

DRAFT EIA / EMP REPORT

FOR

ROUGH STONE AND GRAVEL QUARRY

Extent	1.13.0 Ha
SF.Nos.	203/1B
Location	Orattukuppai village, Madukkarai Taluk, Coimbatore District, Tamil Nadu
Land Type	Consent Registered Patta Land
Production	The Proposed Production for the five years 1,13,338m³ of Rough stone and 15744m³ of gravel for the depth of 37 meter.

- Terms Identification No – TO24b0108TN5970090N dated 12.01.2025
- Baseline Monitoring– Winter Season (December 2024 – February 2025)

PROJECT PROPONENT

THIRU R. SATHISHKUMAR

S/o Rangasamy,
89, ThoppaiyaGounderThottam, Orattukuppai, Chettipalayam,
Coimbatore District,

CONSULTANT

CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

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REVISIONS OF EIA/EMP REPORT

Revision number	Report Status	Date of submission
00/MAR/25	Draft EIA /EMP Report	29.03.2025

Environmental Impact Assessment & Environmental Management Plan Report for Rough stone and Gravel Quarry of Thiru R. Sathishkumar over an area of 1.13.0Ha in Orattukuppai village, Madukkarai Taluk, Coimbatore District, Tamil Nadu was prepared by Creative Engineers & Consultants and authorized for submission by Mr.B.Swamynathan, EIA-Coordinator, of Creative Engineers & Consultants on 29.03.2025 after due review by the personnel and consultation with Thiru R. Sathishkumar. Current Revision number of the EIA/EMP report is 00/MAR/25, signifying as per the revision mentioned in the above table that this is a draft EIA/EMP report.

Signature: 

Date: 29.03.2025

PROJECT PROPONENT DECLARATION

I, Thiru. R. Sathishkumar received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter No - TO24B0108TN5970090N dated 12.01.2025 for Roughstone & Gravel Quarry in S.F.Nos. 203/1B over an area of 1.13.00 Ha in Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamil Nadu.

We have entrusted the EIA study to M/s. Creative Engineers & Consultants (CEC), Chennai who have been accredited by the National Accreditation Board for Education & Training (NABET), Quality Council of India with their accreditation valid upto 23.12.2026

The Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) have been prepared as per the generic structure proposed in the EIA notification 2006, ToR issued by SEIAA, Tamil Nadu. The prescribed ToR along with compliance is also incorporated in the EIA/EMP Report.

This report is prepared based on the information and data obtained from the Mining Plan and other records and the field study carried out by various consultant that have been engaged. The data given in the EIA/EMP report are factually correct to the best of my knowledge.

Signature:

For R. Sathishkumar



Date: 29.03.2025



CREATIVE ENGINEERS & CONSULTANTS

(NABET ACCREDITED, NABL ACCREDITED TESTING LABORATORY,
DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

EIA Consultant Undertaking

[In compliance with MoEF Office Memorandum No. J-11013/41/2006-IA.II (I) dated 04.08.2009]

Creative Engineers & Consultants (CEC) is an NABL accredited testing Laboratory, and also NABET accredited Category-A environment consultancy organization for preparing EIA/EMP reports for the sectors Mining of minerals, Thermal power plants, Mineral Beneficiation & Cement plants.

CEC has been accredited by the National Accreditation Board for Education & Training (NABET), Quality Council of India for empanelment of EIA Consultants with accreditation valid upto 23.12.2026.

Thiru. R. Sathishkumar received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter No - TO24b0108TN5970090N dated 12.01.2025 for Roughstone & Gravel Quarry in S.F.Nos. 203/1B over an area of 1.13.00 Ha in Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamil Nadu.

The prescribed TOR is complied with and incorporated in the EIA Report and submitted. This report is based on the information and data obtained from Approved Mining Plan, other records and data from the field study by CEC. The data generated and given in the EIA/EMP Report are factually correct. The sample analyses are carried out through by Enviro Solutions & Labs, Coimbatore.

(P. Giri)

Chief Executive & EIA Coordinator

Creative Engineers & Consultants

Date: **29.03.2025**

Annexure – VII

Declaration by Experts contributing to the EIA Report for

Roughstone & Gravel Quarry of Thiru R. Sathishkumar in S.F.Nos. 203/1B over an area of 1.13.00 Ha in Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamil Nadu.

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

EIA coordinator:

Name: **B.Swamynathan**

Signature and Date: 

Period of involvement: **November 2024 onwards**

Contact information: **09444133619**

Functional area experts:

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
1	AP*	P.Giri	• Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards. • Identification of sources of air pollution comprising dust, gaseous emission due to mining & other activities • Identification of Impacts & suggestion of mitigation measures Period: December 2024 onwards	
		B.Swamynathan	• Data interpretation of Micro meteorological data for wind rose. • Identification of polluting source and suggestion of suitable mitigation measures. Period: November 2024 onwards	

2	WP*	G.Sandhya	• Study of the monitored data with respect to the applicable standards. • Identification of Water requirement & Source • Preparation of water balance diagram • Identification of Water polluting sources • Impact of the project on the water quality, both surface and groundwater • Suggestion of Mitigation measures to control water pollution Period: December 2024 onwards	
3	SHW*	P.Giri	• Quantification of mineral & waste from mining operation • Waste disposal method evaluation • Providing dump management plan • Providing Surface Runoff Management Structure Requirements. • Identification of Hazardous waste and its details of disposal Period: December 2024 onwards	
4	SE*	R.Baburaj	• Identification of villages in the study area and finalization of demographic profile of the villages within the study area. • Preparation of sections relevant to SE functional area in the EIA/EMP report Period: December 2024 onwards	
5	EB*	B.Swamynathan	• Perusal of existing data relevant to this project. • Studying the details of flora and fauna, separately for core, buffer zone and forest area based on primary field survey. • Identification of species , Indicating the Schedule of the fauna present in the study area • Assessment of impact on Biological environment and suggestion of mitigative measures • Collecting & providing details of existing and proposed Green belt development /plantation in the core zone Period: November 2024 onwards	
6	HG*	K.Shankar	• Study of existing surface drainage arrangements in the core and buffer zone, impact due to mining on these drainage courses and suggestion of mitigative measures	

			• Perusal of site specific ground water table details for the core zone and the study area. • Studied the hydrological aspects of surface and groundwater in study area • Study about impact on the hydrology due to mining operation • Suggesting mitigative measures like RWH for enhancement of ground water level Period: December 2024 onwards	
7	GEO*	K.Shankar	• Study of geology of the ML area and the surrounding areas. • Provide details about Mineral composition Period: December 2024 onwards	
8	SC*	B.Swamynathan	• Study of soil profile • Assessment of Impact on soil and suggesting plantation scheme. Period: November 2024 onwards	
9	AQ*	G.Sandhya	• Quantification of emission particulars • Air quality modelling for post project impact on the air quality prediction of the study area. Analysis of the Isopleth generated • Arriving at the post project concentration at the AAQ monitoring locations • Preparation of meteorological data in suitable form for input into the model • Simulation of model for generation of Isopleth and data interpretation. • Studying the impact on AAQ monitoring locations due to the generated emissions. • Preparation of sections relevant to AQ functional area in the EIA/EMP report. Period: December 2024 onwards	
10	NV*	P.Giri	• Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards. • Predict the noise level and vibration level due to proposed mining operation based on scientific evaluation. • Suggesting the Mitigation measures to control noise pollution, Suggesting the Mitigation measures to	

			control ground vibration Period: December 2024 onwards	
11	LU	B.Swamynathan	• Collection of Remote sensing satellite data to study the land use pattern. • Primary field survey and limited field verification • Preparation of Land use map using Satellite data of the project area separately for the core zone and the buffer zone and providing the land use pattern. Period: November 2024 onwards	<i>B.Swamynathan</i>
12	RH*	K.Shankar	• Identified Major risks involved in the project Mitigation measures suggested to avoid risk. • Preparation of onsite and offsite emergency management plan Period: December 2024 onwards	<i>K.Shankar</i>

*One TM against each FAE may be shown

**Please attach additional sheet if required

Declaration by the Head of the accredited consultant organization/ authorized person

I, **P.Giri** hereby, confirm that the above mentioned experts prepared the EIA report for **Roughstone & Gravel Quarry of Thiru R. Sathishkumar in S.F.Nos. 203/1B over an area of 1.13.00 Ha in Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamil Nadu.**

I also confirm that EIA Coordinator (EC) has gone through the report, and the consultant organization shall be fully accountable for any misleading information. It is certified that no unethical practices, plagiarism involved in carrying out the work and external data / text has not been used without proper acknowledgement while preparing this EIA report.

Signature: 

Name: **P.Giri**

Designation: **Chief Executive**

Name of the EIA consultant organization: **Creative Engineers & Consultants, Chennai – 59**

NABET Certificate No. & Issue Date: **No- NABET/EIA/23-26/RA 0331 & date 23.12.2026**

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IN S.F.NOS. 203/1B OVER AN AREA OF 1.13.00 HA IN ORATTUKUPPAI VILLAGE, MADUKKARAI
TALUK, COIMBATORE DISTRICT, TAMIL NADU.**

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Creative Engineers & Consultants

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**REV NO : 00/MAR/25
C-10**

National Accreditation Board for Education and Training

Certificate of Accreditation

Creative Engineers and Consultants, Chennai

9B/4, Bharathwajar street, East Tambaram, Chennai, Tamil Nadu

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

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals- opencast mining only	1	1 (a) (i)	A
2.	Thermal power plants	4	1 (d)	A
3.	Mineral beneficiation	7	2 (b)	A
4.	Cement plants	9	3 (b)	A

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated May 03, 2024, posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/24/3250 dated May 24, 2024. The accreditation needs to be renewed before the expiry date by Creative Engineers and Consultants, Chennai following due process of assessment.

Issue Date
May 24, 2024

Valid up to
December 23, 2026




Mr. Ajay Kumar Jha
(Sr. Director, NABET)

Certificate No.
NABET/EIA/23-26/RA 0331



Prof (Dr) Varinder S Kanwar
(CEO-NABET)

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

TERMS OF REFERENCE & ITS COMPLIANCE



File No: 11564
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA),
TAMIL NADU)



Dated 12/01/2025



To,

Thiru R.Sathishkumar
S/o Rangasamy 89, Thoppaiya Gounder Thottam, Orattukuppai, Chettipalayam, Coimbatore District, ,
89, Thoppaiya Gounder Thottam, , COIMBATORE, TAMIL NADU, 0000, 641201
sathishrangasamy1234@gmail.com

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

Sir/Madam,

Sub: SEIAA, Tamil Nadu – Proposed Rough Stone and Gravel Quarry lease over an extent 1.13.00 Ha at S.F.Nos. 203/1B of Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamil Nadu by Thiru R.Sathishkumar - under project category – “B1” and Schedule S.No.1(a) “Mining of Minerals Projects” of EIA Notification, 2006, as amended – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

Ref: 1. Online proposal No. SIA/TN/MIN/511721/2024, Dated: 09/12/2024.

2. Your application submitted for Terms of Reference dated: 09.12.2024.

3. Minutes of the 523rd meeting of SEAC held on 27.12.2024.

4. Minutes of the 787th SEIAA meeting held on 08.01.2025.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5970090N
(ii) File No.	11564
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	ROUGHSTONE & GRAVEL QUARRY OF THIRU R.SATHISHKUMAR
(viii) Name of Company/Organization	SATHISHKUMAR RANGASAMY
(ix) Location of Project (District, State)	COIMBATORE, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no

1. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1 (Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.
2. The above-mentioned proposal has been considered by (SEIAA) Appraisal Committee of SEIAA in the meeting held on 08.01.2025. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
3. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects recommended the proposal for grant of Terms of Reference with Public Hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
4. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to issue the following Terms of Reference with Public Hearing for instant proposal of Thiru R. Sathishkumar under the provisions of EIA Notification, 2006 and as amended thereof.
5. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
6. The Terms of Reference with Public Hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/Regulations or Statutes, as applicable, to the project.
7. This issues with the approval of the Competent Authority.

Copy To

- 1.
2. 1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
3. 2. The Principal Secretary to Government, Environment, Climate Change and Forests Department, Tamil Nadu.
4. 3. The Additional Chief Secretary to Government, Natural Resources Department, Tamil Nadu.
5. 4. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. 5. The Chairperson, TNPC Board, 76, Mount Salai, Guindy, Chennai-32
7. 6. The District Collector, Coimbatore District.
8. 7. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. 8. Assistant Director, Department of Geology & Mining, Coimbatore District.
10. 9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
11. 10. Integrated Regional office of MoEF&CC, Sasthi Bhawan, Nungambakkam, Chennai.
12. 11. File Copy.
- 13.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seac Conditions - Site Specific

S. No	Terms of Reference
1.1	1. The PP shall furnish the details on no. of trees to be removed for the proposed quarrying activity and the compensatory planting proposed for the same in the EIA Report. 2. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities. 4. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 5. Since the structures including windmills are situated within a radial distance of 500 m, the PP shall design the controlled blast parameters for reducing the blast-induced ground/air- vibrations and eliminating the fly rock from the blasting operations and a copy of such scientific study report shall be submitted during the EIA appraisal without any deviation. 6. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report. 7. The PP shall prepare the EMP for the entire project life of mine, and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.

2. Seac Standard Conditions

S. No	Terms of Reference
2.1	1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. 2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site. 3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc. 4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry. 5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall

S. No	Terms of Reference
	be included in EIA Report. 6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site. 7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC. 8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level. 9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent. 10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site. 11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences. 12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines, 13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines? 14. Quantity of minerals mined out. · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted. · Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. 15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone). 16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc., 17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same. 19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act' 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.

S. No	Terms of Reference
	20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. 21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study. 22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind. 23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted. 24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given. 25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided. 26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered. 27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided. 28. Impact on local transport infrastructure due to the Project should be indicated. 29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity. 30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific. 31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible. 32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner. 33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags 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

S. No	Terms of Reference
	34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period. 35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period. 36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed. 37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations. 38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation. 39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given. 40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc. 41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB. 42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine. 43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994
1.2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given
1.3	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee
1.4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the areashould be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the

S. No	Terms of Reference
	study area (core and buffer zone)
1.5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics
1.6	Details about the land proposed for mining activities should be 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
1.7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report
1.8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided
1.9	The study 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
1.10	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
1.11	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
1.12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the State Expert Appraisal Committees
1.13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished
1.14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated

S. No	Terms of Reference
1.15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given
1.16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted
1.17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished
1.18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled- I fauna found in the study area, the necessary plan alongwith budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost
1.19	Proximity to Areas declared as Critically Polluted or the Project areas likely to come under the Aravali Range, (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered
1.20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)
1.21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report
1.22	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical

S. No	Terms of Reference
	composition of PM10, particularly for free silica, should be given
1.23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map
1.24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated
1.25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided
1.26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided
1.27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided
1.28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from State Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished
1.29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out
1.30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same
1.31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution
1.32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines

S. No	Terms of Reference
1.33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report
1.34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report
1.35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed
1.36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations
1.37	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation
1.38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project
1.39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project
1.40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given
1.41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out
1.42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report
1.43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc
1.44	Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed. g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR)

S. No	Terms of Reference
	should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation. h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable. i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area



SEIAA STANDARD CONDITIONS:

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 & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.
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 deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.

Agriculture & Agro-Biodiversity

9. Impact on surrounding agricultural fields around the proposed mining Area.
10. Impact on soil flora & vegetation around the project site.
11. Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.

12. The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horti-cultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.

Forests

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

Water Environment

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

25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
27. The EIA shall include the impact of mining activity on the following:
- a) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - b) Bio-geochemical processes and its foot prints including environmental stress.
 - c) Sediment geochemistry in the surface streams.

Energy

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

Climate Change

29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.
31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.

Mine Closure Plan

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

EMP

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

Risk Assessment

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

Disaster Management Plan

36. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/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

37. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.

38. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.

39. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

STANDARD CONDITIONS

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should

be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).

- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the

site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.

- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and

furnished to the effect that the proposed mining activities could be considered.

- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM₁₀, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project

should be indicated.

- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government)

should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report

- b) All documents to be properly referenced with index and continuous page numbering.
- c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
- d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
- e) Where the documents provided are in a language other than English, an English translation should be provided.
- f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
- g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
- h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent

and solid and hazardous wastes.

3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population

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

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

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

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

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

**DRAFT EIA/EMP REPORT FOR ROUGHSTONE & GRAVEL QUARRY OF THIRU R.SATHISHKUMAR
IN S.F.NOS. 203/1B OVER AN AREA OF 1.13.00 HA IN ORATTUKUPPAI VILLAGE, MADUKKARAI
TALUK, COIMBATORE DISTRICT, TAMIL NADU.**

TOR COMPLIANCE

S.No	ToR Points	Reply	Pg.No
A. SEAC CONDITIONS - SITE SPECIFIC			
1	The PP shall furnish the details on no. of trees to be removed for the proposed quarrying activity and the compensatory planting proposed for the same in the EIA Report.	Since the lease area is barren land with grasses only	
2	A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: a) Copy of the agreement forming CMC. b) The Organisation chart of the Committee with defining the role of the members c) The 'Standard Operating Procedures' (SoP) executing the planned activities.	Environmental Management Cell of projects in the cluster will act as a Cluster Management Committee. The various activities to be undertaken by this committee are detailed in para 10.2.2, Chapter – X. • Affidavit in this regard will be submitted during EIA appraisal.	10.3
3	The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	• Safety distance provided as per statutes. Fencing is already carried out in the lease periphery and Plantation of local species like neem, badam, Pungai etc already carried out in the safety zone.	2-7
4	Since the structures including windmills are situated within a radial distance of 500 m, the PP shall design the controlled blast parameters for reducing the blast-induced ground/air- vibrations and eliminating the fly rock from the blasting operations and a copy of such scientific study report shall be submitted during the EIA appraisal without any deviation.	• Safety distance of 150m is left for the wind mill. Blast induced vibration will be effectively controlled by adopting to Controlled blasting operation with Nonel, proper blasting geometry, less charge per delay, muffle blasting as and when necessary. Site specific Blast vibration study through reputed institute will be carried out in year 1 of mining operation after sufficient mine face is developed for trial blasting .	2-13
5	The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.	• Bio diversity details are provided in Para 3.5, Chapter-III	3-33
6	The PP shall prepare the EMP for the entire project life of mine, and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	• EMP is prepared for the entire life of the mine. Affidavit will be provided along with the final EIA/ EMP report.	
B. SEAC STANDARD CONDITIONS			
1	In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:	• Fresh lease. No mining carried out in the lease so far.	2-14



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	a) Original pit dimension b) Quantity achieved Vs EC Approved Quantity c) Balance Quantity as per Mineable Reserve calculated. d) Mined out Depth as on date Vs EC Permitted depth e) Details of illegal/illicit mining f) Violation in the quarry during the past working. g) Quantity of material mined out outside the mine lease area h) Condition of Safety zone/benches i) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.		
2	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	•Letter from VAO is obtained and given as Annexure – .	A-39
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	•Details of the features within 500m radius are provided in Figure 2.3, Chapter-II.	2-7
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	•Hydrogeological Study is detailed under Section 3.6, Chapter-III.	3-39
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	•A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.5, Chapter III.	3-33
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	•There area no Protected Areas, Sanctuaries, Tiger reserve etc., within 10km Radius. The details are furnished in Table no 3.2, Chapter III.	3.2
7	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG	•This is a proposed quarry. No mining activities have been carried out in this lease area.	2-15



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	Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.		
8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	• Pit slope stability plan has been provided under Section 7.7, Chapter-VII	7-11
9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	• Will be submitted along with the final report	--
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	• Controlled blasting will be adopted in this project and details of the same has been provided in Section 4.4.2, Chapter-IV	4-14
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	• Agreed	--
12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	• This is a proposed quarry. No mining activities have been carried out in this lease area.	2-18
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	• Replied above in point no.12	--
14	Quantity of minerals mined out. • Highest production achieved in any one year • Detail of approved depth of mining. • Actual depth of the mining achieved earlier. • Name of the person already mined in that leases area. • If EC and CTO already obtained, the copy of the same shall be submitted. • Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	• Replied above in point no.12	--
15	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	• Project coordinates superimposed in satellite imagery and given as Figure No - 2.4 in Chapter – II. • The 10km Radius Index plan showing buffer zone is given in Figure No.3.1 in Chapter – III. • Geology Map, Geomorphology, Lithology map are enclosed as Figure No.3.16, 3.17 and 3.18, Chapter-III.	2-6 3-1 3-41 & 3-43
16	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,	• Agreed	--



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17	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	• Site photographs have been provided in Chapter-II.	2-7
18	The Project Proponent shall provide the details of geological 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 proposed mitigation measures for the same.	• The details of geological and mineable reserves are provided in Table 2.4, Chapter-II. • The production schedule is provided in Table 2.7, Chapter-II. • The working methodology is detailed under Section 2.8, Chapter-II. • Anticipated impacts of mining operations on surrounding environment is provided under Chapter-IV.	2-14 2-16 2-15 4-1
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	• The organization chart has been provided in Figure No.10.1, Chapter-X.	10-3
20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	• Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-39
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	• The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Winter Season (December 2024 to February 2025) and detailed in Section 3.3 to 3.5 of Chapter-III. The details of Traffic Study is provided under Section 4.9, Chapter-IV.	3-13 & 3-33 4-23
22	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	• The details of the quarries located within the 500m radius of the project is given vide Annexure-3. • A cumulative impact study has been carried out and furnished in Para 7.6, Chapter-VII. • Environmental Management Plan is provided under Chapter-X.	A-5 7-5 10-1
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	• The rain water falling in the quarries will be harvested in the sump at the lowest level of the respective quarry. This sump will act as a settling pond to prevent solids escaping	



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		- along with discharge, before outlet. etc. • Towards surface runoff management, garland drain will be constructed which will be connected to settling ponds with silt traps. • Water requirement for this project is 8 KLD. The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used. • Details of rainwater harvesting are provided under Section 4.3.4.2, Chapter-IV.	4-11
24	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	• The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.4, Chapter-III. • The land use pattern at present and at the end of the quarrying period has been provided under section 4.5.1, Chapter-IV. • The post mining land use has been provided in Table No. 4.13. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.5.	3-27 4-16
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	• There is no waste generation anticipated in this quarry. As such there are no OB dumps involved.	--
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	• Not Applicable	--
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	• The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. • Towards surface runoff management, garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users. The surface runoff management structures diagram is given in Figure No 4.4, Chapter-IV. • The methods for reducing water consumption and rainwater harvesting is provided in section 4.3.4, Chapter-IV.	4-11 4-9
28	Impact on local transport infrastructure due to the Project should be indicated.	• From this proposed quarry the entire output will be transported to the crusher units and other buyers etc. Since the production from	4.23



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		this lease is very less, there will be just 1 trip per hour of additional truck traffic. The existing road can absorb this traffic due to this project Details are provided under section 4.9, Chapter-IV.	
29	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	• An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.	3-33
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	• Details of Mine Closure Plan is provided under section 7.5, Chapter-VII.	7-4
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	• An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.	3-33
32	The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	• Agreed	--
33	Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	• Agreed	--
34	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	• The disaster management plan has been provided under section 7.3.1, Chapter-VII.	7-3
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	• Various risks likely to arise due to mining activities are detailed under section 7.3, Chapter-VII.	7-1
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with	• Details of occupational health and safety aspects are given under the subsections of Para 4.8, Chapter-IV.	4-21



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	required facilities proposed in the mining area may be detailed.		
37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	• Details of the socio-economic survey conducted in the buffer zone has been provided in Para 3.2.4, Chapter-III. • Public health facilities will be further aimed to be developed through CER activities wherein periodic health checkups, medical camps for the locals will be conducted.	3-8
38	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	• Nearby villages were visited for conducting study to know about socio-economic conditions, including aspirations and requirements of the people for a better living and collected relevant data. The details are provided under section 3.2.4, Chapter-III.	3-8
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	• PP informed that there is no litigation pending against the project.	--
40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	• The Roughstone and Gravel Quarry will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, health, infrastructural etc. • Direct employment to about 16 people and indirect employment to scores of people. • By means of carrying out the socio-economic development activities, local community development is expected. Towards the same, the proponent has planned to allocate Rs.5 Lakhs for various activities under CER for all the three projects together. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.	8-1
41	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	• This is a proposed quarry. As such no mining activities have been carried out in this lease area.	2-12
42	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	• EMP is prepared for the entire life of the mine. Affidavit will be provided along with the final EIA/ EMP report.	--
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	• Agreed	--



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C. Additional ToR			
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.	• Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-2
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	-
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	-
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	-
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.	• Agreed	-
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.	• Agreed	-
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	-
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.	• Agreed	-
Agriculture & Agro-Biodiversity			
9	Impact on surrounding agricultural fields around the proposed mining Area.	• Since the lease and its nearby area is of rocky type , it remain uncultivated and only in	



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		patches of land away from the lease area, agricultural activities are carried during monsoon rainfall. Due to poor quality of the soil, inconsistent rainfall, high agricultural labor cost, manpower shortage and less yield are reason for very little agricultural activity in this region. By adoption of systematic mining adhering to all the environmental mitigation measures as explained earlier, no adverse impact on the far away agricultural or surrounding environs envisaged.	4-17
10	Impact on soil flora & vegetation around the project site.	• The impact of mining on biological environment is provided under Table 4.14, Chapter-IV.	4-17
11	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.	• The details of flora in the core zone is provided in Table 3.24, Chapter-III. There is no major clearance of vegetation or transplantation involved.	3-35
12	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.	• An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-33
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	• The post mining land use has been provided in Table No. 4.14.	4-16
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	• Replied in sl no 13 above.	4-18
Forests			
15	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wild life.	• There are no reserve forest within 10km radius and as such no impact on this front envisaged.	--
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	• An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-33
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	• Replied in point 20. Above	--
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	• There are no national parks or corridors in the 10k radius. There are no reserve forest in the proximity of the lease area	3-2
Water Environment			
19	Hydro-geological study considering the contour map	• The details of hydrogeological study is	3-39



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	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.	provided under Section 3.6, Chapter-III.	
20	Erosion Control measures.	• Since the entire material from the quarry face will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in this quarry. As such there will not be any wash out due to stock pile or waste dumps. • Towards surface runoff management, a garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users	4-10
21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	• There is no proposal to discharge any effluent into this waterbody. No major impact is envisaged on the nearby water bodies due to project operations	11-12
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	• There is no major perennial waterbody in close proximity of the lease area.	7-3
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	• The post mining land use has been provided in Table No. 4.13. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.5.	4-16 & 4-20
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	• An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.	3-33
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	• Soil samples were collected in 5 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. The soil quality data is provided in Table No.3.18, Chapter-III.	3-27
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	• The nearest major water bodies is provided in Table No.3.1, Chapter-III. • There are no perineal water courses in lease areas. The mining area consists of hard compact rock,	3-1



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		hence no major water seepage within the mine is expected from the periphery. The ground water table in this area is below the ultimate pit level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.	
27	The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams.	d) As such the production from this lease is very low to cause any appreciable impact. e) No adverse impact on the surrounding environment is envisaged since the number of equipments to be used to achieve this small production is very less and the magnitude of operation is of very small level. f) Besides, as is it a mining project, no adverse generation of heat is envisaged. g) Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned. h) Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed. i) There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact. j) It will be ensured that mining will be carried out adhering to all the statutory rules and regulations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures. k) These mitigative measures will be continued for the entire lease period ensuring no impact on the environment. As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people, loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc.	4-18
Energy			
28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	• The dust control measures are listed under Table 4.1, Water pollution control measures under Section 4.3.2, and noise pollution control	4-2



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		measures under Section 4.4.1.2, Chapter-IV. Besides, energy consumption in this project will be optimum and as per requirement.	
Climate Change			
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	• Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned wherein 550 number of plants will be planted in and around the lease area.	7-16
30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.	• Replied in point no.29 above	--
31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	• Replied in point no.29 above	
Mine Closure Plan			
32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	• Details of Mine Closure Plan is provided under section 7.5, Chapter-VII.	7-4
EMP			
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs	• Detailed environmental management plan is provided under Chapter-X.	10-1
34	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	• Detailed environmental management plan is provided under Chapter-X.	10-1
Risk Assessment			
35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	• Various risks likely to arise due to mining activities are detailed under section 7.3, Chapter-VII.	7-1
Disaster Management Plan			
36	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities	• The disaster management plan has been provided under section 7.3.1, Chapter-VII.	7-3



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	covering the entire mine lease period as per precise area communication order issued.		
Others			
37	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.	• Given in Vide Annexure No – 14 of EIA EMP report	A-39
38	As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.	Will be provided in the Final EIA/EMP Report after completion of public hearing.	--
39	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	• Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.	11-16

D. 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 fresh lease area. No mining has been carried out in this lease area so far by the proponent.	2-11
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 Assistant Director, Dep. of Geology & Mining, Coimbatore vide Rc.No.419/Mines/2024 dated 04.10.2024 (Annexure-1B)	A-3
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.	• The production capacity, quantity of waste, its management and mining technology in mine plan and EIA, etc., are compatible with one another.	--
4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	• Project coordinates superimposed in satellite imagery and given as Figure No - 2.4 in Chapter – II. • The geology and geomorphology map is provided in Figure No.3.16, 3.17, Chapter-III. The Lithology map and Soil map are provided	2-6 3-41 3-42



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		under Figure No. 3.18, 3.19, Chapter-III. • The 10km Radius Index plan showing buffer zone is given in Figure No.3.1 in Chapter – III.	3-43 3-44 3-2
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.	• Replied in Standard ToR point no.4	--
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	--
7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	• The proponent will frame a well-planned environmental policy. Its details are provided under Section 10.2.1, Chapter-X. • The Mines Manager will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level control, plantation programme, social development schemes, etc in the mine. The organizational chart for the same has been provided in Figure No.10.1, Chapter-X.	10-1 10-3
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	• Various risks likely to arise due to mining activities are detailed under section 7.4, Chapter-VII. This being an opencast mine, subsidence is not applicable. The impact due to ground vibrations due to blasting is given in para 4.3.2, Chapter-IV.	7-4 4-9
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 chosen for collecting existing environmental status covers 10 km radial distance from the project periphery (Figure No - 3.1). Data given in the report is for the life of the mine.	3-2
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	• The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.4,	3-27



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	prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Chapter-III. • The land use pattern at present and at the end of the quarrying period has been provided under section 4.5, Chapter-IV. • In the post mining stage, the mine pit area of 0.75.10 Ha will be left as a water body. Plantation will be carried out over 0.3580 Ha, and 0.02Ha will be utilised for road and infrastructure..	4-18
11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.	• There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. Besides, there is no proposal for overburden dump outside the lease area.	2-15
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.	• 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.	• 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	--
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.	--
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	• The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.	4-19
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	• Replied in Standard ToR point No.16	--



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	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.	• A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.5, Chapter III.	3-36
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 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 shilling of village(s) including their R&R and socio-economic aspects should be discussed in the Report.	• The mining activities will be carried out within the mine lease area only. The entire mine lease area is a patta land in proponent's possession. There is no population within the ML area. Hence, the question of R& R does not arise.	7-4



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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.	• The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Winter Season (December 2024 to February 2025) and detailed in para 3.3 to 3.5 of Chapter-III. • Monitoring stations were selected taking into account, wind direction and location of sensitive receptors. • Free silica composition in PM10 sample has been done and the values are found to be Below Detectable Limit (DL 0.05mg/m3) which is well within the prescribed limit of 5mg/m3.	3-1 & 3-16
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.	• Air quality modeling details are furnished in para 4.2.2 and its continuous sub paras in Chapter-IV of EIA report. • The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion. • The model simulations are done for the air pollutant arising from the mining operations, namely, PM10, PM2.5. Ground Level Concentration (GLC) have been computed using hourly meteorological data. • The Isopleths of PM10, PM2.5 concentrations for with control measures scenario have also been drawn and these are given in Figure No.4.1 and 4.2. • It can be seen that the resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM10 are in the range of 58.9µg/m3 to 65.0µg/m3 and with respect to PM2.5 are in the range of 24.0µg/m3 to 27.0µg/m3 which are within the statutory limits in each case.	4-3 4-5 & 4-7
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 total water requirement for this project will be 8.0 KLD comprising 1.0 KLD for drinking water and domestic use, 5.0 KLD for dust suppression and 2.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for	4-8



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		the same is shown in Figure No 4.3.	
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	• Not Applicable.	--
26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	• The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. • Towards surface runoff management, a garland drain of length 400m will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users. The surface runoff management structures diagram is given in Figure No 4.4, Chapter-IV. • The methods for reducing water consumption and rainwater harvesting is provided in section 4.3.4, Chapter-IV.	4-11 4-9 4-11
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.	• There will be no generation of effluent or its discharge from the mining operation in this lease area and as such no impact on surface or ground water is expected. • The ultimate pit depth of mining is 37m. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.	4-10 2-18
28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	• The occurrence of groundwater mainly in the porous soil are weathered layers, very negligible amount of groundwater percolated through the poorly fractured layer, after that there is no existence of groundwater. Since the mining area consists of hard compact rock, no major water seepage within the mine is expected from the periphery. • The ultimate pit depth of mining is 37m. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation. • Details of hydro geological study are given in Para 3.6.2 Chapter – III.	2-12 3-46
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion	• There are no streams passing through the	--



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	proposed, if any, and the impact of the same on the hydrology should be brought out.	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.	• The area applied for mining lease is a gentle plain terrain.. • The ultimate pit depth of mining is 37 m. The ground water table in this area is below this level.	2-2
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.	• Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area. About 550 trees will be planted in and around the lease area. Details of the same is provided under TableNo.4.16, Chapter-IV.	4-19
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.	• From this proposed quarry the entire output will be transported to the crusher units and other buyers etc. Details of the traffic study is provided under section 4.9, Chapter-IV.	4-23
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	• This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	2-17
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.	• In the post mining stage, the mine pit area of 0.75.10 Ha will be left as a water body. Plantation will be carried out over 0.3580 Ha, and 0.02Ha will be utilised for road and infrastructure. Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the rainwater harvested in the mined out void shall be utilized in the area.	4-19
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	• Details of occupational health and safety aspects are given under the subsections of	4-22



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	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	Para 4.8, Chapter-IV.	
36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations	• Details of the socio economic survey conducted in the buffer zone has been provided in Para 3.2.4, Chapter-III. • Public health facilities will be further aimed to be developed through CER activities wherein periodic health checkups, medical camps for the locals will be conducted.	3-9
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.	• Towards the socio economic development of the surrounding area, the proponent has earmarked an amount of Rs 3 Lakhs under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner in the nearby Government schools. In consultation with the locals based on the need & priority it will be implemented. Its details are provided in Para 4.7, Chapter-IV	4-21
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.	• Detailed Environmental Management plan and its implementation, etc., are furnished in Chapter X.	10-1
39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	• This draft EIA/EMP report will be exposed to public consultation as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. • The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.	7-1
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.	• PP informed that 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 of the project is Rs. 1,10,30,000/- Towards EMP measures, Rs. Rs.15.44 Lakhs is allocated under capital cost. Besides, Rs.13.06 lakhs per annum will be spent	4-21 10-12



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		under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue.	
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	• The disaster management plan has been provided under section 7.3.1, Chapter-VII.	7-3
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.	• The proposed Rough Stone Quarry will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, health, infrastructural etc. • Direct employment to 16 people and indirect employment to scores of people. • By means of carrying out the socio economic development activities, local community development is expected. Towards the same, the proponent has planned to allocate Rs. 3 Lakhs for various activities under CER. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.	8-1



CHAPTER - I

INTRODUCTION

CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF THE REPORT:

Thiru R. Sathishkumar proposes to operate a **Rough Stone and Gravel Quarry** over an area of **1.13.0** Ha in Orattukuppai village, Madukkarai Taluk, Coimbatore District, Tamil Nadu and has initiated action towards obtaining environmental clearance. Proposed Production for the five years lease period is 1,13,338m³ of Rough stone and 15,744m³ of gravel for the depth of 37 m (From OGL-447m RL). Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius cluster along with this subject project works out to >5 Ha. Hence, this proposal is considered under Category – B1 and as per MoEF& CC notification necessitates preparation of EIA/EMP report and public hearing. This EIA/EMP report is prepared based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu vide TOR Identification No – TO24b0108TN5970090N dated 12.01.2025 and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining plan.

1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT:

Table 1.1 Identification of project

1	Project Name	Rough Stone and Gravel Quarry of Thiru R. Sathishkumar
2	Extent	1.13.0 Ha
3	Production	The Proposed Production for the five years lease period is 1,13,338m ³ of Rough stone and 15744m ³ of gravel for the depth of 37 meter.
4	Ultimate Depth	37m (From OGL-447m RL) for 5 years
5	Land Classification	It is a Patta Land in S.F.No -203/1B, registered in the name of Thiru. Dinesh kumar ,kathiresan&sathishkumarpatta no.1730. Registration of Consent from Pattadhars obtained and got registered.
6	Location	Survey Number:203/1B
		Village:Orattukuppaivillage
		Taluk:MadukkaraiTaluk
		District:Coimbatore
		State: Tamil Nadu

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Table 1.2: Identification of Project Proponent

1	Proponent Name	Thiru. Thiru R. Sathishkumar
2	Address	S/o Rangasamy 89, ThoppaiyaGounderThottam, Orattukuppai, Chettipalayam, Coimbatore District,
3	Contact Number	9600774662
4	Email-ID	sathishrangasamy1234@gmail.com

The Proponent can meet the financial requirement of this project and will ensure that the mining activities are carried out as per statutory requirements.

Table 1.3: Statutory Approvals

Name	Issuing Authority	Status	Letter number	Date	Reference
Precise Area Communication	Assistant Director, Department of Geology & Mining	Received	Rc.No.419/Mines/ 2024	04.10.2024	Annexure-1
Mining Plan Approval	Assistant Director, Department of Geology & Mining	Approved	Rc.No.419/Mines/ 2024	29.10.2024	Annexure-2
Details of other quarries within 500m radius	Assistant Director, Department of Geology & Mining	Obtained	Rc.No.419/Mines/ 2024	29.10.2024	Annexure-3
District survey report	Collector, Assistant director, Geology & Mining	Authenticated	As per S.O. 3611(E) dated 25.07.2018	-	
VAO Letter	VAO	Obtained	--	--	Annexure-4

The following conditions have been stated in the Precise Area Letter:

- A safety distance of 7.5m for patta land, 10m for government land on the southern side & 10m for Cart Track on the east side to be provided.

The above conditions have been adhered to.



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1.3 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION & PROJECT IMPORTANCE

Table 1.4: Brief Description of Nature of project

1.	Sector	1(a), Non-Coal Mining
2.	Type	Greenfield Project
3.	Category	B1
4.	Mineral Mined	Roughstone & Gravel Quarry
5.	Major/Minor Mineral	Minor
6.	Mining method	Opencast Semi Mechanized Mining
7.	End use	The top overburden in the form of Gravel will be loaded into tipper and marketed to needy customers. The rough stone will be excavated and loaded into tipper to the needy buyers for producing crusher aggregates, M Sand.

Table 1.5: Location of the project

S.No	Particulars	Details
1.	Location	Orattukuppai village, Madukkarai Taluk, Coimbatore District, Tamil Nadu
2.	Corner Coordinates	Latitude : 10°55'03.82" N to 10°55'07.71" N Longitude : 77°03'51.86" E to 77°03'55.86" E
3.	Toposheet Number	58 -B/13 & 58 F/1

Location details are elaborated in Para 2.3, Chapter-II.

1.3.1 IMPORTANCE TO THE COUNTRY AND REGION:

Rough stone from these quarries will meet the domestic demand. The production and method of mining is planned considering the geological factors, availability of proven technology, demand for the material etc. Safety barriers as per State Government order is left in the planning stage itself. Systematic and scientific mining will be carried out. This project will provide employment opportunities to many people. The proponent will carry out CER activities which will help the surrounding villages to derive socio economic benefits. The activities will be customized based on local needs and prioritized. Hence, livelihood development and employment will arise due to this project.



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1.4 SCOPE OF THE STUDY:

Particulars	Details
Proposal no	SIA/TN/MIN/511721/2024, Dated: 09/12/2024
File no	11564
SEAC meeting for issue of TOR	523rd meeting of SEAC held on 27.12.2024.
SEIAA meeting for issue of TOR	787th SEIAA meeting held on 08.01.2025.
Terms of Reference	Received from SEIAA, Tamil Nadu vide TOR Identification No – TO24b0108TN5970090N dated 12.01.2025
Baseline Data Collection	Carried out by Enviro Solutions & Labs, Coimbatore, Winter season (December 2024- February 2025)

Based on the terms of reference, data collection, the Environmental Impact Assessment was carried out for the project area (core zone and the buffer zone (10km radius from the core zone) and the following studies were covered:

- Collection of primary and secondary data relevant to the project.
- One-Season baseline monitoring for environmental parameters such as air, water, noise, soil, flora & fauna, etc. Analysis of parameters in in-house laboratory.
- Documentation of EIA/EMP report with inclusion of relevant studies conducted by other bodies into the EIA/EMP report.
- Identification of significant environmental parameters that are prone to get affected due to pollution. Namely, Air, Water, Noise, Soil, Biological and Land Environment.
- Evaluation and determination of suitable mitigation measures to reduce and control the said pollution.
- Prediction of post project concentration (baseline + incremental) with respect to air environment for core zone and buffer zone. (on Individual as well as cumulative basis)
- Formulation of an Environmental Management plan including administrative aspects for proposed implementation of mitigative measures in time.



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This draft EIA/EMP report will be submitted for public consultation, as per rules and procedures in this respect, as per the EIA notification 2006. The opinions, concerns and objections, if any, of the surrounding public and other stake holders connected, will be taken into consideration and compliance report thereon will be submitted to SEIAA, Tamil Nadu in the final EIA/EMP report.

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CHAPTER - II

PROJECT DESCRIPTION

CHAPTER 2

PROJECT DESCRIPTION

2.1 TYPE OF PROJECT:

This proposal involves quarrying of Roughstone and Gravel by Thiru R. Sathishkumar using Opencast Semi Mechanized Mining method for the lease period of 5 years.

2.2 NEED & JUSTIFICATION FOR THE PROJECT:

There is a huge demand for construction material and the entire material produced from this quarry will be used in the local construction/ infrastructure sector. Considering the following favorable factors it is practically possible to achieve the proposal within the planned period and this proposal is fully justified.

- Availability of good quality proved reserves
- Techno economic viability of the scheme
- Better approachability to the project, availability of logistic facility in proximity to the site
- Economic and Socio Economic Benefits to the region

2.3 LOCATION:

A brief description of the mining area, along with the location, coordinates, accessibility, etc. has been details below in Table No.2.1.

