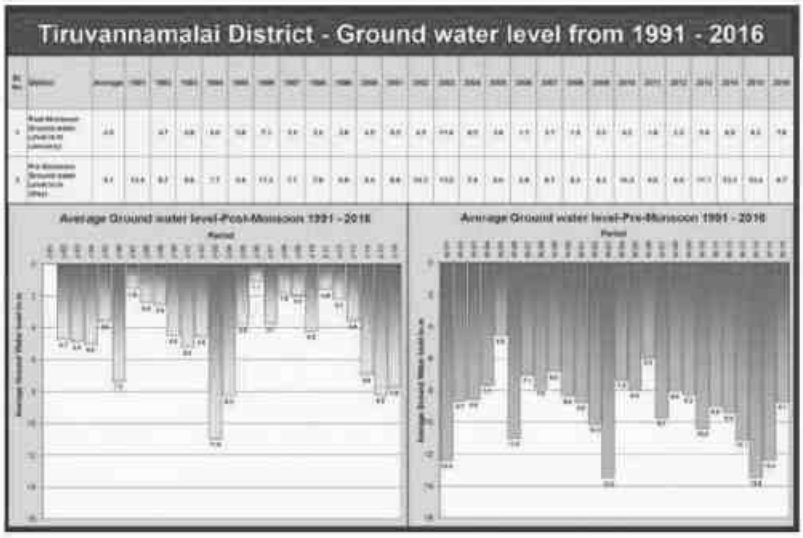


Figure 7.0 Geology And Mineral Resources Map Of Tiruvannamalai District

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:

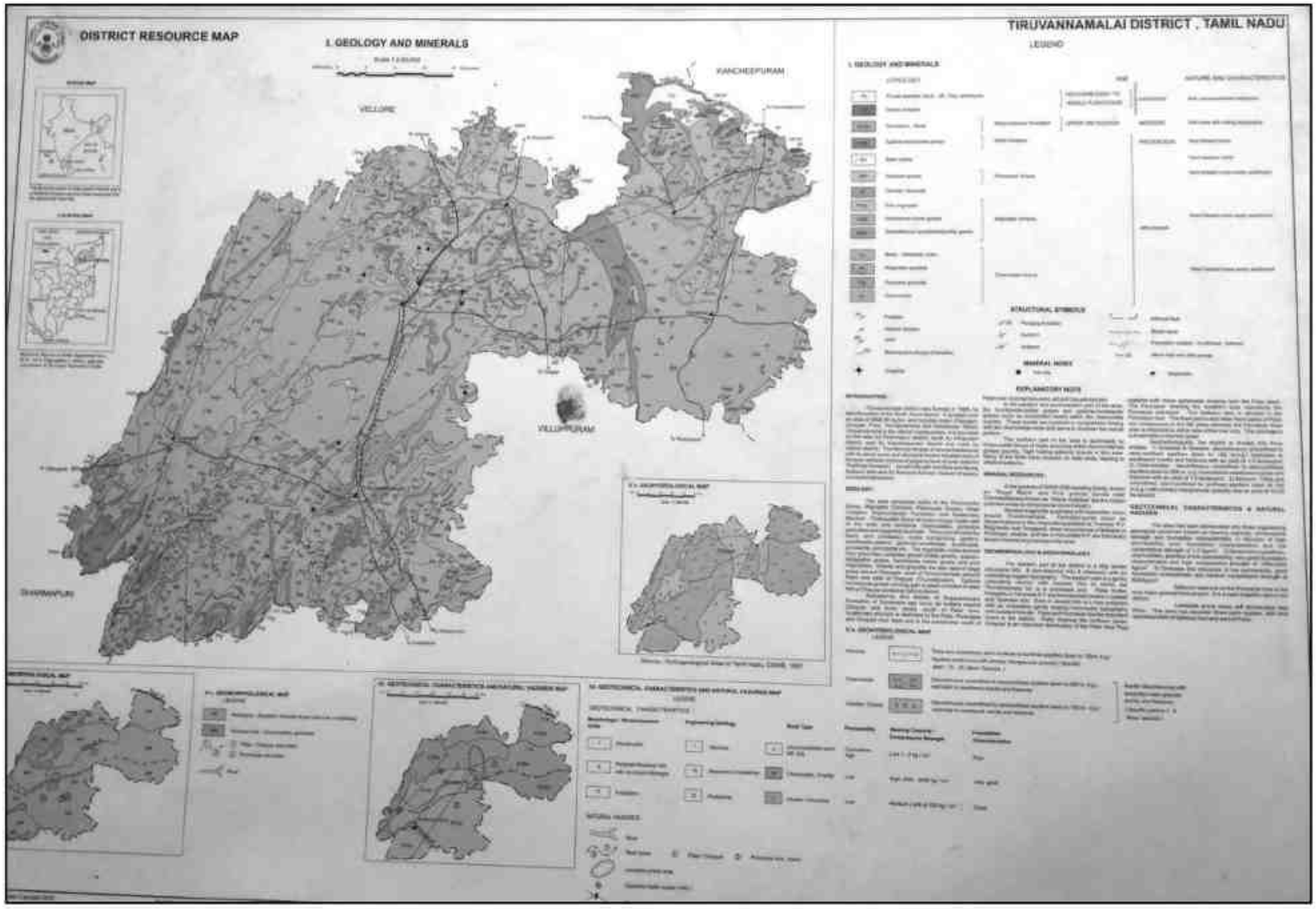
Sl.No	Year	Revenue realized
1.	2016-2017	33519675
2.	2017-2018	38311705
3.	2018-2019	59673732