Table 2.1: Mine site description

Location	Orattukuppai village, Madukkarai Taluk, Coimbatore District, Tamil Nadu
Survey No.	203/1B
Coordinates	Latitude : 10°55'03.82" N to 10°55'07.71" N Longitude : 77°03'51.86" E to 77°03'55.86" E
Nearest Village	Orattukuppai -1.7km (SW)
Nearest Town	Chettipalayam - 3.0km (W)
Nearest Highway	(SH-163) - 1.6Km (NW)
Nearest Railway Station	Chettipalayam - 3.3km (W)
Nearest Airport	Coimbatore - 12km (N)

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TALUK, COIMBATORE DISTRICT TAMIL NADU.**

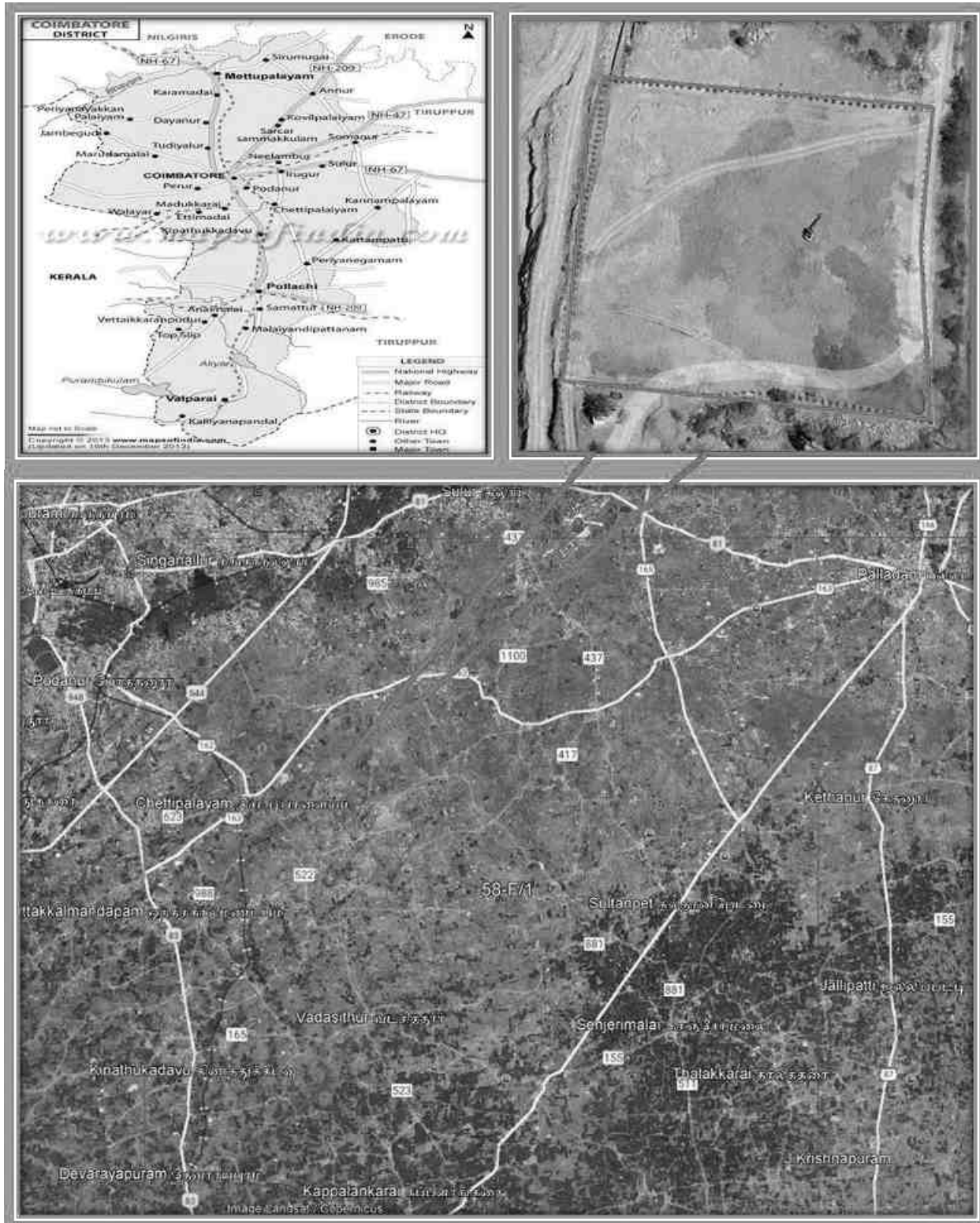
Accessibility	The lease area can be approached through orattukuppai road on the Northern side of the lease area at a distance of 240m which joins SH-163 at a distance of 1.6Km on the north western side of the lease area.
Topography & Drainage	The lease applied area is exhibits Plain topography covered by Roughstone & gravel formation with the altitude of the area is above 447.0m MSL. Other than few first order and second order streams no major drainage pattern is observed around the lease area.

Location map is provided in **Figure No.2.1**. The approachability map is provided in **Figure No.2.2**. Corner co-ordinates of the lease area and satellite imagery are shown in **Figure No. 2.3 & 2.4** respectively. Village map for 500m radius from the lease is shown in **Figure No. 2.5**.



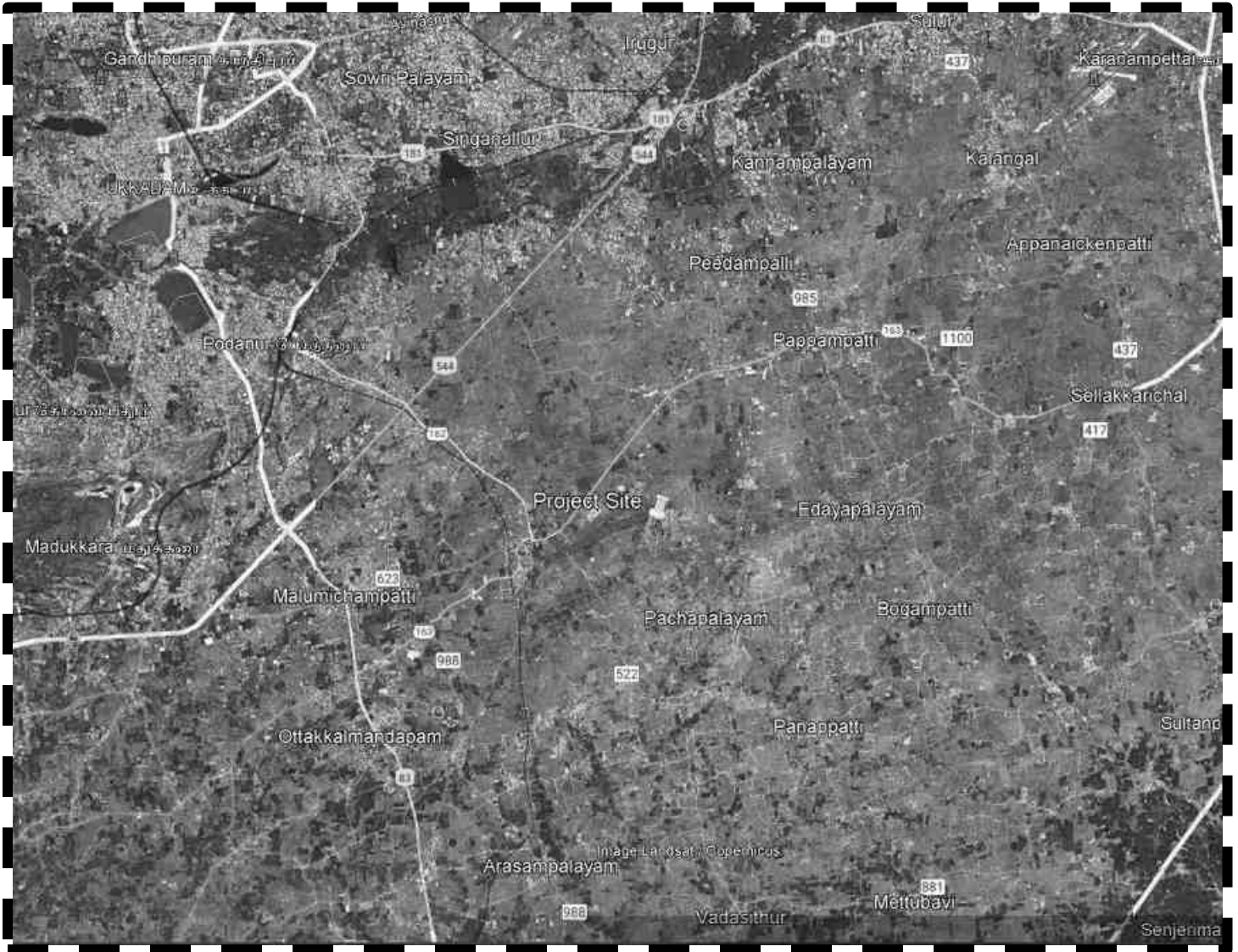
**DRAFT EIA/EMP REPORT FOR ROUGHSTONE & GRAVEL QUARRY OF THIRU R.SATHISHKUMAR
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Figure 2.1: Location Map



**DRAFT EIA/EMP REPORT FOR ROUGHSTONE & GRAVEL QUARRY OF THIRU R.SATHISHKUMAR
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Figure 2.2: Approachability Map



**DRAFT EIA/EMP REPORT FOR ROUGHSTONE & GRAVEL QUARRY OF THIRU R.SATHISHKUMAR
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Figure 2.3: Lease Plan

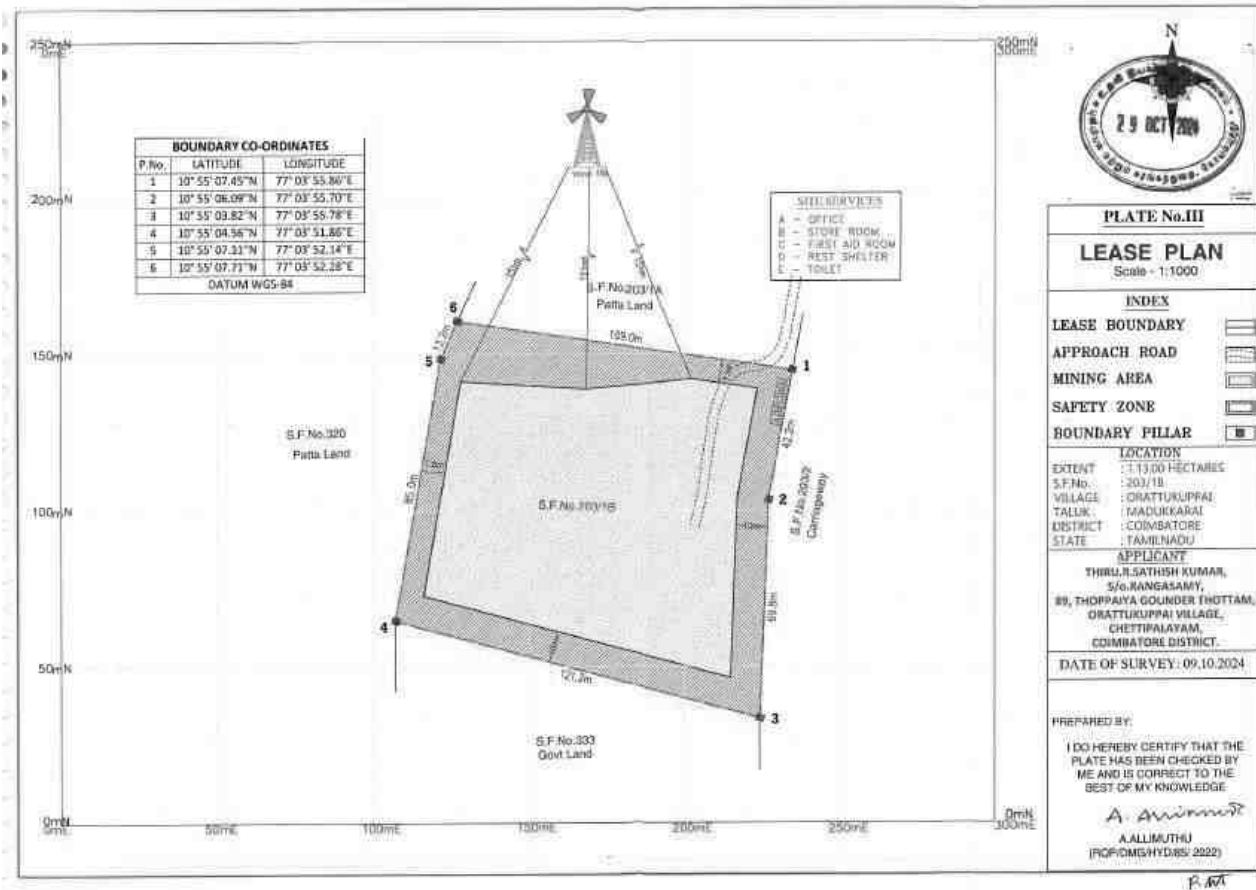
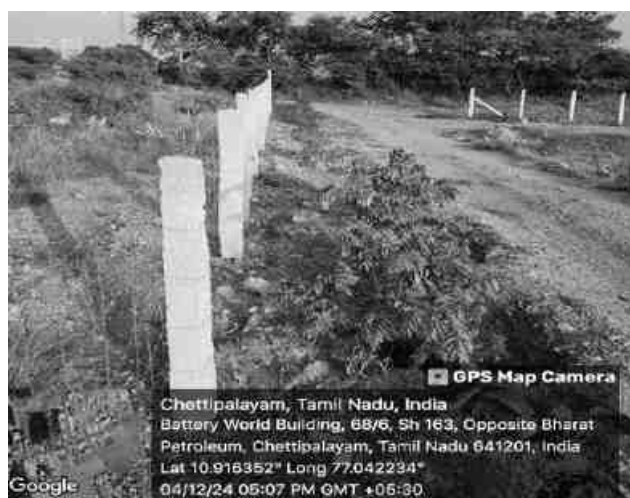


Figure 2.4: Satellite Imagery Showing Corner Co-ordinates of the Project Area



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SITE PHOTOGRAPH



**DRAFT EIA/EMP REPORT FOR ROUGHSTONE & GRAVEL QUARRY OF THIRU R.SATHISHKUMAR
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Figure 2.5: Village Map

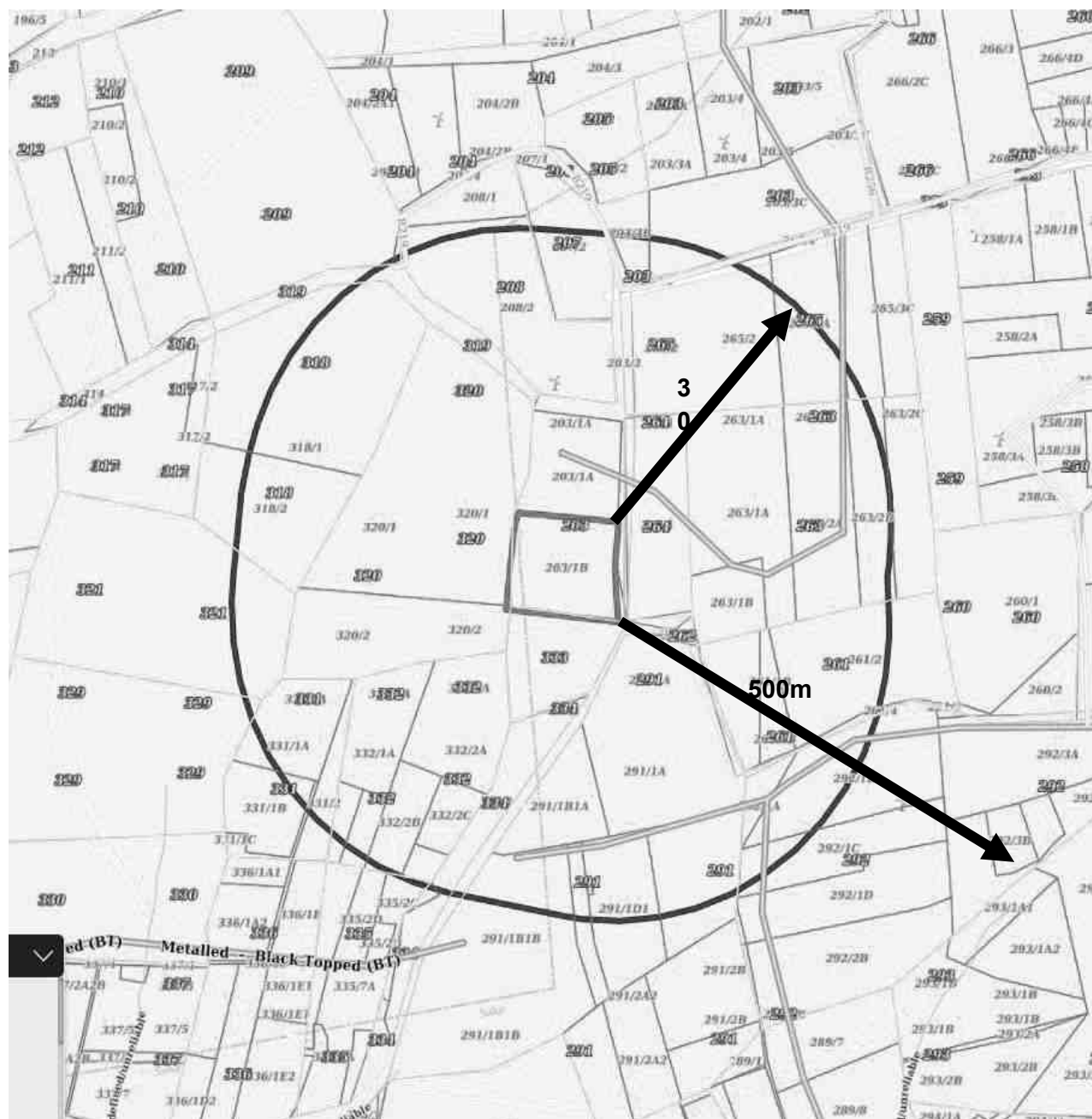


Figure 2.6: Details of features within 300m radius



6

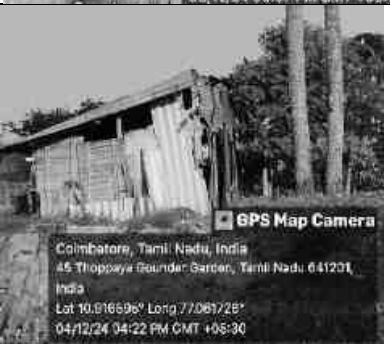
As per the conditions of the Terms of Reference, the details of structures located within the 100m, 200m, 300m, radius are provided below.

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Table 2.2: Features within 300m radius

S.No	Features	Distance	Photos
1	Lease area	-	
2	Cart track	10.0 m East	
3	Crusher	175.0 m East	
4	Wind mill	151.0 m North	

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5	Abandoned Poultry shed	240.0 m-West	
6	Farm house	230.0 m West	
7	Shed	270.0m South West	
8	Workers prayer temple	10.0m South	

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2.4 LAND CLASSIFICATION:

The lease area of 1.13.0 Hectares in S.F.Nos. 203/1B is a Patta land, partly owned by the applicant and for the remaining, applicant got consent from other Pattadars. The survey no. wise area breakup has been provided below:

Table 2.3: Survey Number wise Area Breakup

District	Taluk	Village	Survey No	Area in Ha	Ownership	Remarks
Coimbatore	Madukkarai	Orattukuppai village	203/1B	1.13.0	Thiru. Dinesh Kumar, Kathiresan & Sathishkumar	It is a Patta Land in S.F.No -203/1B, registered in the name of Thiru. Dinesh kumar , kathiresan & sathishkumar patta no.1730. Consent from Pattadhars obtained and got registered
Total Area in (Hectares)				1.13.0		

2.5 GEOLOGY:

The area is mainly composed of crystalline metamorphic complex. The rock type majorly noticed in the area for lease is Biotite Gneiss. Which is mainly composed Hornblende, biotite mica, Quartz, and Feldspar with some ferromagnesian minerals. The grain size is medium to coarse. The strike of the Charnockite formation is N35°E-S35°W with dipping towards 60°S.

The Biotite gneiss is part of peninsular gneisses, a high grade metamorphic rock. It is typically brown to black colour and grain size is coarse grained. It is suitable of construction purposes because of its high strength, colour, high density, low porosity etc.

The geological sequence:

Age	Formation
Recent	- Gravel – (2m)
	----- Unconformity -----
Archaean	- Migmatite, Charnockite & Khondalite



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Figure 2.7: Surface & Geological Plan

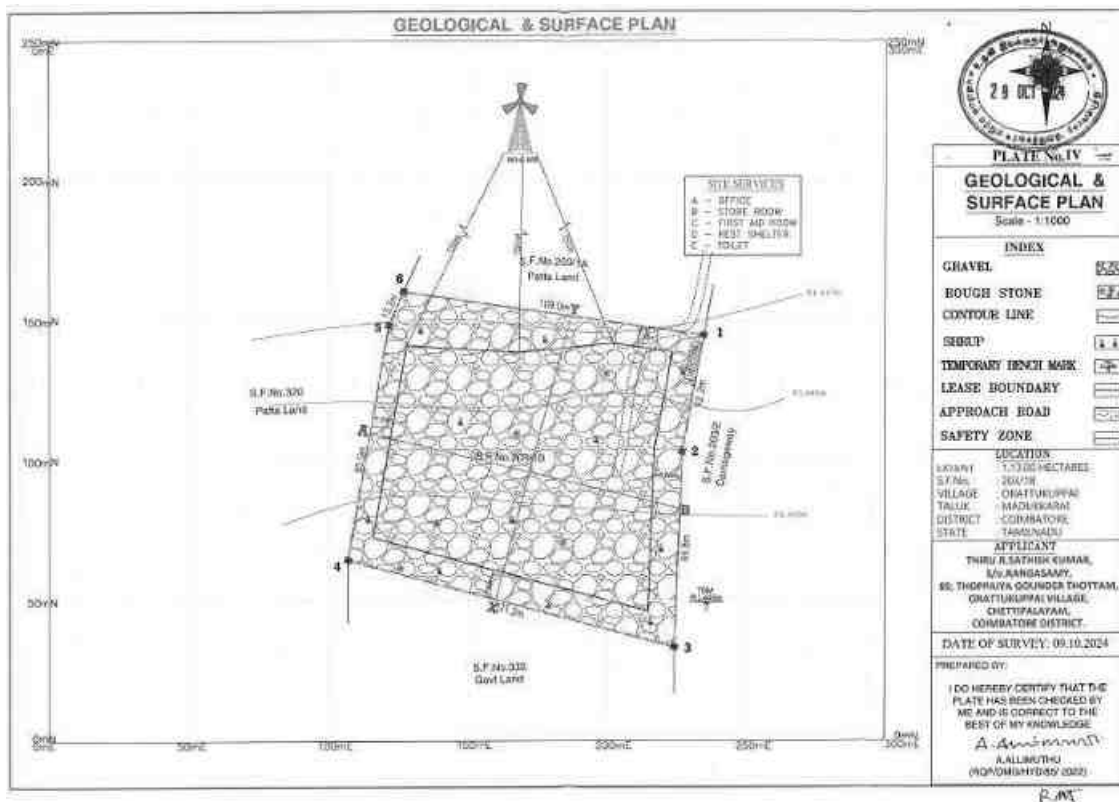
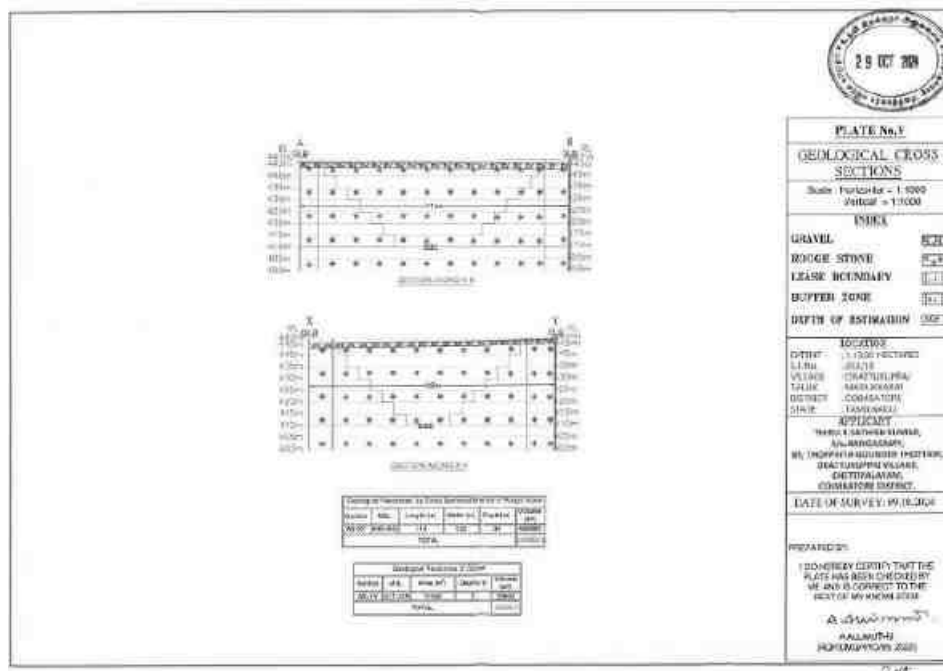


Figure 2.8: Geological Cross Section



2.6 SIZE AND MAGNITUDE OF THE OPERATION:

- The proposed mining will be done by open cast semi mechanized mining method.
- Life of mine will be 5 years.
- The Proposed Production for the 1,13,338m³ of Rough stone and 15744m³ of gravel for the depth of 37 meter.
- There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilised.

2.6.1 RESERVES:

Table 2.4: Geological and Mineable Reserves

Type of reserves	Rough stone in Cu.m.	Gravel in Cu.m.
Geological Resources	4,06,980	22,600
Mineable reserves	1,13,338	15,744
Bench locked & 7.5m boundary barrier reserves	2,93,642	6,856

The mineable reserves is arrived after considering the safety distance as per the Precise area letter.

2.6.2 MINING METHOD:

Open cast semi mechanized mining using jackhammer drilling, blasting, and excavation through excavator & mineral transport through tippers will be carried out. The top gravel is soft and can be directly excavated. The rough stone will be blasted and then excavated. Bench height of 5.0m & 5m width is considered.

Table 2.5: Details of Equipments

SI. NO	NAME OF THE EQUIPMENT	CAPACITY	REQUIRED
1	Excavator	1.2m ³	1
2	Tipper	10/20T	2
3	Compressor	400psi	2
	Jack Hammer	33mm dia	2

2.7 PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION:

The proponent propose to implement the production immediately after obtaining all the statutory approvals such as CTE, CTO, etc. The proponent will comply with the environmental clearance conditions during mining operations. The schedule of project implementation envisaged for this project is provided below. This is a tentative schedule subject to various factor, hence unforeseen variations may occur.

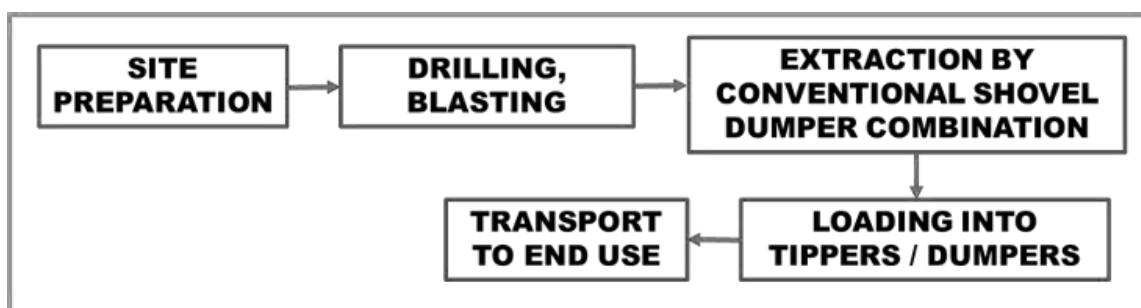
Table 2.6: Proposed Schedule of Implementation

Activities	Months					
	Zero Date	1	2	3	4	5
Obtaining Environmental Clearance						
Obtaining Consent from State Pollution Control Board						
Lease Execution						
Equipment mobilization and Commencement of Mining activity after following all the Statutory Requirements						

2.8 TECHNOLOGY AND PROCESS DESCRIPTION:

The quarry operations involve drilling, blasting, excavation, loading and transportation of Rough stone to buyers. The production of Rough stone in this quarry involves jackhammer drilling and blasting. The primary boulders are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining. The process flow diagram of this project is provided below.

Figure 2.9: Process Flow Diagram



2.9 PROJECT DESCRIPTION:

2.9.1 PAST PRODUCTION:

This is a fresh proposed quarry. As such no mining activities have been carried out in this lease area.

2.9.2 PRODUCTION & WASTE DISPOSAL:

The year wise production has been provided below:

Table 2.7: Production Schedule During Plan Period

YEAR	GRAVEL(m3)	ROUGHSTONE (m3)
I	15,744	22,484
II	--	22,449
III	--	22,645
IV	--	22,870
V	--	22,890
Year Total	15,744	1,13,338

Waste Disposal during Plan Period:

There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. The top overburden in the form of Gravel will be loaded into tipper and marketed to needy customers on payment of necessary fees to Government. The rough stone will be excavated and loaded into tipper to the needy buyers for producing crusher aggregates, M Sand.

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Figure 2.10: Year wise Plan

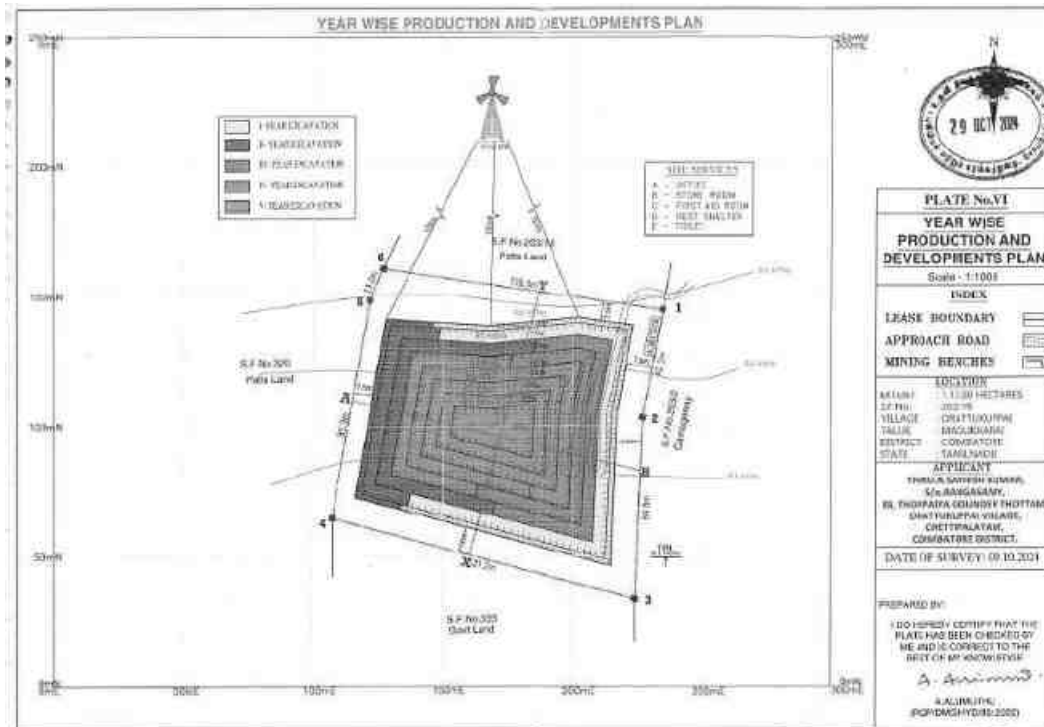
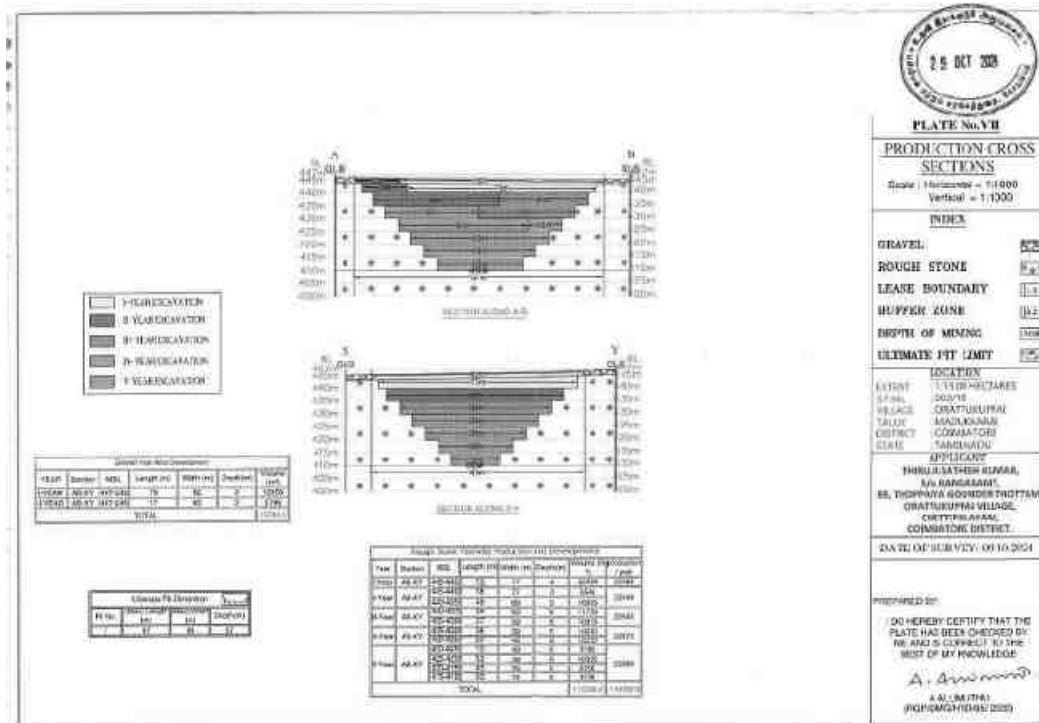


Figure 2.11: Year wise Cross Section



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2.9.3 CONCEPTUAL PERIOD

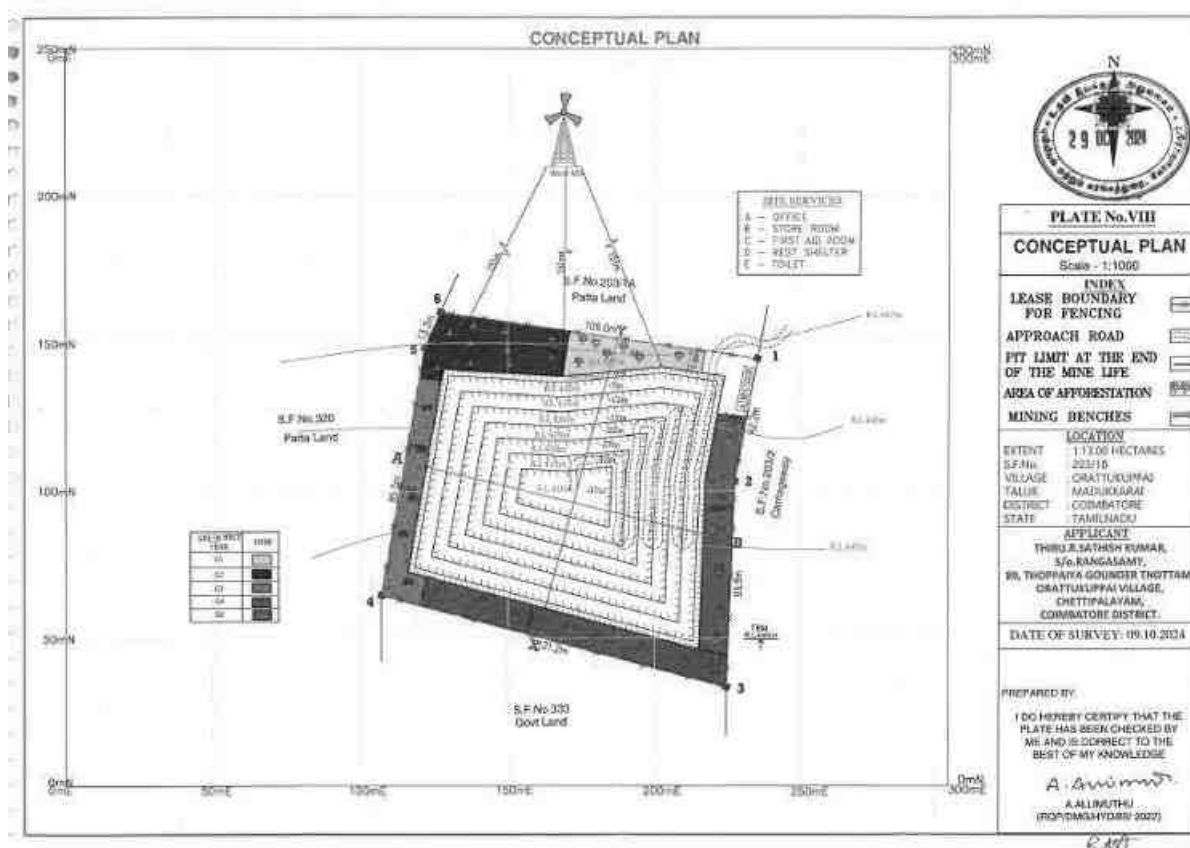
The Proposed Production of 1,13,338 m³ of Rough stone and 15744 m³ of gravel will be mined out during the 5 years lease period for a total depth of 37 meter.

Table 2.8: Ultimate Pit Dimensions

Length in m	Width in m	Depth in (m)
97	83	37

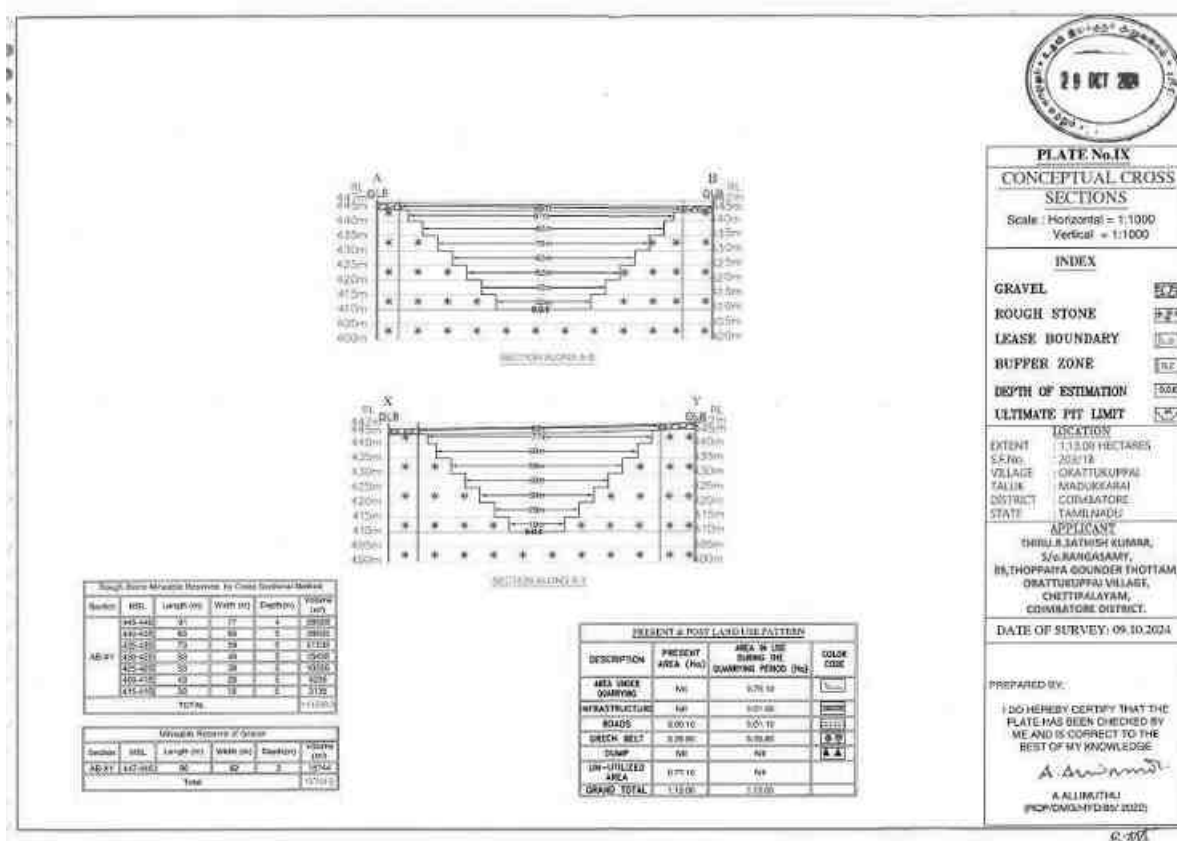
The ground water table on the surface in this area is ranging below 60 - 65mBGL Hence, ground water intersection in not envisaged. The Conceptual Plan & Cross section are shown in **Figure No. 2.11 & 2.12.**

Figure 2.12: Conceptual Plan



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Figure 2.13: Conceptual Cross Section



LAND DEGRADATION/UTILIZATION:

The land use pattern at the end of the 5 years period has been provided below:

Table 2.9: Land Use

Sl. No.	Land Use	Present Area (Hect)	Area in use during the 5 year period (Ha)
1.	Quarrying Pit	-	0.75.10
2.	Infrastructure	-	0.01.00
3.	Roads	-	0.01.10
4.	Green Belt	-	0.35.80
5.	Unutilized	1.13.00	--
	Total	1.13.00	1.13.00

In the post mining stage, the mine pit area of 0.75.10 Ha will be left as a water body. Plantation will be carried out over 0.3580 Ha, and 0.02Ha will be utilised for road and infrastructure.

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2.9.4 PROJECT REQUIREMENTS:

Table 2.10: Project Requirements

Manpower	16 people persons directly and indirectly.	
Water Requirement and Source	Water Requirement: 8 KLD	
	Details	Quantity (KLD)
	Drinking water and Domestic Use	1.0
	Dust Suppression	5.0
	Green belt	2.0
	Total	8.0
	Source: Water requirement will be met from the rainwater collected in the mine Pit.	
Power Requirement	All the equipment will be diesel operated. No electricity is needed for mining operation. The minimum power requirement for office, etc are and will be met from state grid.	
Site Services	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	
Project Cost	Rs. 1,10,30,000/- (Including operational + Fixed Asset + EMP cost).	
Funds allocated for socio-economic development	Rs.3.0 Lakhs is allocated under CER budget.	

2.10 DESCRIPTION OF MITIGATION MEASURES:

Scientific and systematic development of mines will be carried out by the project authorities for preserving as well as improving the environmental conditions in and around the mining lease area. Elaborate analysis on impacts and mitigation measures to be adopted on implementation of this project and the same has been dealt in Chapter- IV.

2.11 ASSESSMENT OF NEW & UNTESTED TECHNOLOGY:

There is no new technology that is being implemented. Opencast method of mining which is the proposed method of mining is a proven technology which is technologically and economically viable. No major technological failures are anticipated. A disaster management plan shall be put into place to take care of any unforeseen situation.

2.12 CONCLUSION:

As good environmental preservation is one of the prime motive of the project proponent. It is expected that the project activity will not have any major impact on environmental equilibrium in the study area.

* * * * *



CHAPTER - III

DESCRIPTION OF ENVIRONMENT

CHAPTER 3

DESCRIPTION OF ENVIRONMENT

3.1 GENERAL: The existing environmental baseline data for the various environmental components were collected in the study area for the purpose of assessing the future impact on present environment due to the project activities.

Monitoring was carried out systematically and meticulously as per relevant IS codes, CPCB, MoEF&CC guidelines during **Winter Season (December 2024 to February 2025)** by Enviro Solutions & Labs, Coimbatore. The details of the study are given in this chapter.