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 Kilpennathu **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 :-

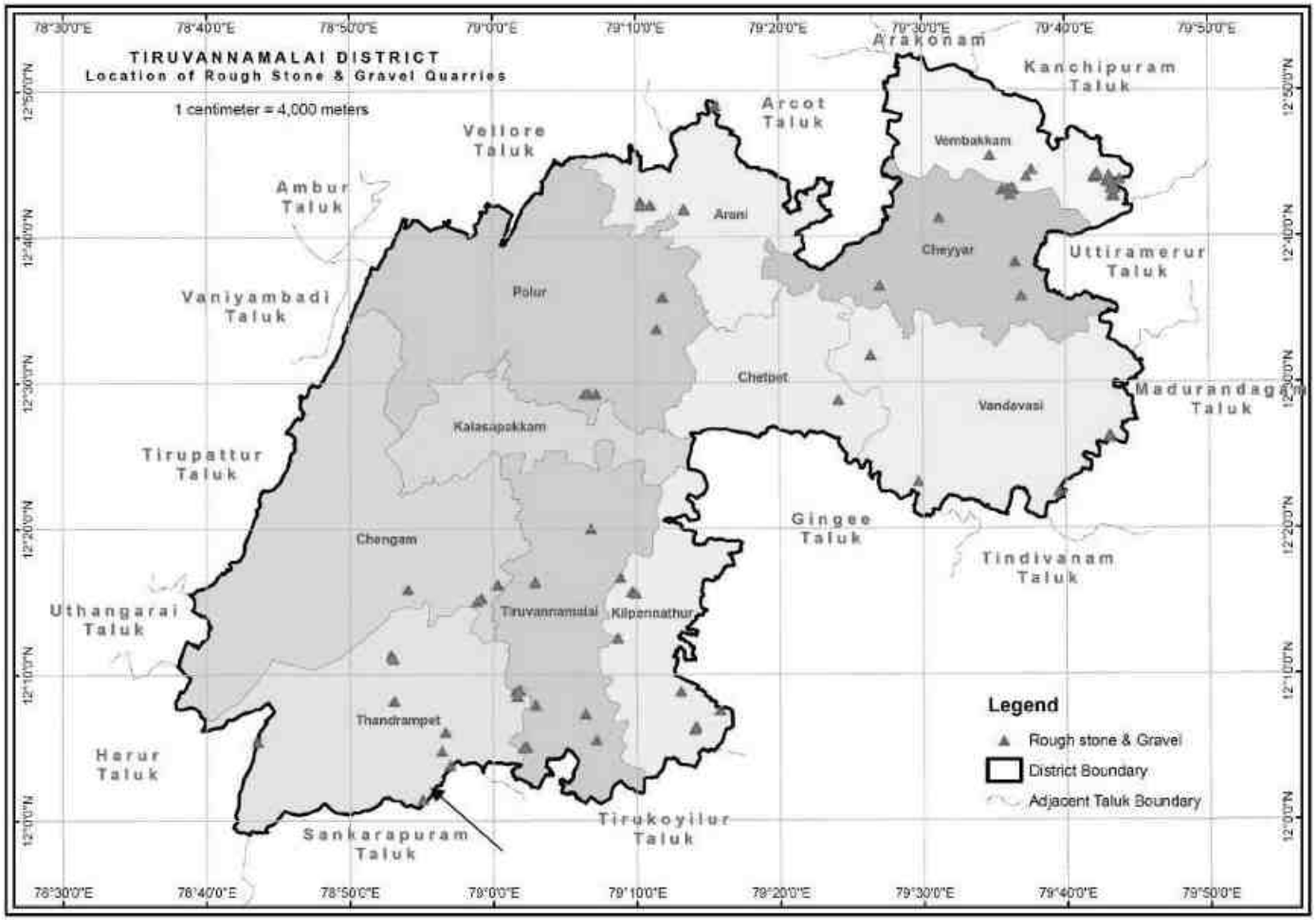
There is a huge demand for Rough stone and Gravel in the district due to the sudden increase of Construction activities and highway projects around the district.

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-9

SES

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TEST REPORT

Report No.	SES/AAQ/966/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	49.8	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)	4.6	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

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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3. The test items will not be retained for more than 7 days from the date of issue of test report.

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TEST REPORT

Report No.	SES/AAQ/967/2023-24	**Report Date**	24.03.2023
Customer Name & Address **Customer Name & Address**	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	47.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	19.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	3.8	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	**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/984/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	45.4	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)	4.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.0	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/985/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	53.4	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)	4.6	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/986/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	50.4	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)	4.4	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

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/987/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	42.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	20.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.2	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/1004/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	48.2	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)	4.1	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	5.4	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/1005/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	43.1	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)	4.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	5.8	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/1006/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	51.4	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)	4.0	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

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/1007/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	45.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	20.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	5.5	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/1024/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	50.6	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)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	5.8	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/1025/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	54.1	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)	4.2	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

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/1026/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	45.3	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)	3.8	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

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/1027/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	52.4	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)	4.4	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

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/1044/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	46.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	20.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	3.9	24 Hours	80	IS .5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.6	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/1045/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	53.2	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)	4.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	5.8	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/1046/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	51.6	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)	4.4	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

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/1047/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	54.2	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)	4.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.6	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/1064/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	50.6	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)	3.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.0	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/1065/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	53.2	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)	5.8	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

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1066/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	51.6	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	29.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.2	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

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TEST REPORT

Report No.	SES/AAQ/1067/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	46.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	19.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	3.4	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/1084/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	52.4	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)	3.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	5.8	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

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/1085/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	**A1- WITHIN THE MINE LEASE AREA K. Sudhakaran**	**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)	54.5	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)	4.3	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/968/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	45.1	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)	4.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.0	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/969/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	47.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	20.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	3.8	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

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/982/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	46.2	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)	4.5	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/983/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	45.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	21.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.6	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/988/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	48.6	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)	4.5	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

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/989/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	46.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	20.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.1	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

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/1002/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	45.3	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)	4.6	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/1003/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	46.9	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)	4.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.6	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/1008/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	48.3	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)	3.8	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/1009/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	45.5	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)	4.6	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
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1022/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	47.6	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)	4.6	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

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/1023/2023-24	Report Date	22.04.2023
Customer Name & Address	Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.		
Sample Description	Ambient Air Quality Survey		
Sample Location	A2-ATHI VILLAGE	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)	50.6	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)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	5.8	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/1028/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	53.1	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)	6.0	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/1029/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	50.3	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)	5.6	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

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/1042/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	51.2	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)	4.2	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

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/1043/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	48.4	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)	6.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	5.8	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

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/1048/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	50.6	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)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.6	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/1049/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	53.1	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)	3.8	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

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/1062/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	56.4	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	29.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.1	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

Note : 1. The Results relate only to this items tested
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Swasti Enviro Solutions Pvt Ltd

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www.swastienvirosolutions.com

TEST REPORT

Report No.	SES/AAQ/1063/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	55.1	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)	4.6	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 poilutants 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/1068/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	52.4	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)	3.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.6	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/1069/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	50.7	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)	3.7	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

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/1082/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	47.2	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)	5.8	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

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/1083/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A2-ATHI VILLAGE	**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)	53.1	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)	4.4	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

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/970/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	44.2	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)	4.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.6	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/971/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	45.1	24 Hours	100	IS 5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	18.7	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.2	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/980/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	52.3	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)	6.2	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/981/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	50.4	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)	5.2	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/990/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	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)	4.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.6	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

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/991/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	52.1	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)	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/1000/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	45.2	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)	4.0	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

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/1001/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	24.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.4	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/1010/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	44.1	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)	4.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.9	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/1011/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	50.2	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)	4.1	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

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/1020/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	52.1	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)	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

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/1021/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	49.6	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)	4.3	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

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/1030/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	48.3	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)	5.2	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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www.swastienvirosolutions.com

TEST REPORT

Report No.	SES/AAQ/1031/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	52.1	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)	4.4	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

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/1040/2023-24	Report Date	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	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)	50.6	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)	5.4	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/1041/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	47.6	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)	4.2	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/1050/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	44.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	21.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	4.6	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

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/1051/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	48.6	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)	5.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.6	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/1060/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	43.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	20.5	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.2	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

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1061/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	26.8	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.4	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

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/1070/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	43.1	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)	4.1	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

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/1071/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	47.4	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)	4.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.6	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/1080/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	45.7	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	20.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	6.9	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/1081/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A3-KILNETHAPAKKAM VILLAGE	**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)	46.1	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)	4.4	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/972/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	55.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	30.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.6	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.6	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/973/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	52.4	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)	4.6	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

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/978/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	60.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	28.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.6	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

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/979/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	57.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	29.0	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.8	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/992/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	51.8	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)	5.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.2	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/993/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	55.4	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)	5.4	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/998/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	45.4	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)	7.2	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

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/999/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	48.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	20.6	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	6.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	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/1012/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	50.4	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)	6.8	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/1013/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	46.9	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)	4.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.6	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

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/1018/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	48.3	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)	3.8	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/1019/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	47.5	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)	4.6	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
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1032/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	45.6	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)	4.2	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/1033/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	47.2	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)	6.2	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/1038/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	57.4	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)	6.2	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

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TEST REPORT

Report No.	SES/AAQ/1039/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	50.6	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)	5.8	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/1052/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	53.2	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)	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/1053/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	52.4	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)	6.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	11.4	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

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1058/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	57.2	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)	5.6	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

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/1059/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	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)	8.4	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/1072/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	57.1	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	29.4	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.2	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

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/1073/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	52.6	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)	6.0	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.2	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/1078/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	55.7	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)	5.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.6	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/1079/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A4-VADA ALAPIRANTHAN PUDUR VILLAGE	**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)	50.4	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)	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/974/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	49.7	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)	5.1	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/975/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	47.2	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)	4.6	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/976/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	54.2	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)	7.2	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