For the purposes of this study, the area has been divided into two zones, namely, core and buffer zones. The entire lease area is considered to be the core zone while the buffer zone encompasses a 10 km radius from the periphery of the core zone. The details of villages falling in the study area and other features are given in Index Plan in Figure No - 3.1

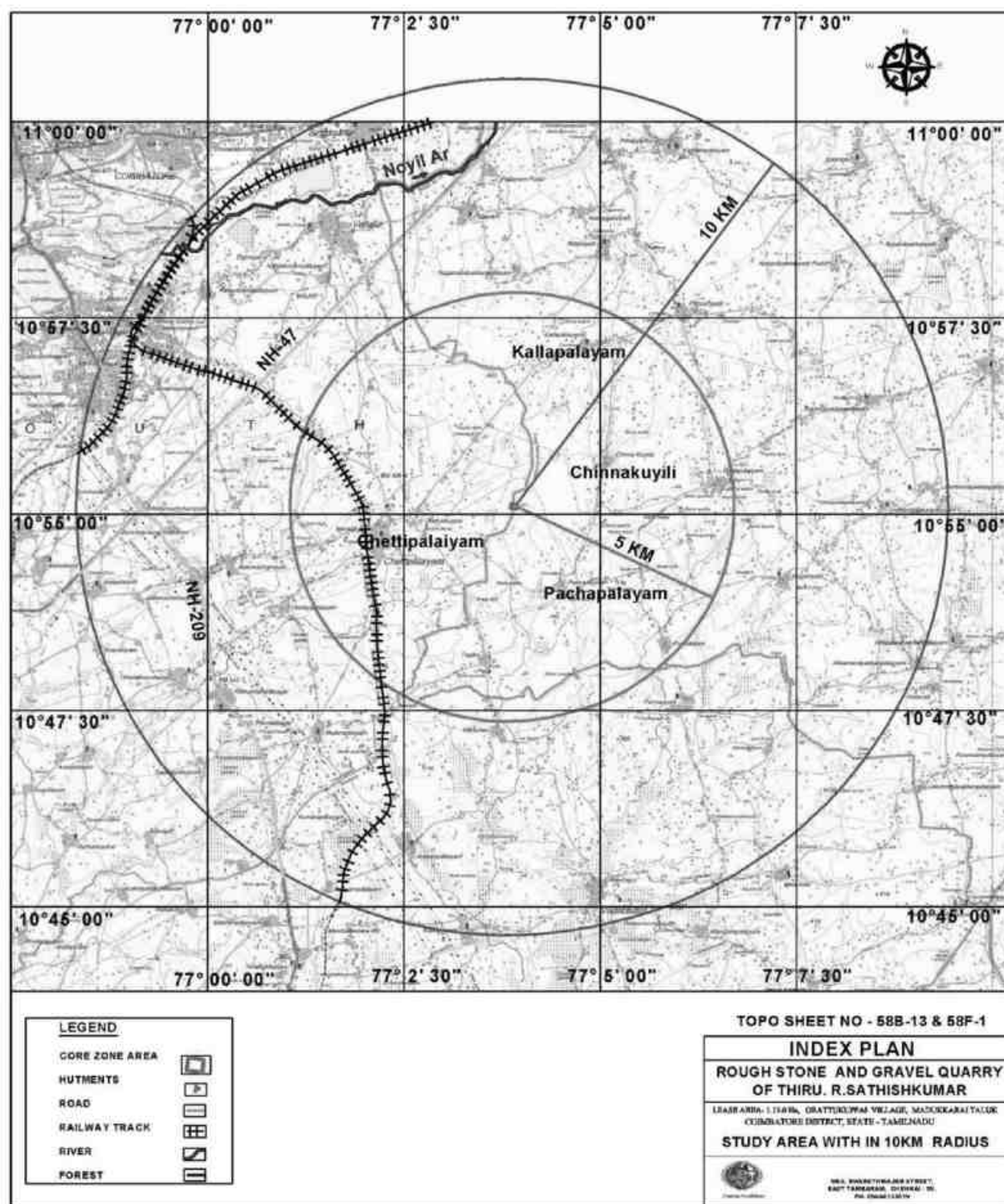
The primary data collection was done by means of field monitoring and the secondary data collection was obtained from published sources and government documents. The details of the baseline data collection which has been elaborated through the course of this chapter has been concised below:

Table 3.1: Type of Baseline Data

S.No	Studies	Parameters / Study	Location
1	Socio Economy	Demographic Data from Census 2011	Core and Buffer Zone
		Sample Survey	Buffer Zone
2	Micro Meteorology	Rainfall Data from IMD, Coimbatore	Coimbatore District
		Temperature, Humidity, Wind Speed, Wind Direction	1 Representative Location
3	Ambient Air Quality	PM10, PM2.5, SO2, NOx, CO	1 Core Zone, 4 Buffer Zone
4	Water Quality	Physical and Chemical Parameters	1 Core Zone, 4 Buffer Zone
5	Noise Levels	Ambient Noise	1 Core Zone, 4 Buffer Zone
6	Soil Quality	Physical and Chemical Parameters	1 Core Zone, 4 Buffer Zone
7	Land Use and Land Cover	Land use pattern within 10km study area using RS Satellite	Core and Buffer Zone
		Land use based on Census 2011	Core and Buffer Zone
8	Biological Environment	Flora and Fauna	Core Zone and Buffer Zone
9	Hydrology & Hydro Geology	Hydrogeological profile of the area	Core Zone and Buffer Zone

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Figure 3.1: Study Area Map



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Table 3.2: Environmental Setting of the Study Area

S.No	PARTICULARS	DETAILS
1	Nearest highway	➤ (SH-163) - 1.6km (SW)
2	Nearest Railway station	➤ Chettipalayam - 3.0km (SW)
3	Nearest Airport	➤ Coimbatore - 12km (N)
4	Nearest major water bodies	➤ Noyal Ar – 7.6km (NW)
5	Nearest town/City	➤ Chettipalayam - 3.0km (SW)
6	Nearest villages	➤ Orattukuppai – 2.3km (SW)
7	Notified Archaeologically important places, Monuments	Nil within 10km radius
8	Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	Nil within 10km radius
9	Reserved / Protected Forests	Nil within 10km radius
10	Defence Installations	Nil within 10m radius
11	Seismic Zone	Zone – II (Least Active)
12	Other Industries in the study area	Other than rough stone quarry & crushers there are numerous ware houses, other industries like glass, textile mills, foundries, engineering units, Upcoming CODISSIA Industrial Park B (Kallapalayam), etc in the area.

3.2 SOCIO-ECONOMIC CONFIGURATIONS OF THE AREA:

3.2.1 GENERAL:

The Socio-Economic details of the study area are collected through:

- Identification of villages falling from the study area map with combined Taluk map.
- Collection of primary data through sample survey, village meetings and discussion.
- Collection of the demographic pattern of villages falling in the area through NIC 2011 census data.
- Occupational structure of villages falling in the study area through NIC 2011 census data.



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- Details of the amenities available in villages falling in the study area through NIC 2011 census data. The findings of the study are illustrated below:

3.2.2 SECONDARY DATA DESCRIPTION:

The proposed Roughstone and gravel quarry is located in Orattukuppai Village, Madukkarai Taluk, Coimbatore District. Based on 2011 census data, in the 10km radius there are 14 Rural villages from Three Taluks namely Sulur, Pollachi, Coimbatore South and 6 urban areas namely Pallapalayam (TP), Vellalur (TP), Chettipalayam (TP), Othakalmandapam (TP), Pattanam (CT) and Malumichampatti (CT) belonging to Madukkarai and Coimbatore District. The demographic profile of the study area is given below:

Table 3.3: Social, Economic and Demographic Profile of the Study Area

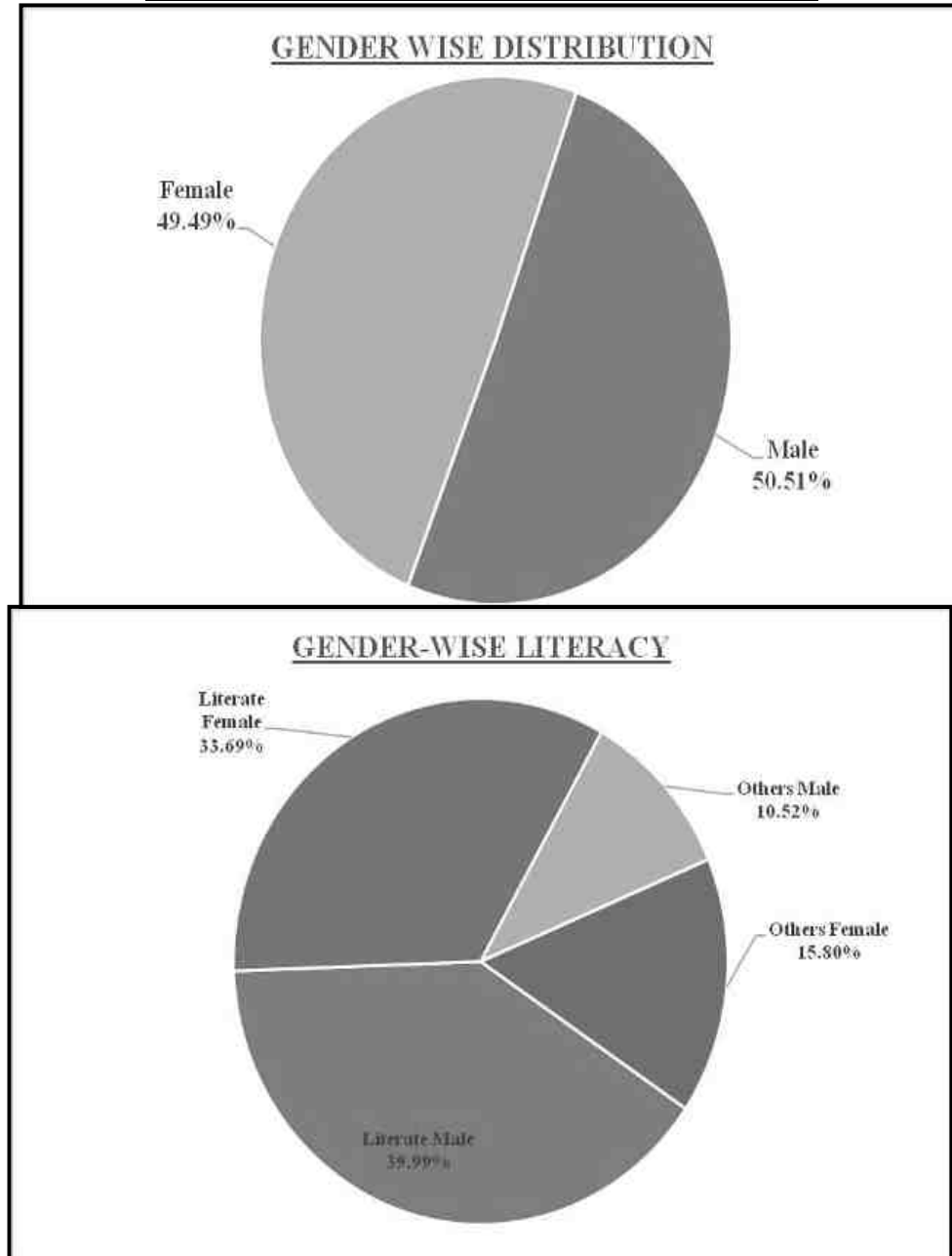
Details	Population	Percentage
A. Gender-wise distribution		
Male Population	67432	50.51
Female Population	66070	49.49
Total	133502	100
B. Caste-wise population distribution		
Scheduled Caste	24606	18.43
Scheduled Tribes	136	0.10
Others	108760	81.47
Total	133502	100
C. Literacy Levels		
Total Literate Population	98367	73.68
Others	35135	26.32
Total	133502	100
D. Occupational structure		
Main workers	57205	42.85
Marginal workers	6593	4.9
Total Workers	63798	47.8
Total Non-workers	69704	52.2
Total	133502	100

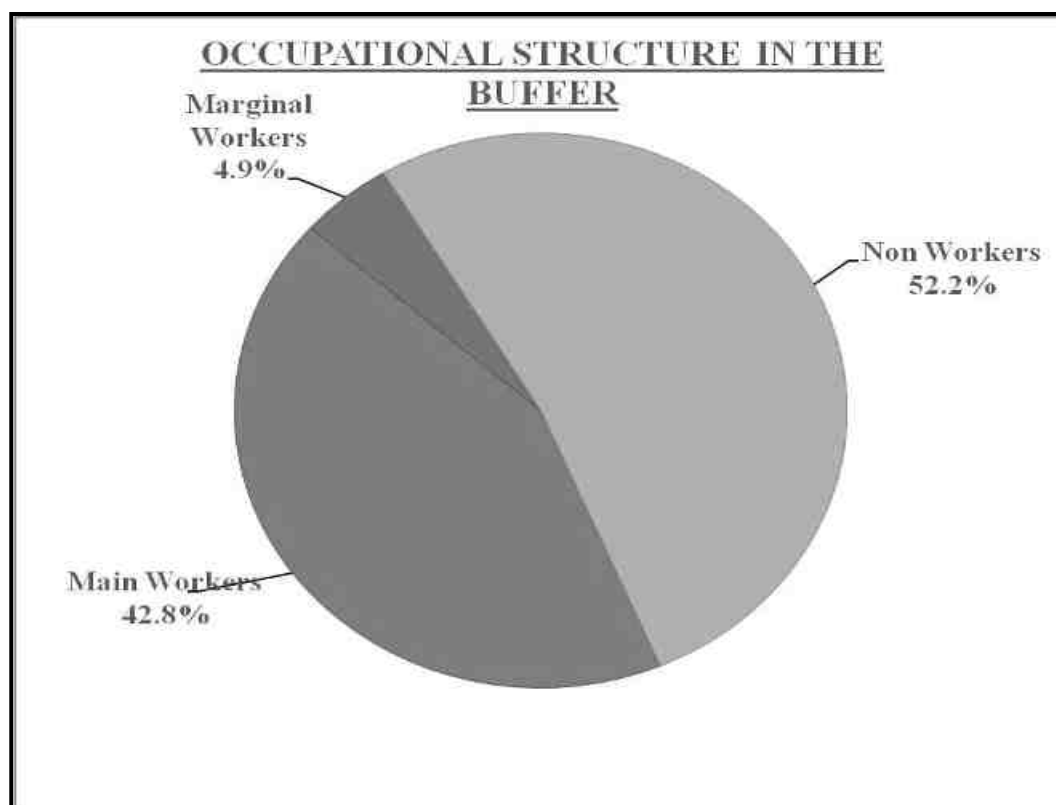
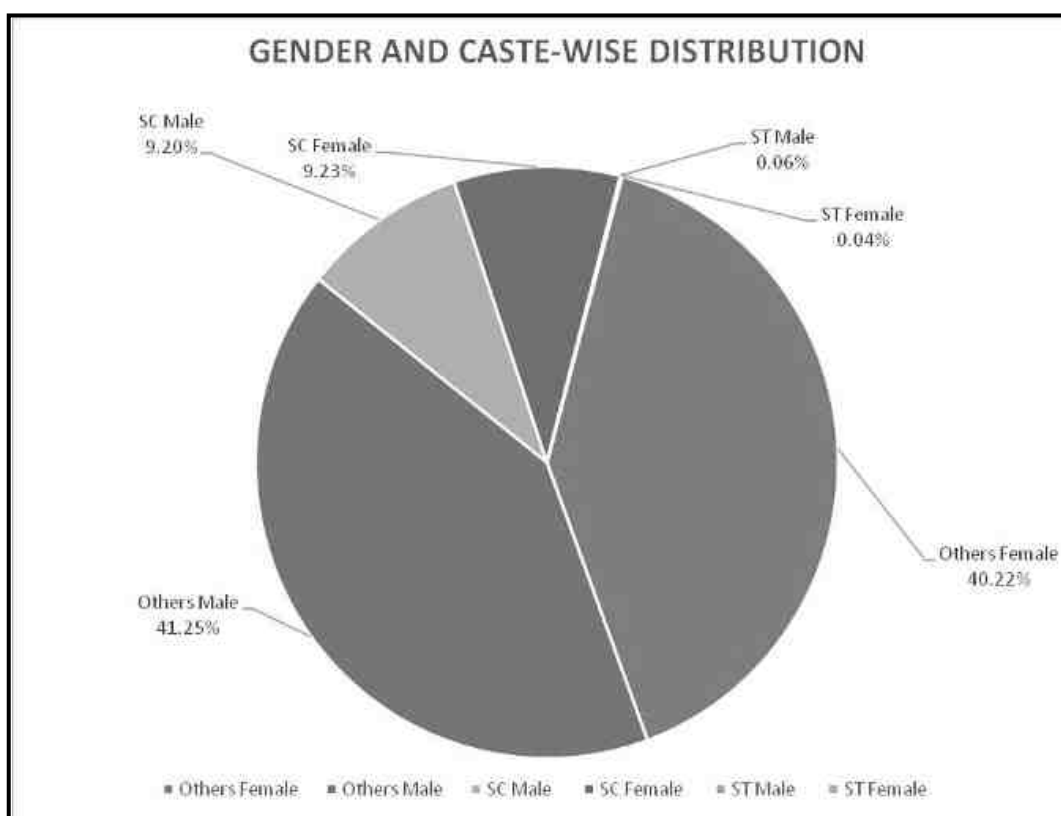
The total population of these 14 rural villages and 6 urban areas is 133502 in which the male population is 67432 (50.51%) and the female population is 66070 (49.49%). This shows that the male and female population ratio is almost equal. Among the total population 0.10% belong to Scheduled Tribes, 18.43% are Scheduled Caste and the balance 81.57% people belong to other castes. Among the total population, 73.68% of the people are literate.

Among the total population, 39.99% are literate males and 33.69% are literate females. This shows that the male literates are slightly more than the female literates.

The village wise population, literacy levels and occupational structure details are given in **Annexures 4 and 5**. The demographic structure within the buffer zone is shown diagrammatically in **Figure No – 3.2**.

Figure 3.2: Demographic Structure in Buffer Zone





3.2.3 DETAILS OF AMENITIES:

Based on 2011 census data, regarding the educational facilities, there are totally 23 Primary Schools functioning in these 13 rural villages. Among them 6 villages have one primary school, 4 villages have 2 primary schools, 3 villages have 3 primary schools.

Table 3.4: Primary Schools in the Buffer Zone Rural Villages

S.No	No of Rural Villages	Number of primary schools	Totals
1	0	0	0
2	6	1	6
3	4	2	8
4	3	3	9
5	0	4	0
6	0	5	0
7	0	6	0
Total	13		23

Table 3.5: Education Facility Availability

PARTICULARS	Available in village
Govt Primary School	26
Govt Middle School	14
Govt Secondary School	8
Govt Senior Secondary School	3

Presently most of the villages have up to Primary school level. Nearby highersecondary school is available in Chettipalayam. Better and higher education facilities are available in Pothanur, Chettipalayam & Coimbatore city corporation.

Table 3.6: Healthcare Amenities Availability

PARTICULARS	Available in village
Community Health Centre	0
Primary Health Centre	0
Primary Health Sub Centre	13
Maternity And Child Welfare Centre	0
TB Clinic	0
Hospital Allopathic	0
Hospital Alternative Medicine	0
Dispensary	0
Veterinary Hospital	6
Mobile Health Clinic	0
Family Welfare Centre	0

Presently Chettipalayam and Coimbatore have better Healthcare.

Table 3.7: Infrastructure Facilities

Particulars	Available in village
Tap Water-Treated	14
Covered Well	15
Hand Pump	19
Tube Wells/Borehole	15
Post office	28
bus services	15
Commercial Bank	26
Cooperative bank	24

The details of the educational, medical and infrastructural facilities available in the buffer zone is provided in **Annexures- 6-8**. The above figures are based on 2011 census data, however drastic improvements in the above said amenities are observed in the area.

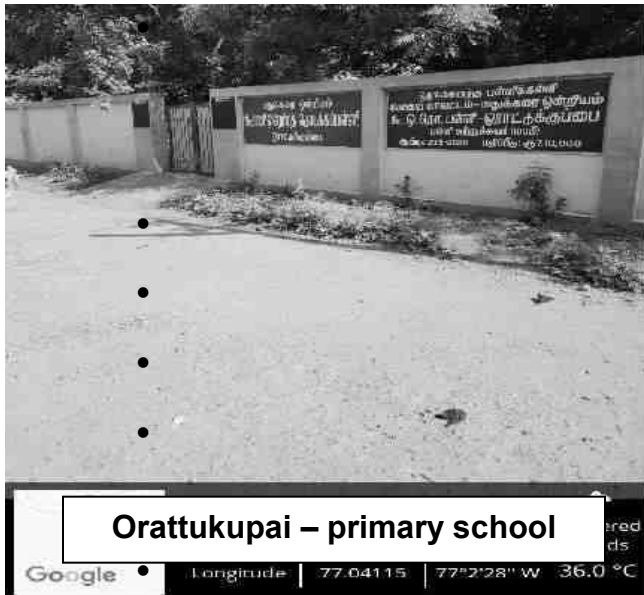
3.2.4 SOCIO ECONOMIC SURVEY:

Study of the area to know about socio-economic conditions, including aspirations and requirements of the people show the following:

- Lease and its surrounding environment is dominated with quarry and its related activities.
- Due to rocky land formation, undependable rainfall, poor soil condition, absence of irrigational source or water bodies, deep ground water occurrence, little seasonal agricultural activities are carried out in the area. Only patches of coconut cultivation is observed.
- Numerous ware houses, other industries like glass, textile mills, foundries, engineering units, Upcoming CODISSIA Industrial Park B (Kallapalayam), etc serve as the main occupation for the young workforce.
- Industrialisation & harmony with locals are observed.
- Other allied activities like livestock rearing and poultry farming are also found.
- Reasonably better amenities like approach road bus facility, electricity, mobile phone connectivity, Public Distribution System, Co operative bank. Scheduled banks etc are available.
- Bore well is the main source for drinking water. There are OHT's, Ground level tanks, public taps are available.

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- Private and more improved facilities are available in Chetipalayam, Pothanur, & Coimbatore.



3.3 EXISTING ENVIRONMENTAL QUALITY

3.3.1 MICRO-METEOROLOGY

3.3.1.1 General:

The meteorological conditions in an area regulate the dispersion of air pollutants being released into the atmosphere. The principal variables are horizontal convective transport i.e. wind speed and direction and vertical convective transport, i.e. mixing height, stability class and topography of the area.

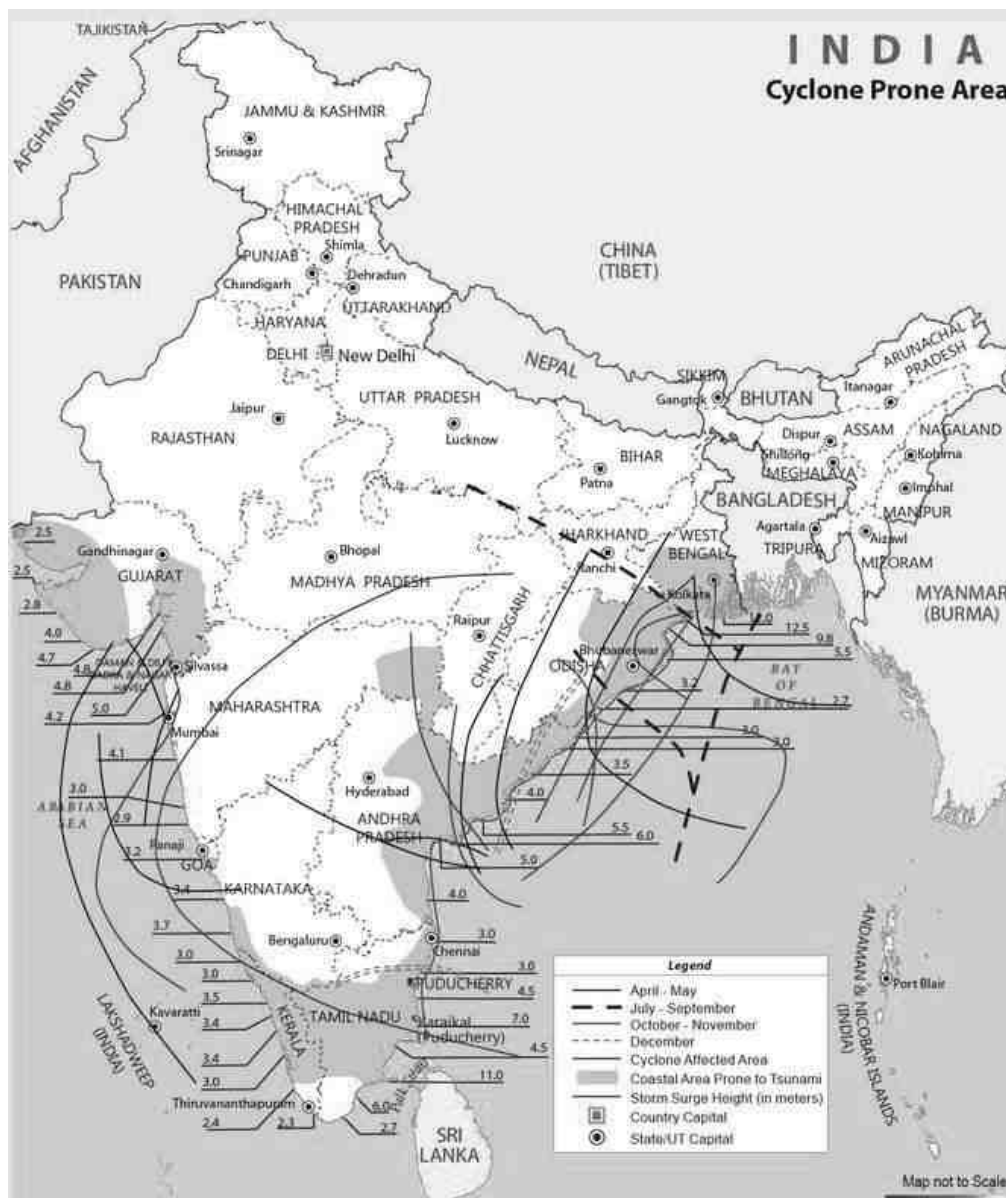
3.3.1.2 Historical Meteorological Data:

A. Cyclones And Depressions

Cyclonic storms and depressions in Bay of Bengal affect the East Coast of India. Isolated ones, forming in January to March in the South Bay of Bengal move West-North-westwards and hit Tamil Nadu coast. In April and May, cyclonic storms and depressions form in the South and adjoining Central Bay and move initially to the Northwest, then North and then recurve to the Northeast striking the Arakan coasts in April and Andhra Pradesh (AP)-Orissa-West Bengal (WB) – Bangladesh coasts in May. Most of the monsoon (June – September) storms develop in the central and in the north bay and move west – north - westwards affecting AP – Orissa – WB coasts. Post monsoon (October – December) storms form mostly in the south and central Bay, recurve between 150 and 180 N affecting Tamil Nadu – AP – Orissa – WB – Bangladesh coasts. **Figure No - 3.3** depicts the history of cyclonic storms, which have struck the Indian coast during the months of October, November and December during the last 75 years. **(Source: Vulnerability Atlas of India series, above figure accessed from www.maps of india.com).** East coast is prone to cyclonic storms round the year but mostly these occur prior to SW i.e., in May and after SW monsoon i.e., in October and November.

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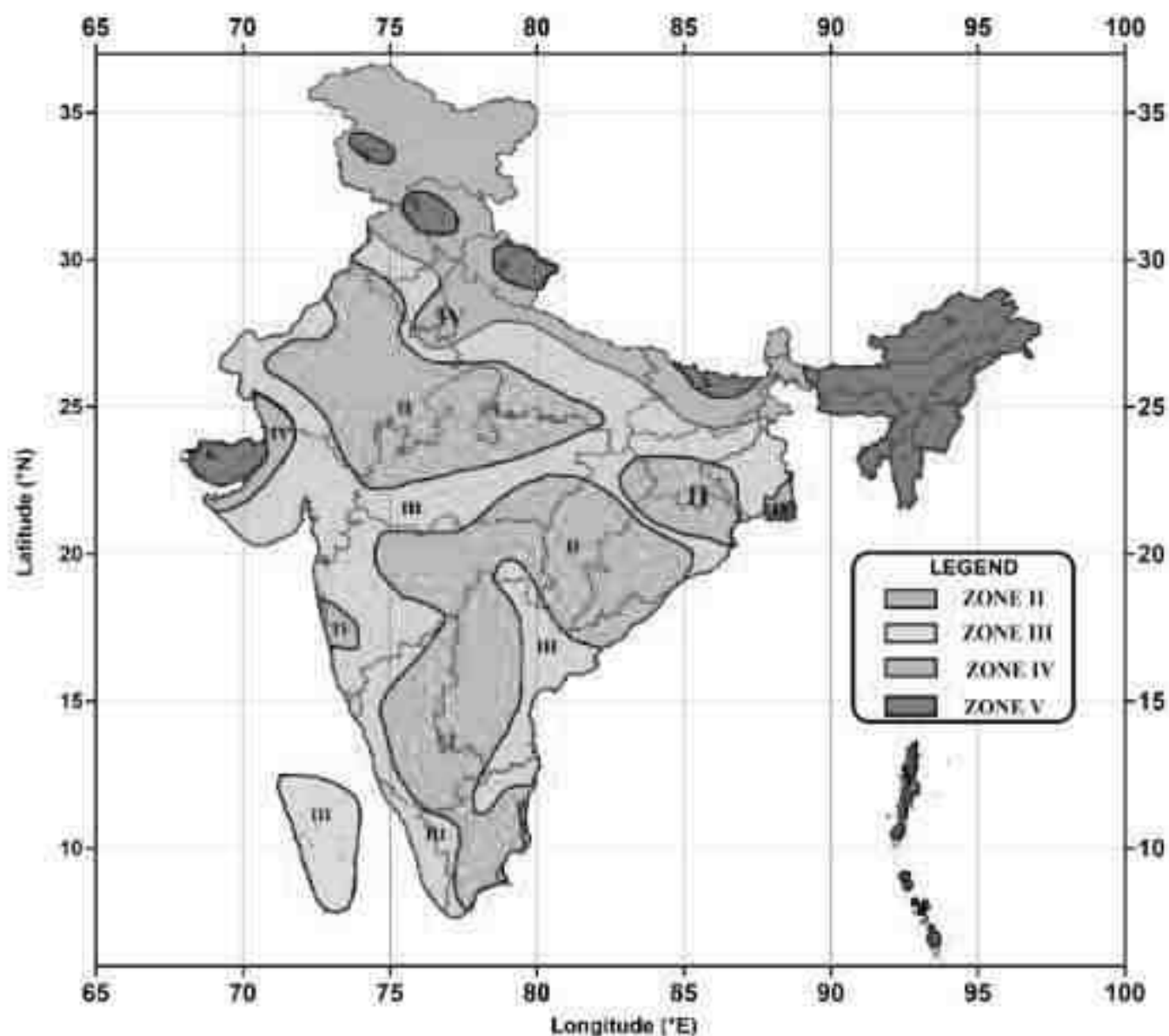
Figure 3.3: History of Cyclonic Storms



B. SEISMIC DATA

From the seismic zone map of India as depicted in the **Figure No - 3.4**, it can be seen that the project site and study area falls in the Zone – II and is described as least active zone.

Figure 3.4: Seismic Zone Map of India



C. Climate and Rainfall Data:

Coimbatore has a tropical wet and dry climate. It experiences hot and humid summers from March to June with temperatures ranging from 25 °C to 38 °C. The monsoon season starts from July and lasts till October. The city receives moderate rainfall from the south-west monsoon and occasional heavy rainfall from the north-east monsoon. The winter season starts from November and ends in February.

Due to the south-west monsoon winds passing through the Palghat gap, elevated regions of the city receive rainfall in the months from June to August. After a warm and foggy September, the north-east monsoon starts from October, lasting until early November. The average annual rainfall is around 600 mm (23.6 in) with the northeast and the southwest monsoons contributing to 47% and 28% respectively to the total rainfall.[36] This periodic rainfall does not satisfy the city's water requirements throughout the year and water supply schemes drawn from Siruvani and Pilloor help supplant the requirements during low rainfall months

Table 3.8: Average Annual Rainfall Data

The average annual rainfall and the 5 years rainfall collected from twadboard, Coimbatore as follows:

Actual Rainfall In mm						Normal Rainfall In Mm
2019	2020	2021	2022	2023	2024(as on 30.09.24)	
272.4	1572.3	2119.1	2151.7	1480.9	1287.7	1205.8

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

3.3.1.3 SITE SPECIFIC METEOROLOGICAL DATA:

Micrometeorology and microclimatic parameters of wind velocity, wind direction, ambient temperature, relative humidity, were collected throughout the monitoring period.

DATA ANALYSIS:

The temperature in the area during the study period ranged from 18.0°C to 34.0°C while the relative humidity varied between 13.0 - 99%. The wind speed during the study period ranged from <1.8 to 27.7 km/h. The predominant wind direction is from E. The meteorological data are presented in **Table no – 3.9**. The average wind rose is depicted in **Figure No - 3.5**.

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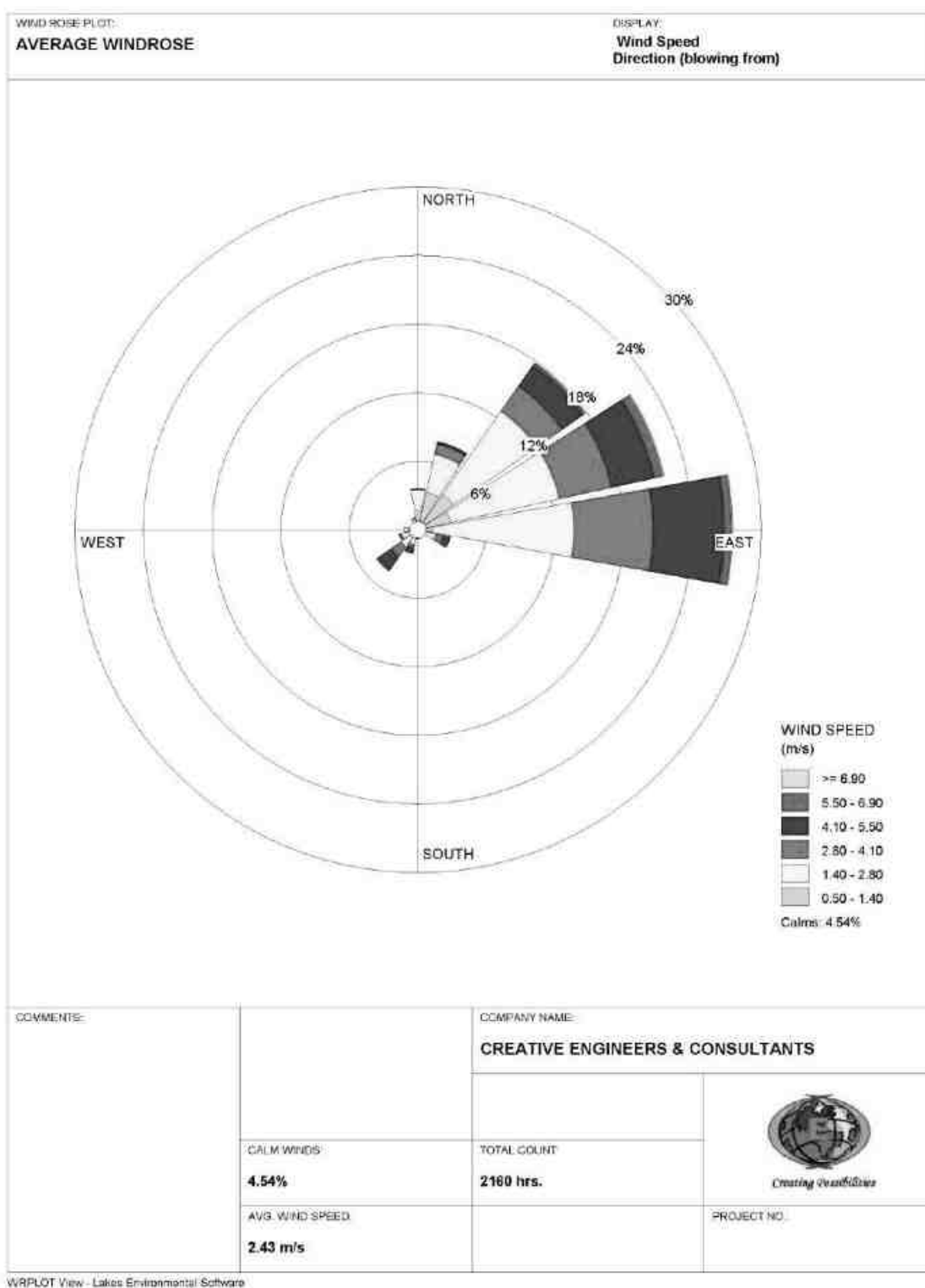
Table 3.9: Meteorological Data

Season: Winter Season (December 2024 to February 2025)			
S.NO	PARAMETERS	MIN	MAX
1	Temperature In °c	18.0	34.0
2	Humidity in %	13.0	99.0
3	Wind speed in km/hr	<1.8	27.7
4	Predominant wind direction from	E	



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Figure 3.5: Average Wind Rose



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3.3.2 AMBIENT AIR QUALITY (AAQ):

Ambient Air quality has been assessed through a network of 5 ambient air quality stations. The following methodology has been considered for design of ambient air quality monitoring network in the area. Based on these criteria, 5 numbers of air sampling stations were selected in the area as shown below in Table No.3.10.

- ❖ Topography / terrain of study area.
- ❖ Populated areas within study area.
- ❖ Residential /sensitive areas within study area.
- ❖ Magnitude of surrounding industries.
- ❖ Representation of regional background levels.
- ❖ Representation of cross sectional distribution in down wind direction.
- ❖ Predominant wind direction and wind pattern.

Table 3.10: Air Quality Monitoring

1.	Monitoring Period	Winter Season (December 2024 to February 2025)
2.	Monitoring Location	The location map showing Ambient Air Quality study stations are shown in Figure No- 3.6 .
3.	Methodology	
	Parameter	Protocol
	a. Particulate Matter (PM10)	Gravimetric (IS 5182: Part 23:2017)
	b. Particulate Matter PM2.5	Gravimetric (IS 5182: Part 24:2019)
	c. Sulphur Dioxide	Colorimetric (West & Gaeke Method) (IS 5182: Part 02: 2017)
	d. Nitrogen Dioxide	Colorimetric(Modified Jacob & Hocheiser Method) (IS 5182: Part 06:2017)
	e. Carbon Monoxide	CO Monitor
4.	f. Silica	Colorimetric (Molybdate Method) NIOSH 7601 -2003
	Monitoring Frequency	2 days in a week, 4 weeks in a month for 3 months in a season.

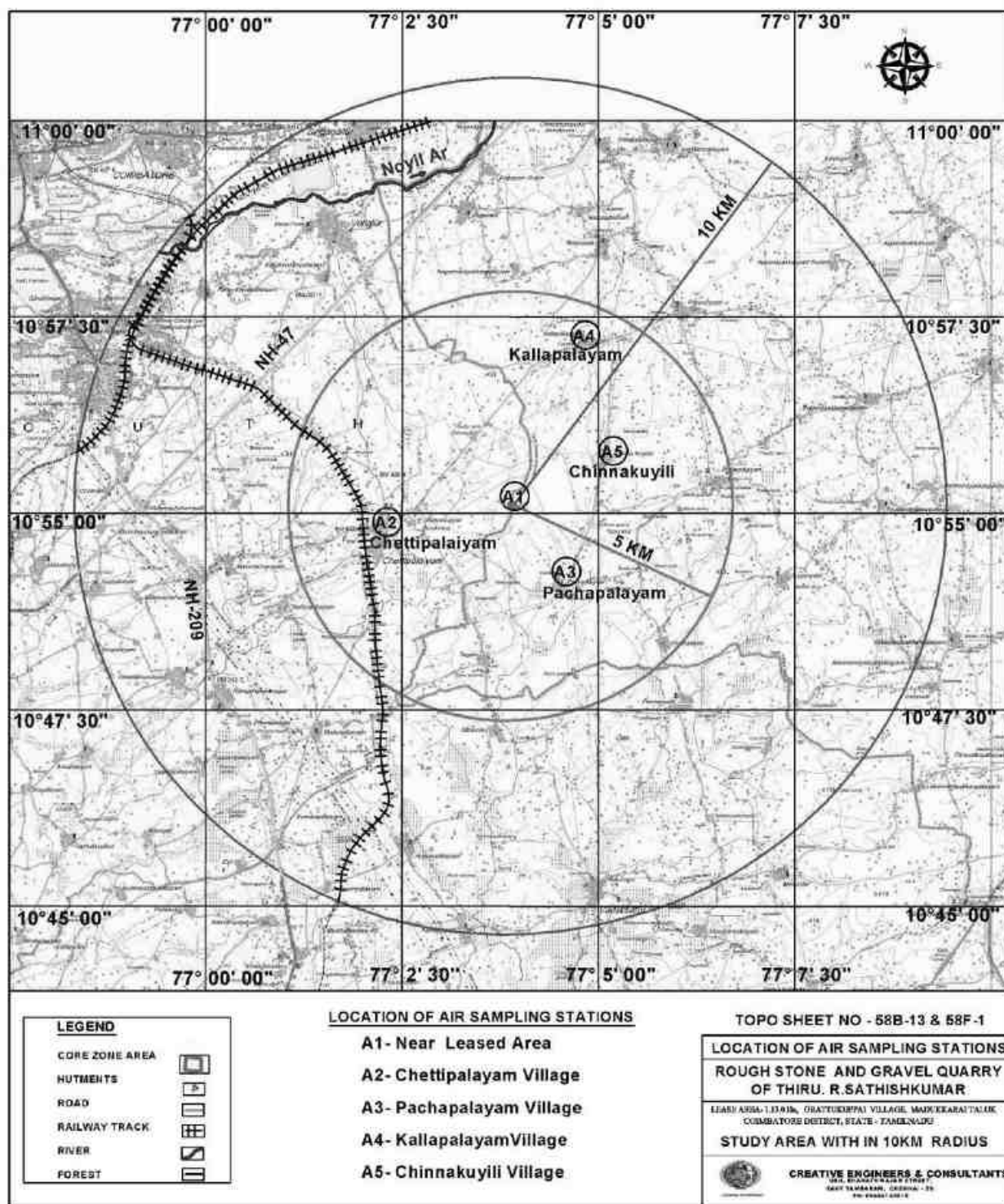
Table 3.11: Air Quality Monitoring Locations

S.NO	LOCATION CODE	LOCATION	DISTANCE FROM CORE ZONE (KM)	DIRECTION
1	A1	Near Lease Area	-	-
2	A2	Chettipalayam Village	3.0km	SW
3	A3	Pachapalayam Village	2.0km	SE
4	A4	Kallapalayam Village	4.0km	NE
5	A5	Chinnakuyili Village	2.3km	NE



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Figure 3.6: Ambient Air Quality Study Stations



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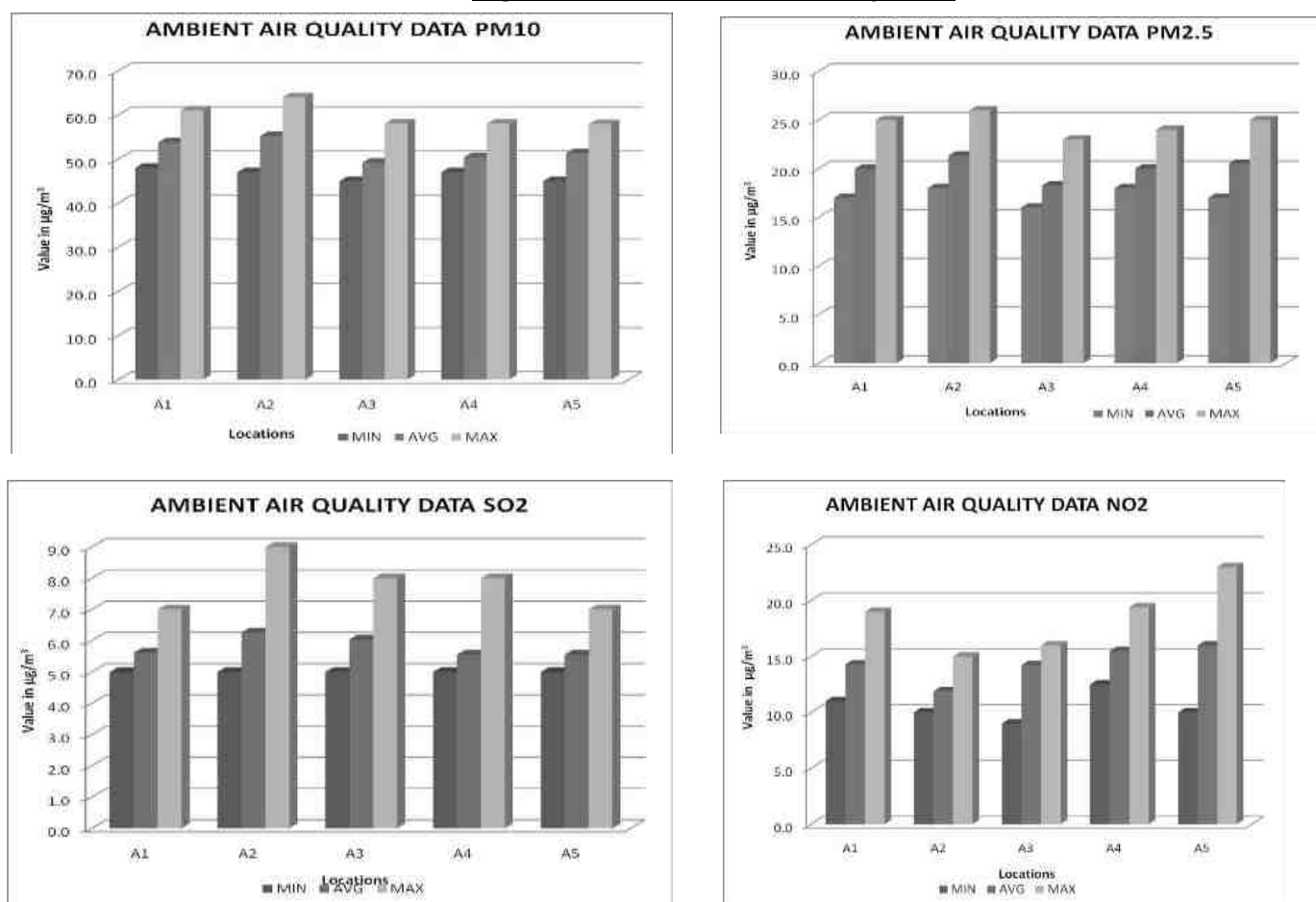
Table 3.12: Ambient Air Quality Data