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/977/2023-24	**Report Date**	24.03.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	59.4	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)	4.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.2	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/994/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	25.1	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	7.6	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

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TEST REPORT

Report No.	SES/AAQ/995/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	54.6	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)	4.6	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

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/996/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	47.4	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)	7.8	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/997/2023-24	**Report Date**	08.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	49.7	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)	5.2	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

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/1014/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	55.7	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)	4.3	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.6	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/1015/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	51.4	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)	5.4	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

Authorized Signatory
A.Prabhu
Quality/Technical Manager

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TEST REPORT

Report No.	SES/AAQ/1016/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	53.2	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)	8.2	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/1017/2023-24	**Report Date**	22.04.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	51.4	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)	7.6	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/1034/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	47.8	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)	4.8	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

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/1035/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	55.4	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)	4.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.2	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/1036/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	50.6	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)	6.6	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/1037/2023-24	**Report Date**	06.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	48.3	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)	4.5	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/1054/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	49.8	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)	5.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.2	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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(Accreditated by NABL as ISO/IEC/17025:2017)

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www.swastienvirosolutions.com

TEST REPORT

Report No.	SES/AAQ/1055/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	47.9	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)	5.4	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

Note : 1. The Results relate only to this items tested
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TEST REPORT

Report No.	SES/AAQ/1056/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	52.1	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)	6.2	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/1057/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	50.3	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)	5.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.2	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/1055/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	47.9	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)	5.4	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	**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/1056/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	52.1	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)	6.2	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/1057/2023-24	**Report Date**	20.05.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	50.3	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)	5.8	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	9.2	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/1074/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	55.2	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)	4.6	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/1075/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	61.3	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	34.3	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.4	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	8.4	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

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TEST REPORT

Report No.	SES/AAQ/1076/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	AS-ANAPPATHUR VILLAGE	**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)	57.2	24 Hours	100	IS :5182P23 RA2017
2	PM 2.5 (< 2.5 µm)	30.2	24 Hours	60	IS:5182P24:2019
3	Sulphur Dioxide (SO_2)	5.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.6	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

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/1077/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Sample Description	**Ambient Air Quality Survey**		
Sample Location	A5-ANAPPATHUR VILLAGE	**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)	53.1	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)	6.2	24 Hours	80	IS :5182P2 RA2017
4	Nitrogen Dioxide (NO_2)	7.6	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/1086/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Customer Reference	-	**Sample Reference No.**	WA/1086
Sample Description	**W1- NEAR MINE LEASE AREA K. Sudhakaran**	**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	-	7.28	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1.0	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	1018	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	612	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	82.2	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	124	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	431	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	208	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	223	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	83.1	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	53.6	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	319	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	0.09	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	3.26	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

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/WA/1087/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Customer Reference	-	**Sample Reference No.**	WA/1087
Sample Description	**W2-ATHI VILLAGE**	**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	389.4	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	236	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	34.2	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	13.6	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	171	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	108	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	62.7	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	43.1	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	15.1	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	147	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	0.08	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	0.13	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	BDL(D.L-1.0)	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

Note : 1. The Results relate only to this items tested
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Swasti Enviro Solutions Pvt Ltd
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TEST REPORT

Report No.	SES/WA/1088/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Customer Reference	-	**Sample Reference No.**	WA/1088
Sample Description	**W3-KILNETHAPAKKAM VILLAGE**	**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	-	6.89	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	710.5	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	430	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	134	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	72.6	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	235	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	142	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	93.0	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	56.8	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	22.3	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	160	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	0.21	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	3.5	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/1089/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Customer Reference	-	**Sample Reference No.**	WA/1089
Sample Description	**W4-VADA ALAPIRANTHAN PUDUR VILLAGE**	**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	-	7.34	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	1656	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	995	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	342	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	208	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	349	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	161	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	188	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	64.3	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	45.2	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	326	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	0.15	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	0.39	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.08	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