All Value in $\mu\text{g}/\text{m}^3$

PARAMETERS	Cat.*	PM ₁₀			PM _{2.5}			SO ₂			NO ₂		
LOCATIONS		MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX
A1- Near Lease Area	I	48.0	53.7	61.0	17.0	20.0	25.0	5.0	5.6	7.0	11.0	14.3	19.0
A2-Chettipalayam Village	R	47.0	55.2	64.0	18.0	21.3	26.0	5.0	6.3	9.0	10.0	11.9	15.0
A3- Pachapalayam Village	R	45.0	49.1	58.0	16.0	18.3	23.0	5.0	6.0	8.0	9.0	14.2	16.0
A4- Kallapalayam Village	R	47.0	50.4	58.0	18.0	20.0	24.0	5.0	5.6	8.0	12.5	15.5	19.4
A5- Chinnakuyili Village	R	45.0	51.3	57.9	17.0	20.5	25.0	5.0	5.6	7.0	10.0	16.0	23.0
NAAQ Limits		PM₁₀			PM_{2.5}			SO₂			NO₂		
	*	100			60			80			80		
	**	100			60			80			80		

***Note:** Category: * - Industrial, Residential, Rural and other area, ** – Ecologically Sensitive Area (notified by Central Government)

Figure 3.7: Ambient Air Quality Data



3.3.2.1 Results and Discussion:

The AAQ monitored data for all locations for above parameters are shown in **Table No - 3.12** and in **Figure No - 3.7**. Ambient Air Quality data during the study period is given in **Annexure-9**. From the table it is seen that, in the ambient air, the PM_{10} values were in the range of 45.0-64.0 $\mu g/m^3$. $PM_{2.5}$ values were in the range of 16.0 – 26.0 $\mu g/m^3$. SO_2 levels were ranging from 5.0– 9.0 $\mu g/m^3$. NO_2 levels were ranging from 9.0-23.0 $\mu g/m^3$. The existing Ambient Air Quality levels for PM_{10} , $PM_{2.5}$, SO_2 and NO_2 , are within the NAAQ standards prescribed CPCB limits of 100 $\mu g/m^3$, 60 $\mu g/m^3$, 80 $\mu g/m^3$ & 80 $\mu g/m^3$. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m^3)

3.3.3 WATER ENVIRONMENT:

Assessment of baseline data on water environment includes Identification of water resources, Collection of water samples and Analyzing water samples collected for physico-chemical parameters as per standards. The water sampling was carried out for 5 locations. Details of the same has been provided below:

Table 3.13: Water Quality Monitoring

1.	Monitoring Period		Winter Season (December 2024 to February 2025)		
2.	Monitoring Location		The location map showing water sampling locations are given in Figure No.3.8.		
	Code	Location	Sample Type	Distance	Direction
	W1	Near Lease Area	Bore Well	-	-
	W2	Chettipalayam Village	Borewell	3.0km	SW
	W3	Pachapalayam Village	Borewell	2.0km	SE
	W4	Kallapalayam Village	Borewell	4.0km	NE
	W5	Chinnakuyili Village	Borewell	2.3km	NE
3.	Methodology		Sampling - IS 3025 Part - I		
			Analysis – IS 3025 relevant parts / APHA 23rd Edition		

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Figure 3.8: Location of Water Sampling Stations

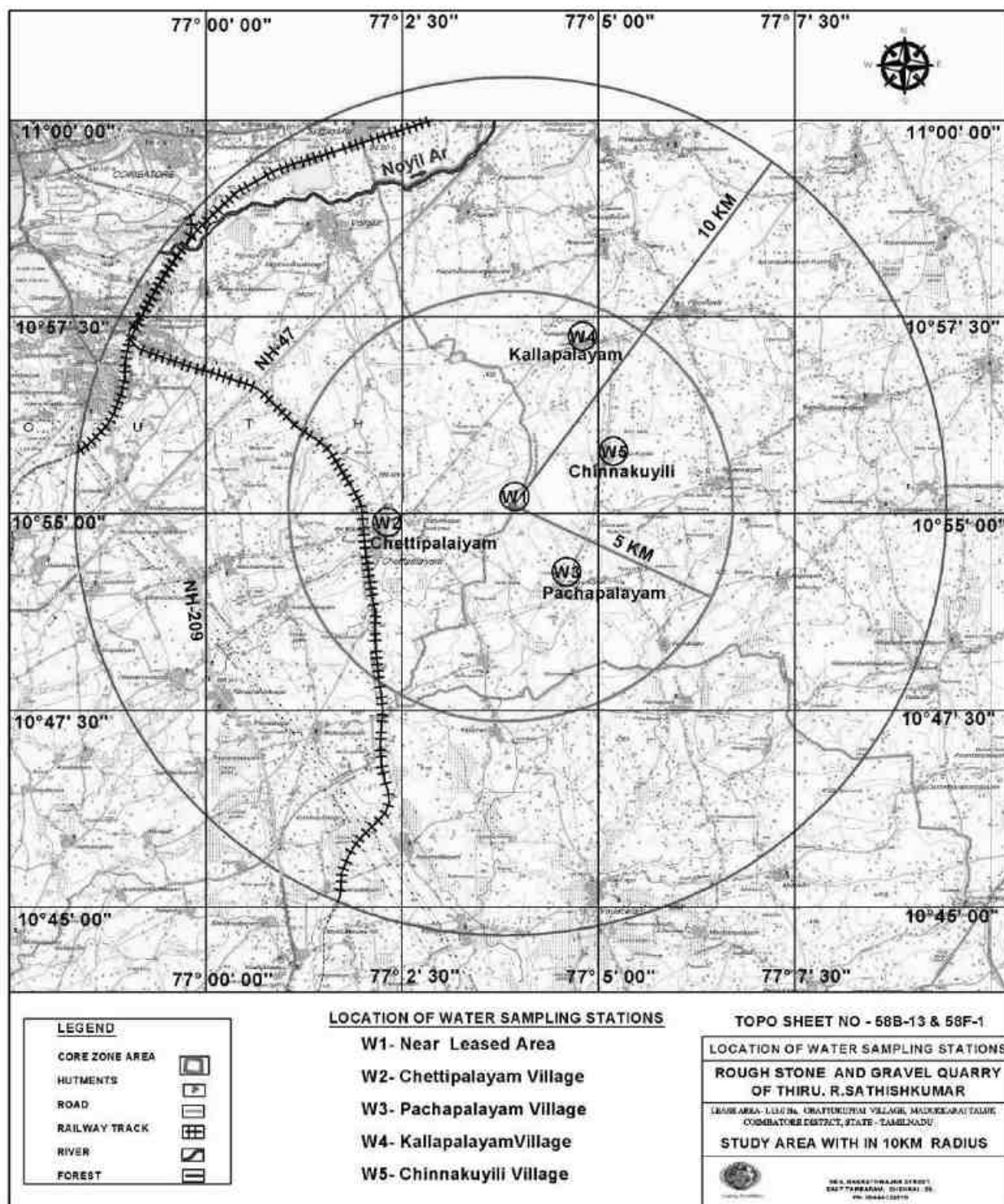


Table 3.14: Summary of Water Quality Data

Season	Winter Season (December 2024 to February 2025)	
Monitoring Locations	5 locations	
Parameters	Range of values	Limits*
pH at 25 °C	7.29 – 8.05	6.5-8.5
Total Dissolved Solids, mg/L	428 – 767	2000
Chloride as Cl-, mg/L	15 – 155	1000
Total Hardness (as CaCO ₃), mg/L	150 – 256	600
Total Alkalinity (as CaCO ₃), mg/L	206– 273	600
Sulphates as SO ₄ ²⁻ , mg/L	4.89 – 53.7	400
Iron as Fe, mg/L	BDL(<0.05)	0.3
Nitrate as NO ₃ , mg/L	3.94 – 6.45	45
Fluoride as F, mg/L	BDL(<0.1) – 0.2	1.5

Note : * IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications.

3.3.3.1 Results and Discussion:

The results of the water sample analysis are shown in Table No - 3.14. The pH values were ranging in between 7.29 – 8.05, TDS values were in the range of 428 – 767mg/L. Chloride values were ranging from 15 – 155mg/L. Iron content was found to be in the range BDL(<0.05)mg/L. The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications. The water quality data is provided in **Annexure-10**.

3.3.4 NOISE ENVIRONMENT:

Opearional phase of this project may lead to increase noise levels from the existing levels at least in and around the project area. As noise level beyond permissible limits will cause adverse impacts on the environment, it has become imperative to assess the noise levels in and around the mine area. Noise level measurements were taken at the 5 locations during the monitoring period. Details of the same are provided below:

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Table 3.15: Noise Level Monitoring

1.	Monitoring Period	Winter Season (December 2024 to February 2025)		
2.	Monitoring Location	The location map showing noise monitoring locations are given in Figure No.3.9.		
	Code	Location	Distance	Direction
	N1	Project Site	-	-
	N2	Chettipalayam Village	3.0km	SW
	N3	Pachapalayam Village	2.0km	SE
	N4	Kallapalayam Village	4.0km	NE
	N5	Chinnakuyili Village	2.3km	NE
3.	Methodology	Noise levels were measured using sound level meter manufactured by (Model No - SL- 4001, Make - Lutron). Sound Pressure Level (SPL) measurements were measured at all locations where ambient air quality monitored; one reading for every hour was taken for 24 hours.		
4.	Monitoring Frequency	Once during monitoring period		

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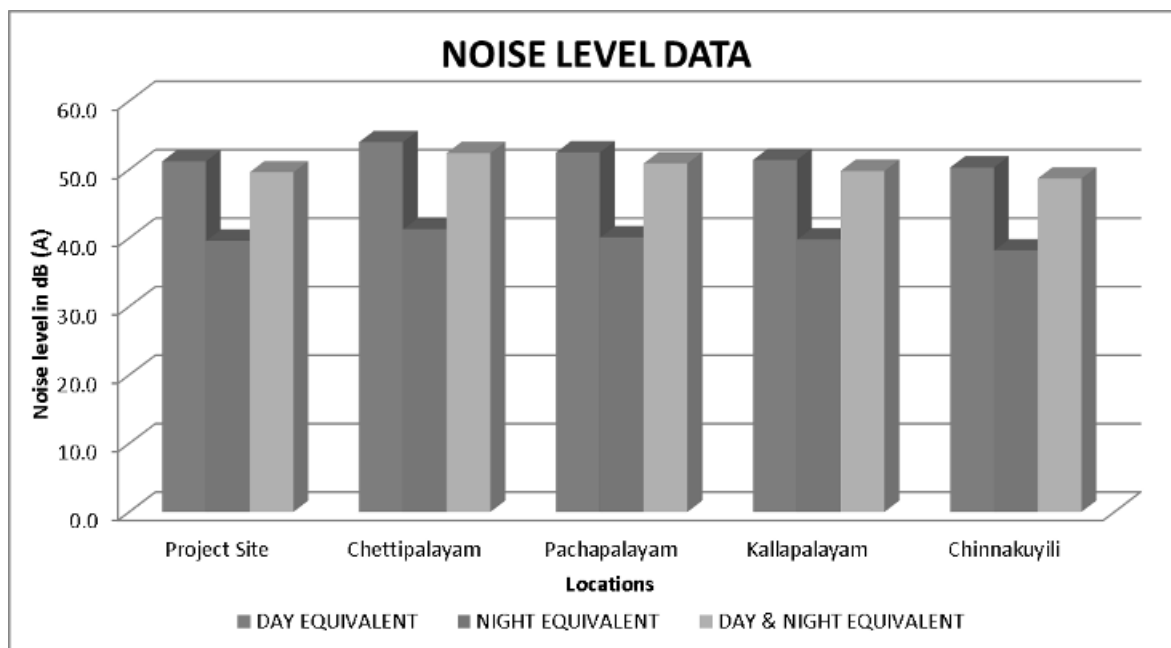
Figure 3.9: Location of Noise Sampling Stations



Table 3.16: Ambient Noise Level in dB (A)

Date and time of monitoring	N1	N2	N3	N4	N5
Day Equivalent	51.2	54.0	52.5	51.4	50.3
Night Equivalent	39.6	41.3	40.1	39.8	38.2
Day & Night Equivalent	49.6	52.4	50.9	49.8	48.7

Figure 3.10: Noise Level Data



3.3.4.1 Results and Discussion:

The results of noise levels for all locations are given in **Table No-3.16**. The noise values for all above locations are shown in a comparative chart given in **Figure No - 3.10**. In the buffer zone, day Equivalent Noise (Leq-d) noise levels were ranging from 50.3 dB(A) to 54.0 dB(A) and night Equivalent Noise (Leq-d) levels ranged between 38.2 dB(A) to 41.3 dB(A). While comparing with the MOEF&CC Norm of 55 dB(A) for day time and 45 dB(A) for night time, the monitored ambient noise levels were within the limit values for Residential areas.

3.3.5 SOIL CHARACTERISTICS:

Soil samples were collected in 5 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. Elaborate details of the same has been provided below.

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Table 3.17: Soil Quality Monitoring

1.	Monitoring Period	Winter Season (December 2024 to February 2025)		
2.	Monitoring Location	The location map showing soil sampling locations are given in Figure No.3.11.		
	Code	Location	Distance	Direction
	S1	Project Site	-	-
	S2	Chettipalayam Village	3.0km	SW
	S3	Pachapalayam Village	2.0km	SE
	S4	KallapalayamVillage	4.0km	NE
	S5	Chinnakuyili Village	2.3km	NE
3.	Methodology	Composite soil samples using sampling augers and field capacity apparatus.		
4.	Monitoring Frequency	Once during monitoring period		



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Figure 3.11: Location of Soil Sampling Stations

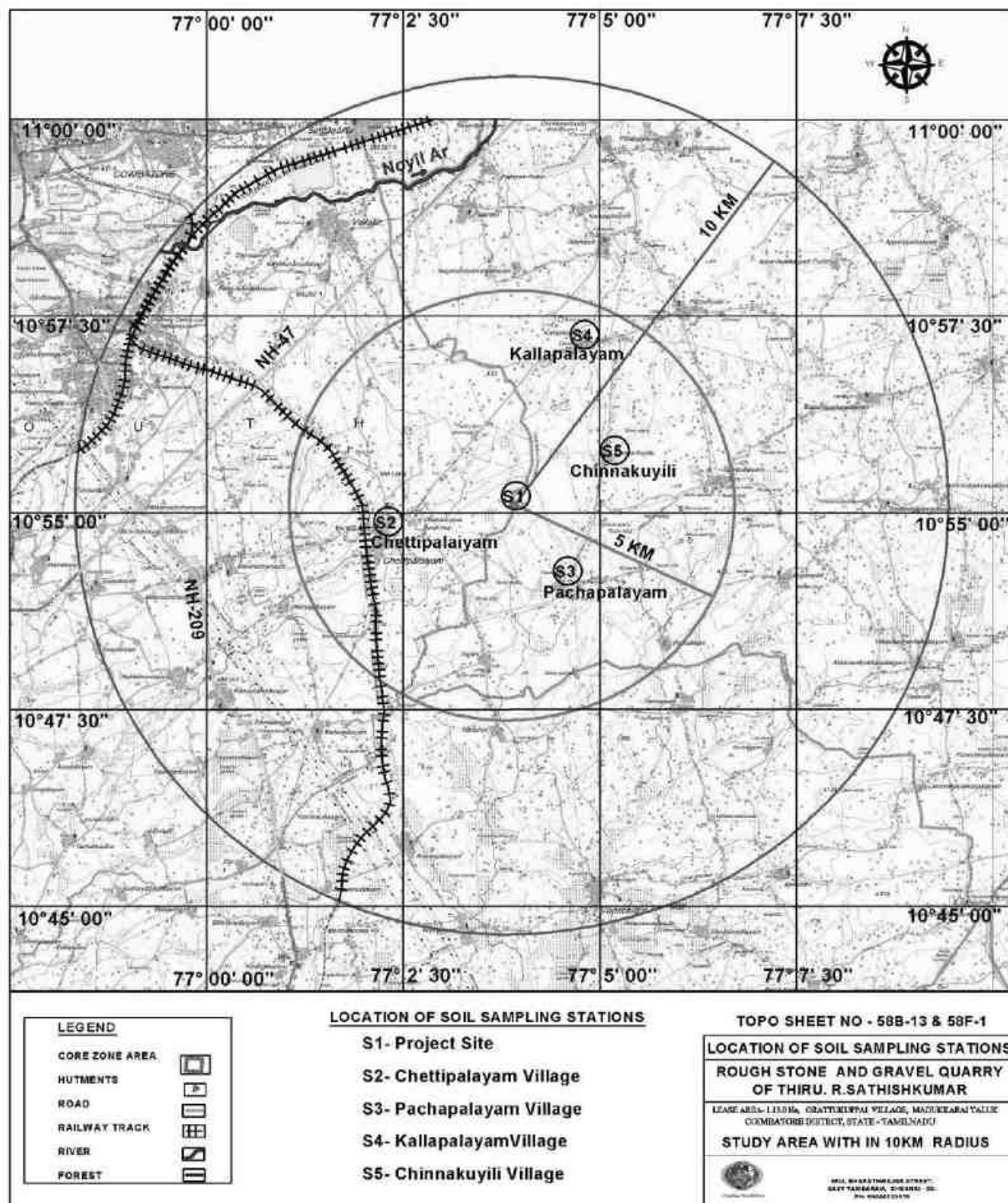


Table 3.18: Soil Quality Data

S.No	Parameters	Unit	S1	S2	S3	S4	S5
1	pH at 25°C	-	6.81	6.73	6.83	6.91	6.79
2	Electrical Conductivity	(µmhos/cm)	0.090	0.05	0.095	0.025	0.088
5	Organic Matter	%	1.36	0.83	1.41	0.56	1.18
6	Soil texture	-	Sandy	Sandy	Sandy	Sandy	Sandy
7	Grain Size Distribution i. Sand	%	87.5	85.4	87.1	88.5	87.9
8	ii. Silt	%	4.1	4.9	4.3	3.7	3.4
9	iii. Clay	%	8.4	9.7	8.6	7.8	8.7
10	Phosphorous	µg/g	20.7	26.8	36.7	48.6	32.2
11	Sodium	mg/kg	2.18	1.47	2.41	1.18	1.87
12	Potassium	mg/kg	263	227	358	396	327
13	Total Nitrogen	mg/kg	158	124	224	260	198
14	Water holding capacity	Inc/foot	5.2	5.4	5.7	5.3	5
15	Sodium absorption ratio (SAR)	meq/kg	1.0	1.07	1.11	1.05	1.09

3.3.5.1 Results and Discussion:

Results of the soil samples show that the pH values were ranging between 6.73 to 6.79 and Electrical Conductivity values were ranging between 0.03 – 0.10 µmhos/cm. Soils are generally Sandy type. Organic matter values were ranging between 0.56 – 1.41%. Total Nitrogen values were ranging between 124 - 260mg/kg. Phosphorus values were ranging between 20.7 – 48.6µg/g. Potassium values were ranging between 227 - 396 mg/kg. Sodium values were ranging between 1.18- 2.41 mg/kg. The soil quality data for the 5 samples collected and analyzed are provided in **Table No – 3.18**.

3.4 LAND ENVIRONMENT - LANDUSE & LAND COVER

For preparing an impact statement, aspects of the land conditions are covered under land use. An industrial project / mine can cause changes in land use, soil process in different intensities depending upon the size of the project and distance involved between the industries and the area. Here, land use status for a radius of 10 km has been studied.

3.4.1 DATA USED AND METHODOLOGY

For the present study on land use pattern of buffer area around the proposed stone and gravel quarry, an archived historical data of Landsat-8 data has been used as base data acquired on Feb 2025 (Figure No.3.12) has been used to generate the required landuse map showing their

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spatial pattern within the buffer area. The table showing data used for generation of information on landuse and subsequent GIS analysis is given below

Table 3.19: RS satellite image used for the present study

S.No	Type of Data	Date	Generated Map
1.	Landsat-8	Feb 2025	Landuse (LU) Map showing 10 Km around the ML area

Interpretation of satellite image requires understanding of relationship between image elements and their respective terrain elements. Since, in the present study, the landuse information is obtained using visual interpretation, an interpretation key is generated. The image elements such as color, tone, texture, size, shape and associated elements have been used to delineate various landuse categories. The landuse categorization and nomenclature used in the present study is based on the national level landuse classification system, which is adopted for the entire country as recommended by National Remote Sensing Centre (NRSC), Department of Space, Government of India.

Figure 3.12 : Landsat 8 Satellite Data of the Study Area

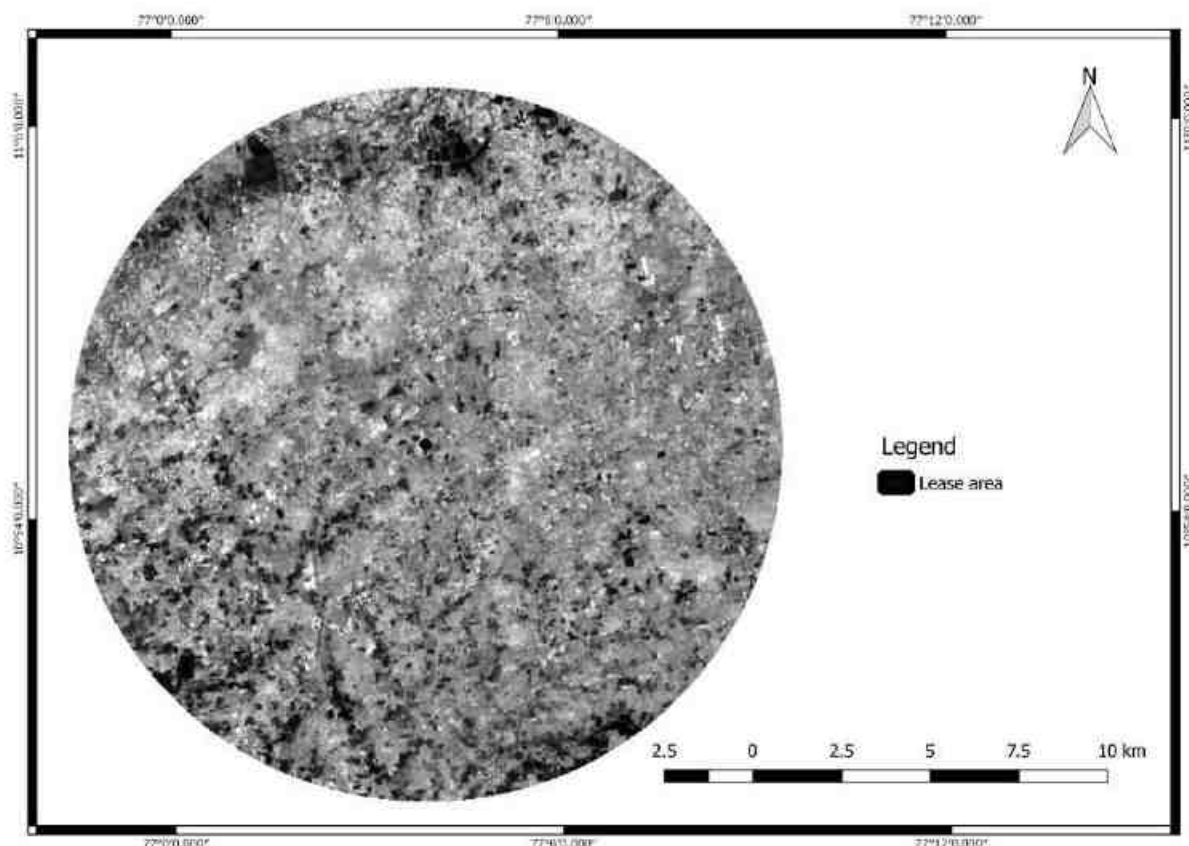


Table 3.20: Major Landuse Units of the Study Area

S.No	Major Category	Landuse unit
1	Built-Up Land	Village, Town, Industrial / Vacant Area
2	Agricultural Land	Crop Land Fallow Land Plantation Farm Land
3	Forest Land	Open Scrub Forest
4	Waste Land Mining Area	Land With Scrub/ Land Without Scrub Barren Rocky/ Stony Waste Quarries / Abandoned Quarries
5	Waterbodies	Tanks/ Rivers / Streams

Such LandUse and Land cover (LULC) categories have been verified using field check and identified sample sites within the buffer area, verified on field and transferred into gis geo-coordinates using observation coordinates received from hand held GPS (global positioning system) instrument. Thus, an interpreted final landuse map has been generated (Figure No. 3.13) using above such elaborate procedure and transformed into GIS environment for its spatial distribution and area estimation. Spatial nature and extent of various landuse categories within the buffer area is discussed is given below:

Figure 3.13: Map Showing Land Use Categories around 10km Buffer

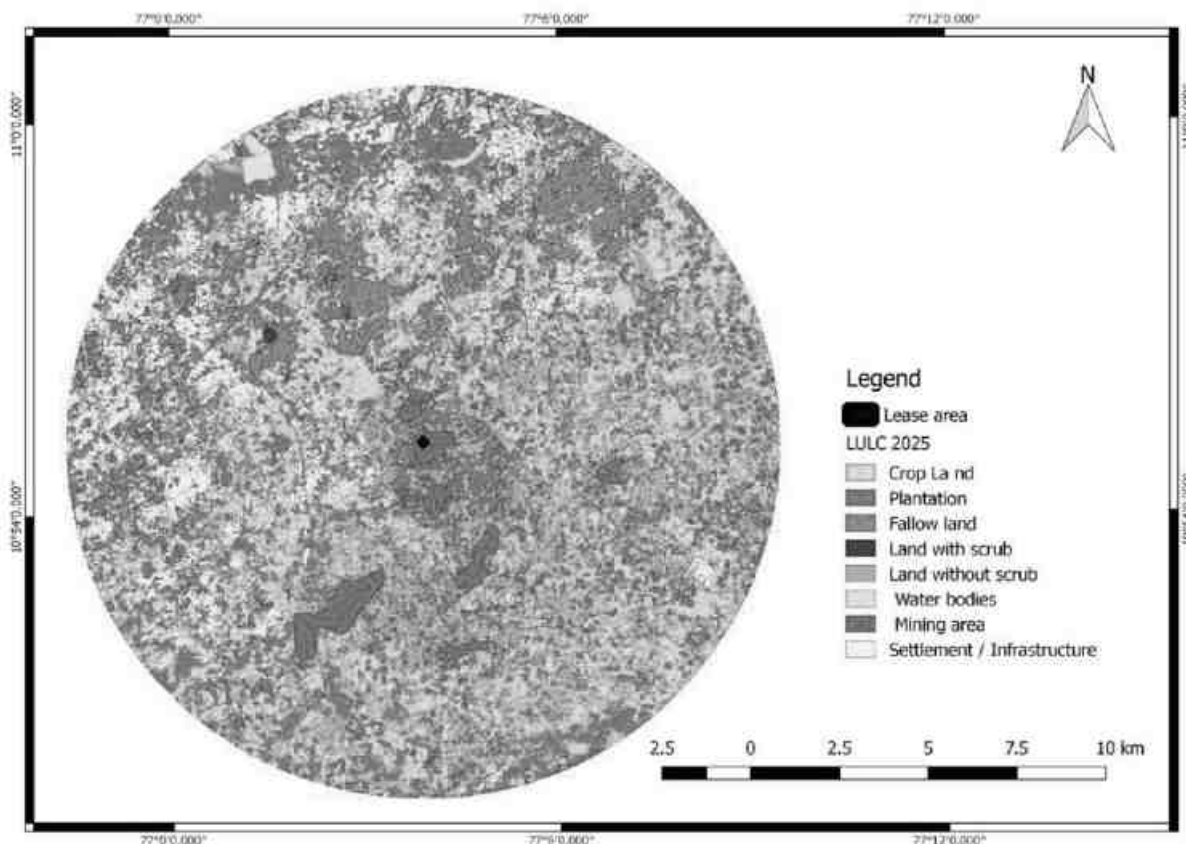


Table 3.21: Area Estimation of Landuse Categories in Buffer Zone

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Crop Land	101.89	31.97
2	Plantation	90.48	28.39
3	Fallow Land	45.55	14.29
4	Land With Scrub	0.70	0.22
5	Land Without Scrub	31.70	9.95
6	Water bodies	1.26	0.40
7	Mining Area	7.69	2.41
8	Settlement & Infrastructure	39.43	12.37
	Total	318.70	100

From the above table it is seen that 31.97 % of the study area is agriculture land and 28.39 % are Plantation followed by 14.29 % of fallow land. Land with scrub constitutes 0.22 %, lands without scrub constitute 9.95 %, waterbodies constitute 0.40 % & others constitute 14.78%.

3.4.2 LAND USED BASED ON REVENUE RECORDS:

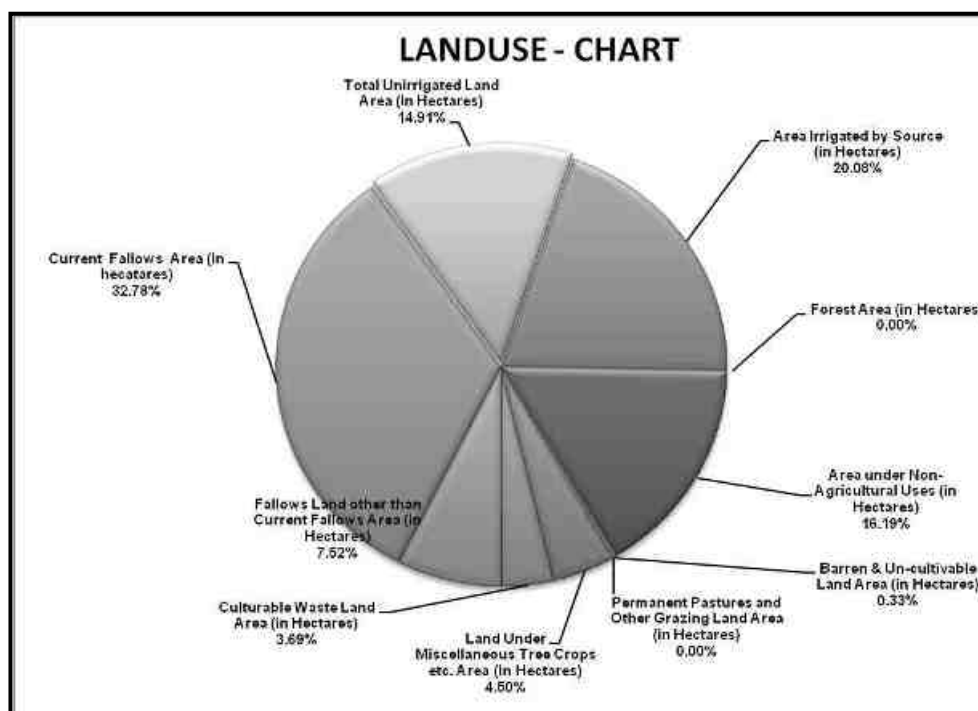
The lease area falls in Orattukuppai village, Madukkarai Taluk, Coimbatore District, Tamil Nadu state and the study area for the land use pattern (10 km radius) has been divided into four zones viz. Zone-I (0-2 km), Zone-II (2-5 km), Zone-III (5-10 km) and Zone-IV (0-10 km) respectively. The land use pattern of the study area falling within 10 km radius around the proposed project area is presented in Table no - 3.22. Village wise land use pattern is provided in **Annexure-11**.

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Table 3.22: Land Use Pattern of the Study Area Falling Within 10 Km Area in (Ha)

Study Area	Total Geographic al Area	Forest Area	Area under Non-Agricultural Uses	Barren & Un-cultivable Land Area	Permanent Pastures and Other Grazing Land Area	Land Under Miscellaneous Tree Crops etc. Area	Culturable Waste Land Area	Fallows Land other than Current Fallows Area	Current Fallows Area	Total Un irrigated Land Area	Area Irrigated by Source
2 - 5 KM	16533.73	0	3004.06	49.27	0	1.81	549.09	955.96	5953.32	2508.35	3511.87
5-10 KM	21168.66	0	3427.34	68.85	0	952.24	780.57	1591.92	6939.45	3156.88	4251.41
0-10 KM	100.00	0.00	16.19	0.33	0.00	4.50	3.69	7.52	32.78	14.91	20.08

Figure 3.14: Landuse within the Buffer Zone Area



3.5 BIOLOGICAL ENVIRONMENT:

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

3.5.1 FLORA:

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

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

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

3.5.1.1 Sampling Methodology:

In order to provide representative ecological status for the study area, the 10-km radius buffer area has been divided into four quartiles for biodiversity sampling, i.e., NE (Q-1), NW (Q-2) SW (Q-3) and SE (Q-4). Each of the quartiles have been examined for representative flora on randomly sampled quadrats for trees (10x10 m), shrubs (5x5 m) and herbs (1x1 m) depending upon prevailing geographical conditions and bio-diversity aspects of study area.

Phyto-sociological Survey: Phyto-sociological parameters, viz., Abundance (i.e., density), average and minimum stems were measured to determine the distribution and ecological aspects of the species. Abundance is a measure of the density of distribution of an individual species within a given area. It is calculated by summed individuals of a species. Average species number is calculated for all quadrates; similarly, minimum number of individuals

represented is recorded at quadrats level. A total of 10 quadrats were laid down in core area and a total of 20 quadrats were laid out in four quartiles (5 each) of buffer area.

Quadrats method for flora : Quadrats of 10 × 10m were laid down randomly within core and 10kms buffer area; each quadrat was laid to assess the trees (>5 cm GBH) and 5 × 5 m sub-quadrat nested within the quadrat for shrubs and two plot 1 × 1 m for herbs . The quadrats were laid at a minimum distance of a kilometer apart to maximize the sampling efforts and minimize the species homogeneity, such as small stream area, trees in agricultural bunds, tank bunds, farm forestry plantations, natural forest area, avenue plantations, house backyards, etc. In each sample quadrat, individuals belonging to tree, shrub and herb species were recorded separately, and have been identified on the field. The prevailing land use and habitat quality has been noted down for each location on the field.

Vegetation Analysis using index: Species diversity will be calculated by using Shannon and Wiener (1963) formula as follows:

$$H' = - \sum_{i=1}^R p_i \ln p_i$$

Whereas,

H' is Shannon index of general diversity,

p_i is often the proportion of individuals belonging to the i th species in the dataset of interest.

Evenness index was calculated as: $E = H'/H_{max}$,

Whereas $H_{max} = \log_2$ (number of species in the plot)

A.CORE ZONE:

The lease area is a non-forest, private land. Major part of lease area is barren fallow land with grasses & bushes only. The detailed list of plants found in the core zone are given in Table no – 3.23. Plantation of Neem, Pungai, Naval, Badam etc carried out by the PP in the lease periphery.

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Table 3.23: List of Floristic Species in the Core Zone

Sl.No	Species Name	Family	Common Name
Trees			
1	<i>Azadirachta indica</i>	<i>Meliaceae</i>	<i>Neem</i>
2	<i>Psidium guajava</i>	<i>Myrtaceae</i>	<i>Koyya</i>
3	<i>Eucalyptus tereticornis</i>	<i>Myrtaceae</i>	<i>Thailam maram</i>
4	<i>Terminalia catappa</i>	<i>Combretaceae</i>	<i>Indian almond</i>
5	<i>Syzygium cumini</i>	<i>Myrtaceae</i>	<i>Naval</i>
6	<i>Ficus benghalensis</i>	<i>Moraceae</i>	<i>Alamaram</i>
Shrubs			
1	<i>Ricinus communis</i>	<i>Euphorbiaceae</i>	<i>Amanakku</i>
2	<i>Lantana camara</i>	<i>Verbenaceae</i>	<i>Uni</i>
3	<i>Calotropis gigantea</i>	<i>Apocynaceae</i>	<i>Earukku</i>
Herbs			
1	<i>Tridax procumbens</i>	<i>Asteraceae</i>	<i>Thatha poo</i>
2	<i>Leucas aspera</i>	<i>Lamiaceae</i>	<i>Thumbai</i>
3	<i>Achyranthes aspera</i>	<i>Amaranthaceae</i>	<i>Nayuruvi</i>
4	<i>Acalypha indica</i>	<i>Amaranthaceae</i>	<i>Kupaimeni keeri</i>
5	<i>Solanum xanthocarpum</i>	<i>Solanaceae</i>	<i>Kandangkattari</i>
6	<i>Sida acuta</i>	<i>Malvaceae</i>	<i>Palambasi</i>
Grasses			
1	<i>Cyperus rotundus</i>	<i>Cyperaceae</i>	<i>Korai pullu</i>
2	<i>Chloris barbata</i>	<i>Poaceae</i>	<i>Kodai pullu</i>

C.BUFFER ZONE:

The Dominated species are *Cocus nucifera*, *Prosopis juliflora*, *Acacia leucophloea*, *Acacia auriculiformis*, *Azadirachta indica*, *Borassus flabellifer*, *Acacia nilotica*, *Albizia lebbeck*, etc. The detailed list of plants found in the Buffer zone is given in Table no – 3.24.

Table 3.24: List of Floristic Species in the Buffer Zone

Sl.No	Scientific Name	Family Name	Common Name
Trees			
1	<i>Annona reticulata</i>	<i>Annonaceae</i>	<i>Seethapazham</i>
2	<i>Artocarpus heterophyllus</i>	<i>Moraceae</i>	<i>Palamaram</i>
3	<i>Artocarpus integrifolia</i>	<i>Moraceae</i>	<i>Pala maram</i>
4	<i>Azadirachta indica</i>	<i>Meliaceae</i>	<i>Vembu</i>
5	<i>Bambusoideae</i>	<i>Poaceae</i>	<i>Moongil</i>
6	<i>Borassus flabellifer</i>	<i>Arecaceae</i>	<i>Panai</i>

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Sl.No	Scientific Name	Family Name	Common Name
7	Carica papaya L	Caricaceae	Pappali
8	Casuarina equisetifolia	Casuarinaceae	Savukku
9	Ceiba pentandra	Malvaceae	Ilavam Panju
10	Citrus lemon	Rutaceae	Ezhumuchaipalam
11	Cocos nucifera	Arecaceae	Thennai
12	Eucalyptus tereticornis	Myrtaceae	Thailam
13	Ficus benghalensis	Moraceae	Alamaram
14	Ficus religiosa	legume	Asoka
15	Lawsonia inermis	Lythraceae	Marudaani
16	Mangifera indica	Anacardiaceae	Mango
17	Manilkara zapota	Sapotaceae	Sapota
18	Millettia pinnata	Fabaceae	Pongai
19	Morinda tinctoria	Rubiaceae	Nuna
20	Moringa oleifera	Moringaceae	Murunga
21	Muntingia calabura	Muntingiaceae	Ten Pazham
22	Murraya koenigii	Rutaceae	Karuveppilai
23	Musa acuminata	Musaceae	Vazhaimaram
24	Peltophorum pterocarpum	Fabaceae	Perunkondrai
25	Phoenix sylvestris	Arecaceae	Icham
26	Pithecellobium dulce	Fabaceae	Kudukapuli
27	Prosopis juliflora	Fabaceae	karuvalam
28	Samanea saman	Fabaceae	Thungumoonchi
29	Syzygium cumini	Myrtaceae	Naval maram
30	Tamarindus indica	Legumes	Puliyamaram
31	Tectona grandis	Verbenaceae	Thekku
32	Terminalia catappa	Combretaceae	Inguti
33	Thespesia Populnea	Malvaceae	Poovarasam
34	Vachellia nilotica	Fabaceae	Karuvelam
Shrubs			
1	Abrus precatorius	Fabaceae	Kundumani
2	Abutilon indicum	Meliaceae	Thuthi
3	Anisomeles malabarica	Lamiaceae	Pei veratti
4	Calotropis gigantea	Apocynaceae	Erukku
5	Cathranthus roseus	Apocynaceae	Nithyakalyani
6	Datura metel	Solanaceae	Umathai
7	Euphorbia antiquorum	Euphorbiaceae	Chaturakalli
8	Hibiscu rosa-sinensis	Malvaceae	Chemparuthi
9	Ixora coccinea	Rubiaceae	Idly Poo

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Sl.No	Scientific Name	Family Name	Common Name
10	Jatropha curcas	Euphorbiaceae	Kattamanakku
11	Lantana camara	Verbenaceae	Unni chedi
12	Mimosa pudica	Mimosaceae	Thottalchinungi
13	Nerium indicum	Apocynaceae	Arali
14	Opuntia	Cactaceae	Nagathali
15	Phoenix sp	Arecaceae	Icham
16	Ricinus communis	Euphorbiaceae	Amanakku
17	Senna auriculata	Fabaceae	Avarai
Herbs			
1	Acalypha indica	Euphorbiaceae	Kuppamani
2	Achyranthes aspera	Amaranthaceae	Nayuruvi
3	Aloe vera	Asphodelaceae	Katrashai
4	Amaranthus polygonoides	Amaranthaceae	Sirukeerai
5	Amaranthus spinosus	Amaranthaceae	Mullukkeerai
6	Argemone mexicana	Papaveraceae	Eli-yotti
7	Boerhavia diffusa	Nyctaginaceae	Mukurattai
8	Celome viscosa	Capparidaceae	Nai kadugu
9	Euphorbia hirta	Euphorbiaceae	Amman pacharisi
10	Leucas aspera	Lamiaceae	Thumbai
11	Ocimum tenuiflorum	Lamiaceae	Thulasi
12	Parthenium hysterophorus	Asteraceae	Parttiniyam
13	Phyllanthus niruri	Phyllanthaceae	Keelaneeli
14	Solanum melongena	Solanaceae	kathirikai
15	Solanum nigrum	Solanaceae	Manathakkali
16	Tridax procumbens	Asteraceae	Veetukaayapoondur
Climber			
1	Abrus precatorius L	Fabaceae	Kuntumani
2	Cissus quadrangularis	Vitaceae	Perandai
3	Coccinia grandis	Cucurbitaceae	Kovai
4	Jasminum augustifolium	Oleaceae	Malli
5	Momordica charantia	Cucurbitaceae	Pavakkai
Grasses			
1	Chloris barbata	Amaranthaceae	Chevvarakupul
2	Chloris dolichostachya	Poaceae	Kuruthupillu
3	Cyperus rotundus	Poaceae	Korai
4	Dichanthium annulatum	Poaceae	Marvel grass

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3.5.2 FAUNA:

Methodology: Both direct and indirect observation methods were used to survey the fauna. Point Survey Method was used to study the Bird diversity. Besides, discussion with local villagers Collection secondary data from Government records, published reports as well as through discussion with Forest officials, knowledgeable public were used for the study.

Observation: There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals are commonly found. No wild mammalian species was directly sighted during the field survey. The list of fauna within the study area is given in Table No – 3.25.

Table 3.25: List of Fauna in the Buffer Zone

SI. No	Common Name	Family Name	Scientific Name	Schedule list WPA 1972
Mammals				
1.	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV
2.	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV
3.	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule (Part II)
4.	Indian hare	Leporidae	<i>Lepus nigricollis</i>	Schedule (Part II)
5.	Brown rat	Muridae	<i>Rattus norvegicus</i>	Schedule IV
Birds				
1.	Asian Koel	Cuculidae	<i>Eudynamys</i>	Schedule IV
2.	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	Schedule IV
3.	Rock pigeon	Columba livi	<i>Columbidae</i>	Schedule IV
4.	Common myna	Sturnidae	<i>Acridotheres tristis</i>	Schedule IV
5.	House crow	Corvidae	<i>Corvus splendens</i>	Schedule V
6.	Sunbird	Nectariniidae	<i>Nectariniidae</i>	Schedule IV
7.	Red Vented Bulbul	Pycnonotidae	<i>Pycnonotus cafer</i>	Schedule IV
8.	Small Bee Eater	Meropidae	<i>Merops orientalis</i>	Schedule IV
9.	Small blue Kingfisher	Alcedinidae	<i>Alcedo atthis</i>	Schedule IV
10.	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameri</i>	Schedule IV
11.	Asian Palm Swift	Apodidae	<i>Cypsiurus balasienensis</i>	Schedule IV
12.	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV
13.	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV
14.	Woodpecker bird	Picidae	<i>Picidae</i>	Schedule IV
15.	Two-tailed Sparrow	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV
16.	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV
17.	Wood Sandpiper	Scolopacidae	<i>Tringa glareola</i>	Schedule IV
18.	Blue-Tailed Bee Eater	Meropidae	<i>Merops philippinus</i>	Schedule IV
19.	Indian Roller	Coraciidae	<i>Coracias benghalensis</i>	Schedule IV
20.	Common Swallow	Hirundinidae	<i>Hirundo rustica</i>	Schedule IV
21.	Purple Rumped Sunbird	Nectariniidae	<i>Leptocoma zeylonica</i>	Schedule IV
22.	Common Tailor Bird	Cisticolidae	<i>Orthotomus sutorius</i>	Schedule IV
23.	Purple Sunbird	Chordata	<i>Cinnyris asiaticus</i>	Schedule IV
24.	Lesser Golden Backed Woodpecker	Picidae	<i>Dinopium benghalense</i>	Schedule IV
REPTILES				



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1.	Oriental garden lizard	Agamidae	<i>Calotes versicolor</i>	NL
2.	House lizards	Gekkonidae	<i>Hemidactylus flaviviridis</i>	Schedule IV
3.	Indian cobra	Elapid snakes	<i>Naja naja</i>	Sch II (Part II)
4.	Green vine snake	Colubridae	<i>Ahaetulla nasuta</i>	Schedule IV
5.	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch IV (Part II)
6.	Common krait	Elapid snakes	<i>Bungarus caeruleus</i>	Schedule IV
7.	Common skink	Scincidae	<i>Mabuya carinatus</i>	NL

3.6 HYDROGEOLOGICAL STUDY:

This section delves into the study of the hydrogeological scenario of the study area to evaluate the impact of mining activities on the nearby areas. The study area is located in Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamil Nadu is considered to understand the nature of the general hydrogeological conditions of the area.