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/WA/1090/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Customer Reference	-	**Sample Reference No.**	WA/1090
Sample Description	**W5-ANAPPATHUR VILLAGE**	**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	-	7.29	IS:3025/P11/RA2017	6.5-8.5
3	Turbidity	NTU	<1	IS:3025/P10/RA2017	1.0
4	Electrical Conductivity	µS/cm	985.7	IS:3025/P13/RA2019	---
5	Total Dissolved Solids	mg/l	596	IS:3025/P16/RA2017	500
6	Chlorides (as Cl)	mg/l	117	IS:3025/P32/RA2019	250
7	Sulphates (as SO_4)	mg/l	114	IS:3025/P24/RA2019	200
8	Total Hardness (as $CaCO_3$)	mg/l	408	IS:3025/P21/RA2019	200
9	Calcium Hardness (as $CaCO_3$)	mg/l	186	IS:3025/P40/RA2019	---
10	Magnesium Hardness (as $CaCO_3$)	mg/l	221	IS:3025/P46/RA2019	---
11	Calcium as Ca	mg/l	74.5	IS:3025/P40/RA2019	75
12	Magnesium as Mg	mg/l	53.2	IS:3025/P46/RA2019	30
13	Total Alkalinity (as $CaCO_3$)	mg/l	254	IS:3025/P23/RA2019	200
14	Iron (as Fe)	mg/l	0.12	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	0.24	IS:3025/P60/RA2019	1.5
17	Nitrates (as NO3)	mg/l	2.93	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/1091/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Customer Reference	-	**Sample Reference No.**	SA/1091
Sample Description	**S1- WITHIN THE MINE LEASE AREA SUDHAKARAN**	**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	-	7.95	IS : 2720 (Part -26)
2	Electrical Conductivity	µmhos/cm	184.9	IS : 14767 : 2000
3	Dry matter content	%	97.6	IS : 15106 2002
4	Water Content	%	2.4	IS : 15106 2002
5	Organic Matter	%	0.15	IS : 2720 (Part – 22)
6	Soil texture	-	Sandy Loam	USEPA – Soil.sci.soi.AM.J.Vol 65 may – June 2001
7	Grain Size Distribution i. Sand	%	55.64	
8	ii. Silt	%	28.95	
9	iii. Clay	%	15.41	
10	Phosphorous as P	mg/kg	4.5	IS 10158 – 1982 (RA 2003)
11	Sodium as Na	mg/kg	476	USEPA 3050 B
12	Potassium as K	mg/kg	720	USEPA 3050 B
13	Total Nitrogen	mg/kg	53.0	IS 14684 - 1999
14	Total Sulphur	%	BDL(D.L.0.02)	FAO 2007
15	Water Holding Capacity	%	3.3	SES/SOP/15
16	Porosity	%	16.4	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/1092/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Customer Reference	-	**Sample Reference No.**	SA/1092
Sample Description	**S1- WITHIN THE MINE LEASE AREA SUDHAKARAN**	**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	-	7.25	IS : 2720 (Part -26)
2	Electrical Conductivity	µmhos/cm	156.7	IS : 14767 : 2000
3	Dry matter content	%	96.5	IS : 15106 2002
4	Water Content	%	3.5	IS : 15106 2002
5	Organic Matter	%	0.22	IS : 2720 (Part – 22)
6	Soil texture	-	Clay	USEPA – Soil.sci.soi.AM.J.Vol 65 may – June 2001
7	Grain Size Distribution i. Sand	%	32.57	
8	ii. Silt	%	26.44	
9	iii. Clay	%	40.99	
10	Phosphorous as P	mg/kg	3.2	IS 10158 – 1982 (RA 2003)
11	Sodium as Na	mg/kg	540	USEPA 3050 B
12	Potassium as K	mg/kg	910	USEPA 3050 B
13	Total Nitrogen	mg/kg	68.0	IS 14684 - 1999
14	Total Sulphur	%	BDL(D.L.0.02)	FAO 2007
15	Water Holding Capacity	%	3.7	SES/SOP/15
16	Porosity	%	18.6	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

SES

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TEST REPORT

Report No.	SES/SA/1093/2023-24	**Report Date**	07.06.2023
Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Customer Reference	-	**Sample Reference No.**	SA/1093
Sample Description	**S1- WITHIN THE MINE LEASE AREA SUDHAKARAN**	**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	-	7.67	IS : 2720 (Part -26)
2	Electrical Conductivity	µmhos/cm	110.2	IS : 14767 : 2000
3	Dry matter content	%	98.3	IS : 15106 2002
4	Water Content	%	1.7	IS : 15106 2002
5	Organic Matter	%	0.32	IS : 2720 (Part – 22)
6	Soil texture	-	SILT LOAM	USEPA – Soil.sci.soi.AM.J.Vol 65 may – June 2001
7	Grain Size Distribution i. Sand	%	36.58	
8	ii. Silt	%	52.47	
9	iii. Clay	%	10.95	
10	Phosphorous as P	mg/kg	2.7	IS 10158 – 1982 (RA 2003)
11	Sodium as Na	mg/kg	386	USEPA 3050 B
12	Potassium as K	mg/kg	562	USEPA 3050 B
13	Total Nitrogen	mg/kg	102	IS 14684 - 1999
14	Total Sulphur	%	BDL(D.L.0.02)	FAO 2007
15	Water Holding Capacity	%	3.5	SES/SOP/15
16	Porosity	%	16.9	SES/SOP/16

Remarks: 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/1094/2023-24	**Report Date**	08.06.2023

Customer Name & Address	**Proposed Rough Stone and Gravel Quarry of Thiru. K. Sudhakaran at S.F. Nos. 7, 8/1, 8/2, 8/3, 8/4, 8/5 and 214/5, over an extent of 2.57.0 Ha in Vada Alapirandan Village, Cheyyar Taluk, Tiruvannamalai District, Tamil Nadu State.**		
Customer Reference	-	**Reference No.**	NM/1094
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 THE MINE LEASE AREA SUDHAKARAN	**45.0**	**47.3**	**46.2**
2	N2-ATHI VILLAGE	**37.7**	**38.1**	**39.0**
3	N3-KILNETHAPAKKAM VILLAGE	**43.6**	**45.8**	**44.8**
4	N4-VADA ALAPIRANTHAN PUDUR VILLAGE	**45.0**	**47.3**	**46.2**
5	N5-ANAPPATHUR VILLAGE	**37.7**	**38.1**	**39.0**
Unit		**dB(A)**		
Reference Method		**IS 9989-1981 (Reaff.2014)**		

***** End of Report *****

Verified 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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ANNEXURE-10

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

SCOPE OF ACCREDITATION

Laboratory Name : SWASTI ENVIRO SOLUTIONS PVT LTD, PLOT NO.J 86, BHARATHI STREET, PARI NAGAR, JAFFERKHANPET, CHENNAI, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-10448 **Page No** 1 of 8

Validity 29/03/2022 to 28/03/2024 **Last Amended on** 10/05/2023

S.No	Discipline / Group	Materials or Products tested	Component, parameter or characteristic tested / Specific Test Performed / Tests or type of tests performed	Test Method Specification against which tests are performed and / or the techniques / equipment used
Permanent Facility				
1	CHEMICAL- ATMOSPHERIC POLLUTION	Ambient Air Monitoring	Ammonia (as NH3)	SOP A06, Issue No: 01, Issue date: June 2015
2	CHEMICAL- ATMOSPHERIC POLLUTION	Ambient Air Monitoring	Nitrogen dioxide (as NO2)	IS 5182 (Part 06)
3	CHEMICAL- ATMOSPHERIC POLLUTION	Ambient Air Monitoring	Particulate Matter less than 10 micron size (PM10)	IS 5182 (Part 23)
4	CHEMICAL- ATMOSPHERIC POLLUTION	Ambient Air Monitoring	Particulate Matter less than 2.5 micron size (PM2.5)	SOP A02, Issue No.01, Issue Date: June 2018
5	CHEMICAL- ATMOSPHERIC POLLUTION	Ambient Air Monitoring	Sulphur Dioxide (as SO2)	IS 5182 (Part 02)
6	CHEMICAL- ATMOSPHERIC POLLUTION	Stack Emission Monitoring	Carbon Dioxide (as CO2)	IS 13270
7	CHEMICAL- ATMOSPHERIC POLLUTION	Stack Emission Monitoring	Carbon Monoxide (as CO)	IS 13270
8	CHEMICAL- ATMOSPHERIC POLLUTION	Stack Emission Monitoring	Oxygen (as O2)	IS 13270
9	CHEMICAL- ATMOSPHERIC POLLUTION	Stack Emission Monitoring	Sulphur Dioxide as SO2	IS 11255 (Part 02)
10	CHEMICAL- ATMOSPHERIC POLLUTION	Work Environment and Indoor Air Quality	Ammonia (as NH3)	NIOSH 4th Edition Method No:6015
11	CHEMICAL- ATMOSPHERIC POLLUTION	Work Environment and Indoor Air Quality	Nitrogen dioxide (as NO2)	NIOSH 4th edition Method No: 6014
12	CHEMICAL- ATMOSPHERIC POLLUTION	Work Environment and Indoor Air Quality	Respirable Aerosol mass	NIOSH 4th Edition Method No. 0600
13	CHEMICAL- ATMOSPHERIC POLLUTION	Work Environment and Indoor Air Quality	Total Aerosol mass	NOISH 4th Edition Method No: 0500
14	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Ammonical Nitrogen	IS 3025 (Part 34)
15	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	pH at 25°C	IS 3025 (Part 11)
16	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Calcium as Ca	IS 3025 (Part 40)
17	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Chemical Oxygen Demand (COD)	IS 3025 (Part 58)
18	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Dissolved Oxygen	IS 3025 (Part 38,4)

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19	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Electrical Conductivity	IS 3025 (Part 14)
20	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Free Ammonia as NH3	IS 3025 (Part 34)
21	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Hexavalent Chromium as Cr6	IS 3025 (Part 52)
22	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Iron as Fe	IS 3025 (Part 53)
23	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Magnesium hardness as CaCO3	APHA 23rd Edn. 3500 Mg B
24	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Nitrate as NO3	IS 3025 (Part 34)
25	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Phosphate as PO4	IS 3025 (Part 31)
26	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Temperature	IS 3025 (Part 9)
27	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total Dissolved Solids (TDS)	IS 3025 (Part 16)
28	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total Residual chlorine as Cl	IS 3025 (Part 26)
29	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total Suspended Solids	IS 3025 (Part 17)
30	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Turbidity	IS 3025 (Part 10)
31	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Acidity as CaCO3	IS 3025 (Part 22)
32	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Biological Oxygen Demand (BOD) @ 27°C for 3 days	IS 3025 (Part 44)
33	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Copper as Cu	IS 3025 (Part 42)
34	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Fluoride as F	APHA 23rd Edn. 4500 F- B,D
35	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Magnesium as Mg	IS 3025 (Part 46)
36	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Oil & Grease	IS 3025 (Part 39)
37	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Acidity as CaCO3	APHA 23rd Edn. - 2310 B