3.6.1 PHYSIOGRAPHY AND DRAINAGE:

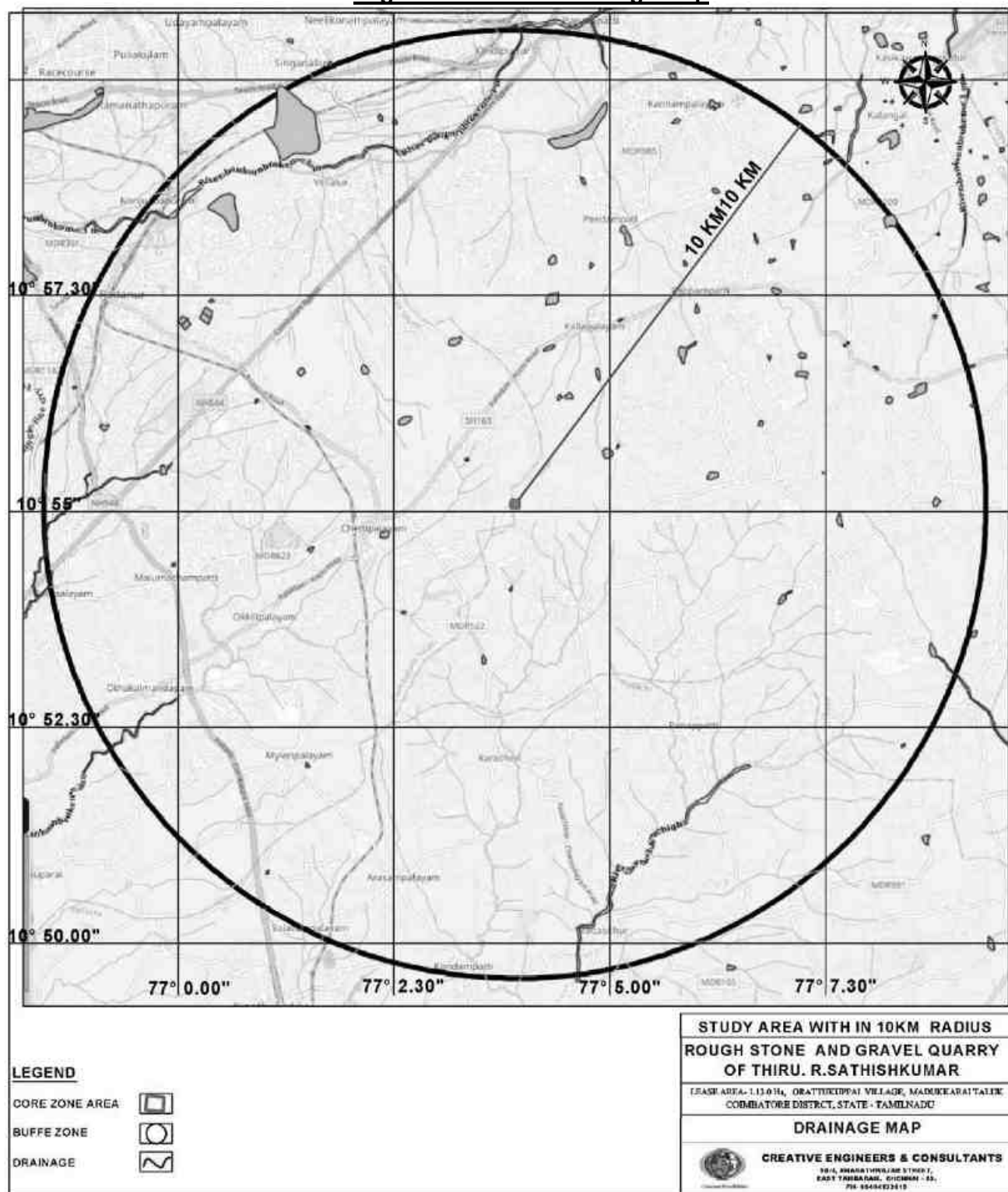
Physiography: The area applied for mining lease is a gentle plain terrain and dry lands without any major vegetation. The area is mainly composed of crystalline metamorphic complex. The rock type majorly noticed in the area for lease is Biotite Gneiss. Which is mainly composed Hornblende, biotite mica, Quartz, and Feldspar with some ferromagnesian minerals. Lot of mining activities are carried out all around the lease area.

Drainage: There are no streams, canals or water bodies within the lease area. The drainage pattern of the area is dendritic – sub dendritic. Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin.



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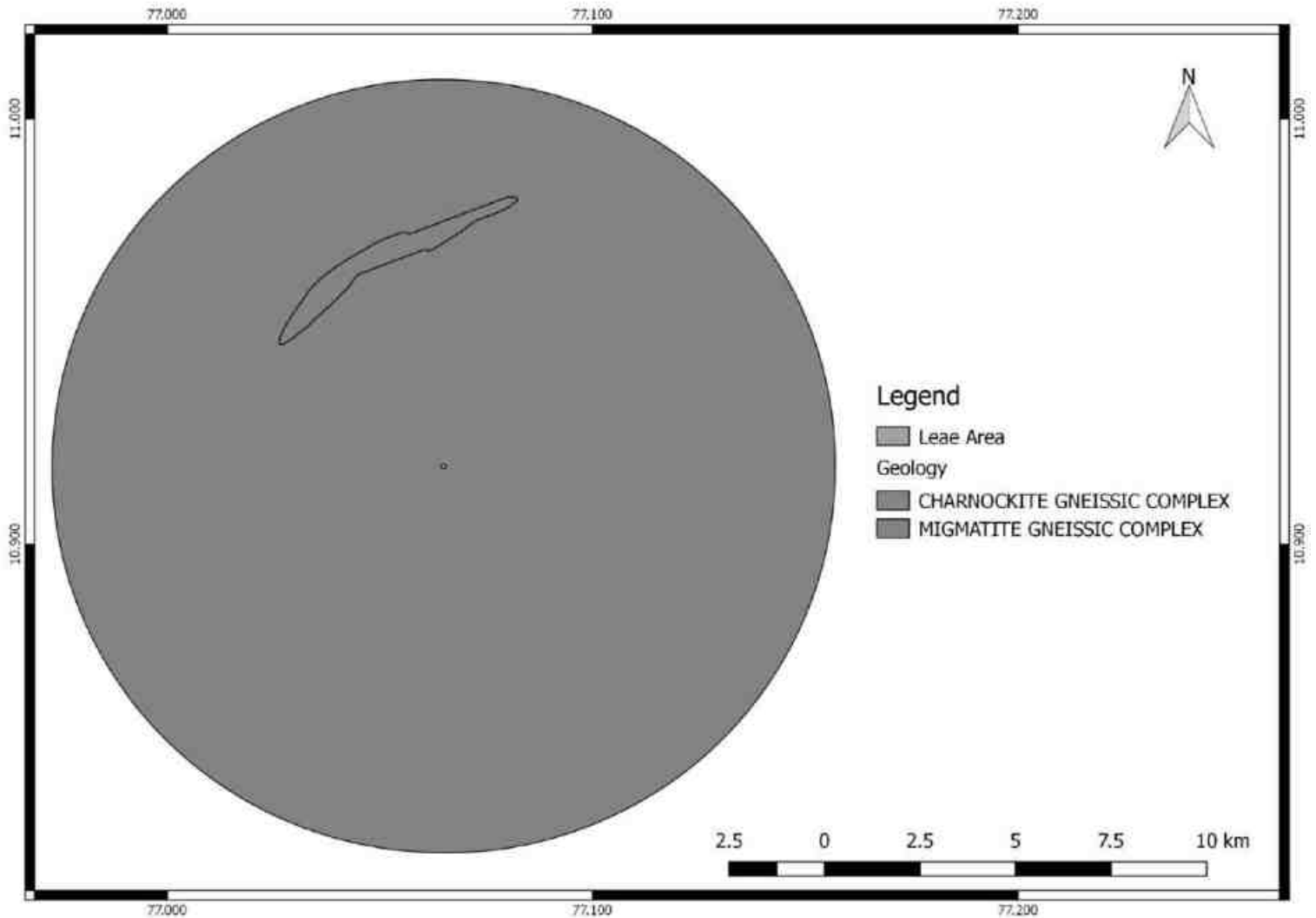
Figure 3.15: 10km Drainage Map



3.6.2 GEOLOGY AND GEOMORPHOLOGY

Geology: The type of rock formation in the buffered zone is composed majorly of Migmatite Gneissic complex. The lease area falls under Migmatite Gneissic complex category.

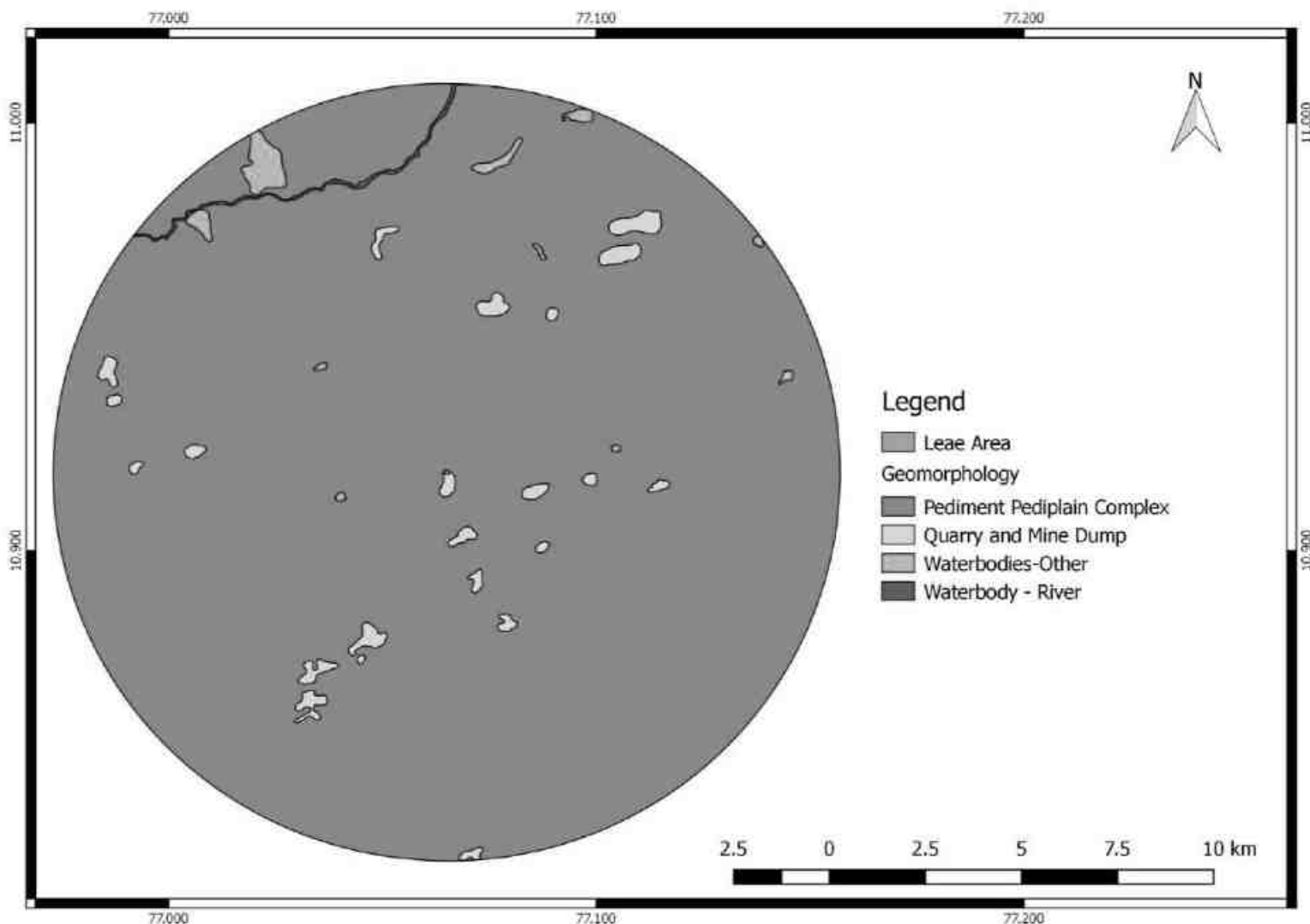
Figure 3.16: Geology Map



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Geomorphology: The geomorphology map of the study derived from the satellite imagery using remote sensing and GIS technique. Predominantly the buffer zone is dominated by Pediment Pediplain complex, and it is the same category that the lease area also falls under.

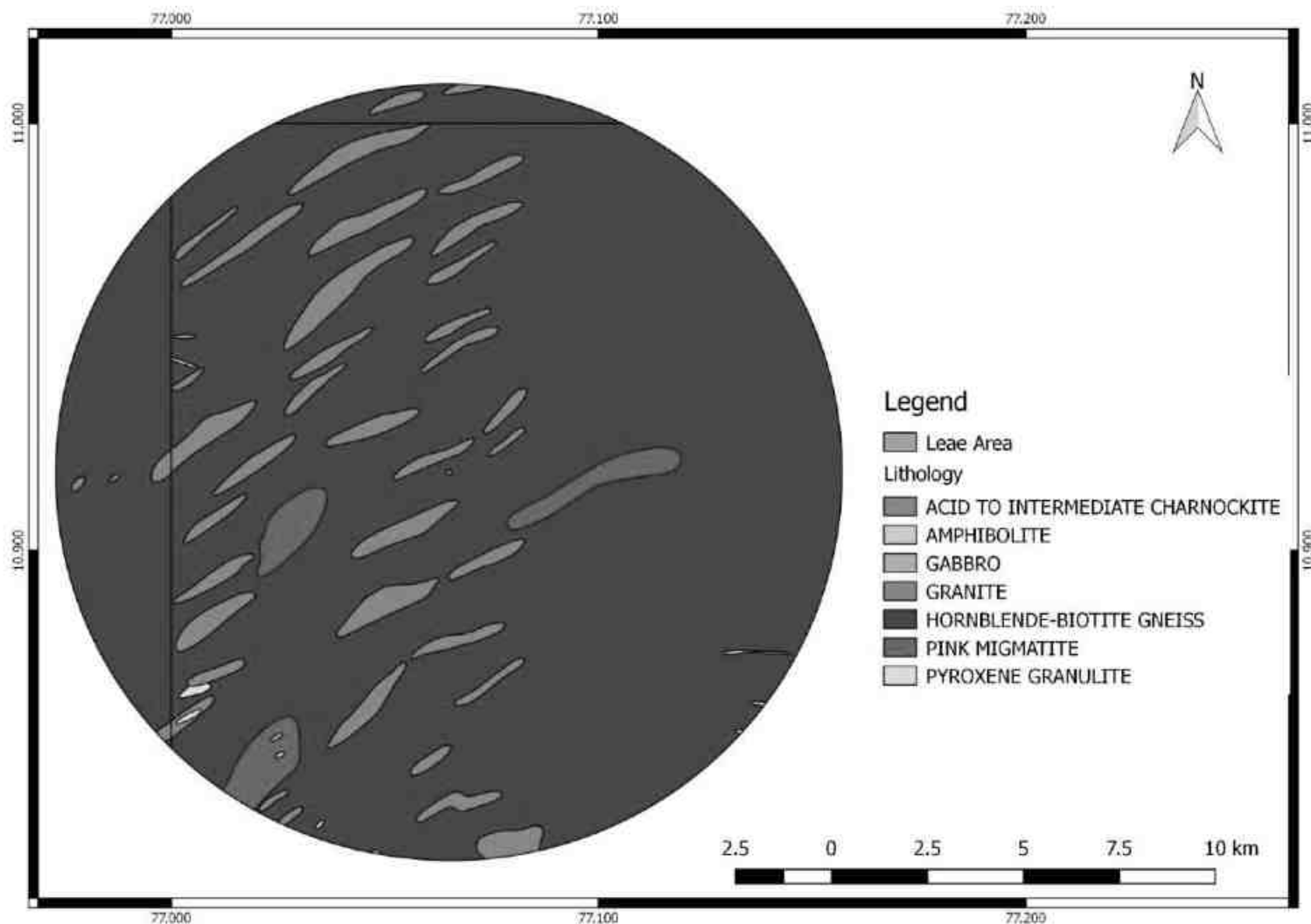
Figure 3.17: Geomorphology Map



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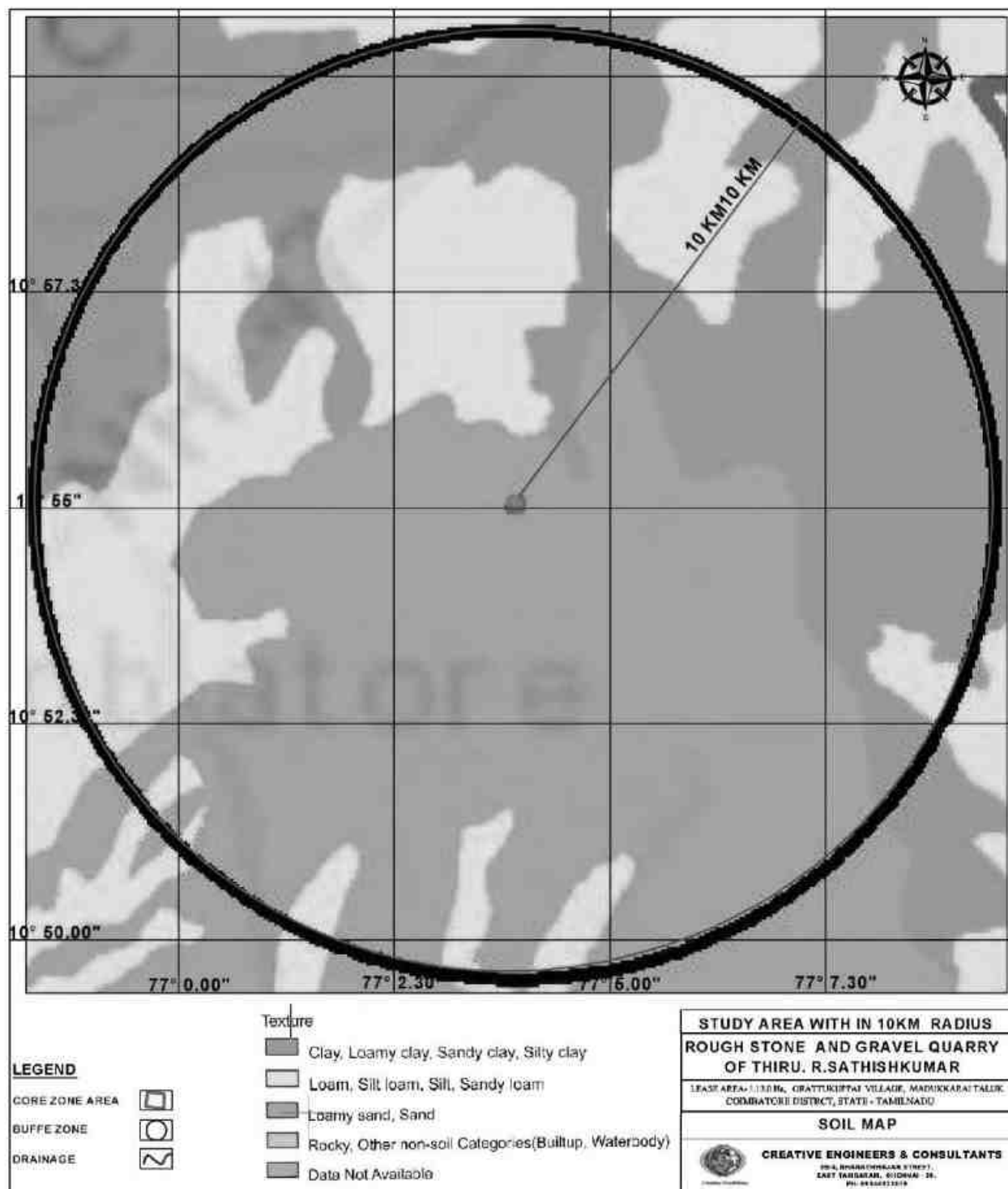
Lithology: The study area is mainly dominated by Hornblende-Biotite Gneiss. The lithology map has been provided below.

Figure 3.18: Lithology Map



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Soil: The study area is by Texture clay, silt loam, sily, sandy loam, Loamy sand, Sandy clay, Silty clay, Loamy Clay & Sand. The project area is dominated with Loamy sand of soil.



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Field investigation:

The district is underlain by hard rock formation fissured and fractured crystalline rocks constitute the important aquifer systems in the district. Study area is dominated with hard Charnockite rock formation.

There are no streams, canals or water bodies within the lease area. The drainage pattern of the area is dendritic – sub dendritic. Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. Based on the well inventory of the nearby wells & borewells, it is observed that the average water level in the open well is varies from 12m to 15 m BGL whereas the water level in the bore well varies generally from 65m to 70m BGL.

Study of the area shows that the sub-surface formations reveal low to medium recharge potentials. Subsequently hard and massive formations of rock are found. Based on the available information and the geophysical investigations it is observed that the study area is of poor to moderate groundwater potential up to 65m to 70m. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. There is no water seepage noticed in to the already quarried deeper pits situated nearby the proposed quarry area. Hence, the quarrying rough stone up to the proposed depth may not have any adverse impact in the area over ground water conditions.

Direct rainfall falling into the mine pit during monsoon season and intermittent seepage from phreatic top layer if any will be collected in the bottom of the mine pit and gainfully used for Greenbelt development, Dust suppression etc.

* * * * *



CHAPTER - IV

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

CHAPTER 4

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 GENERAL

In this project Mechanized Open Cast mining will be carried out to quarry out Rough Stone & Gravel. The identified impacts due to this mine during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc., and the details of the same are elaborated in this chapter.

4.2 AIR ENVIRONMENT:

4.2.1 IMPACTS DUE TO PROJECT OPERATION:

The existing ambient air quality in the area has been described in Chapter-III. The proposed mining and allied operations may cause deterioration of air quality due to pollution arising from the project operation if prompt care is not taken. The principal sources of air pollution in general due to mining and allied activities will be:

- ❖ Excavation of material.
- ❖ Movement of HEMM such as Excavators, tippers etc.
- ❖ Loading and unloading operation
- ❖ Transportation

Besides, Gas emission will occur as a result of operation of diesel driven mining equipment, compressors, transporting vehicles, etc.

Particulate matter smaller than 10 microns, referred to as PM₁₀, can settle in the bronchi and lungs and cause health problems like Bronchitis, Emphysema, Bronchial Asthma, Irritation of mucus membranes of eyes, etc. Particles smaller than 2.5 micrometers (PM_{2.5}), tend to penetrate into the lungs and very small particles (<100 nanometers) may pass through the lungs to affect other organs.

Besides the above mentioned fugitive dust emissions, atmospheric pollution can occur as a result of emission of SO₂, NO_x, CO etc., from diesel driven mining equipment, generator sets, etc. Larger suspended particles are generally filtered in the nose and throat and do not cause problems. Higher concentration of SO₂, NO_x, CO may cause some health effect on the human beings



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exposed to it. In case of this mine, the following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

Table 4.1: Impact and Mitigation Measures – Air Environment

S.No	Activity	Consequence	Mitigation Measures
1	Drilling	Dust Emanation	Usage of Drill bits in good condition
			Covering of drill holes with wet cloth
			Usage of sharp drill bits for drilling of holes.
			Provision of dust filters / mask to workers working at highly dust prone and affected areas.
2	Blasting	Instantaneous dust emanation	Well-designed blasting parameter, effective stemming to achieve optimum breakage occurs without generating fines.
			Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
			Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
			Use of controlled blasting techniques with Nonel to keep the dust generation, noise as well as vibration level within the prescribed limits.
3	Excavation and Loading	Dust emanation, Gaseous Emission	HEMM will be operated as per the manufacturer's guidelines
			Enclosures for operator cabin.
			Imparting sufficient training to operators on safety and environmental parameters.
			Proper maintenance of hauling equipments.
4	Transportation	Dust emanation, Gaseous Emission	Avoiding overloading of dumpers.
			Regular wetting of transport road using mobile water tanker.
			Proper maintenance of haul road and other roads
			Setting up of tyre wash facility in the transport road.
			Avoiding overloading of tippers
			Covering of loaded tippers with tarpaulins during transportation
5	Others	Dust emanation, Gaseous Emission	Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
			Development of greenbelt / barriers around mine in the safety zone and carrying out plantation within the lease area.

Due to adoption of all these measures, no major impact on air quality is envisaged due to this proposed opencast mining operation.



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Considering that the quantum of production is less, only 1 excavator, 2 tippers will be engaged. These equipment's will be properly and regularly maintained. Besides, as mentioned earlier, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned wherein 550 number of plants will be planted in and around the lease area.

The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion. Details of the modeling study / estimation including the modeling technique and post project air quality values are elaborated in the following paras.

4.2.2 AIR QUALITY IMPACT PREDICTION:

The model simulations are done for the air pollutant arising from the mining operations, namely, PM₁₀, PM_{2.5}. **Ground Level Concentration** (GLC) have been computed using hourly meteorological data.

Table 4.2: Emission Sources

ACTIVITY	SOURCE TYPE
A. Mining operations	Open pit
B. Transportation	Line

4.2.2.1 Emission Factors

Quantification of particulate emissions has been carried out by the emission factor technique. Emission factor is a statistical average of the rate at which a pollutant is released during an activity. This factor when multiplied by the level of that activity in a given situation will give the overall effect. Fugitive emissions have been predicted by using standard equations given and suggested by AP-42, USEPA(1998), Coal S&T Project and for mining & allied activities and other factors. The modeling is done for the peak production to know the worst case scenario. The details of the emission factors used for the same is provided below:

Table 4.3: Emission Factors

S.No	Activity	PM10	PM2.5	Unit
1	Ore Loading	1.5×10^{-3}	2.1×10^{-4}	Kg/T
2	OB Loading	1.4×10^{-4}	1.5×10^{-5}	Kg/T
3	Hauling inside lease area	0.19	0.019	g/VKT



4	Drilling	0.1	0.04	Kg/hole
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4.2.2.2 Emission Rates:

Based on the emission factors, after adopting necessary control measures like dust suppression, Proper maintenance of HEMM, using better quality diesel, using latest equipment, proper maintenance of roads, etc. the expected emission rate due to various operations in this project is calculated and is given below:

Table 4.4: Emission Rate

ACTIVITIES/POLLUTANTS	PM ₁₀ (g/sec)	PM _{2.5} (g/sec)
Ore Loading	0.02	0.00
Drilling	0.07	0.03
Hauling inside lease area	0.07	0.01
Total	0.15	0.04

A. Emission Source Coordinates: The center of mine was assumed (0, 0) in the mathematical modeling.

B. Meteorological Conditions Used In Predictions: The hourly meteorological data has been generated for the monitoring period and the same has been used in the predictions.

4.2.2.3 Results and Discussions

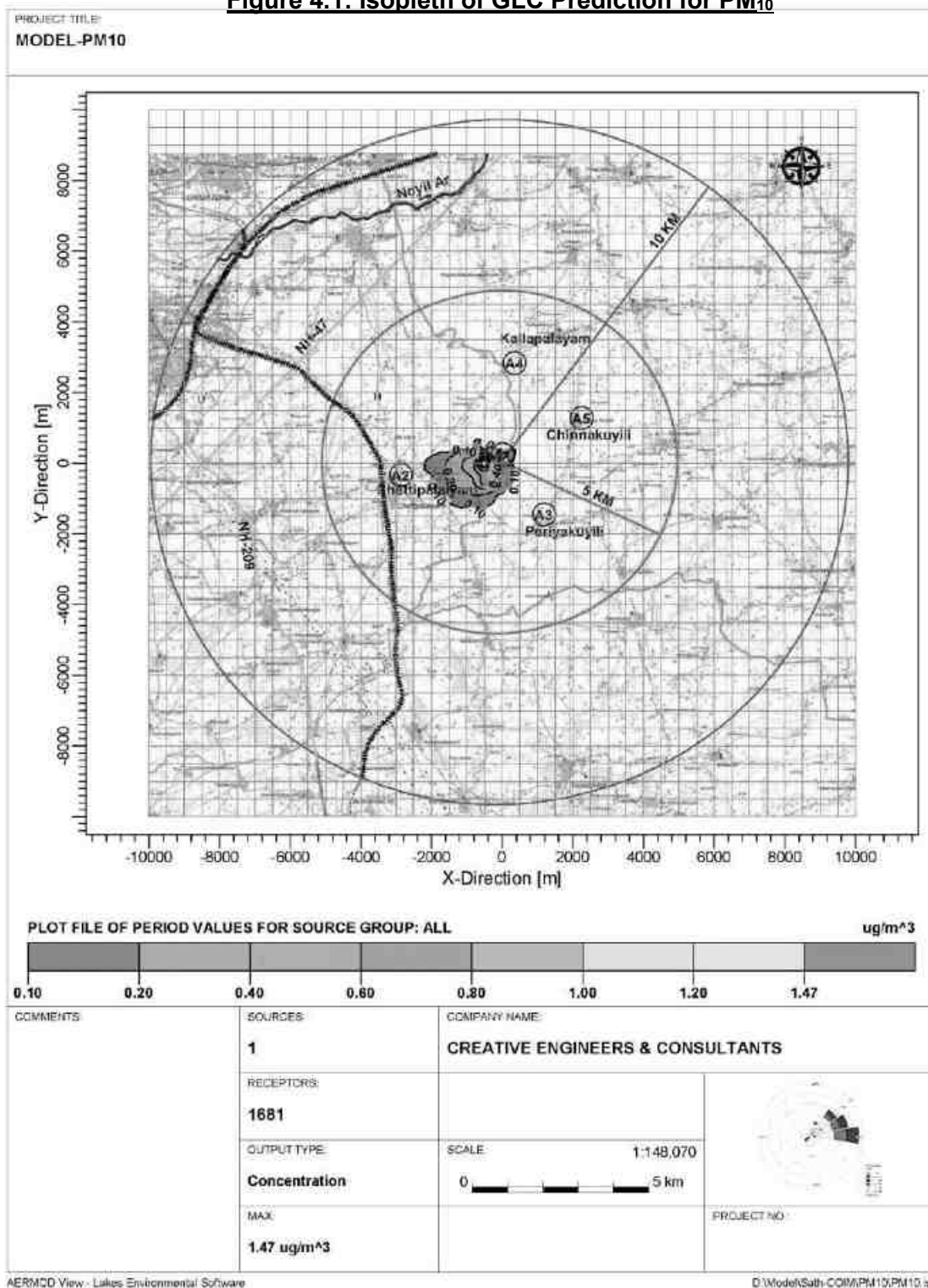
Table 4.5: Peak Incremental Concentration

S.No	Parameters	Peak incremental concentration µg/m ³
1	PM ₁₀	1.47
2	PM _{2.5}	0.66

It is observed that the peak incremental concentration for PM₁₀, PM_{2.5} occurring very near the source. At away from the source the values are getting reduced due to dispersion effects. The Isopleths of PM₁₀, PM_{2.5} concentrations with control measures scenario have also been drawn and these are given in **Figure No.4.1 and 4.2**. The incremental and predicted concentrations at the locations of ambient air quality have been discussed in the following section.

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Figure 4.1: Isopleth of GLC Prediction for PM₁₀



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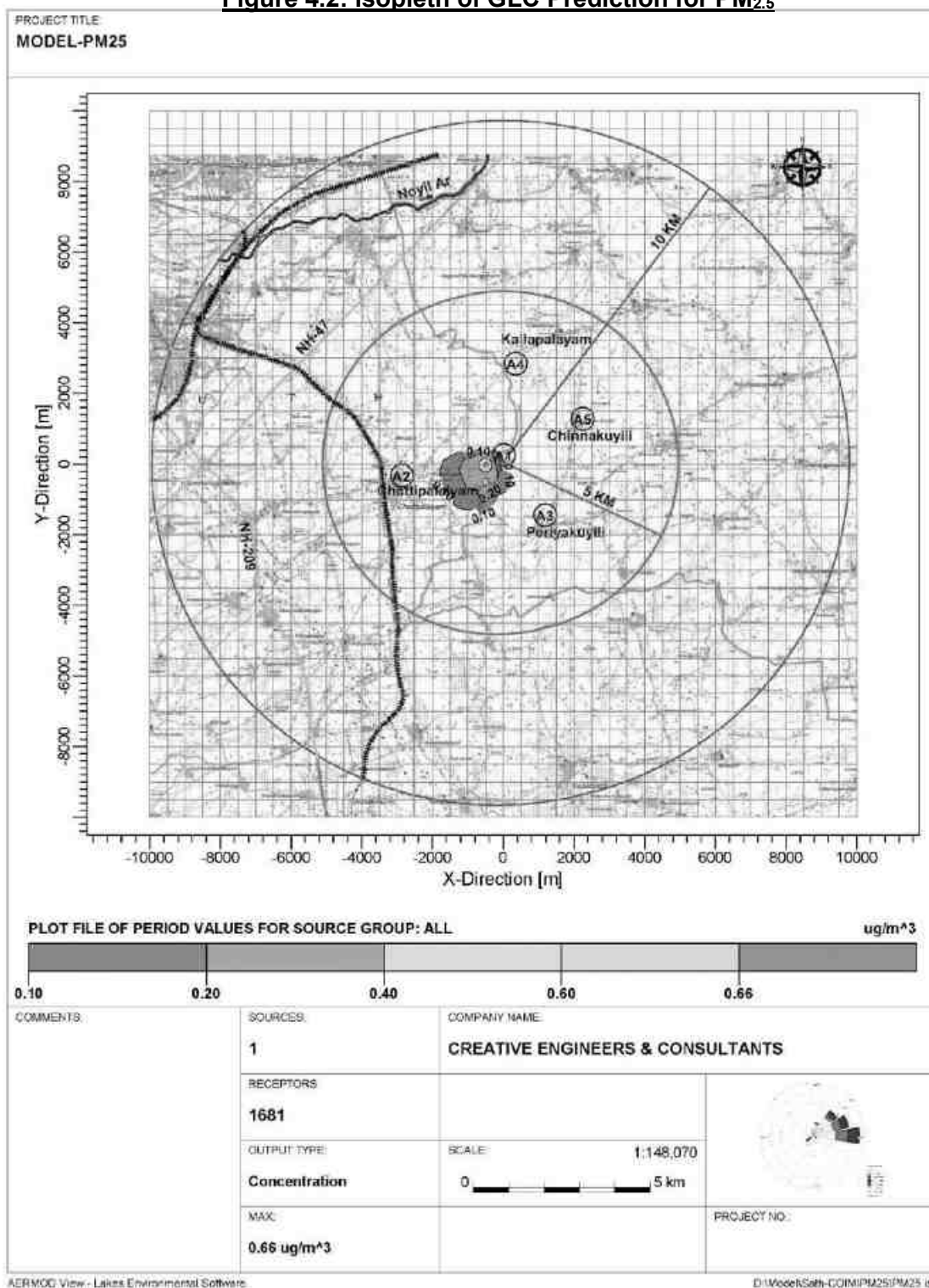
**CHAPTER-4: ANTICIPATED ENVIRONMENTAL
IMPACTS AND MITIGATION MEASURES**

REV NO : 00/MAR/25

4-5

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



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Predicted Ambient Air Quality:

The post project Concentrations of PM₁₀, PM_{2.5}, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 4.6 to 4.7.

Table 4.6: Concentrations Of PM₁₀ after Project Implementation

Values in $\mu\text{g}/\text{m}^3$

S. No	Location	Background Concentration	Predicted Incremental Concentration	Post Project Concentration	Statutory Limits
1	A1- Near Mine Lease Area	61.0	1.4	62.4	-
2	A-2Chettipalayam Village	64.0	<1.0	65.0	100
3	A-3 Periya Kuyilai Village	58.0	<1.0	59.0	
4	A-4KallapalayamVillage	58.0	<1.0	59.0	
5	A-5Chinnakuyili Village	57.9	<1.0	58.9	

Table 4.7: Concentrations Of PM_{2.5} after Project Implementation

Values in $\mu\text{g}/\text{m}^3$

S. No	Location	Background Concentration	Predicted Incremental Concentration	Post Project Concentration	Statutory Limits
1	A1- Near Mine Lease Area	25.0	<1.0	26.0	-
2	A-2Chettipalayam Village	26.0	<1.0	27.0	60
3	A-3 Periya Kuyilai Village	23.0	<1.0	24.0	
4	A-4KallapalayamVillage	24.0	<1.0	25.0	
5	A-5Chinnakuyili Village	25.0	<1.0	26.0	

It can be seen that the resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM₁₀ are in the range of 58.9 $\mu\text{g}/\text{m}^3$ to 65.0 $\mu\text{g}/\text{m}^3$ and with respect to PM_{2.5} are in the range of 24.0 $\mu\text{g}/\text{m}^3$ to 27.0 $\mu\text{g}/\text{m}^3$ which are within the statutory limits in each case. For preservation of environment in this mine strict enforcement of management schemes and regular air quality monitoring will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.

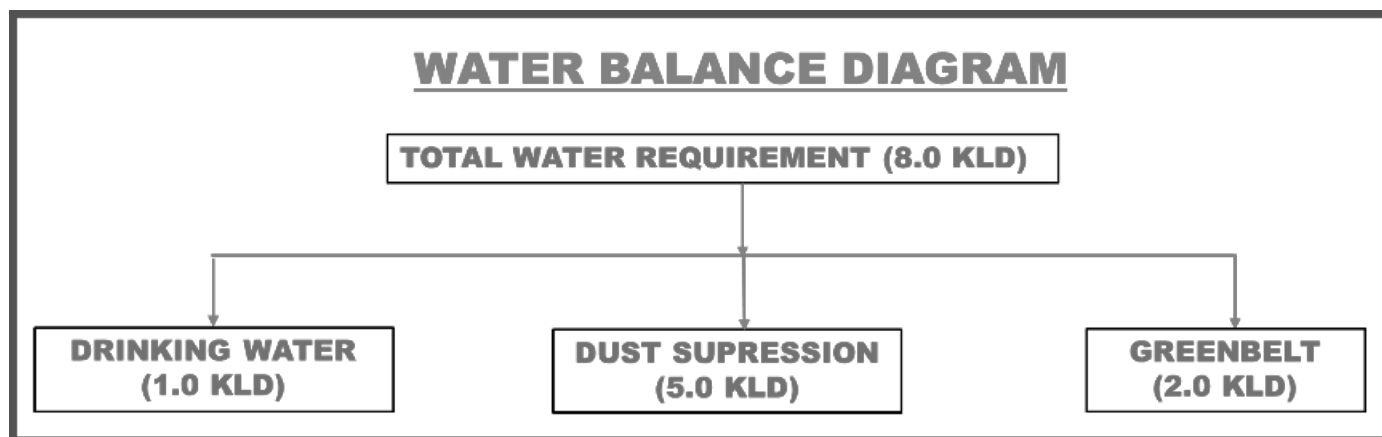


4.3 WATER ENVIRONMENT:

4.3.1 WATER REQUIREMENT:

The total water requirement for this project will be 8.0 KLD comprising 1.0 KLD for drinking water and domestic use, 5.0 KLD for dust suppression and 2.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for the same is shown in **Figure No 4.3**.

Figure 4.3: Water Balance Diagram



4.3.2 SOURCES OF WATER POLLUTION:

The existing water environment showing water quality at different sampling stations in the area has been described in Chapter-III.

Direct impact on human beings due to poor water quality consequent to mining operation can lead to various water borne diseases like diarrhea, jaundice, dysentery, typhoid, etc. Besides, the polluted water may not be useful for animal or human consumption, vegetation and may affect aquatic life, if effluents are not properly treated to remove the harmful pollutants.

The major sources of water pollution normally associated due to mining and allied operations are:

- a. Domestic effluent.
- b. Washouts from stockpile if any.
- c. Disturbance to drainage course in the project area
- d. Generation of mine pit water pumped out from deeper workings if any.

4.3.3 TREATMENT SCHEME:

A. Generation of domestic effluent:

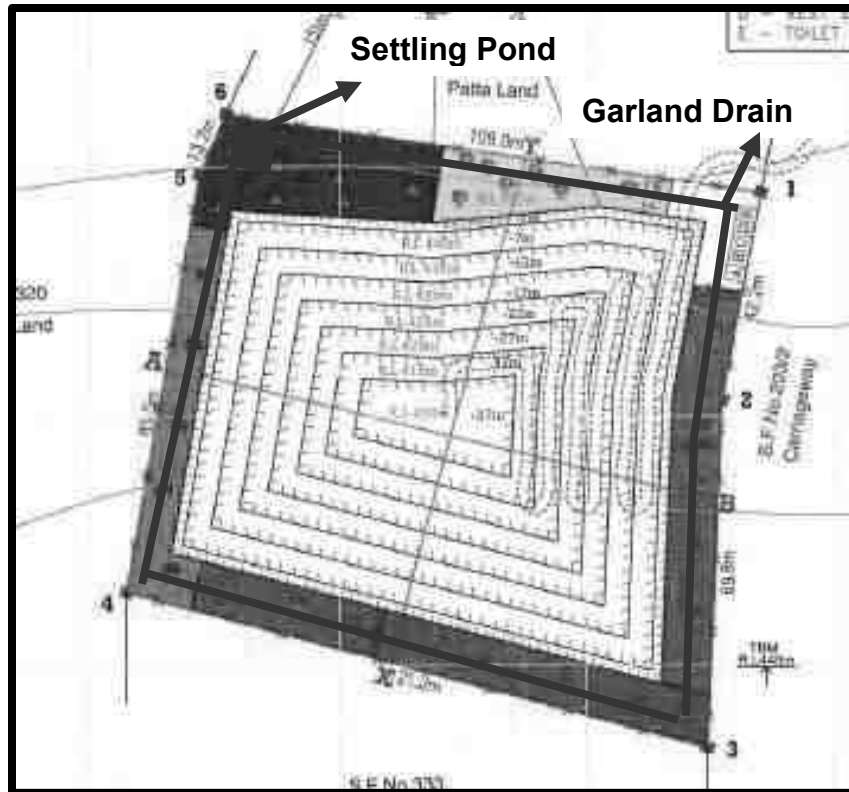
The domestic sewage to be generated from the project will be collected in septic tank with soak pits.

B. Washouts from overburden, ore stockpile, etc.

Since the entire material from the quarry face will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in this quarry. As such there will not be any wash out due to stock pile or waste dumps.

The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. Towards surface runoff management, a garland drain of length 400m will be constructed around the quarry and will be connected to settling pond on the SW corner with silt traps. The supernatant clear water from the settling ponds will be flow to the downstream users. The surface runoff management structures diagram is given in **Figure No 4.4**.

Figure 4.4: Surface Runoff Management Structures



C. Disturbance to drainage courses

There are no streams, canals or water bodies in and around the lease area.. There is no proposal to discharge any effluent into these water bodies. No major impact is envisaged on the nearby water bodies due to project operations.

D. Generation of mine pit water pumped out from deeper workings if any.

The occurrence and movement of groundwater in hard rock formations are restricted to the porous zones of weathered formations and the open systems of fractures, fissures and joints. Generally, in hard rock regions, occurrence of weathered thickness is discontinuous both in space and depth. Hence recharge of groundwater in hard rock formations is influenced by the intensity and depth of weathering.

Study of the area shows that the sub-surface formations are compact with less intergranular porosity and fractures leading to less permeability and transmissivity values and as such the ground water level in this area is deep from surface. Subsequently hard and massive formations of rock are found. Based on the available information and the geophysical investigations it is observed that the study area is of poor to moderate groundwater potential up to 60m to 65m. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. The ultimate pit depth of mining is 37m. The ground water table in this area is below this level. Hence, ground water intersection is not envisaged and ground water will not be affected appreciably due to the quarrying operation. There is no water seepage noticed in the already quarried deeper pits situated nearby the proposed quarry area. Hence, the quarrying rough stone up to the proposed depth may not have any adverse impact in the area over ground water conditions.

As mentioned earlier, the rainfall will be collected in the mine floor sump and advantageously used. Excess water if any in the sump will be pumped to settling pond for downstream users.