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38	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Boron as B	APHA 23rd Edn. - 4500 - B/B
39	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Boron as B	IS 3025 (Part 57)
40	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Calcium Hardness as CaCO3	APHA 23rd Edn. 3500 Ca B
41	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Chloride as Cl	APHA 23rd Edn - 4500 Cl- B
42	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Chloride as Cl	IS 3025 (Part 32)
43	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Colour	APHA 23rd Edn. - 2120 B
44	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Colour	IS 3025 (Part 4) (Pt- Co) visual comparison method
45	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Hexavalent Chromium as Cr6	APHA 23rd Edn.- 3500 Cr-B
46	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Potassium as K	APHA 23rd Edn. -3500 – K-B
47	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Potassium as K	IS 3025 (Part 45)
48	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Silica as Si	APHA 23rd Edn. -4500 SiO2-C
49	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Sodium as Na	APHA 23rd Edn. -3500 – K-B
50	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Sodium as Na	IS 3025 (Part 45)
51	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Sulphates as SO4	APHA 23rd Edn. 4500 SO42 E
52	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Sulphates as SO4	IS 3025 (Part 24)
53	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Temperature	APHA 23rd Edn. - 2550 B
54	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total / carbonate & non-carbonate hardness as CaCO3	APHA 23rd Edn. -2340 A,C&2320 B
55	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total / carbonate & non-carbonate hardness as CaCO3	IS 3025 (Part 21)
56	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total Dissolved Solids (TDS)	APHA 23rd Edn. - 2540 C

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57	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total Kjeldahl Nitrogen	APHA 23rd Edn. - 4500 - Norg – A, B
58	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total Kjeldahl Nitrogen	IS 3025 (Part 34)
59	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total Suspended Solids	APHA 23rd Edn. - 2540 D
60	CHEMICAL- POLLUTION & ENVIRONMENT	Waste Water (Raw & Treated Liquid Effluents and Sewage)	Total/Phenolphthalein/Carbonate/Hydroxide/Bicarbonate alkalinity as CaCO3	IS 3025 (Part 23)
61	CHEMICAL- RESIDUES IN WATER	Drinking Water	Boron as B	APHA 23rd Edn. - 4500 - B/B
62	CHEMICAL- RESIDUES IN WATER	Drinking Water	Boron as B	IS 3025 (Part 57)
63	CHEMICAL- RESIDUES IN WATER	Drinking Water	Iron as Fe	IS 3025 (Part 53)
64	CHEMICAL- RESIDUES IN WATER	Drinking Water	Magnesium as Mg	IS 3025 (Part 46)
65	CHEMICAL- RESIDUES IN WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Boron as B	APHA 23rd Edn. - 4500 - B/B
66	CHEMICAL- RESIDUES IN WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Boron as B	IS 3025 (Part 57)
67	CHEMICAL- RESIDUES IN WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Copper as Cu	IS 3025 (Part 42)
68	CHEMICAL- RESIDUES IN WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Fluoride as F	APHA 23rd Edn. 4500 F D
69	CHEMICAL- RESIDUES IN WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Fluoride as F	IS 3025 (Part 60,5)
70	CHEMICAL- WATER	Construction Water	Chloride as Cl	APHA 23rd Edn - 4500 Cl- B
71	CHEMICAL- WATER	Construction Water	Chloride as Cl	IS 3025 (Part 32)
72	CHEMICAL- WATER	Construction Water	Fixed Residue	IS 3025 (Part 18)
73	CHEMICAL- WATER	Construction Water	pH at 25°C	IS 3025 (Part 11)
74	CHEMICAL- WATER	Construction Water	Sulphates as SO4	APHA 23rd Edn. 4500 SO42 E
75	CHEMICAL- WATER	Construction Water	Sulphates as SO4	IS 3025 (Part 24)
76	CHEMICAL- WATER	Construction Water	Suspended Solids	IS 3025 (Part 17)
77	CHEMICAL- WATER	Construction Water	Volatile Residue	IS 3025 (Part 18)
78	CHEMICAL- WATER	Drinking Water	Calcium as Ca	APHA 23rd Edn. - 3500 Ca B