4.3.4 REDUCING WATER CONSUMPTION OVER THE YEARS:

4.3.4.1 GENERAL METHODS:

Use of water will be monitored and used to the minimum required. Awareness will be spread to the employees about the importance of water conservation. Tap and showers will be turned off immediately after use and any leaks will be monitored and immediately controlled. Water requirement for greenbelt and dust suppression can be reduced by choosing the native plants/trees species with low water requirement and which can sustain in such conditions for greenbelt/ plantation and also optimum usage to the required minimum. While the dust suppression itself is an important method of pollution control for air pollution due to dust, the water consumption will be monitored strictly. The water tanker will be examined for any sources of leaks and if found will be immediately sealed so that water can be utilized for dust suppression effectively without loss.

4.3.4.2 RAINWATER HARVESTING PLAN

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

- a) Development of garland drain around the quarry connected to settling tank.
- b) Cleaning of drain periodically to prevent siltation
- c) The supernatant clear water from the settling pond will drain into the nearby drainage.
- d) Utilizing the rainwater harvested in the mine pit to meet the water requirement of the project.
- e) Excess water, if any in consultation with local villagers and in line with government practices shall be provided to the downstream users.

4.4 NOISE AND VIBRATION:

4.4.1 NOISE ENVIRONMENT:

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



4.4.1.1 IMPACT PREDICTION DUE TO NOISE:

Noise is one of the inevitable causes of pollution in mining operations, largely due to the extensive mechanization adopted. Besides, other operations such as drilling, blasting, movement of vehicles, etc., also produce noise of considerable magnitude in mining operations. The main sources of noise and expected levels are given below in **Table no – 4.8**.

Table 4.8: Main Sources of Noise

Sl. No.	Source	Inside Cabin	Noise level at dB(A) 10 m. from source
1	Shovel	84-91	59-68
2.	Dumpers/Tippers	87-96	75-85
3.	Drill	88- 95	75-83

Prolonged exposure to a high noise level is harmful to the human auditory system and can create mental fatigue, rebellious attitude, annoyance and carelessness, which may lead to neglect of work and also result in accidents. The impact of noise level as per World Health Organization's 1986 notification is given below in **Table No - 4.9**.

Table 4.9: Impact of Noise Levels

NOISE LEVELS	ADVERSE EFFECTS
90-115 dB	Partial deafness and nervous irritability
> 115 dB	Permanent deafness
Impulsive noise (>90dB)	Frightens livestock grazing in the nearby areas

OSHA (Occupational Safety and Health Administration), USA and other similar organisations stipulate that noise level up to 90 dB(A) is acceptable for eight hours exposure Leq (Equivalent sound level) (8hrs) per day. The Directorate General of Mines Safety, in circular No. DG (Tech)/18 of 1975, has prescribed the noise level in mining occupations (TLV) for workers, in an 8 hour shift period with unprotected ear as 90 dB(A) or less.

The noise will be felt only near the active sources. There will be considerable reduction in the noise level due to the absorption factor, environmental surroundings and other attenuation factors. As far as absorption factor is concerned, If the ground cover is vegetated or has a soft texture,



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sound will decrease at the rate of 4.5 dB(A) every time the distance between the source and the observer is doubled. Besides, there will be shielding factor, which takes into account the environmental surroundings. With every 30m of dense land scape vegetation, 5 dB(A) of additional attenuation can be obtained up to a maximum of 10 dB(A). As such at away places the effect of noise will not be felt.

Anticipated noise levels resulting from operation of the various machineries like excavator, tippers, drill have been computed using point source model. Computation of cumulative noise levels at the nearby villages is made based on the assumption that there are no attenuation paths between the source and the boundary.

Noise modeling is carried out using the following formula:

$Lp2 = Lp1 - 20 \log R2/R1$, Where, $Lp1$ and $Lp2$ are sound pressure levels at points located at distances $R1$ and $R2$ respectively from the source. The study results are as follows:

Table 4.10: Post Project Noise Levels

Sl.No	Location	Baseline Day Eq.in dB(A)	Post project noise Eq in dB(A)	Limit dB(A) as per MoEF&CC
1.	Near Mine Lease Area	51.2	51.9	90
2.	Chettipalayam Village	54.0	54.2	90
3	Periya Kuyilai Village	52.5	52.7	90
4	KallapalayamVillage	51.4	51.5	90
5	Chinnakuyili Village	50.3	50.5	55

From the studies, it is found that the predicted Noise Levels due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor. However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary. Since the habitations are also away the effect of noise due to mining operations will not be felt at all in the surrounding villages.

4.4.1.2 CONTROL MEASURES FOR NOISE ENVIRONMENT:

Hence, by following mitigative measures for noise control, the impact on noise levels will be insignificant:

- Planting rows of native trees along roads, around mine area and other noise generating centers to act as acoustic barriers.
- Sound proof operator's cabin for equipments like shovel, tippers, etc.



- Proper and regular maintenance of equipments may lead to less noise generation.
- Providing in-built mechanism for reducing sound emissions.
- Providing earplugs to workers exposed to higher noise level.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.
- Provision of tin net on the southern side and green net along the lease periphery on the other sides.

Further green belt and afforestation will be planned and executed to abate noise and dust propagation in the area.

4.4.2 GROUND VIBRATIONAL DUE TO BLASTING EFFECTS:

Vibrations due to blasting may cause damage to nearby structures, if appropriate control measures are not adopted. Flyrock is another possible damage causing outcome of blasting. There are many factors, which influence these, like long explosive column with little stemming column, improper burden, loose material or pebbles near holes and long water columns in the holes.

Since the production from this lease is very low, the no of holes and the quantum of explosives to be used for blasting will be negligible .

The following control measures will be planned to reduce ground vibratory conditions to sustainable statutory limits:

- 1) Carrying out controlled blasting using Nonel delay detonator.
- 2) Optimum design for burden and spacing.
- 3) Reducing explosive charge per delay to minimum.
- 4) The peak particle velocity (PPV) of ground vibration will be kept very low through optimally controlled blasting techniques, after necessary field trials.



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- 5) To contain fly rocks, stemming column to be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation.
- 6) Blasting will not be carried out when strong winds are. Blasting will be done during midday time.
- 7) Controlled blasting to avoid tension cracks which may endanger the stability of bench slopes in the mine.
- 8) Proper care and supervision during blasting by a competent and experienced person to be carried out.
- 9) Having different blasting time for the leases in the cluster.

By adoption of above measures, it will be ensured that the ground level vibration due to blasting are maintained within the limits prescribed by DGMS, Dhanbad at the mining areas vide Circular No. 7 dated 29 -08-1997 as given below

Table 4.11: Permissible Peak Particle Velocity (PPV) In Mining Areas

Type of structure	Dominant excitation frequency Hz		
	<8 Hz	8-25 Hz	>25 Hz
A. Buildings/structures not belonging to owner			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed structures)	10	20	25
Objects of historical importance and sensitive structures.	2	5	10
B. Building belonging to owner with limited span of life			
Domestic houses/structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed structures)	15	25	50

Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance.

4.5 LAND ENVIRONMENT:

The lease area of 1.13.0 Ha in S.F.No 203/1B is a consent patta land. The present land use pattern, and the post mining land use pattern is shown below:



Table 4.12: Land Use Table

Sl. No.	Land Use	Present Area (Hect)	Area in use during the 5 year period (Ha)
1.	Quarrying Pit	-	0.75.10
2.	Infrastructure	-	0.01.00
3.	Roads	-	0.01.10
4.	Green Belt	-	0.35.80
5.	Unutilized	1.13.00	--
	Total	1.13.00	1.13.00

4.5.1 LAND RECLAMATION:

There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. At the end of the period, In the post mining stage, the mine pit area of 0.75.10 Ha will be left as a water body. Plantation will be carried out over 0.3580 Ha, and 0.02Ha will be utilised for road and infrastructure

Table 4.13: Land Use During Post Operational Period

S.No	Description	Land use (Ha.)			
		Plantation	Water body	Others	Total
1	Quarrying Pit	-	0.75.10	-	0.75.10
2	Infrastructure	0.01.00	-	-	0.01.00
3	Road	-	-	0.01.10	0.01.10
4	Green Belt	0.35.80	-	-	0.35.80
5	Unutilized	-	-	-	-
	TOTAL	0.36.80	0.75.10	0.01.10	1.13.00

Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the entire mined out area shall be used as a rainwater harvesting pond.

4.6 BIOLOGICAL ENVIRONMENT:

4.6.1 EXISTING FLORA AND FAUNA:

The core zone area is barren with grasses and bushes. Details of flora/fauna pattern in core and buffer zones have been described in chapter - III.

4.6.2 IMPACT OF MINING ON BIOLOGICAL ENVIRONMENT:

The significance of impact on biological environment due to mining and allied activities on various fronts is described below:



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Table 4.14: Impact on Biological Environment

S.No	ISSUES	OBSERVATIONS
1	Clearance of vegetation due to mining and allied activities	No clearance of major vegetation is involved.
2	Retardation of tree growth, tip burning, etc, due to deposition of dust and the Particulate matter generated from the mining operation.	Necessary mitigative measures like dust suppression, proper maintenance of equipment's, roads will be carried out to prevent dust generation.
3	Proximity to national park/ wildlife sanctuary/reserve forest/mangroves/Coastline/estuary/ sea	The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.
4	Release of effluents into water body that also supplies water to wildlife	There is no proposal to discharge any effluent into nearby water bodies.
5	Proposed project could increase siltation that would affect nearby biodiversity area	Surface runoff management structures like garland drain, settling pond etc. as explained above will be constructed and as such there will not be any appreciable impact on surface water quality which in turn can affect the bio diversity of the area.
6	Activities of the project affects the breeding/nesting sites of birds and animals	In the present ML area, there is no wetland. A migratory bird needs sufficient wetlands with sufficient food, shelter, roosting places and nesting places which is not possible here.
7	Located near an area populated by rare or endangered species	There are no rare or endangered species in the nearby area
8	Risk of fall/slip or cause death to wild animals due to project activities	In the post mining stage, barbed wire fencing is proposed all around the mined-out void to prevent falling of animals in the mine pits.
9	Project affects the forest-based livelihood/any specific forest product on which local livelihood depends	Not applicable
10	Project likely to affect migration routes	No migration routes are in the area.
11	Project likely to affect flora of an area, which have medicinal value	No such significantly important medicinal value species within the ML area and its nearby region.
12	The project likely to affect wetlands, fish breeding grounds, marine ecology	There are no any wetlands, fish breeding grounds, marine ecology nearby the ML area which will be affected due to this project.
13	Project affects the Agriculture, Forestry and Traditional Practices	Due to rocky land formation, undependable rainfall, poor soil condition, absence of irrigational source or water bodies, deep ground water occurrence, little seasonal agricultural activities are carried out in the area. Only patches of coconut cultivation is observed
14	Impact on soil health and biodiversity	The lease area is Plain topography land only (Photograph of the site attached in Chapter-II). Besides, there is no waste



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		generation, disposal or stacking involved in this project. As such no loss of soil health and Bio-diversity is expected.
15	Climate change leading to droughts, floods, etc.	•As such the production from this lease is very low to cause any appreciable impact.
16	Pollution leading to release of greenhouse gases (GHG) rise in temperature (Hydrothermal/Geothermal effect due to destruction in environment, Bio-geochemical processes and its foot prints including environmental stress) and livelihood of local people.	•No adverse impact on the surrounding environment is envisaged since the number of equipment's to be used to achieve this small production is very less and the magnitude of operation is of very small level. •Besides, as is it a mining project, no adverse generation of heat is envisaged. •Certified vehicles with low carbon emissions will only be used. These equipment's will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been in and around the lease area. •Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed. •There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact. •It will be ensured that mining will be carried out adhering to all the statutory rules and regulations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures. •These mitigative measures will be continued for the entire lease period ensuring no impact on the environment. •As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people, loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc.
17	Possibilities of water contamination and impact on aquatic ecosystem health and impact on Sediment geochemistry in the surface streams	•This being a mining project no process effluent will be generated. •Water generation is expected to be due to ✓ Direct rainfall falling within the pit ✓ Rain water draining near the lease area. •Direct rain fall will be collected in the mine floor sump. Water from sump will be pumped to settling pond for downstream users. •Rainwater from the mine periphery will be collected through peripheral garland drain. Garland drain will be connected to a settling pond. Supernatant clear water from settling pond



		confirming to applicable limits will be let out to downstream users for agricultural or other purposes. •Due to above mentioned reasons and absence of perinial water bodies nearby where in any marine ecosystem is observed, no effect on this front is expected.
--	--	--

There are no migratory corridors, migratory avian-fauna, rare endemic and endangered species. Therefore there shall be no impacts due to mining activity on them. Even though there are no adverse impact on bio diversity and flora/fauna status due to project operations, positive impacts will arise due to well-planned reclamation measures for restoration of land status in the area ultimately to productive land category with elaborately planned green belt development activities.

4.6.3 CONTROL MEASURES FOR BIOLOGICAL ASPECTS:

To reduce the adverse effects on flora/fauna status of the area due to deposition of dust generated from mining operations, mobile water tanker systems will be ensured in all dust prone areas to arrest dust generation. Methodical and well-planned plantation scheme will be carried out depending upon the immediate need, priority and availability of land. The plantation will be done along the lease boundary in a phased manner.

4.6.4 GREEN BELT & PLANTATION:

In the safety zone within the lease area and in the nearby areas including mineral transport road plantation of local trees will be carried out about 550 trees will be planted in and around the lease area.

Table 4.15: Proposed Plantation

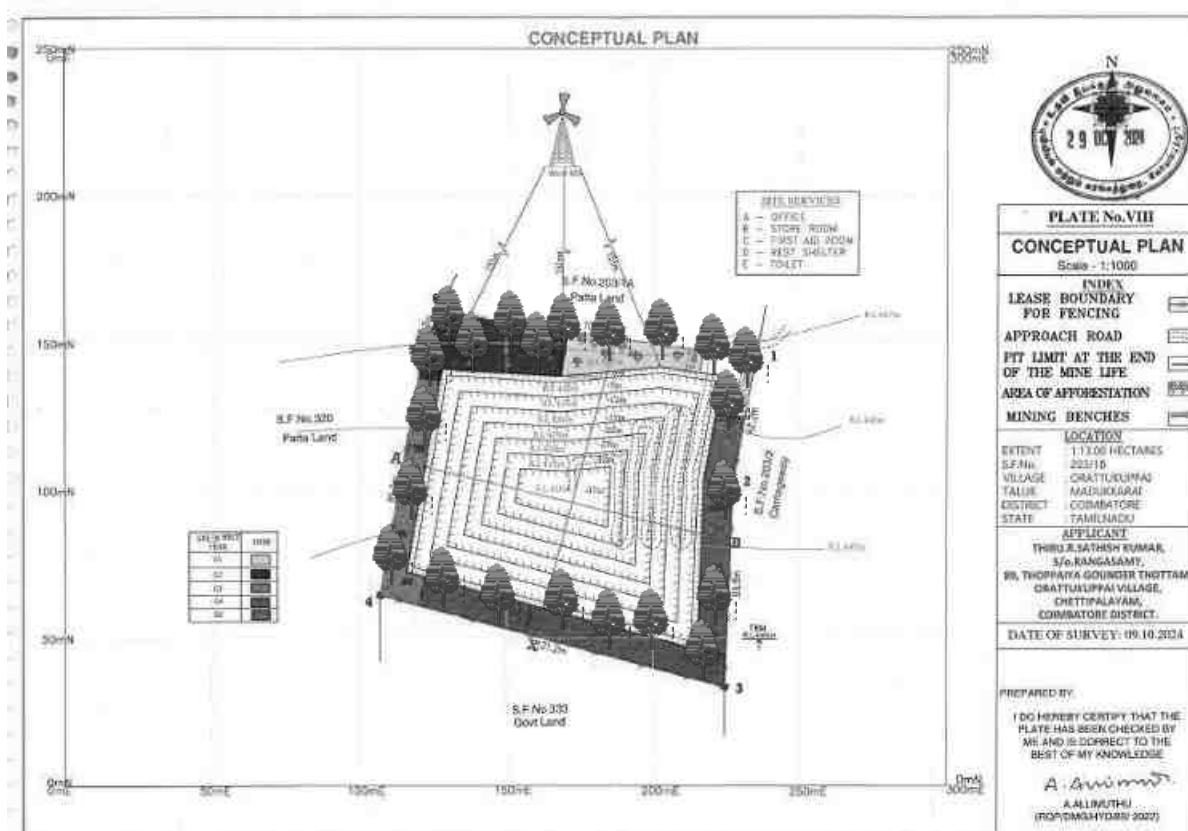
Year	Species	No Of Trees
1	Pungai, vagai, Vembu etc	110
2		110
3		110
4		110
5		110
	Total	550

In the post mining stage, the mine pit area of 0.75.10 Ha will be left as a water body. Plantation will be carried out over 0.3580 Ha, and 0.02Ha will be utilised for road and infrastructure. The post mining land use plan showing afforestation and water body is shown in **Figure No- 4.5**.



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Figure 4.5: Mine Closure Plan



4.7 SOCIO ECONOMIC ENVIRONMENT:

The entire lease area is in the proponent's possession. There are no habitations or hutments in the core zone area and no rehabilitation or resettlement is involved.

The mining operations in the proposed mine will employ about 16 persons directly and about 50 persons on indirect basis through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which will provide raising income levels and standards of living in the area through various service related activities connected with the project operations as shown under.

- Project related logistical operations for transport of Rough Stone, etc,
- Various trading services for consumer goods, spare parts, sundry items, etc.
- Contractual services connected with the project.



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**CHAPTER-4: ANTICIPATED ENVIRONMENTAL
IMPACTS AND MITIGATION MEASURES**

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- Green belt and horticultural works in the project.
- Casual labor needs for various activities.

Besides, there will be improvement in the following aspects due to project operation:

- ❖ Improvement in infrastructural facilities, providing education aids etc. in nearby schools
- ❖ Betterment of drinking water facilities.
- ❖ Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc from this project directly and also indirectly.

From above details, it is clear that the project operations will have highly beneficial positive impact in the area.

Table 4.16: CER Cost

Project Cost (Rs.)	Rs. 1,10,30,000/-
CER Cost Requirement (2% of the Project Cost) (Rs.)	Rs. 2,20,600/-
Revised CER cost allocated (Rs.)	Rs. 3,00,000/-

However, towards the socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.3 Lakhs under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner in provision of facilities in nearby Government School.

4.8 OCCUPATIONAL HEALTH AND SAFETY:

4.8.1 BASELINE STATUS:

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

4.8.2 IMPACTS ON OCCUPATIONAL HEALTH DUE TO PROJECT OPERATIONS:

Anticipated occupational illness sequel to mining activities can be as follows:



- Dust related pneumonia
- Tuberculosis
- Rheumatic arthritis
- Segmental vibration
- Miner's Nystagamus

4.8.3 MITIGATIVE MEASURES FOR OCCUPATIONAL HEALTH:

To reduce pollution emanation from the project, following measures are being and will be taken:

- Water sprinkling on haul roads etc.
- Green belt creation to arrest dust and reduce noise propagation.
- Acceptance of good control measures for reducing air pollution, as mentioned earlier in the chapter.
- Control of noise levels through good preventive maintenance of machineries, green belt creation, provision of ear plug to workers, etc.
- In addition to above measures, the following remedial steps are being and will be enforced to ensure minimization of occupational health and safety problems.
- Medical examination of workers by qualified doctors, as per DGMS circulars.
- Regular awareness campaigns amongst staff and workers
- Staff will be provided with PPE to guard against excess noise levels, Dust generation and inhalation, etc., as per standards prescribed by DGMS.

4.8.4 MITIGATIVE MEASURES FOR SAFETY ASPECTS:

The following safety gadgets will be provided to the staff and workers based on their area of operation and work & requirement:

SI No	Safety Equipments
1.	Helmets
2.	Shoes
3.	Goggles
4.	Dust Mask
5.	Hand Gloves

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SI No	Safety Equipments
6.	Reflective Jackets
7.	Ear Muffs
8.	Signal Lights/Flags

4.9 LOGISTICAL SYSTEM:

From this proposed quarry the entire output will be transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. The expected peak transport will be as follows:

Table 4.17: Details of Transportation

Sl.no	Particulars of activity	Quantity
A	Maximum RoughstoneTransported (m3/year)	22890
B	No of days in a year	300
C	Transport hours per day	8
D	Truck capacity in T	20
	Trips per hour	1 Trip/hr

From the above table it is seen that there will be about 1 trip per hour additional truck traffic. The existing road can absorb this traffic due to this project. However, the following mitigative measures are suggested:

- ❖ Water sprinkling on material in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Plantation on either side of the transport road in consultation with the concerned department.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet.
- ❖ Limiting of speed
- ❖ Provision of tyre washing facility at the mine outlet



4.10 WASTE MANAGEMENT:

Solid Waste: Since the entire mined out material will be used there will not be any solid waste generation from this project.

Liquid waste: There is no process effluent generation from this mine. Hence no liquid waste is generated.

Hazardous waste management: In this project the following management practices will be followed:

- Ensuring availability of different colour bins for collection of different types of waste.
- Storing of Hazardous waste material in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps, tyre storage etc.
- Ensure that there are no leakages/spillages of hazardous wastes.
- Ensuring that the fire extinguisher system is available at hazardous material storage area.

The hazardous waste if any will be disposed through authorized recyclers or re-processors periodically. The hazardous wastes will be transported in accordance with the provisions of rules. By effective implementation of above said mitigation measures no major impact due to Hazardous waste is expected.

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

* * * * *

CHAPTER - V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

CHAPTER 5

ANALYSIS OF ALTERNATIVES

5.1 ALTERNATE TECHNOLOGY:

This is a proposed Rough Stone and Gravel Quarry in which Mechanized Open Cast mining will be carried out. It involves jack hammer drilling, blasting, excavation, loading and transportation of Rough stone to the crushing units. As this method is techno economically proven, consideration of an alternate technology is not warranted.

5.2 ALTERNATE SITE:

The mineral deposits are site specific in nature; hence question of seeking alternate site does not arise.

* * * * *



CHAPTER - VI

ENVIRONMENTAL MONITORING PROGRAMME

CHAPTER 6

ENVIRONMENTAL MONITORING PROGRAMME

6.1 GENERAL

In this project, appropriate environmental monitoring programme are framed. Regular, systematic and sustained programme schedules for implementation and monitoring of various control measures are devised with clear cut guidelines of various concerned plans for keeping a continuous surveillance on the various environmental quality parameters in the area.

The monitoring schedules are planned to aim at regular and systematic study of various pollution levels with respect to air and water quality, noise levels etc., to ensure that they conform to the standards laid down by the Environment Protection Act, 1986 and various Central and State Pollution Control Board Limits.

The various methodologies and frequency of studies of all environmental quality parameters will be as per prescribed norms laid down by MOEF&CC and State Pollution Control Board. This being a small quarry operation, the Mines in-charge will take care of all the environmental related works also.

Environmental control measures include components like air, water and soil quality, noise levels, afforestation measures, etc. For monitoring of environment over the life of the mine, a set of stations for study of quality parameters are fixed as per the actual requirements and prevailing conditions of environmental factors, as dictated from time to time, depending on the prevailing pollution levels.

6.2 MONITORING SCHEDULES FOR VARIOUS PARAMETERS

The monitoring schedules are planned for systematic study of various pollution levels with respect to air and water qualities, noise levels, etc. to ensure that they conform to the standards laid down by Environmental Protection Act and various statutory Limits. However, based on the need and priority it may be suitably modified / improved in consultation with local authorities. The monitoring schedules to be adopted in this quarry are given below.



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Table 6.1: Environmental Monitoring Schedule

S.No	Environmental Parameters	Parameters to be monitored	Monitoring area coverage /locations	Frequency of monitoring
1	Air Quality	Sulphur dioxide (SO ₂), Oxides of Nitrogen (NO ₂), Respirable Particulate Matter (PM _{2.5} and PM ₁₀).	2 locations in the buffer zone and 1 work zone locations.	Once in a year in each location.
2	Water Quality	General, Physical, and chemical parameters	Ground Water samples (around the project area) and Mine Pit water samples	Once in a year
3	Water Table Fluctuations	Water Levels	Nearby wells and Borewells	On yearly basis pre and post monsoon level
4	Noise	Leq. Lmax Lmin, Leq Day & Leq Night dB(A)	Work zone locations and buffer zone villages	Once in a year
5	Vibration	Peak Particle Velocity	Mine periphery	Once to arrive at optimum blasting parameters
6	Socio Economic Environment	Socio Economic Survey, Review of implementation of CER activities proposed	Buffer Zone	Yearly basis
7	Occupational Health	Occupational health survey to detect early incidence of diseases, Audiometry Test for workers in noise prone area and review of safety matters.	Staff and Workers involved in the project	Once in a year
8	Greenbelt	Maintenance	Within the lease area	Regularly

6.3 LEGISLATIVE AND REGULATORY FRAME WORK:

The project will have environmental policy declaring its responsibility and commitment to protect the environment and to ensure public safety. The existing policy will be available with all concerned officials of the plant. The following environmental standards as per methodologies prescribed, by MOEF/CPCB/TNPCB will be enforced in this project:



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Table 6.2: Environmental Standards

Standards	Issued By	Reference
National Ambient Air Quality Standards	Central Pollution Control Board	Table No. 6.3
Water quality standards per IS 10500:2012	Bureau of Indian Standards	Table No.6.4
Noise Standards	CPCB / MoEF&CC	Table No.6.5
Permissible Peak Particle Velocity	DGMS, Dhanbad	Table No.6.6

Table 6.3: National Ambient Air Quality Standards

[NEPI III] - संशोधन 4

मानक वातावरण : असाधारण

3

NATIONAL AMBIENT AIR QUALITY STANDARDS
CENTRAL POLLUTION CONTROL BOARD
NOTIFICATION
New Delhi, the 18th November, 2009

No. B-29616/2009/PC-I.-In exercise of the powers conferred by Sub-section (2) (b) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in supersession of the Notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Areas (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual* 24 hours**	50 80	20 80	- Improved West and Gaeke - Ultraviolet fluorescence
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM ₁₀ , µg/m ³	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or PM _{2.5} , µg/m ³	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation
5	Ozone (O ₃), µg/m ³	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb), µg/m ³	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS/ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO), mg/m ³	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia (NH ₃), µg/m ³	Annual* 24 hours**	100 400	100 400	- Chemiluminescence - Indophenol blue method



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THE GAZETTE OF INDIA : EXTRAORDINARY

[PART III—SEC. 4]

(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C ₆ H ₆) µg/m ³	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m ³	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m ³	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman
[ADVT-III/4/184/09/Exy.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India, Extraordinary vide notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998.



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Table 6.4: IS – 10500 :2012 Standards

Table 1 Organoleptic and Physical Parameters
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Colour, Hazen units, <i>Max</i>	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources
ii)	Odour	Agreeable	Agreeable	Part 5	a) Test cold and when heated b) Test at several dilutions
iii)	pH value	6.5-8.5	No relaxation	Part 11	—
iv)	Taste	Agreeable	Agreeable	Parts 7 and 8	Test to be conducted only after safety has been established
v)	Turbidity, NTU, <i>Max</i>	1	5	Part 10	—
vi)	Total dissolved solids, mg/l, <i>Max</i>	500	2 000	Part 16	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.



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Table 2 General Parameters Concerning Substances Undesirable in Excessive Amounts
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Aluminium (as Al), mg/l, Max	0.03	0.2	IS 3025 (Part 55)	—
ii)	Ammonia (as total ammonia-N), mg/l, Max	0.5	No relaxation	IS 3025 (Part 34)	—
iii)	Anionic detergents (as MBAS) mg/l, Max	0.2	1.0	Annex K of IS 13428	—
iv)	Barium (as Ba), mg/l, Max	0.7	No relaxation	Annex F of IS 13428* or IS 15302	—
v)	Boron (as B), mg/l, Max	0.5	1.0	IS 3025 (Part 57)	—
vi)	Calcium (as Ca), mg/l, Max	75	200	IS 3025 (Part 40)	—
vii)	Chloramines (as Cl ₂), mg/l, Max	4.0	No relaxation	IS 3025 (Part 26)* or APHA 4500-Cl G	—
viii)	Chloride (as Cl), mg/l, Max	250	1 000	IS 3025 (Part 32)	—
ix)	Copper (as Cu), mg/l, Max	0.05	1.5	IS 3025 (Part 42)	—
x)	Fluoride (as F) mg/l, Max	1.0	1.5	IS 3025 (Part 60)	—
xi)	Free residual chlorine, mg/l, Min	0.2	1	IS 3025 (Part 26)	To be applicable only when water is chlorinated. Tested at consumer end. When pro- tection against viral infec- tion is required, it should be minimum 0.5 mg/l
xii)	Iron (as Fe), mg/l, Max	0.3	No relaxation	IS 3025 (Part 53)	Total concentration of man- ganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xiii)	Magnesium (as Mg), mg/l, Max	30	100	IS 3025 (Part 46)	—
xiv)	Manganese (as Mn), mg/l, Max	0.1	0.3	IS 3025 (Part 59)	Total concentration of man- ganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xv)	Mineral oil, mg/l, Max	0.5	No relaxation	Clause 6 of IS 3025 (Part 39) Infrared partition method	—
xvi)	Nitrate (as NO ₃), mg/l, Max	45	No relaxation	IS 3025 (Part 34)	—
xvii)	Phenolic compounds (as C ₆ H ₅ OH), mg/l, Max	0.001	0.002	IS 3025 (Part 43)	—
xviii)	Selenium (as Se), mg/l, Max	0.01	No relaxation	IS 3025 (Part 56) or IS 15303*	—
xix)	Silver (as Ag), mg/l, Max	0.1	No relaxation	Annex J of IS 13428	—
xx)	Sulphate (as SO ₄) mg/l, Max	200	400	IS 3025 (Part 24)	May be extended to 400 pro- vided that Magnesium does not exceed 30
xxi)	Sulphide (as H ₂ S), mg/l, Max	0.05	No relaxation	IS 3025 (Part 29)	—
xxii)	Total alkalinity as calcium carbonate, mg/l, Max	200	600	IS 3025 (Part 23)	—
xxiii)	Total hardness (as CaCO ₃), mg/l, Max	200	600	IS 3025 (Part 21)	—
xxiv)	Zinc (as Zn), mg/l, Max	5	15	IS 3025 (Part 49)	—

NOTES

1 In case of dispute, the method indicated by '*' shall be the referee method.

2 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.



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Table 6.5: Noise Level Standards

Area Code	Category of Area	Limits in dB(A) Leq	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note :

1. Day time shall mean from 6 a.m. and 10.0 p.m.
2. Night time shall mean from 10.0 p.m. and 6 a.m.
3. Silence zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority.
4. Mixed categories of areas may be average as one of the four above mentioned categories by the competent authority.

* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A “decibel” is a unit in which noise is measured.

“A”, in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is energy mean of the noise level over a specified period.

Table 6.6: Permissible Noise For Industrial Workers As Laid Down By CPCB

Exposure time (in hr. per day)	Limit in dB(A)
8	90
4	93
2	96
1	99
1/2	102
1/4	105
1/8	108
1/16	111
1/32	114



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Table 6.7: Permissible Peak Particle Velocity (PPV) In Mining Areas

In mm/sec.

Type of structure	Dominant excitation frequency Hz		
	<8 Hz	I 8-25 Hz	I >25 Hz
A. Buildings/structures not belonging to owner			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed structures)	10	20	25
Objects of historical importance and sensitive structures.	2	5	10
B. Building belonging to owner with limited span of life			
Domestic houses/structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed structures)	15	25	50

The above said monitoring location and the frequency of monitoring shall be suitably modified in consultation with the nodal agency as per the actual requirements and prevailing conditions of the mine and environmental factors, as dictated from time to time, depending on the prevailing pollution levels, if required.

6.4 ENVIRONMENTAL MONITORING COST:

Towards environmental monitoring it is proposed to allocate a budget of Rs. 50,000 per annum for this project. Further details of the capital and recurring cost of environmental management has been provided in in Table No. 10.2, Chapter-X.

* * * * *



CHAPTER - VII

ADDITIONAL STUDIES

CHAPTER 7

ADDITIONAL STUDIES

7.1 GENERAL:

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

1. Public consultation of the project as per MoEF&CC mandates.
2. Risk Assessment
3. Cumulative Impact Study
4. R&R Plan
5. Mine closure planning

7.2 PUBLIC CONSULTATION:

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

7.3 RISK ASSESSMENT:

For the various risks, likely to arise, detailed analysis of causes and control measures is given in below:

S.No	Factors	Causes of risks	Control measures
1.	Removal of material	a) Bench may slide due to its unconsolidated nature. b) Vibration due to movement of vehicles in the benches.	Overall bench slope angle will be maintained optimally as per DGMS requirement. Working bench width will be more than bench height.
2.	Drilling	a) Due to high pressure of compressed air hoses may burst. b) Down the hole drill rod	• Periodical preventative maintenance and replacement of worn out accessories in the compressor and drill equipment.



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S.No	Factors	Causes of risks	Control measures
		may break due to improper maintenance of rod.	As per manufacturers recommendation rod to be replaced and bits will be changed.
3.	Blasting	a) Fly rock, ground vibration, noise etc. b) Improper charging of explosives	- Burden and spacing will be kept optimum on trial basis. - Explosive charge per delay will be minimized. - Controlled blasting with Nonel will be used.
4.	Excavation	a) Hauling and loading equipment are in such proximity while excavation b) Swinging of bucket over the body of tipper c) Driving of unauthorized person	- Operator shall not operate the machine when person & vehicles are in such proximity. - Shall not swing the bucket over the cab and operator leaves the machine after ensuring the bucket is on ground. - Shall not allow any unauthorized person to operate the machine by effective supervision.
5.	Transportation	a) Operating the vehicle "nose to tail" b) Overloading of material c) While reversal & overtaking of vehicle d) Operator of truck leaving his cabin when it is loaded	- It will be ensured that all these causes will be nullified by giving training to the operators. - No over loading will be done. - Audio visual reverse horn will be provided. - Proper training will be given.
6.	Fire due to electricity and Oil	a) Due to the short circuit of cables & other electrical parts b) Due to the leakage of inflammable liquid like diesel, oil etc.	- Electrical parts shall be cleaned frequently with the help of dry air blower - All fastening parts and places will be tightening. Suitable fire suppression equipment shall be provided.
7.	Natural calamities	Unexpected happenings	The mine management is capable to deal with the situation.

This being a small rough stone project that too working in a safe area, no major disaster is expected.



7.3.1. DISASTER MANAGEMENT PLAN:

In General, following natural/industrial hazards may occur during normal operation.

- Inundation of mine pit due to flood/excessive rains :
- Slope failure of the pit and waste dumps
- Accident due to heavy mining equipment and
- Blasting and use of Explosives

Mining operation in this lease will be carried out under the management control and direction of a qualified mine manager. The DGMS have been issuing a number of standing orders, model standing orders and circulars to be followed by the mine management in case of disaster. All these orders statutory rules and regulations will be followed. Seismically project site and study area falls in the Zone – II and is described as least active zone. There are no perennial water body near the lease area to cause any flooding. As such no disaster due to this project is envisaged.

In order to take care of above hazard / disasters the following control measures have been adopted.

- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- Avoiding mining during heavy monsoon period and marching of all the HEMM to the top benches during rainy period.
- Provision of high capacity standby pumps with generator sets with sufficient quantity of diesel for emergency pumping especially during monsoon.
- All safety precautions and provisions of regulations will be strictly followed during all mining operations
- Prohibiting entry of unauthorized persons.
- Provision of Fire fighting and first-aid provisions in the mines.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees for their use.

- Training and refresher courses for all the employees working in hazardous premises
- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Working of mine, as per approved plans and regularly updating the mine plans
- Cleaning of mine faces regularly
- Proper storage, usage of explosives through competent persons.
- Regular maintenance and testing of all mining equipment as per manufacturers guidelines
- Suppression of dust on the haulage roads with frequent water sprinkling, etc.
- Increasing the awareness of safety and disaster through competitions, posters and annual safety weeks and environmental weeks, encouraged through suitable rewards and other similar drives.

The management and the EMC will be able to deal with the situations efficiently keeping in view of the likely sources of dangers in the mine.

7.4 REHABILITATION AND RESETTLEMENT (R & R) PLAN:

The mining activities will be carried out within the mine lease area only. The entire mine lease area is a Patta land. There is no population within the ML area. Hence, the question of R& R does not arise.

7.5 MINE CLOSURE PLAN:

In the mine closure stage all necessary measures will be taken as per Act & Rules, There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of life of mine will be properly fenced all around to prevent inherent entry of public and cattle and all the statutory requirements will be fulfilled. As already explained, in the post mining stage the rainwater harvested in the mined out void shall be utilized for irrigation and domestic needs locally. The mine closure plan is provided in Figure 4.5 in chapter – IV of the EIA/EMP Report.

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7.6 CUMULATIVE IMPACT STUDY:

The lease area is located in Orattukuppai village, madukkarai Taluk, Coimbatore District, Tamil Nadu. The details of the other quarries located within the 500m radius of the project considered for cumulative impact study now (**Annexure-3**) has been provided below:

Table 7.1: Details of quarries within 500m radius

S.No	Quarry Details	Village	S.F.No.	Extent (Ha)	Lease Period
a	Existing Quarry				
	Nil				
b	Expired Quarries				
1	Tvl.Ultra Ready Mix Private Ltd	Orattukuppai	320 (P) & 332/2A (P)	3.07.4	22.12.2018 to 21.12.2023
2	K.Balakrishnan	Pachapalayam	291/1B1B(P)	2.40.5	15.09.2017 to 14.09.2022
c	Abandoned Quarries				
1	V.Velusamy	Pachapalayam	291/1B2, 291/1D1 & 291/1D2	2.43.5	07.03.2017 to 06.03.2020
2	K. Natarajan	Pachapalayam	291/2A2 & 291/2B	1.83.5	02.06.2016 To 01.06.2021
3	R.Chellammal	Kallapalayam	261/1A & 263/1B	1.22.0	24.07.2005 to 23.07.2010
4	N.Boopathiraj	Orattukuppai	333 (Govt.poramboke)	1.06.5	21.02.2004 to 20.02.2009
d. Present proposed Quarries					
1.	R.Sathishkumar	Orattukuppai	203/1B	1.13.0	Applied area (Rough Stone and gravel)
2	M/s. Tamilnadu Blue Metals	Kallapalayam	263/ 1A(P) 86 264/ 1(P)	1.91.0	Pending with SEIAA
3	V.Gopalakrishnan	Pachapalayam	291/1A	2.43.5	Pending with SEIAA
4	M/s.Ultra Sahara Sand	Orattukuppai	320/1 (P)	4.24.0	Precise area communicated
5	D.Ramesh	Pachapalayam	291/1B1A	0.91.0	Pending with SEIAA

From that above it is seen that, although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius along with this subject project works out to >5 Ha. As such cluster situation applicable and this EMP is prepared.



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Baseline data given in Chapter – III reflects the existing operations in the area. Cumulative impact on various environmental attributes due to the present proposed project and other 4 proposed projects are studied,. For this purpose the impact of the present proposal as given in Chapter – IV of this report and for other proposals from their respective report are correlated and given below:



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Figure 7.1: Vicinity Map



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Table 7.2: Salient details of the proposed quarries

S. No	Project Name	Sathish kumar	P1 M/s. Tamilnadu Blue Metals	P2 - V.Gopalakrish nan	P3- M/s.Ultra Sahara Sand	P4- D.Ramesh
1	Survey No.	203/1B	263/1A(P) & 264/1(P)	291/1A	320 (P)	291/1B1A
2	Village	Orattukuppai	Kallapalayam	Pachapalayam	Orattukuppai	Pachapalayam
3	Taluk	Madukkarai	Sulur taluk	Sultanpet taluk	Madukkarai	Madukkarai
4	District	Coimbatore	Coimbatore	Coimbatore	Coimbatore	Coimbatore
5	State	Tamilnadu	Tamilnadu	Tamilnadu	Tamilnadu	Tamilnadu
6	Lease Area in Ha	1.13	1.91	2.43.5	4.24.0	0.91
7	Mineable reserves	113338	1,51,295	2,26,170	476250	60,002
8	Peak Production	22890	30,259	45,234	117450	12,000
9	Method of mining	Opencast mechanized mining	Opencast mechanized mining	Opencast mechanized mining	Opencast mechanized mining	Opencast mechanized mining
10	Lease Period	5 years	5 years	5 years	5 years	5 years
11	Ultimate Depth	37m	27m	46m	52m	27m
12	Project cost	Rs.1,10,30,000/-	Rs. 1,31,74,000/-	Rs. 82,85,000 /-	Rs.3,82,05,000 /-	Rs. 33,05,670/-

7.6.1 AIR ENVIRONMENT:

The mining and allied activities particularly excavation, hauling, loading and un loading etc. lead to emission of particulate matter. However, effective mitigative measures are provided in the EIA/EMP reports to obviate these effects. The impact on ambient air quality for PM₁₀ and PM_{2.5} due to the operations of both these proposed projects are predicted based on Air Quality Model simulations. The modeling is done for the peak production to know the worst scenario. The cumulative peak Ground Level Concentration (GLC) after effective implementation of various mitigative measures have been computed .

It is observed that the peak incremental concentration for PM₁₀, PM_{2.5} is occurring very near the source. At away from the source the values are getting reduced due to dispersion effects.

The incremental and predicted concentrations at the locations of ambient air quality on cumulative basis is given below.



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7.6.1.1 PREDICTED AMBIENT AIR QUALITY:

The cumulative combined post project Concentrations of PM₁₀, PM_{2.5}, (GLC) (base line + incremental) after adopting necessary control measures is given below:

Table 7.3: Concentrations of PM₁₀ after Project Implementation

S. No	Location	Background Concentration	Predicted Incremental Concentration Sathish	Values in µg/m ³		Statutory Limits
				Predicted Incremental Concentration P1 to P4	Post Project cumulative Concentration	
1	A1- Near Mine Lease Area	61.0	1.4	8.0	70.4	-
2	A-2Chettipalayam Village	64.0	<1.0	2.0	67.0	100
3	A-3 Periya Kuyilai Village	58.0	<1.0	1.5	60.5	
4	A-4KallapalayamVillage	58.0	<1.0	<1.0	60.0	
5	A-5Chinnakuyili Village	57.9	<1.0	<1.0	59.9	

Table 7.4: Concentrations of PM_{2.5} after Project Implementation

S. No	Location	Background Concentration	Predicted Incremental Concentration	Predicted Incremental Concentration P1 to P4	Post Project Concentration	Statutory Limits
1	A1- Near Mine Lease Area	25.0	<1.0	2.0	28.0	-
2	A-2Chettipalayam Village	26.0	<1.0	<1.0	28.0	60
3	A-3 Periya Kuyilai Village	23.0	<1.0	<1.0	25.0	
4	A-4KallapalayamVillage	24.0	<1.0	<1.0	26.0	
5	A-5Chinnakuyili Village	25.0	<1.0	<1.0	27.0	

On cumulative basis, the resultant added concentrations with baseline figures even at worst scenario and cumulative impact of the projects show that the values of ambient air quality with respect to PM₁₀ are in the range of 59.9µg/m³ to 70.4 µg/m³ and with respect to PM_{2.5} are in the range of 25.0µg/m³ to 28.0µg/m³ which are within the statutory stipulations in respective case.

7.6.2 WATER ENVIRONMENT:

Water requirement for all the projects is mainly for dust suppression and green belt development. Only negligible quantity of water is required for this purpose. Initially it will be procured from outside agencies for these projects and later rainwater collected in the mine pit will be used. Groundwater intersection is not envisaged due to the quarrying operations in these mines . These being mining project there will not be any effluent discharge outside. There are



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no streams passing through the lease areas. Hence, no major impact is expected on groundwater and surface water regime due to the cumulative project operations.

7.6.3 NOISE ENVIRONMENT:

Normally noise is felt only near the active source and at away places it get dissipates rapidly. Besides, due to attenuation at mine benches, elevation difference in pits, green belt and dissipation effect , noise levels due to mining operations at its periphery itself becomes insignificant.

Post project noise in the core zone has already been provided under para 4.4, Chapter-IV where it is seen that the predicted Noise Levels due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor. However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary. Hence, the cumulative post project noise levels is also expected to be insignificant.

7.6.4 VIBRATION:

By Carrying out controlled blasting using Nonel milli second delay detonators, Optimum design for burden and spacing, reducing the explosive charge per delay to minimum in all the projects no adverse impact due to blasting vibration is expected.

7.6.5 TRAFFIC:

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

Table 7.5: Cumulative number of trips

Details	sathishkumar	P1 M/s. Tamilnadu Blue Metals	P2 - V.Gopalakrishnan	P3- M/s.Ultra Sahara Sand	P4- D.Ramesh
Maximum Roughstone Transported (m3/year)	22890	30,259	45234	117450	12000
No of days in a year	300	300	300	300	300
Transport hours per day	8	8	8	8	8
Truck capacity in m3	12.5	12.5	12.5	12.5	12.5
Trips per hour	1 Trip/hr	1 Trip/hr	2 Trips/hr	4 Trips/hr	1 Trips/hr



Totally there will be about 9 trips per hour. The existing road can absorb this traffic due to this project. Various measures like proper maintenance of road, covering of the loaded truck with tarpaulin, water sprinkling will be carried out to ensure no adverse impact on the logistical front.

7.6.6 LAND ENVIRONMENT:

In the post mining stage, entire mined out area of all the leases will be left as water body. Safety zone will be developed with plantation. It will be ensured that the entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. The rainwater harvested in the mined-out void shall be utilized to meet the water requirement.

7.7 PIT SLOPE STABILITY PLAN

- Factors affecting slope stability of the mine are
 - Geological structure comprising dip, intervening shear zone formation, clay intrusion, joints / discontinuities, faults etc.,
 - Lithology of formation
 - slope geometry
 - Ground water availability which may cause increased thrust on the faces
- Site specific analysis
 - Since the formation is of homogeneous rock type probability of slope failure is low and can be avoided if proper measures are adopted.
 - There will be a 7.5m wide barrier zone which will form a ridge which can also take care of the top section and as such no risk is envisaged on this front.
 - During future workings the following measures will be ensured:
 - Regular inspection of the mine faces to be carried out by mines manager for ensuring absence of any structural features like faults, joints, dyke, intrusive material in the rock strata which may affect the slope stability and cleared.
 - No loose material or boulders is to be stacked on the mine top or pit benches.

- Height of the benches should be 5m. Working bench width should be at least 2.5 times the bench height. Ultimate pit bench width will be 5m & slope is kept at 45° to ensure slope stability.
- Haul road formation will be at 1 in 16 slope with adequate road width.
- There will be no ground water table intersection. No seepage is expected due to formation. Adequate drainage management system comprising peripheral garland drain, settling pond to regulate monsoon water will be created to prevent saturation of compact layers, apparent drainage over the bench slope to avert damages to quarry face and manage the water flow.

The above will ensure safe and stable mine prospects.

7.8 CONCLUSION:

It can be concluded that lot of mining and its allied activities are taking place in the hard rocky formation nearby surroundings. The proposed lease may act as a substitute for the recently expired or to be expired leases in the region.

No adverse impact on the surrounding environment is envisaged from this project due to enforcing all the mitigative measures during mining.

Certified vehicles with low carbon emissions will only be used. These equipment's will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned

Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed. There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact.

It will be ensured that mining will be carried out adhering to all the statutory rules and regulations, appointing statutory personnel's like qualified mines manager, blaster, informing DGMS before commencement of mining operations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures.

As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the



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local people, loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc.

Mine closure plan is prepared for the lease period and already included in the approved mine plan.

Due to absence of perennial water bodies nearby where in any marine ecosystem is observed, no effect on this front is also expected. Hydrological investigation carried out and as given in Para 3.6 of Chapter III & para 4.3 Chapter – IV shows that the all-time ground water table in this area is much below the mining level. Hence, ground water intersection is not envisaged for the entire life of the mine and ground water will not be affected due to the quarrying operation. As such there will not be any adverse impact on the ground water regime. Besides, this being a mining project, there will not be any process effluent. As mentioned earlier, the rainfall will be collected in the mine floor sump and gainfully used as per CGWA requirement. Excess water if any in the sump will be pumped to settling pond and supernatant clear water let out for downstream users.

It will be ensured that mining will be carried out adhering to all the statutory rules and regulations, appointing statutory personnel's like qualified mines manager, blaster, informing DGMS before commencement of mining operations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures for the entire lease period.

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CHAPTER - VIII

PROJECT BENEFITS

CHAPTER 8

PROJECT BENEFITS

The proposed Rough stone and Gravel Quarry of Thiru. R.Sathishkumar will improve physical and social infrastructures in the area like:

- Direct employment to 16 people.
- Indirect employment to scores of people.
- Financial gains for the governments, through collection of various taxes like royalty, GST, etc.,
- Increase in General Awareness of the People.
- Continual improvements of the local amenities for the local society
- Improvement of the General Living Standard of the People in the Vicinity
- Overall Improvement in HDI (Human Development Index)
- Growth of Allied Industries in the Area.
- Improvement in Per Capita Income.
- Providing certain facilities for the local schools and panchyats

In short, the proposed Rough Stone & Gravel Quarry will benefit this region in the fields of employment opportunities, improved per capita income for local people, and improved social welfare facilities in respect of education, medical systems, infrastructural build-up, etc in its own way.

By means of carrying out the socio-economic development activities, local community development is expected. Towards the same, the proponent has planned to allocate Rs.3.0 Lakhs for various activities under CER. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.

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CHAPTER - IX

ENVIRONMENTAL COST BENEFIT ANALYSIS

CHAPTER 9

ENVIRONMENTAL COST BENEFIT ANALYSIS

Appendix-III of the MoEF notification S.O. 1533 dated 14.09.2006, which describes the generic structure of Environmental Impact Assessment document, states that the chapter 'Environmental cost benefit analysis' is applicable if it is recommended during scoping stage.

ToR for this project has been received from SEIAA, Tamil Nadu vide their letter No. TO24B0108TN5970090N dated 12.01.2025. Environmental cost benefit analysis is not prescribed in the terms of reference. Hence, it is not applicable for this project.

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CHAPTER - X

ENVIRONMENTAL MANAGEMENT PLAN

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

10.1 INTRODUCTION:

This chapter describes the implementation strategies of the environmental management measures described through the course of this EIA/EMP report for the purpose of mitigating significant impacts due to the proposed mining operations.

10.2 COMPONENTS OF THE ENVIRONMENTAL MANAGEMENT PLAN:

The environmental management plan comprises identification of the major impacts due to project operations and their suitable mitigative measures. (Provided in an elaborate manner in Chapter-IV) Based on the environmental policy of the company, the environmental management cell will oversee the implementation of these mitigative measures. The details of the proponent's environmental policy, environmental management cell and also the budgetary allocation towards various environmental management measures has been elaborated in this chapter.

10.2.1 ENVIRONMENTAL POLICY:

The proponent will frame a well-planned environmental policy. The salient features of this policy will be.

- ❖ Ensuring risk-free and safe mining operations by following all rules and conditions prescribed in the Indian mines Act, metalliferous mining regulation, mineral conservation and development rules, etc,
- ❖ Ensuring environmental preservation by adoption of remedial measures for control of air, water quality, noise status, biological improvements, green belt creation, etc.,
- ❖ Extending CER activities to cater to the needs of local community for various benefits like improvement of physical and social infrastructures for the welfare of local community.



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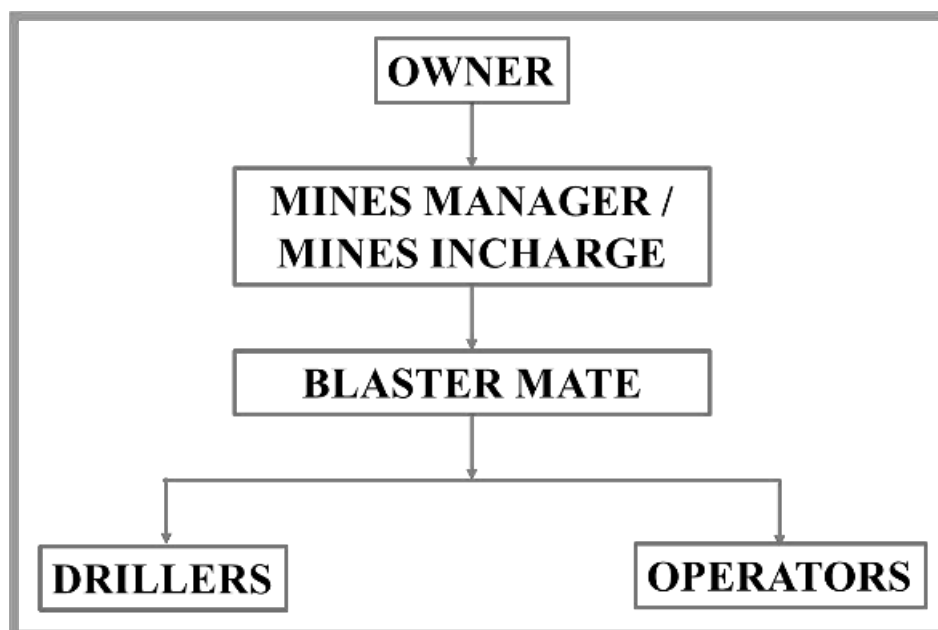
- ❖ Ensuring that all mining operations such as deployment of HEMM, conduct of drilling and blasting operations, etc are strictly conducted keeping with regulatory standards & maintaining safe working environment in the area.
- ❖ Providing periodical training on safety, Health, & Environment to all employers.
- ❖ Any infringement / violation of any rule or unsafe mining operations should be reported mines manager, should be reported by the foremen/ blaster mate etc, who will take immediate corrective measures for avoiding major disasters. The report will ultimately reach the owner through upwardly hierarchical communicative channels from the lowest level to superior levels in a quick time bound duration.
- ❖ The mines manager will exercise overall control over entire mining and connected operations and all infringements / violations on any count pertaining to unsafe operations, environmental degradation, etc, should be brought to the notice of the owner of the quarry. Remedial measures for such violations and deviations should be taken care by the mines manager to avoid any hazards or disasters in the mine and nearby areas. The persons responsible for such violations will be punished through appropriate disciplinarily penal actions.
- ❖ The EC conditions and stipulations will be strictly observed by Mines manager of the mine in various issues like prescribed environmental monitoring schedules conducting of vibratory studies due to blasting, creation of green belt, management of mined area, occupational health review, etc.
- ❖ Penalty actions will be taken by the proponent in cases of continuous negligence resulting in violations deviations in this respect.
- ❖ A time schedule of once in 90 days for review of all operational factors as mentioned above is to be enforced, for proper and quick corrective actions needed in the matter.



10.2.2 ENVIRONMENTAL MANAGEMENT CELL:

The Mines Manager/Mine Incharge will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level control, plantation programme, social development schemes, etc in the mine. The organizational chart for the same has been provided below:

Figure 10.1: Organization Chart



The Mines Manager/Mines In charge in the mine project site will be directly responsible for various environmental activities in the mine. The owner will correlate and oversee the environmental activities and their effective implementation in consonance with the guidelines in the EMP. The Mines Manager/Mines In charge will oversee the environmental administration at the mine and he will directly supervise all activities of environmental administration on environmental issues. Necessary assistance from sub ordinates, external consultants and laboratories shall be taken.

Environmental control measures will span various factors like land degradation, air, water and soil quality, noise levels, effective land reclamation for excavated areas, afforestation measures, etc. The administrative functions are given below.

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- ❖ To observe the implementation of environmental control measures.
- ❖ To study the effects of project activities on the environment.
- ❖ To ensure implementation of Plantation Programme. Regular monitoring of survival rate of plants is carried out to achieve the desired result.
- ❖ To keep records of monitoring etc., in a systematic way, so as to facilitate easy access, when needed by statutory agencies, etc. Also send prescribed returns to statutory authorities.
- ❖ To ensure that adequate fencing and plantation is carried out in the safety zones.
- ❖ Conducting environmental studies and reporting to SPCB.
- ❖ To interact and liaise with Government Departments.
- ❖ To evaluate the performance of existing pollution control equipment and systems periodically and take timely action to keep the equipment at its optimum performance condition.
- ❖ To take immediate preventive action in case of some unforeseen environmental pollution attributable to the project.
- ❖ Conducting safety audits and programmes to create safety awareness in workers/ staff.
- ❖ Conducting annual health audits to detect any health problems promptly in the workers/staff. This will reduce occupational health problems.
- ❖ Imparting training on safety and conduct safety drills to educate employees. Firefighting equipment and system has to be kept in 'ready-to-fight' condition.
- ❖ Carrying out socio economic study in the surrounding areas to find out the benefits derived by the society due to the project and also to fulfill the deficiency, if any, immediately.
- ❖ Ensuring proper mine closure arrangements



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Considering the other mines in the cluster, the Environmental Management Cell of this project will also act as a Cluster Management Committee. The various activities undertaken to be undertaken by this committee are detailed below:

- Effective implementation of the environmental management measures in a holistic manner
- Devising an operation plan for mining and transportation activities.
- Various natural calamities like rain, flooding, evacuation plans etc. will also be deliberated by this committee to form risk management and emergency management plan pertaining to the cluster.
- The environmental policy of the company will be implemented and proper sustainable mining in accordance with statutory regulations will be enforced for the quarries in the cluster.
- Furnishing action plan regarding restoration strategy
- Deliberate on the health of the workers involved in the mining and also the health of the public
- Carrying out detailed study on the impact of mining on:
 - Soil health & biodiversity
 - Climate change leading to droughts, floods, etc.
 - Pollution leading to release of greenhouse gases (GHG) rise in temperature and livelihood of local people
 - Possibilities of water contamination and impact on aquatic ecosystem health.
 - Agriculture, Forestry & Traditional practices.
 - Hydro geothermal /Geothermal effect due to destruction in the Environment.
 - Bio-geochemical process and its footprints including environmental stress.
 - Sediment geochemistry



- Furnishing action plan to achieve sustainable development goals with regards to water, sanitation and safety.
- Furnishing fire safety and evacuation plans in case of fire accidents.
- Implementation of steps to effectively utilize energy.

10.2.3 ENVIRONMENTAL MANAGEMENT PLAN:

10.2.3.1 General:

Systematic monitoring systems and well-conceived and efficient Environment Management Plan will ensure that during the project operations, the various environmental parameters, are well within the statutorily sustainable limits. The environmental control measures proposed to keep various environmental parameters of the project in terms of air, water, noise, land, biological environment, etc. has been described below.

10.2.3.2 Air Quality:

With regards to air quality, to mitigate the fugitive and gaseous emission resulting from mining and allied activities, the following control measures are proposed to be undertaken:

- Regular water sprinkling in the transport roads using mobile tankers for dust suppression.
- Controlled blasting techniques with NONEL.
- Provision of dust filters / mask to workers working at highly dust prone and affected areas.
- Covering of drill holes with wet cloth, using sharp drill bits
- Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
- Proper maintenance of haul roads, HEMM and dumpers.
- Covering of loaded tippers with tarpaulins during transportation

- Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
- Besides, there will be good green belt cover will be developed around mine periphery and in safety zone.

10.2.3.3 Water Environment:

There will be no process effluent generated from this project. The domestic sewage to be generated will be collected in septic tank with soak pit arrangements. Besides, there will be no waste dumps or stockpiles within the lease area as the entire material will be directly dispatched to the consumers.

Surface runoff management structures such as garland drain connected to a settling pond will be constructed around the quarry to collect the rain water. The supernatant clear water from the settling pond will be provided to nearby downstream users. Towards rainwater harvesting, the rainwater harvested in the mine will be used to meet the water requirements during mining and excess water in consultation with villagers and in line with government practices will be out in to the nearby stream or shall be distributed to the nearby villages as per their need

10.2.3.4 Noise Environment:

During the project operations, various control measures as listed below will be carried out to mitigate adverse impact due to the noise generated due to mining and allied activities:

- Good plantation will be carried out in the safety zone areas
- Noise protectors, insulation of operator cabins, installation of silencers in machineries, etc.
- Proper and regular maintenance of equipment's
- Providing earplugs to workers exposed to higher noise level.
- Providing in-built mechanism for reducing sound emissions.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.

- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.

10.2.3.5 Ground Vibration

Since the production from this lease is less, the no of holes and the quantum of explosives to be used will also be negligible. During the project operations, various control measures as listed below will be carried out to mitigate adverse impact due to the ground vibration caused due to blasting activities:

- ❖ Controlled blasting techniques to maintain the peak particle velocity (PPV) below DGMS prescribed levels.
- ❖ Ideally formulating drilling and charging pattern and ensuring using less charge per delay.
- ❖ To contain fly rocks, stemming column will not be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation.
- ❖ Blasting will not be carried out when strong winds are blowing towards the inhabited areas. Blasting will be done during midday time and never at night.
- ❖ Proper care and supervision during blasting by a competent and experienced person.
- ❖ Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance.

Further details regarding the same has been provided under section 4.4.2, Chapter-IV.

10.2.2.6 Biological Environment:

The mining lease area and 10km buffer zone are devoid of declared ecologically sensitive features such as national parks, sanctuaries etc. Besides, endangered or endemic species are observed in the core and buffer zone. There will be no major clearance of vegetation involved in this project. However, good greenbelt and plantation programmes are planned in and around the lease area.. Greenbelt / Plantation will be carried out to enhance the vegetative growth and



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aesthetic in the safety zone area. This will boost the biological, visual and aesthetic outlook of the area. Elaborate details regarding the same is provided under section 4.6.4, Chapter-IV..

10.2.2.7 Socio-Economic Environment:

The proposed project operation will provide positive impacts in the region on the employment area as well as on physical and social infrastructural status. Many other tangible benefits will be gained by the local people in the surrounding areas due to ancillary units, trading operations, contractual needs, casual labor, green belt development, etc. Towards the socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.3.0 Lakhs under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner.

10.3 ENVIRONMENTAL POLLUTION CONTROL COST:

In this proposed quarry Implementation of environmental control measures as stated above involves capital as well as recurring expenses. The probable capital and recurring environmental control cost are calculated and given below **Table No – 10.1**

Table 10.1: Environmental Control Cost

			Rs. In lakhs	
Activities	Mitigation Measure	Provision for Implementation	Capital in lakhs	Recurring in lakhs
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	0.11	0.11
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	8.00	0.50
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0.00	0.05
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance	0.50	0.05
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0.00	0.05
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0.00	0.10
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 2 Units	0.10	0.00
	Regular monitoring of exhaust fumes	Monitoring of Exhaust Fumes by Manual Labour	0.00	0.05



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Activities	Mitigation Measure	Provision for Implementation	Capital in lakhs	Recurring in lakhs
	as per RTO norms			
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	-	0.23
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	0.50	0.20
Sub-Total			9.21	1.34
Noise Environment	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	-	-
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	-	-
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	-	-
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	-	-
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	-	-
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	-	-
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person	-	-
	Provision for Portable blaster shed	Installation of Portable blasting shelter	0.50	0.02
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	-	2.83
Sub-Total			0.50	2.85
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	0.25	0.20
		Installation of dust bins	0.05	0.02
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost		
Sub-Total			0.30	0.22
Mine Closure	1. Progressive Closure Activity - Surface Runoff managment	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	0.11	0.05
	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	2.26	0.10
	3. Progressive Closure Activity	Site clearance, preparation of land, digging of pits /	0.40	0.06



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Activities	Mitigation Measure	Provision for Implementation	Capital in lakhs	Recurring in lakhs
	Green belt development - 500 trees per one hectare - Proposal for 550 Trees - (200 Inside Lease Area & 350 Outside Lease Area)	trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)		
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	1.05	0.11
	4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	0.57 *	-
	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of peak production Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site	2.04 *	-
* Not included in capital cost				
Sub-Total			3.82	0.32
Implementation of EC, Mining Plan & DGMS Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	0.10	0.01
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0.00	0.50
	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee)	0.64	0.16
	Slope stability action plan	Slope stability action plan in the end of fourth year plan period	0.00	0.00
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0.00	0.16
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0.00	0.05
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	0.10	0.02
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	0.57	0.10
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	0.30	0.05
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR, 1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0.00	7.80
Conse			NA	NA



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Activities	Mitigation Measure	Provision for Implementation	Capital in lakhs	Recurring in lakhs
Operation Measures				
Sub-Total			1.61	8.34
TOTAL			15.44	13.06

Towards EMP measures, Rs.15.44 Lakhs is allocated under capital cost. Besides, Rs.13.06 Lakhs per annum will be spent under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue and will be spent for the entire lease period.

10.4 CONCLUSION:

Since the production from this lease is very less, the no of equipments required, magnitude of mining operation and consequent impact on environment is expected to be negligible. As such no adverse impact on environment is expected. Systematic mining and ensuring adoption of various mitigative measures given in the report will ensure that the future environmental quality in the area will be maintained within statutory limits. The environmental management strategy as explained above will prove that industrial growth, if properly planned with all environmental concerns and appropriate remedial measures can go a long way to improve life pattern and living conditions of the local community around the project.

* * * * *



CHAPTER-XI

SUMMARY AND CONCLUSION

CHAPTER 11

SUMMARY & CONCLUSION

11.1 INTRODUCTION:

Thiru R. Sathishkumar proposes to operate a Rough Stone and Gravel Quarry over an area of 1.13.0 Ha in Orattukuppai village, Madukkarai Taluk, Coimbatore District, and Tamil Nadu and has initiated action towards obtaining environmental clearance.

Proposed Production for the five years lease period is 1,13,338m³ of Rough stone and 15744m³ of gravel for the depth of 37 m (From OGL-447m RL). Entire lease area is Patta land, owned by the applicant.

Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius cluster along with this subject project works out to >5 Ha. Hence, this proposal is considered under Category – B1 and as per MoEF & CC notification necessitates preparation of EIA/EMP report and public hearing.

This EIA/EMP report is prepared based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu vide letter no. – TO24b0108TN5970090N dated 12.01.2025 and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining plan.

11.1.1 STATUTORY APPROVALS:

S.No	Statutory Approval	Authority	Letter Number and Date	Reference
1.	Precise Area Communication Letter	Assistant Director, Dep. of Geology & Mining	Rc.No.419/Mines/2024 dated 04.10.2024.	Annexure-1
2.	Mining Plan Approval	Assistant Director, Dep. of Geology & Mining	Rc.No.419/Mines/2024 dated 29.10.2024.	Annexure-2
3.	Details of other quarries within 500m radius	Assistant Director, Dep. of Geology & Mining	Rc.No.419/Mines/2024 dated 29.10.2024.	Annexure-3

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11.1.2 ENVIRONMENTAL CLEARANCE APPLICATION:

Particulars	Details
Terms of Reference	Received from SEIAA, Tamil Nadu vide their Lr No. TO24b0108TN5970090N dated 12.01.2025
Baseline Data Collection	Carried out by Enviro Solutions & Labs, Coimbatore, Winter season (December 2024- February 2025)

11.2 SALIENT FEATURES OF THE PROJECT:

Table 11.1: Site Details

Location	Orattukuppai village, Madukkarai Taluk, Coimbatore District, Tamil Nadu
Survey No.	203/1B
Coordinates	Latitude : 10°55'03.82" N to 10°55'07.71" N Longitude : 77°03'51.86" E to 77°03'55.86" E
Nearest Village	Orattukuppai -1.7km (SW)
Nearest Town	Chettipalayam - 3.0km (W)
Nearest Highway	(SH-163) - 1.6Km (SW)
Nearest Railway Station	Chettipalayam - 3.3km (W)
Nearest Airport	Coimbatore - 12km (N)
Accessibility	The lease area can be approached through orattukuppai road on the Northern side of the lease area at a distance of 240m which joins SH-163 at a distance of 1.6Km on the north western side of the lease area.
Topography & Drainage	The lease applied area is exhibits Plain topography covered by Roughstone & gravel formation with the altitude of the area is above 447.0m MSL. Other than few first order and second order streams no major drainage pattern is observed around the lease area.

Table 11.2: Environment Setting of The Study Area

S.No	PARTICULARS	DETAILS
1	Nearest highway	➤ (SH-163) - 1.6km (NW)
2	Nearest Railway station	➤ Chettipalayam - 3.3km (W)
3	Nearest Airport	➤ Coimbatore - 12km (N)
4	Nearest major water bodies	➤ Noyal Ar – 7.6km (NW)
5	Nearest town/City	➤ Chettipalayam - 3.0km (W)



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S.No	PARTICULARS	DETAILS
6	Nearest villages	➤ Orattukuppai - 1.7km (SW)
7	Notified Archaeologically important places, Monuments	Nil within 10km radius
8	Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	Nil within 10km radius
9	Reserved / Protected Forests	Nil within 10km radius
10	Defence Installations	Nil within 10m radius
11	Seismic Zone	Zone – II (Least Active)
12	Other Industries in the study area	Other than rough stone quarry & crushers, there are numerous ware houses, other industries like glass, textile mills, foundries, engineering units, Upcoming CODISSIA Industrial Park B (Kallapalayam), etc in the area.

Table 11.3: Technical Description

PARTICULARS	DETAILS		
Geological reserve	4,06,980Cu.m. Roughstone & 22,600 cu.m Gravel		
Mineable reserve	1,13,338 Cu.m. Roughstone & 15,744 cu.m Gravel		
Method of Mining	Open cast mechanized mining method with drilling, blasting, excavation, loading and transportation of Rough stone to needy buyers.		
Production	Year	ROUGHSTONE (m3)	GRAVEL(m3)
	I	22,484	15,744
	II	22,449	--
	III	22,645	--
	IV	22,870	--
	V	22,890	--
	Total	1,13,338	15,744
Waste Generation and Management	There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. The Gravel will be loaded into tipper and marketed to needy customers on payment of necessary Fees to Government. The roughstone will be excavated and loaded into tipper to the needy buyers for producing crusher aggregates, M Sand.		



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PARTICULARS	DETAILS
Ultimate Depth	37 m
Man power	16 People directly and more than 50 people indirectly
Mode of transport	By Road
Water requirement	8 KLD
Source of water	The required water will be procured from outside agencies initially. Later, water collected in the mine pit will be used to meet the needs.
Power requirement	All the equipment will be diesel operated. No electricity is needed for mining operation. The minimum power requirement for office, etc will be met from state grid.
Life of the mine	5 Years
Project cost	Rs. 1,10,30,000/- (Including operational + Fixed Asset + EMP cost).

11.3 EXISTING ENVIRONMENTAL SCENARIO:

11.3.1 GENERAL:

The studies and data collection have been carried out systematically and meticulously as per relevant IS codes, CPCB and MoEF&CC guidelines and as per approved ToR during **Winter Season (December 2024 – February 2025)** by **Enviro Solutions & Labs, Coimbatore**. For the purpose of this study, the area has been divided into two zones, namely, core and buffer zones. Core zone is considered as the total lease area, while buffer zone encompasses an area of 10 km radius distance from the periphery of core zone.

11.3.2 SOCIO-ECONOMIC STATUS:

The proposed Roughstone and gravel quarry is located in orattukuppai Village, madukkarai Taluk, Coimbatore District, and Tamil Nadu. The details of the 10Km radius study area has been provided below:

Table 11.4: Social, Economic and Demographic Profile of the Study Area

Details	Population	Percentage
A. Gender-wise distribution		
Male Population	67432	50.51
Female Population	66070	49.49
Total	133502	100



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Details	Population	Percentage
B. Caste-wise population distribution		
Scheduled Caste	24606	18.43
Scheduled Tribes	136	0.10
Others	108760	81.47
Total	133502	100
C. Literacy Levels		
Total Literate Population	98367	73.68
Others	35135	26.32
Total	133502	100
D. Occupational structure		
Main workers	57205	42.85
Marginal workers	6593	4.95
Total Workers	63798	47.80
Total Non-workers	69704	52.2
Total	133502	100

Further developments in this area with respect to these various facilities has occurred over the years. Numerous ware houses, other industries like glass, textile mills, foundaries, engineering units, Industrial Park B (Kallapalayam), etc serve as the main occupation for the young workforce. Industrialisation in harmony with locals are observed.

11.3.2.1 SAMPLE SURVEY:

Nearby villages were visited for conducting sample Village survey on all socio-economic aspects and requirements of the people. The existing socio-economic scenario is studied and CER activities are also suggested to the proponent. The study details are given in **Para 3.2.4, Chapter – III**.

11.3.3 EXISTING ENVIRONMENTAL QUALITY:

Table 11.5: Baseline Data

A) METEOROLOGICAL DATA			
Season: Winter Season (December 2024 to February 2025)			
PARAMETERS	MINIMUM	MAXIMUM	
Temperature in °C	18.0	34.0	
Humidity in %	13.0	99.0	
Wind speed Km/Hr	<1.8	27.7	
Predominant wind direction (From)	E		
B) AMBIENT AIR QUALITY		Monitoring Location – 5 locations	
PARAMETER	RESULT (µg/m3)		*LIMIT (µg/m3)
Location	Core Zone	Buffer Zone	



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Particulate Matter (Size <10 µm)	48.0 - 61.0	45.0 - 64.0	100
Particulate Matter (Size <2.5 µm)	17.0 - 25.0	16.0 - 26.0	60
Sulphur Dioxide (as SO ₂)	5.0 - 7.0	5.0 - 9.0	80
Nitrogen Dioxide (as NO ₂)	11.0 - 19.0	9.0 - 23.0	80

Conclusion: The existing Ambient Air Quality levels for PM₁₀, PM_{2.5}, SO₂ and NO₂, are within the NAAQ standards prescribed CPCB limits of 100 µg/m³, 60 µg/m³, 80 µg/m³ & 80 µg/m³. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m³)

C) WATER QUALITY	Monitoring Location – 5 locations	
PARAMETER	Result	*LIMIT (µg/m³)
pH at 25 °C	7.29 – 8.05	6.5-8.5
Total Dissolved Solids, mg/L	428 – 767	2000
Chloride as Cl ⁻ , mg/L	15 – 155	1000
Total Hardness (as CaCO ₃), mg/L	150 – 256	600
Total Alkalinity (as CaCO ₃), mg/L	206 – 273	600
Sulphates as SO ₄ ²⁻ , mg/L	4.89 – 53.7	400
Iron as Fe, mg/L	BDL(<0.05)	0.3
Nitrate as NO ₃ , mg/L	3.94 – 6.45	45
Fluoride as F, mg/L	BDL(<0.1) – 0.2	1.5

Conclusion: The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications.

D) NOISE LEVELS	Monitoring Location – 5 locations	
PARAMETER	RESULT dB(A)	
	Day Equivalent	Night Equivalent
Core Zone	51.2	39.6
Buffer Zone	50.3-54.0	38.2-41.3
		*LIMIT (µg/m³)
		90
		Day Equivalent - 55dB(A), Night Equivalent - 45dB(A)

*Permissible noise for industrial workers as laid down by CPCB (at 8 hrs Exposure Time). While comparing with the MoEF&CC Norms, the monitored ambient noise levels are generally within the limit values.

E) SOIL QUALITY	Monitoring Location – 5 locations
PARAMETER	Range of values
pH	6.73 - 6.79
Electrical Conductivity (µmho/cm)	0.03 – 0.10
Organic matter (%)	0.56 – 1.41%
Total Nitrogen (mg/kg)	124 - 260
Phosphorus (mg/kg)	20.7 – 48.6
Sodium (mg/kg)	1.18- 2.41
Potassium (mg/kg)	227 - 396
Soil is of Sandy type.	

F) LAND ENVIRONMENT:



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For the present study on land use pattern in the study area, remote sensing satellite data have been used. The area estimated of land use categories around the 10km buffer zone is provided below:

Table 11.6: Land Use in 10Km Buffer Zone

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Crop Land	101.89	31.97
2	Plantation	90.48	28.39
3	Fallow Land	45.55	14.29
4	Land With Scrub	0.70	0.22
5	Land Without Scrub	31.70	9.95
6	Water bodies	1.26	0.40
7	Mining Area	7.69	2.41
8	Settlement & Infrastructure	39.43	12.37
	Total	318.70	100

From the above table it is seen that 31.97 % of the study area is agriculture land and 28.39 % are Plantation followed by 14.29 % of fallow land. Land with scrub constitutes 0.22 %, lands without scrub constitute 9.95 %, water bodies constitute 0.40 % & others constitute 14.78%.

G) BIOLOGICAL ENVIRONMENT:

Flora: The lease area is a non-forest, private patta land. Major part of lease area is barren fallow land with grasses & bushes only.. Plantation of Neem, Pungai, Naval, Badam etc carried out by the PP in the lease periphery. Dominated species in the buffer zone are Cocus nucifera, Prosopis juliflora Acacia leucophloea, Acacia auriculiformis, Azadirachta indica, , Borassus flabellifer, Acacia nilotica, Albizia lebbeck, etc. The detailed list of plants found in the Buffer zone is given in Table no – 3.26.

Fauna: There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals are commonly found. No wild mammalian species was directly sighted during the field survey. The list of fauna within the study area is given in Table No – 3.27.

H) HYDROLOGICAL STUDY:

The district is underlain by hard rock formation. Fissured and fractured crystalline rocks constitute the important aquifer systems in the district. Study area is dominated with hard Charnockite rock formation.



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There are no streams, canals or water bodies within the lease area. The drainage pattern of the area is dendritic – sub dendritic. Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. Based on the well inventory of the nearby wells & borewells, it is observed that the average water level in the open well is varies from 12m to 15 m BGL whereas the water level in the bore well varies generally from 65m to 70m BGL.

Study of the area shows that the sub-surface formations reveal low to medium recharge potentials. Subsequently hard and massive formations of rock are found. Based on the available information and the geophysical investigations it is observed that the study area is of poor to moderate groundwater potential up to 65m to 70m. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. There is no water seepage noticed in to the already quarried deeper pits situated nearby the proposed quarry area. Hence, the quarrying rough stone up to the proposed depth may not have any adverse impact in the area over ground water conditions.

Direct rainfall falling into the mine pit during monsoon season and intermittent seepage from phreatic top layer if any will be collected in the bottom of the mine pit and gainfully used for Greenbelt development, Dust suppression etc..

11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:

11.4.1 GENERAL:

This is a proposed project and Mechanized Open Cast mining will be carried out to quarry out Rough Stone & Gravel. Since the annual production is less, only 1 excavator, 2 tippers will be engaged and as such no adverse impact on the surrounding environ is envisaged. The identified impacts due to this mine during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc.

11.4.2 AIR ENVIRONMENT:

The principal sources of air pollution in the area due to mining and allied activities are dust generation in the mine due to various activities such as excavation of material, movement of



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HEMM, loading, unloading and transportation operations.. Besides, Gas emission also occur as a result of emission of SO₂, NO_x, CO etc., from diesel driven mining equipment, compressors, generator sets, etc. The following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

Table 11.7: Mitigation Measures – Air Environment

S.No	Activity	Mitigation Measures
1	Drilling	Usage of Drill bits in good condition
		Covering of drill holes with wet cloth
		Usage of sharp drill bits for drilling of holes.
		Provision of dust filters / mask to workers working at highly dust prone and affected areas.
2	Blasting	Well-designed blasting parameter, effective stemming to achieve optimum breakage occurs without generating fines.
		Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
		Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
		Use of controlled blasting techniques with Nonel to keep the dust generation, noise as well as vibration level within the prescribed limits.
3	Excavation and Loading	Proper maintenance of HEMM
		Enclosures for operator cabin.
		Imparting sufficient training to operators on safety and environmental parameters.
		Proper maintenance of hauling equipments.
4	Transportation	Avoiding overloading of dumpers.
		Regular wetting of transport road using mobile water tanker.
		Proper maintenance of haul road and other roads
		Setting up of tyre wash facility in the transport road.
		Avoiding overloading of tippers
		Covering of loaded tippers with tarpaulins during transportation
5	Others	Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
		Development of greenbelt / barriers around mine in the safety zone and carrying out plantation within the lease area.

Due to adoption of all these measures, no major impact on air quality is envisaged due to this proposed opencast mining operation.

The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is

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based on steady state Gaussian plume dispersion. Ground Level Concentration (GLC) have been computed using hourly meteorological data for particulate matter PM10 and PM2.5.

The resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM10 are in the range of 58.9 µg/m³ to 65.0 µg/m³ and with respect to PM2.5 are in the range of 24.0 µg/m³ to 27.0 µg/m³ which are within the statutory limits in each case.

For preservation of environment in this mine strict enforcement of management schemes will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.

11.4.3 WATER ENVIRONMENT:

Water Requirement: The total water requirement for this project will be 8.0 KLD comprising 1.0 KLD for drinking water and domestic use, 5.0 KLD for dust suppression and 2.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose.

The activity / source of pollution, its impact / consequence, proposed control measures are explained below:

Table 11.8: Mitigation Measures – Water Pollution

S.No	Source	Consequence	Mitigation Measures
A	Domestic use	Generation of waste water	The domestic sewage to be generated from the project will be collected in septic tank with soak pits.
B	Rainfall	Runoff from waste dump and stack	Towards surface runoff management, a garland drain of length 400m will be constructed around the quarry and will be connected to settling ponds with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users.
		Rainwater Harvesting	The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc.
C	Drainage Course	Disturbance to drainage course	There are no streams or water bodies within the lease area. There is no proposal to discharge any effluent into this waterbody. No major impact is envisaged on the nearby water bodies due to project operations



Generation of mine pit water: Study of the area shows that the sub-surface formations are compact with less intergranular porosity and fractures leading to less permeability and transmissivity values and as such the ground water level in this area is deep from surface. Subsequently hard and massive formations of rock are found. Based on the available information and the geophysical investigations it is observed that the study area is of poor to moderate groundwater potential up to 60m to 65m. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. The ultimate pit depth of mining is 37m. The ground water table in this area is below this level. Hence, ground water intersection is not envisaged and ground water will not be affected appreciably due to the quarrying operation. There is no water seepage noticed in the already quarried deeper pits situated nearby the proposed quarry area. Hence, the quarrying rough stone up to the proposed depth may not have any adverse impact in the area over ground water conditions.

As mentioned earlier, the rainfall will be collected in the mine floor sump and advantageously used. Excess water if any in the sump will be pumped to settling pond for downstream users.

11.4.4 NOISE ENVIRONMENT:

Anticipated noise levels resulting from operation of the various machineries like excavator, tippers, drill have been computed using point source model. Computation of cumulative noise levels at the nearby villages is made based on the assumption that there are no attenuation paths between the source and the boundary. From the studies, it is found that the predicted Noise Levels due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor. However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary. Since the habitations are also away the effect of noise due to mining operations will not be felt at all in the surrounding village. Hence, by implementing the following mitigative measures for noise control, the impact on noise levels will continue to be insignificant:

- Planting rows of native trees along roads, around mine area and other noise generating centres to act as acoustic barriers.
- Sound proof operator's cabin for equipments like shovel, tippers, etc.
- Proper and regular maintenance of equipments may lead to less noise generation.

- Providing in-built mechanism for reducing sound emissions.
- Providing earplugs to workers exposed to higher noise level.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.
- Provision of green net in lease periphery

Further green belt and afforestation will be planned and executed to abate noise and dust propagation in the area.

11.4.5. VIBRATION:

Vibrations due to blasting may cause damage to nearby structures, if appropriate control measures are not adopted. Since the production from this lease is very low, the no of holes and the quantum of explosives to be used for blasting will be negligible .

The following control measures will be planned to reduce ground vibratory conditions to sustainable statutory limits:

- 1) Carrying out controlled blasting using Nonel delay detonator.
- 2) Optimum design for burden and spacing.
- 3) Reducing explosive charge per delay to minimum.
- 4) The peak particle velocity (PPV) of ground vibration will be kept very low through optimally controlled blasting techniques, after necessary field trials.
- 5) To contain fly rocks, stemming column to be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation.
- 6) Blasting will not be carried out when strong winds are. Blasting will be done during midday time.
- 7) Controlled blasting to avoid tension cracks which may endanger the stability of bench slopes in the mine.

- 8) Proper care and supervision during blasting by a competent and experienced person to be carried out.
- 9) Having different blasting time for the leases in the cluster.

By adoption of above measures, it will be ensured that the ground level vibration due to blasting are maintained within the limits prescribed by DGMS, Dhanbad . Elaborate details regarding the same are provided under section 4.4.2, Chapter-IV.

11.4.6 IMPACT ON LAND ENVIRONMENT:

The lease area of 1.13.0 Ha in S.F.No. 203/1B is a patta land. There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. Plantation will be carried out in this safety zone area. In the post mining stage, the mine pit area of 0.75.10 Ha will be left as a water body. Plantation will be carried out over 0.3580 Ha, and 0.02Ha will be utilised for road and infrastructure. Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the rainwater harvested in the mined out void shall be utilized.

11.4.7 BIOLOGICAL ENVIRONMENT:

The core zone area is mostly barren with grasses and bushes only. Since the mining operation in this lease will be of small scale the impact on surrounding environ is expected to be insignificant. Additionally, necessary mitigative measures like dust suppression, proper maintenance of equipment's, greenbelt and plantation etc., will be carried out to prevent dust generation & any further impact on the vegetation. In the safety zone within the lease area and in the nearby areas including mineral transport road plantation of local trees will be carried out about 550 trees will be planted in and around the lease area.

11.4.8 SOCIO ECONOMIC ENVIRONMENT:

The entire lease area is a private patta land. There are no habitations or hutments in the core zone area and as such no rehabilitation or resettlement is involved. The mining operations in the proposed quarry will employ about 16 people. Besides through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which

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will provide raising income levels and standards of living in the area through various service related activities connected with the project operations.

Towards the socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.3.0 Lakhs under Corporate Environmental Responsibility. The activities identified under CER will be implemented in the nearby Government school. In consultation with the locals based on the need & priority it will be implemented.

11.4.9 OCCUPATIONAL HEALTH AND SAFETY ASPECTS:

In order to ensure minimisation of occupational health and safety problems in the project operation, the following preventive remedial measures will be effectively exercised in the project operations, so as to comply with applicable standards.

- Medical examination of workers at pre-entry level stage of workers, etc., by qualified doctors, with periodical examination of all workers/staff at least once a year, as per DGMS circulars.
- Regular awareness campaigns amongst staff and workers
- Staff will be provided with PPE to guard against excess noise levels, Dust generation and inhalation, etc., as per standards prescribed by DGMS.

11.4.10 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

From this proposed quarry the entire output will be transported to the consumers . There will be just 1 trip per hour of additional truck traffic. The transport route can easily absorb this negligible traffic due to this project. The following mitigative measures are suggested for mitigation of adverse impacts on the logistical aspect of the project:

- ❖ Water sprinkling on Rough stone in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.



11.4.11 WASTE MANAGEMENT:

Since the entire mined out material will be used there will not be any solid waste generation from this project. There is no process effluent generation from this mine. Hence no liquid waste is generated.

The hazardous waste generated in this mine will be stored in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps, tyre storage etc. It will be disposed through authorized recyclers or re-processors periodically. The hazardous wastes will be transported in accordance with the provisions of rules. By effective implementation of above said mitigation measures no major impact due to Hazardous waste is expected.

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

11.5 ENVIRONMENTAL MONITORING PROGRAMME:

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

Monitoring location and the frequency of monitoring shall be suitably modified in consultation with the nodal agency as per the actual requirements and prevailing conditions of the mine and environmental factors, as dictated from time to time, depending on the prevailing pollution levels, if required.

Towards EMP measures, Rs. 15.44 Lakhs is allocated under capital cost. Besides, Rs. 13.06 Lakhs per annum will be spent under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue. Further details of the capital and recurring cost of environmental management has been provided in in Table No. 10.2, Chapter-X.

11.6 ADDITIONAL STUDIES:

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

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1. Public consultation of the project as per MoEF&CC mandates.
2. Risk Assessment
3. R&R Plan
4. Mine closure plan

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

Elaborate description in respect of Risk Assessment and Mine closure plan are given in **Chapter - VII.**

Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius along with this subject project works out to >5 Ha. As such cluster situation applicable and this EMP is prepared. The baseline monitoring carried out for this project reflects the cumulative impact of the existing quarry. For the proposed quarries, a cumulative impact study has been carried out.

Baseline data given in Chapter – III reflects the existing operations in the area. Cumulative impact on various environmental attributes due to the present proposed project and other 4 proposed projects are studied. For this purpose the impact of the present proposal as given in Chapter – IV of this report and for other proposals from their respective report are correlated and given in para 7.6 of Chapter – VII. From the study it is observed that due to adoption of various mitigative measures there will not be adverse impact on cumulative basis also.

11.7 CONCLUSION:

Since the production from this lease is very less, the no of equipments required, magnitude of mining operation and consequent impact on environment is expected to be negligible. As such no adverse impact on environment is expected. Systematic mining and ensuring adoption of various mitigative measures given in the report will ensure that the future environmental quality



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in the area will be maintained within statutory limits. The environmental management strategy as explained above will prove that industrial growth, if properly planned with all environmental concerns and appropriate remedial measures can benefit this region in the fields of potential employment opportunities, improved per capita income for local people, improved social welfare facilities etc. in its own way and also revenue to Government through royalty, taxes etc. Besides, it will meet the raw material requirement of the construction industry also.