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79	CHEMICAL- WATER	Drinking Water	Calcium as Ca	IS 3025 (Part 40)
80	CHEMICAL- WATER	Drinking Water	Chloride as Cl	APHA 23rd Edn. - 4500 Cl- B
81	CHEMICAL- WATER	Drinking Water	Chloride as Cl	IS 3025 (Part 32)
82	CHEMICAL- WATER	Drinking Water	Colour	APHA 23rd Edn. - 2120 B
83	CHEMICAL- WATER	Drinking Water	Colour	IS 3025 (Part 4)
84	CHEMICAL- WATER	Drinking Water	Copper as Cu	IS 3025 (Part 42)
85	CHEMICAL- WATER	Drinking Water	Electrical Conductivity	IS 3025 (Part 14)
86	CHEMICAL- WATER	Drinking Water	Fluoride as F	APHA 23rd Edn 4500 F- B,D
87	CHEMICAL- WATER	Drinking Water	Hexavalent Chromium as Cr6	APHA 23rd Edn.- 3500 Cr-B
88	CHEMICAL- WATER	Drinking Water	Hexavalent Chromium as Cr6	IS 3025 (Part 52)
89	CHEMICAL- WATER	Drinking Water	Magnesium hardness as CaCO3	APHA 23rd Edn 3500 Mg B
90	CHEMICAL- WATER	Drinking Water	Nitrate as NO3	IS 3025 (Part 34)
91	CHEMICAL- WATER	Drinking Water	Silica	APHA 23rd Edn. -4500 SiO2-C
92	CHEMICAL- WATER	Drinking Water	Silica	IS 3025 (Part 35)
93	CHEMICAL- WATER	Drinking Water	Sulphates as SO4	IS 3025 (Part 24)
94	CHEMICAL- WATER	Drinking Water	Total Acidity as CaCO3	APHA 23rd Edn. - 2310 B
95	CHEMICAL- WATER	Drinking Water	Total Acidity as CaCO3	IS 3025 (Part 22)
96	CHEMICAL- WATER	Drinking Water	Total Alkalinity as CaCO3	IS 3025 (Part 23)
97	CHEMICAL- WATER	Drinking Water	Total Dissolved Solids (TDS)	APHA 23rd Edn. - 2540 C
98	CHEMICAL- WATER	Drinking Water	Total Dissolved Solids (TDS)	IS 3025 (Part 16)
99	CHEMICAL- WATER	Drinking Water	Total hardness as CaCO3	APHA 23rd Edn. -2340 A,C&2320 B
100	CHEMICAL- WATER	Drinking Water	Total hardness as CaCO3	IS 3025 (Part 21)
101	CHEMICAL- WATER	Drinking Water	Total Phosphate as P	IS 3025 (Part 31)
102	CHEMICAL- WATER	Drinking Water	Total Residual chlorine as Cl	IS 3025 (Part 26)
103	CHEMICAL- WATER	Drinking Water	Total Suspended Solids	APHA 23rd Edn. - 2540 D
104	CHEMICAL- WATER	Drinking Water	Total Suspended Solids	IS 3025 (Part 17)
105	CHEMICAL- WATER	Drinking Water	Turbidity	IS 3025 (Part 10)
106	CHEMICAL- WATER	Drinking Water,	Calcium hardness as CaCO3	APHA 23rd Edition 3500 Ca B
107	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Hexavalent Chromium as Cr6	APHA 23rd Edn.- 3500 Cr-B

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108	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Hexavalent Chromium as Cr6	IS 3025 (Part 52)
109	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Ammonical Nitrogen	IS 3025 (Part 34)
110	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Calcium as Ca	APHA 23rd Edn. - 3500 Ca B
111	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Calcium as Ca	IS 3025 (Part 40)
112	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Calcium hardness as CaCO3	APHA 23rd Edn. 3500 Ca B
113	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Chloride as Cl	APHA 23rd Edn. - 4500 Cl- B
114	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Chloride as Cl	IS 3025 (Part 32)
115	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Dissolved Oxygen	IS 3025 (Part 38,4)
116	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Electrical Conductivity	IS 3025 (Part 14)
117	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Free Ammonia as NH3	IS 3025 (Part 34)
118	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Iron as Fe	IS 3025 (Part 53)
119	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Magnesium as Mg	APHA 23rd Edn. 3500 Mg B
120	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Magnesium as Mg	IS 3025 (Part 46,6)
121	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Magnesium hardness as CaCO3	APHA 23rd Edn. 3500 Mg B
122	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Nitrate Nitrogen as NO3	IS 3025 (Part 34)
123	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	pH at 25°C	IS 3025 (Part 11)
124	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Potassium as K	APHA 23rd Edn. -3500 – K-B
125	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Potassium as K	IS 3025 (Part 45)
126	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Silica as Si	APHA 23rd Edn. -4500 SiO2-C

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127	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Silica as Si	IS 3025 (Part 35)
128	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Sodium as Na	APHA 23rd Edn. -3500 – K-B
129	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Sodium as Na	IS 3025 (Part 45)
130	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Sulphates as SO4	IS 3025 (Part 24)
131	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total / carbonate & non-carbonate hardness as CaCO3	APHA 23rd Edn. -2340 A,C&2320 B
132	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total / carbonate & non-carbonate hardness as CaCO3	IS 3025 (Part 21)
133	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total Acidity as CaCO3	APHA 23rd Edn. - 2310 B
134	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total Acidity as CaCO3	IS 3025 (Part 22)
135	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total Dissolved Solids (TDS)	APHA 23rd Edn. - 2540 C
136	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total Dissolved Solids (TDS)	IS 3025 (Part 16)
137	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total Phosphate as P	IS 3025 (Part 31)
138	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total Residual chlorine as Cl	IS 3025 (Part 26)
139	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total Suspended Solids	APHA 23rd Edn. - 2540 D
140	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Total/Phenolphthalein/Carbonate/Hydroxide/Bicarbonate alkalinity as CaCO3	IS 3025 (Part 23)
141	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	TotalSuspended Solids	IS 3025 (Part 17)
142	CHEMICAL- WATER	Well Water, Borewell Water, Surface Water, Packaged Drinking water	Turbidity	IS 3025 (Part 10)

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Site Facility				
1	CHEMICAL- ATMOSPHERIC POLLUTION	Stack Emission Monitoring	Oxides of Nitrogen (as NOx)	IS 11255 (Part 7)
2	CHEMICAL- ATMOSPHERIC POLLUTION	Stack Emission Monitoring	Particulate Matter	IS 11255 (Part 01)