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CHAPTER - XII

DISCLOSURE OF CONSULTANTS ENGAGED

CHAPTER 12

DISCLOSURE OF CONSULTANTS ENGAGED

Creative Engineers & Consultants, Chennai is an **NABL** accredited testing laboratory and **NABET** accredited EIA consultancy. Established over 25 years ago, this company has steadily made good strides in the environmental impact assessment fields, and is also one of the first companies to get accredited by NABET as an Accredited Consultant Organization as early as 2011. Creative Engineers & Consultants has to its credit, successful completion of numerous EIA/EMP reports, grant of environmental clearances and periodic environmental monitoring works. Presently, the company has been accredited by NABET as a 'Category-A' organization for the sectors of Mining of Minerals (opencast only), Thermal Power Plants, Mineral Beneficiation and Cement Plants with the accreditation valid upto 23.12.2026. The team of experienced professionals that are a part of this organization has been detailed below.

Figure 12.1: Disclosure of consultants engaged

EXPERT NAME	QUALIFICATION	POSITION	EXPERIENCE
Mr. P. Giri	AMIE (Mining)	EIA Coordinator & Functional area Expert (AP,NV,HW),	Over 30 years of experience in EIA/EMP report, mine plan preparation, including modeling
Mr. K. Shankar	M.Sc (Geology). PGMEMG	Functional area Expert (GEO, HG, SHW, RH) & IBM approved RQP.	Over 25 years of experience in EIA/EMP report, Mine plan, hydrological report preparation
Mr.S.S.Rajendran	M.Sc. (Pharmaceutical Chemistry)	Lab head	More than 9 years of experience in Environmental laboratory.
Mr. R. Babu raj	M.A (Sociology), B.Com(Y.L&Cost), ITI, Advance Diploma in Computer application	Functional Area Expert (Socio Economy)	Over 15 years of experience in dispersion modeling, computer applications. Specialized in CAD and computer software, applications. 5years experience in the field of socio economy and its allied report preparation.



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EXPERT NAME	QUALIFICATION	POSITION	EXPERIENCE
Mr. B. Govindaraman	B.Sc.	Field technician	Over 20 years of field monitoring & data collection experience
Dr.B.Swamynathan	M.Sc (Ecology & Environmental Sciences), M.Phill (Botany), Ph.D (Ecology & Environmental Sciences)	EIA Coordinator & Functional Area Expert (EB,SC,LU&AP)	More than 12 years of experience in Environment and allied fields.
Ms. G. Sandhya	B. Tech Chemical Engineering M.Tech Environmental Engineering	EIA Coordinator & Functional Area Expert (AQ&WP)	Over 6 years experience in preparation of EIA/EMP reports

* * * * *



ANNEXURES

உதவி இயக்குநர் அலுவலகம், திரு. ரங்கசாமி, 89,
புலியியல் மற்றும் சுரங்கத்துறை,
மாவட்ட ஆட்சியர் அலுவலக வளாகம்,
கோயம்புத்தூர் - 18*

ந.க.எண்.419/கனிமம்/2024

நாள் 04.10.2024

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - கோயம்புத்தூர் மாவட்டம்
மதுக்கரை வட்டம் - ஓராட்டுக்குப்பை கிராமம் - புல
எண்.203/1B-ல் 1.13.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில்
சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம்
கோரி திரு.R.சதீஷ்குமார் என்பவர் விண்ணப்பம் செய்தது -
வரைவு சுரங்கத்திட்டம் சமர்ப்பிக்க அறிவுறுத்துதல் -
தொடர்பாக.

- பார்வை: 1. திரு.R.சதீஷ்குமார், த/பெ. ரங்கசாமி, 89,
தொப்பையகவுண்டர் தோட்டம், ஓராட்டுக்குப்பை,
செட்டிபாளையம், கோயம்புத்தூர் என்பவரின் விண்ணப்பம்
நாள் 08.05.2024
2. இவ்வலுவலக கடிதம் இதே எண். நாள்: 15.05.2024 மற்றும்
06.09.2024
3. வட்டாட்சியர், மதுக்கரை கடிதம் ந.க.எண்.1744/2022/அ6
நாள்: 08.07.2024
4. வருவாய் கோட்டாட்சியர், கோயம்புத்தூர் தெற்கு
அவர்களின் கடிதம் மூ.மு.எண்.3041/2024/அ2 நாள்:
12.07.2024.
5. செயல் அலுவலர், செட்டிபாளையம் பேரூராட்சி,
செட்டிபாளையம் கடிதம் ந.க.எண்.1294/2024 நாள்:
19.09.2024.
6. கோயம்புத்தூர் புலியியல் மற்றும் சுரங்கத்துறை உதவி
புலியியலாளர் அவர்களின் தணிக்கை குறிப்பு நாள்:
20.08.2024.

பார்வை 1-ல் கோயம்புத்தூர் மாவட்டம், செட்டிபாளையம், 89, தொப்பையகவுண்டர்
தோட்டம், ஓராட்டுக்குப்பை என்ற முகவரியில் வசிக்கும் திரு.ரங்கசாமி என்பவரின் மகன்
திரு.R.சதீஷ்குமார் என்பவர் கோயம்புத்தூர் மாவட்டம், மதுக்கரை வட்டம்,
ஓராட்டுக்குப்பை கிராமம், புல எண்.203/1B-ல் 1.13.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா
பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம்
கோரி உரிய ஆவணங்களுடன் விண்ணப்பித்துள்ளார்.

பார்வை 3,4, 5 மற்றும் 6-ல் கண்ட கடிதங்களில் கோயம்புத்தூர் மாவட்டம்,
மதுக்கரை வட்டாட்சியர், கோயம்புத்தூர் தெற்கு வருவாய் கோட்டாட்சியர்,
செட்டிபாளையம் பேரூராட்சி செயல் அலுவலர் மற்றும் புலியியல் மற்றும் சுரங்கத்துறை
உதவி புலியியலாளர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கோயம்புத்தூர் மாவட்டம்,

மதுக்கரை வட்டம், ஓராட்டுக்குப்பை கிராமம், புல எண்.203/1B-ல் 1.13.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் திரு.R.சதீஷ்குமார் என்பவருக்கு சாதாரணர்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

எனவே, கோயம்புத்தூர் மாவட்டம், மதுக்கரை வட்டம், ஓராட்டுக்குப்பை கிராமம், புல எண்.203/1B-ல் 1.13.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 1959-ம் வருடாந்தி தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.19-ன் கீழ் 5 வருட காலங்களுக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்க உகந்த புலமாக கருதி அறிவிப்பு செய்யப்படுகிறது.

மேலும், திரு.R.சதீஷ்குமார் என்பவர் மூன்று மாத காலத்திற்குள் வரைவு சுரங்கத்திட்ட அறிக்கை (Draft Mining Plan) கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு தயார் செய்து கோயம்புத்தூர் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநரிடம் ஒப்புதல் பெற்றும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 41 & 42-ன் படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவாணைச் சான்று பெற்று சமர்ப்பிக்குமாறும் அறிவுறுத்தப்படுகிறது.

நிபந்தனைகள்

1. அருகில் உள்ள பட்டா நிலத்திற்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
2. அனுமதி கோரும் புலத்தின் தெற்கு பகுதியில் உள்ள அரசு புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணி மேற்கொள்ள வேண்டும்.
3. அனுமதி கோரும் புலத்தின் கிழக்கு பகுதியில் செல்லும் வண்டிப் பாதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணி மேற்கொள்ள வேண்டும்.
4. அனுமதி கோரும் புலத்தினை அரசு அங்கீகாரம் பெற்ற நிறுவனத்தினரால் DGPS (Differential Global Positioning System)-ன் படி ஆய்வு செய்யப்பட்டு ஒவ்வொரு எல்லைத் தூண்களும் நடப்படவேண்டும்.
5. அருகிலுள்ள பட்டா நிலங்கள் மற்றும் பொது மக்களுக்கும் எவ்வித இடையூறும் இன்றி குவாரி பணி மேற்கொள்ள வேண்டும்.


உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை
கோயம்புத்தூர்.

பெறுநர்:
திரு.R.சதீஷ்குமார்,
த/பெ. ரங்கசாமி,
89, தொப்பையகவுண்டர் தோட்டம்,
ஓராட்டுக்குப்பை,
செட்டிபாளையம்,
கோயம்புத்தூர்

From

To

Thiru.K.Vijayaragavan, M.Sc.,
Assistant Director,
Geology and Mining,
Coimbatore

Thiru.R.Sathishkumar,
S/o.Rangasamy,
89, Thoppaiyagounder Thottam,
Orattukuppai,
Chettipalayam,
Coimbatore.

Rc.No.419/Mines/2024 Dated: 29.10.2024.

Sir,

Sub: Mines and Quarries – Minor Minerals – Coimbatore District - Madukarai Taluk – Orattukuppai Village - Survey No.203/1B - over an extent of 1.13.0 hectares of patta land - Rough stone & Gravel quarry lease – Precise area communicated – Draft mining plan submitted by Thiru.R.Sathishkumar - Approval of mining plan - Regarding.

Ref: 1. Application of Thiru.R.Sathishkumar dated: 08.05.2024
2. Precise area communication in Rc.No. 419/Mines/2024 dated: 04.10.2024.
3. Thiru.R.Sathishkumar letter dt.18.10.2024.

In the reference 1st cited, Thiru.R.Sathishkumar has applied for the grant of lease to quarry rough stone & Gravel over an extent of 1.13.0 hectares of patta land in Survey No.203/1B of Orattukuppai Village, Madukarai Taluk, Coimbatore District under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

2) The precise area has been communicated to the applicant vide reference 2nd cited above, based on the recommendations of the Tahsildar, Madukarai, Revenue Divisional Officer, Coimbatore South, Executive Officer, Chettipalayam Town Panchayat and the Assistant Geologist of Geology and Mining, Coimbatore.

3) In exercise of powers delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan submitted by Thiru.R.Sathishkumar for grant of lease to quarry rough stone & gravel, over an extent of 1.13.0 hectares of patta land in Survey No.203/1B of Orattukuppai Village, Madukarai Taluk, Coimbatore District for a period of Five years and the proposed mineable reserves after leaving safety distance is arrived as **1,13,338 M³** of rough

stone and **15,744 M³** of gravel upto a depth of 37 m. This approval is subject to the following conditions:-

- (i) That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
- (ii). This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act, 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884(Central Act IV of 1884) and the rules made there under the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii). That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv). A safety distance of 7.5 meters should be provided for adjacent patta land from the lease applied area.
- (v). A safety distance of 10 meters should be provided for government land located in southern side of the applied area.
- (vi). A safety distance of 10 meters should be provided for the cart track passing on the eastern side of the applied area.


Assistant Director,
Geology and Mining,
Coimbatore

Encl: 2 copies of Approved Mining Plan.



Copy submitted to :

1. The Chairman, State Level Environment Impact Assessment Authority, Chennai
2. The Commissioner of Geology and Mining, Industrial Estate, Guindy, Chennai- 32

Annexure - 3

From

To

Thiru.K.Vijayaragavan, M.Sc.,
Assistant Director,
Geology and Mining,
Coimbatore

Thiru.R.Sathishkumar,
S/o.Rangasamy,
89, Thoppaiyagounder Thottam,
Orattukuppai,
Chettipalayam,
Coimbatore

Rc.No.419/Mines/2024 Dated: 29.10.2024.

Sir,

Sub: Mines and Quarries – Minor Minerals – Coimbatore District - Madukarai Taluk – Orattukuppai Village - Survey No.203/1B - over an extent of 1.13.0 hectares of patta land - Rough stone & Gravel quarry lease - Precise area communicated - 500 mts Radius letter requested- regarding.

Ref: 1. Application of Thiru.R.Sathishkumar, Coimbatore dt: 08.05.2024.
2. Precise area communication in Rc.No. 419/Mines/2024 dated: 04.10.2024.
3. Thiru.R.Sathishkumar letter dt.18.10.2024

With reference to your letter in the reference 3rd cited, the details of existing and lease expired quarries located within 500m radius from the proposed Rough stone & gravel quarry over an extent of 1.13.0 hectares of patta land in Survey No.203/1B of Orattukuppai Village, Madukarai Taluk, Coimbatore District are as follows:

Sl. No	Name of the quarry Owner	Name of the Village & Survey Number	Extent (in Hects)	Remarks
a. Existing Quarries				
-NIL-				
b. Expired Quarries				
1.	Tvl.Ultra Ready Mix Private Ltd	Orattukuppai 320 (P) & 332/2A (P)	3.07.4	22.12.2018 to 21.12.2023
2.	K.Balakrishnan	Pachapalayam 291/1B1B(P)	2.40.5	15.09.2017 to 14.09.2022
c. Abandoned Quarries				
1.	V.Velusamy	Pachapalayam 291/1B2, 291/1D1 & 291/1D2	2.43.5	07.03.2017 & 06.03.2020
2.	K.Natarajan	Pachapalayam 291/2A2 & 291/2B	1.83.5	02.06.2016 & 01.06.2021

3.	R.Chellammal	Kallapalayam 261/1A & 263/1B	1.22.0	24.07.2005 to 23.07.2010
4.	N.Boopathiraj	Orattukuppai 333 (Govt.poramboke)	1.06.5	21.02.2004 to 20.02.2009
d. Present proposed Quarries				
1.	R.Sathishkumar	Orattukuppai 203/1B	1.13.0	applied area (Rough Stone and gravel)
2.	M/s. Tamilnadu Blue Metals	Kallapalayam 263/1A(P) & 264/1(P)	1.91.0	Pending with SEIAA
3.	V.Gopalakrishnan	Pachapalayam 291/1A	2.43.5	Pending with SEIAA
4.	M/s.Ultra Sahara Sand	Orattukuppai 320/1 (P)	4.24.0	Precise area communicated
5.	D.Ramesh	Pachapalayam 291/1B1A	0.91.0	Pending with SEIAA


Assistant Director,
Geology and Mining,
Coimbatore


29/10/24

POPULATION BREAKUP & LITERACY LEVEL IN THE BUFFER ZONE

Sl.No	No. of Villages	Name of village	Rural / urban	HOUSE HOLDS	POPULATION			POPULATION BELOW 6 AGE GROUP			SCHEDULE CASTE			SCHEDULE TRIBE			LITRERATES			ILLITRERATES		
					TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F. MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE
0-2 km,Coimbatore south Sub-District, Coimbatore District																						
1	1	Chettipalayam (TP)	Urban	2841	10366	5268	5098	880	480	400	2920	1460	1460	0	0	0	7304	3991	3313	3062	1277	1785
		total (A)		2841	10366	5268	5098	880	480	400	2920	1460	1460	0	0	0	7304	3991	3313	3062	1277	1785
2-5 km,Sulur Sub-District, Coimbatore District																						
2	1	Kallapalayam	Rural	860	3066	1581	1485	253	130	123	686	346	340	4	3	1	2350	1293	1057	716	288	428
3	2	Bogampatti	Rural	686	2415	1254	1161	155	85	70	170	87	83	0	0	0	1515	905	610	900	349	551
Pollachi Sub-District, Coimbatore District																						
4	1	Panappatti	Rural	763	2635	1383	1252	199	113	86	450	219	231	0	0	0	1740	1026	714	895	357	538
		total (B)		2309	8116	4218	3898	607	328	279	1306	652	654	4	3	1	5605	3224	2381	2511	994	1517
5-10km,Sulur Sub-District, Coimbatore District																						
5	1	Peedampalli	Rural	1134	3896	1955	1941	339	185	154	683	356	327	24	13	11	2982	1601	1381	914	354	560
6	2	Pappampatti	Rural	1172	4143	2052	2091	415	196	219	961	455	506	0	0	0	2865	1524	1341	1278	528	750
7	3	Edayapalayam	Rural	667	2251	1130	1121	193	98	95	269	128	141	4	3	1	1659	930	729	592	200	392
8	4	Sellakkarichal	Rural	1863	6209	3109	3100	443	205	238	1610	804	806	0	0	0	4368	2447	1921	1841	662	1179
9	5	Vadavalli	Rural	955	3171	1567	1604	244	128	116	822	413	409	0	0	0	2010	1093	917	1161	474	687
10	6	Appanaickenpatti	Rural	1121	3992	1998	1994	337	170	167	947	478	469	0	0	0	2665	1413	1252	1327	585	742
11	7	Pallapalayam (TP)	Urban	3369	11910	5993	5917	1074	563	511	1418	711	707	0	0	0	9648	5080	4568	2262	913	1349
Pollachi Sub-District, Coimbatore District																						
12	1	Pattanam (CT)	Urban	2604	9196	4681	4515	864	446	418	1234	629	605	0	0	0	7239	3895	3344	1957	786	1171
13	2	Solavampalayam	Rural	1837	6387	3195	3192	619	316	303	1364	691	673	3	2	1	4074	2234	1840	2313	961	1352
14	3	Kondampatty	Rural	738	2467	1218	1249	165	77	88	455	221	234	2	1	1	1625	889	736	842	329	513
15	4	Vadasithur	Rural	1532	5080	2483	2597	342	173	169	940	459	481	2	1	1	3452	1878	1574	1628	605	1023
16	5	Mettubavi	Rural	719	2485	1281	1204	173	93	80	301	153	148	8	3	5	1671	971	700	814	310	504
17	6	Arasampalayam	Rural	1090	3818	1894	1924	298	160	138	947	471	476	0	0	0	2473	1384	1089	1345	510	835
Coimbatore south Sub-District, Coimbatore District																						
18	1	Malumichampatti (CT)	Urban	3594	12936	6568	6368	1294	687	607	2561	1294	1267	4	2	2	10023	5315	4708	2913	1253	1660
19	2	Vellalur (TP)	Urban	6837	24872	12794	12078	2232	1129	1103	4389	2206	2183	16	8	8	19571	10684	8887	5301	2110	3191
20	3	Othakalmandapam (TP)	Urban	3394	12207	6028	6179	1087	551	536	1479	707	772	69	40	29	9133	4831	4302	3074	1197	1877
		total (C)		32626	115020	57946	57074	10119	5177	4942	20380	10176	10204	132	73	59	85458	46169	39289	29562	11777	17785
		Grand Total (A+B+C)		37776	133502	67432	66070	11606	5985	5621	24606	12288	12318	136	76	60	98367	53384	44983	35135	14048	21087

**Source: District Primary Census Abstract, Coimbatore District of Tamilnadu State-2011*

OCCUPATIONAL STRUCTURE IN THE BUFFER ZONE

Sl.No	No. of Villages	Name of village	Rural / urban	MAIN WORKERS		CULTIVATORS		AGRI LABOURS		HOUSE HOLD		OTHERS		MARGINAL WORKERS		NON WORKERS	
				MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE
0-2 km,Sub-District, Coimbatore District																	
1	1	Chettipalayam (TP)	Urban	3078	1000	393	46	157	109	49	35	2479	810	221	151	1969	3947
		total (A)		3078	1000	393	46	157	109	49	35	2479	810	221	151	1969	3947
2-5 km,Sulur Sub-District, Coimbatore District																	
2	1	Kallapalayam	Rural	961	561	214	148	227	227	31	13	489	173	18	7	602	917
3	2	Bogampatti	Rural	731	254	352	118	174	104	11	3	194	29	82	98	441	809
Pollachi Sub-District, Coimbatore District																	
4	1	Panappatti	Rural	969	597	391	240	300	304	5	6	273	47	5	8	409	647
		total (B)		2661	1412	957	506	701	635	47	22	956	249	105	113	1452	2373
5-10km,Sulur Sub-District, Coimbatore District																	
5	1	Peedampalli	Rural	1023	442	139	39	83	100	86	44	715	259	218	186	714	1313
6	2	Pappampatti	Rural	1262	499	95	48	225	158	48	27	894	266	79	137	711	1455
7	3	Edayapalayam	Rural	676	301	153	47	54	124	28	15	441	115	72	101	382	719
8	4	Sellakkarichal	Rural	1768	894	286	117	528	496	98	40	856	241	266	272	1075	1934
9	5	Vadavalli	Rural	1095	763	180	109	634	479	75	80	206	95	16	20	456	821
10	6	Appanaickenpatti	Rural	1197	809	81	34	206	224	26	19	884	532	88	105	713	1080
11	7	Pallapalayam (TP)	Urban	3585	1670	36	10	51	57	152	52	3346	1551	130	106	2278	4141
Pollachi Sub-District, Coimbatore District																	
12	1	Pattanam (CT)	Urban	2533	1063	84	37	48	17	57	25	2344	984	407	399	1741	3053
13	2	Solavampalayam	Rural	2014	1023	145	95	432	494	15	29	1422	405	120	210	1061	1959
14	3	Kondampatty	Rural	635	351	86	54	219	195	8	1	322	101	183	141	400	757
15	4	Vadasithur	Rural	1631	788	354	194	377	340	19	9	881	245	40	53	812	1756
16	5	Mettubavi	Rural	879	446	335	142	252	205	3	5	289	94	12	35	390	723
17	6	Arasampalayam	Rural	1166	697	241	119	345	401	12	11	568	166	103	75	625	1152
Coimbatore south Sub-District, Coimbatore District																	
18	1	Malumichampatti (CT)	Urban	3922	1300	123	65	57	47	61	40	3681	1148	133	162	2513	4906
19	2	Vellalur (TP)	Urban	7404	2647	230	64	274	265	208	244	6692	2074	767	539	4623	8892
20	3	Othakalmandapam (TP)	Urban	3274	1297	76	29	80	85	50	28	3068	1155	510	318	2244	4564
		total (C)		34064	14990	2644	1203	3865	3687	946	669	26609	9431	3144	2859	20738	39225
		Grand Total (A+B+C)		39803	17402	3994	1755	4723	4431	1042	726	30044	10490	3470	3123	24159	45545

**Source: District Primary Census Abstract, Coimbatore of Tamilnadu State-2011*

EDUCATIONAL FACILITIES IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Educational Facilities (A(1)/ NA(2))	Govt Pre - Primary School (Nursery/LKG/UKG) (Numbers)	Govt Primary School (Numbers)	Govt Middle School (Numbers)	Govt Secondary School (Numbers)	Govt Senior Secondary School (Numbers)	Govt Arts and Science Degree College (Numbers)	Govt Engineering College (Numbers)	Govt Medicine College (Numbers)	Govt Management Institute (Numbers)	Govt Polytechnic (Numbers)	Govt Vocational Training School/ITI (Numbers)	Government Non Formal Training Centre (Numbers)	Government School For Disabled (Numbers)
2-5 km,Sulur Sub-District, Coimbatore District																
1	1	Kallapalayam	1	2	1	1	1	0	0	0	0	0	0	0	0	0
2	2	Bogampatti	1	1	2	2	0	0	0	0	0	0	0	0	0	0
Pollachi Sub-District, Coimbatore District																
3	1	Panappatti	1	2	1	1	1	0	0	0	0	0	0	0	0	0
		total (A)		5	4	4	2	0	0	0	0	0	0	0	0	0
5-10km,Sulur Sub-District, Coimbatore District																
4	1	Peedampalli	1	2	2	1	1	1	0	0	0	0	0	0	0	0
5	2	Pappampatti	1	2	1	1	0	0	0	0	0	0	0	0	0	0
6	3	Edayapalayam	1	1	1	1	1	1	0	0	0	0	0	0	0	0
7	4	Sellakkarichal	1	4	3	1	1	0	0	0	0	0	0	0	0	0
8	5	Vadavalli	1	3	1	0	0	0	0	0	0	0	0	0	0	0
9	6	Appanaickenpatti	1	2	2	1	1	0	0	0	0	0	0	0	0	0
Pollachi Sub-District, Coimbatore District																
10	1	Solavampalayam	1	3	2	1	1	0	0	0	0	0	0	0	0	0
11	2	Kondampatty	1	1	3	1	0	0	0	0	0	0	0	0	0	0
12	3	Vadasithur	1	4	3	1	1	1	0	0	0	0	0	0	0	0
13	4	Mettubavi	1	2	1	1	0	0	0	0	0	0	0	0	0	0
14	5	Arasampalayam	1	4	3	1	0	0	0	0	0	0	0	0	0	0
		total (b)		28	22	10	6	3	0	0	0	0	0	0	0	0
		Grand Total (A+B)		33	26	14	8	3	0	0	0	0	0	0	0	0

**Source: District Primary Census Abstract, Coimbatore District of Tamilnadu State-2011*

MEDICAL FACILITIES WITHIN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Medical Facilities (A(1)/NA(2))	Community Health Centre (Numbers)	Primary Health Centre (Numbers)	Primary Health Sub Centre (Numbers)	Maternity And Child Welfare Centre (Numbers)	TB Clinic (Numbers)	Hospital Allopathic (Numbers)	Hospital Alternative Medicine (Numbers)	Dispensary (Numbers)	Veterinary Hospital (Numbers)	Mobile Health Clinic (Numbers)	Family Welfare Centre (Numbers)
2-5 km,Sulur Sub-District, Coimbatore District														
1	1	Kallapalayam	1	0	0	1	0	0	0	0	0	0	0	0
2	2	Bogampatti	2	0	0	0	0	0	0	0	0	0	0	0
Pollachi Sub-District, Coimbatore District														
3	1	Panappatti	1	0	0	1	0	0	0	0	0	1	0	0
		total (a)		0	0	2	0	0	0	0	0	1	0	0
5-10km,Sulur Sub-District, Coimbatore District														
4	1	Peedampalli	1	0	0	1	0	0	0	0	0	0	0	0
5	2	Pappampatti	1	0	0	1	0	0	0	0	0	1	0	0
6	3	Edayapalayam	2	0	0	0	0	0	0	0	0	0	0	0
7	4	Sellakkarichal	1	0	0	1	0	0	0	0	0	3	0	0
8	5	Vadavalli	1	0	0	1	0	0	0	0	0	0	0	0
9	6	Appanaickenpatti	1	0	0	1	0	0	0	0	0	0	0	0
Pollachi Sub-District, Coimbatore District														
10	1	Solavampalayam	1	0	0	1	0	0	0	0	0	0	0	0
11	2	Kondampatty	2	0	0	0	0	0	0	0	0	0	0	0
12	3	Vadasithur	1	0	0	1	0	0	0	0	0	1	0	0
13	4	Mettubavi	1	0	0	1	0	0	0	0	0	0	0	0
14	5	Arasampalayam	1	0	0	3	0	0	0	0	0	0	0	0
		total (b)		0	0	11	0	0	0	0	0	5	0	0
		Grand Total (A+B)		0	0	13	0	0	0	0	0	6	0	0

**Source: District Primary Census Abstract, Coimbatore District of Tamilnadu State-2011*

Note : A: Available, NA- Not Available

INFRASTRUCTURAL FACILITIES IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Tap Water-Treated (Status A(1)/NA(2))	Covered Well (Status A(1)/NA(2))	Hand Pump (Status A(1)/NA(2))	Tube Wells/Bore hole (Status A(1)/NA(2))	Spring (Status A(1)/NA(2))	River/Canal (Status A(1)/NA(2))	Tank/Pond/Lake (Status A(1)/NA(2))	Post Office (Status A(1)/NA(2))	Sub Post Office (Status A(1)/NA(2))	Post And Telegraph Office (Status A(1)/NA(2))	Telephone (landlines) (Status A(1)/NA(2))	Mobile Phone Coverag e (Status A(1)/NA(2))	Public Bus Service (Status A(1)/NA(2))	Railway Station (Status A(1)/NA(2))	Commer cial Bank (Status A(1)/NA(2))	Cooper ative Bank (Status A(1)/NA(2))	Agricultur al Credit Societies (Status A(1)/NA(2))
2-5 km,Sulur Sub-District, Coimbatore District																			
1	1	Kallapalayam	1	1	1	1	2	2	1	2	1	2	1	1	1	2	2	2	1
2	2	Bogampatti	1	1	1	1	2	2	2	2	1	2	1	1	2	2	2	2	2
Pollachi Sub-District, Coimbatore District																			
3	1	Panappatti	1	1	1	1	1	2	2	2	2	2	1	1	1	2	2	2	2
		total (a)	3	3	3	3	5	6	5	6	4	6	3	3	4	6	6	6	5
5-10km,Sulur Sub-District, Coimbatore District																			
4	1	Peedampalli	1	1	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
5	2	Pappampatti	1	2	2	1	1	2	2	2	1	2	1	1	1	2	1	2	2
6	3	Edayapalayam	1	1	1	1	2	2	2	2	2	2	1	1	1	2	2	1	1
7	4	Sellakkarichal	1	1	1	1	1	2	2	2	1	2	1	1	1	2	1	1	1
8	5	Vadavalli	1	1	1	1	2	2	2	2	1	2	1	1	1	2	2	2	2
9	6	Appanaickenpatti	1	1	2	1	1	2	2	2	1	2	1	1	1	2	2	1	2
Pollachi Sub-District, Coimbatore District																			
10	1	Solavampalayam	1	1	1	1	2	2	2	2	1	2	1	1	1	2	2	1	1
11	2	Kondampatty	1	1	2	1	1	2	2	2	2	2	1	1	1	2	2	2	2
12	3	Vadasithur	1	1	1	1	2	2	2	2	1	2	1	1	1	2	2	2	1
13	4	Mettubavi	1	1	2	1	2	1	2	2	1	2	1	1	1	2	2	2	2
14	5	Arasampalayam	1	1	1	1	2	2	2	2	1	2	1	1	1	1	2	2	2
		total (b)	11	12	16	12	18	21	22	22	13	22	11	11	11	21	20	18	18
		grand Total - A+B	14	15	19	15	23	27	27	28	17	28	14	14	15	27	26	24	23

**Source: District Primary Census Abstract, Coimbatore District of Tamilnadu State-2011*

Note : A: Available, NA- Not Available

Status: A(1)/NA(2)



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Annexure-9



TEST REPORT

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Issued To

M/S.R. Sathish Kumar (Rough Stone Quarry)
89, Thoppiyan Goundetr Thottam, Orattukuppai,
Chettipalayam, Coimbatore - 641 201.

Report No
Report Date
Sample Code

: ESL/2503/AAQ/1337
: 05.03.2025
: ESL250314

SAMPLE DETAILS

Nature of Sample	Air Quality	Sample Description	Ambient Air
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Date	ESL/QSP/07	Sample Location	Near Leased Area
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Taluka.		

Monitoring Date	Particulate Matter size less than 10- µm (PM ₁₀) µg/m ³	Particulate Matter size less than 2.5- µm (PM _{2.5}) µg/m ³	Sulphur Dioxide (SO ₂) µg/m ³	Nitrogen Dioxide (NO ₂) µg/m ³	Carbon Monoxide (CO) mg/m ³
02.12.2024	50	22	6	14	0.18
05.12.2024	57	21	5	11	0.21
10.12.2024	52	19	5	12	0.18
13.12.2024	49	20	6	18	0.19
16.12.2024	58	21	6	12	0.2
20.12.2024	51	21	7	16	0.19
24.12.2024	53	19	5	15	0.18
28.12.2024	48	20	6	15	0.19
31.12.2024	55	18	6	15	0.22
04.01.2025	59	23	7	16	0.18
08.01.2025	54	20	5	15	0.22
11.01.2025	57	21	5	16	0.22
14.01.2025	54	18	6	16	0.21
18.01.2025	61	24	5	14	0.25
21.01.2025	58	25	7	11	0.2
24.01.2025	50	21	7	12	0.27
27.01.2025	58	19	5	12	0.22
31.01.2025	53	21	6	13	0.24
05.02.2025	55	18	6	19	0.21
08.02.2025	54	20	5	15	0.23
10.02.2025	56	20	5	16	0.22
13.02.2025	55	19	5	14	0.18
18.02.2025	53	17	5	15	0.2
22.02.2025	56	20	5	16	0.2
24.02.2025	49	17	5	14	0.23
27.02.2025	48	19	6	13	0.2
Min	48	17	5	11	0.18
Max	61	25	7	19	0.27
Mean	54	20	6	14	0.21
98%ile	60	25	7	19	0.26
CPCB Limits	100	60	80	80	2

Note: BQL-Below Quantification Limit, LOQ - Limit of Quantification

End of Report

Authorised Signatory

[Signature]
Ram Ganesan
Technical Manager

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M/S.R. Sathish Kumar (Rough Stone Quarry)
89, Thoppiyan Goundetr Thottam, Orattukuppai,
Chettipalayam, Coimbatore - 641 201.

Report No
Report Date
Sample Code

: **ESL/2503/AAQ/1338**
: **05.03.2025**
: **ESL250315**

SAMPLE DETAILS

Nature of Sample	Air Quality	Sample Description	Ambient Air
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Date	ESL/QSP/07	Sample Location	Chettipalayam Village
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Taluka.		

Monitoring Date	Particulate Matter size less than 10- µm (PM ₁₀)	Particulate Matter size less than 2.5- µm (PM _{2.5})	Sulphur Dioxide (SO ₂)	Nitrogen Dioxide (NO ₂)	Carbon Monoxide (CO)
	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³
02.12.2024	52	20	7	10	0.14
05.12.2024	56	19	6	10	0.21
10.12.2024	62	26	5	12	0.18
13.12.2024	52	18	6	10	0.15
16.12.2024	57	22	6	12	0.2
20.12.2024	63	25	7	10	0.15
24.12.2024	58	23	5	14	0.18
28.12.2024	55	21	6	13	0.22
31.12.2024	47	20	6	14	0.14
04.01.2025	59	24	5	13	0.14
08.01.2025	64	20	8	10	0.22
11.01.2025	60	22	5	14	0.13
14.01.2025	59	23	6	13	0.21
18.01.2025	57	22	5	15	0.15
21.01.2025	56	21	6	11	0.22
24.01.2025	52	23	6	11	0.2
27.01.2025	50	22	5	12	0.22
31.01.2025	47	18	6	13	0.15
05.02.2025	50	20	6	10	0.14
08.02.2025	51	19	8	13	0.14
10.02.2025	56	20	9	11	0.2
13.02.2025	55	23	7	14	0.18
18.02.2025	59	24	9	12	0.2
22.02.2025	57	22	6	11	0.14
24.02.2025	58	21	6	10	0.15
27.02.2025	51	20	7	13	0.18
Min	47	18	5	10	0.13
Max	64	26	9	15	0.22
Mean	56	21	6	12	0.17
98%ile	64	26	9	15	0.22
CPCB Limits	100	60	80	80	2

Note: BQL-Below Quantification Limit, LOQ - Limit of Quantification

End of Report

Authorised Signatory

[Signature]
I. Ram Ganesan

Technical Manager

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Chettipalayam, Coimbatore - 641 201.

Report No
Report Date
Sample Code

: **ESL/2503/AAQ/1339**
: **05.03.2025**
: **ESL250316**

SAMPLE DETAILS

Nature of Sample	Air Quality	Sample Description	Ambient Air
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Date	ESL/QSP/07	Sample Location	Pachapalayam Village
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Taluka.		

Monitoring Date	Particulate Matter size less than 10- µm (PM ₁₀) µg/m ³	Particulate Matter size less than 2.5- µm (PM _{2.5}) µg/m ³	Sulphur Dioxide (SO ₂) µg/m ³	Nitrogen Dioxide (NO ₂) µg/m ³	Carbon Monoxide (CO) mg/m ³
02.12.2024	53	18	5	15	0.18
05.12.2024	48	17	6	14	0.21
10.12.2024	51	18	6	13	0.18
13.12.2024	54	18	7	9	0.13
16.12.2024	48	19	7	12	0.2
20.12.2024	50	17	8	16	0.13
24.12.2024	47	19	5	15	0.11
28.12.2024	58	22	7	15	0.19
31.12.2024	52	18	6	15	0.14
04.01.2025	47	16	5	16	0.2
08.01.2025	49	17	6	15	0.14
11.01.2025	45	19	6	16	0.18
14.01.2025	46	17	7	16	0.23
18.01.2025	48	18	6	15	0.13
21.01.2025	50	19	7	11	0.23
24.01.2025	47	18	7	15	0.24
27.01.2025	45	17	7	16	0.23
31.01.2025	55	23	6	14	0.21
05.02.2025	48	20	7	14	0.13
08.02.2025	45	18	6	15	0.12
10.02.2025	47	17	6	16	0.2
13.02.2025	52	19	5	14	0.18
18.02.2025	46	19	5	15	0.13
22.02.2025	48	19	5	16	0.2
24.02.2025	51	17	5	14	0.15
27.02.2025	53	18	5	13	0.14
Min	45	16	5	9	0.11
Max	58	23	8	16	0.24
Mean	49	18	6	14	0.17
98%ile	57	23	8	16	0.24
CPCB Limits	100	60	80	80	2

Note: BQL - Below Quantification Limit, LOQ - Limit of Quantification

End of Report

Authorized Signatory

I. Ram Ganesan
I. Ram Ganesan

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Chettipalayam, Coimbatore - 641 201.

Report No : ESL/2503/AAQ/1340
Report Date : 05.03.2025
Sample Code : ESL250317

SAMPLE DETAILS

Nature of Sample	Air Quality	Sample Description	Ambient Air
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Date	ESL/QSP/07	Sample Location	Kallapalayam Village
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Thaluka.		

Monitoring Date	Particulate Matter size less than 10- µm (PM ₁₀)	Particulate Matter size less than 2.5- µm (PM _{2.5})	Sulphur Dioxide (SO ₂)	Nitrogen Dioxide (NO ₂)	Carbon Monoxide (CO)
	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³
02.12.2024	50	21	5	15	0.14
05.12.2024	49	18	6	18	0.19
10.12.2024	50	21	5	16	0.12
13.12.2024	54	22	5	13	0.15
16.12.2024	49	19	5	15	0.13
20.12.2024	51	20	5	13	0.14
24.12.2024	58	24	7	19	0.21
28.12.2024	53	22	5	14	0.12
31.12.2024	51	18	5	14	0.16
04.01.2025	51	20	6	19	0.12
08.01.2025	49	18	5	19	0.16
11.01.2025	47	19	6	14	0.21
14.01.2025	50	20	5	13	0.12
18.01.2025	51	19	6	16	0.13
21.01.2025	49	18	5	18	0.18
24.01.2025	53	22	8	19	0.12
27.01.2025	50	20	5	16	0.23
31.01.2025	55	23	5	15	0.25
05.02.2025	47	20	7	15	0.12
08.02.2025	50	18	5	13	0.14
10.02.2025	49	20	6	16	0.18
13.02.2025	47	19	5	18	0.21
18.02.2025	53	23	6	14	0.14
22.02.2025	51	21	5	17	0.15
24.02.2025	48	19	6	16	0.12
27.02.2025	50	20	6	13	0.21
Min	47	18	5	13	0.12
Max	58	24	8	19	0.25
Mean	51	20	6	16	0.16
98%ile	57	24	7	19	0.24
CPCB Limits	100	60	80	80	2

Note: BQL-Below Quantification Limit, LOQ - Limit of Quantification

End of Report

Authorised Signatory

I. Ram Ganesan

I. Ram Ganesan
Technical Manager

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Chettipalayam, Coimbatore - 641 201.

Report No
Report Date
Sample Code

: **ESL/2503/AAQ/1341**
: **05.03.2025**
: **ESL250318**

SAMPLE DETAILS

Nature of Sample	Air Quality	Sample Description	Ambient Air
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Date	ESL/QSP/07	Sample Location	Chinnakuyili Village
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Taluka.		

Monitoring Date	Particulate Matter size less than 10- µm (PM ₁₀)	Particulate Matter size less than 2.5- µm (PM _{2.5})	Sulphur Dioxide (SO ₂)	Nitrogen Dioxide (NO ₂)	Carbon Monoxide (CO)
	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³
02.12.2024	47	20	5	14	0.22
05.12.2024	50	19	6	18	0.24
10.12.2024	56	21	6	16	0.26
13.12.2024	51	17	5	13	0.25
16.12.2024	48	21	5	15	0.24
20.12.2024	52	23	7	20	0.23
24.12.2024	50	20	6	19	0.19
28.12.2024	55	22	5	14	0.25
31.12.2024	53	21	7	14	0.25
04.01.2025	51	21	6	16	0.24
08.01.2025	49	19	5	19	0.2
11.01.2025	50	18	5	13	0.24
14.01.2025	48	17	5	13	0.27
18.01.2025	50	20	6	10	0.25
21.01.2025	54	19	5	18	0.24
24.01.2025	51	22	6	14	0.21
27.01.2025	49	18	5	23	0.27
31.01.2025	53	19	5	18	0.24
05.02.2025	45	20	6	15	0.2
08.02.2025	57	24	7	16	0.25
10.02.2025	55	23	5	20	0.18
13.02.2025	50	22	5	18	0.24
18.02.2025	54	21	6	19	0.21
22.02.2025	58	25	5	20	0.26
24.02.2025	51	21	5	16	0.17
27.02.2025	54	24	6	14	0.15
Min	45	17	5	10	0.15
Max	58	25	7	23	0.27
Mean	52	21	6	16	0.23
98%ile	57	25	7	21	0.27
CPCB Limits	100	60	80	80	2

Note: BQL-Below Quantification Limit, LOQ - Limit of Quantification

End of Report

Authorised Signatory

I. Ram Ganesan

I. Ram Ganesan
Technical Manager

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Annexure-10

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M/S.R. Sathish Kumar (Rough Stone Quarry)
89, Thoppiyan Goundetr Thottam, Orattukuppai,
Chettipalayam, Coimbatore - 641 201.

Report No : ESL/2503/W/1343
Report Date : 05.03.2025
Sample Code : ESL250320

SAMPLE DETAILS

Nature of Sample	Water	Sample Description	Ground Water - Well
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Near Leased Area
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Thaluka.		

S.No.	PARAMETER	UNIT	TEST PROCEDURE	RESULTS	*Limits
1	Odour	-	IS 3025 Part 5-2018	Agreeable	Agreeable
2	Turbidity	NTU	IS 3025 Part 10-2023	BQL (LOQ:0.1)	1
3	pH at 25 °C	-	IS 3025 Part 11-2022	8.01	6.5-8.5
4	Electrical Conductivity @25°C	µS/cm	IS :3025 Part 14- 1984(RA: 2019)	1083	Not Specified
5	Total dissolved solids	mg/l	IS 3025 Part 16-2023	541	2000
6	Total Suspended solids	mg/l	IS : 3025 Part 17-2022	BQL (LOQ:2.0)	Not Specified
7	Total Alkalinity as CaCO ₃	mg/l	IS 3025 Part 23- 2023	206	600
8	Total Hardness as CaCO ₃	mg/l	IS 3025 Part 21-2009(RA:2019)	240	600
9	Calcium as Ca	mg/l	IS 3025 Part 40-1991 (RA:2019)	102	200
10	Magnesium as Mg	mg/l	IS 3025 Part 46-2023	35.3	100
11	Chloride as Cl ⁻	mg/l	IS 3025 Part 32-1988 (RA: 2019)	15.0	1000
12	Sulphate as SO ₄	mg/l	IS 3025 Part 24/Sec 1: 2022	4.89	400
13	Nitrate as NO ₃	mg/l	IS 3025 Part 34-2023	5.21	45
14	Iron as Fe	mg/l	IS 3025 Part 53-2024	BQL(LOQ:0.05)	1.0
15	Manganese as Mn	mg/l	IS 3025 Part 59-2023	BQL(LOQ:0.02)	0.3
16	Fluoride as F	mg/l	IS 3025 Part 60-2008(RA:2017)	0.2	1.5
17	Ammonia as N	mg/l	IS 3025 Part 34-2023	BQL(LOQ:0.05)	0.5
18	Calcium as CaCO ₃	mg/l	IS 3025 Part 40-1991 (RA:2019)	254	-

*Limits-PERMISSIBLE LIMIT AS PER IS 10500: 2012

Note: BQL-Below Quantification Limit, LOQ - Limit of Quantification.

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



Authorised Signatory

L. Ram Ganesan
L. Ram Ganesan
Technical Manager

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M/S.R. Sathish Kumar (Rough Stone Quarry)
89, Thoppiyan Goundetr Thottam, Orattukuppai,
Chettipalayam, Coimbatore - 641 201.

Report No : ESL/2503/W/1344
Report Date : 05.03.2025
Sample Code : ESL250321

SAMPLE DETAILS

Nature of Sample	Water	Sample Description	Ground Water - Borewell
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Chettipalayam Village
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Thaluka.		

S.No.	PARAMETER	UNIT	TEST PROCEDURE	RESULTS	*Limits
1	Odour	-	IS 3025 Part 5-2018	Agreeable	Agreeable
2	Turbidity	NTU	IS 3025 Part 10-2023	BQL (LOQ:0.1)	1
3	pH at 25 °C	-	IS 3025 Part 11-2022	7.29	6.5-8.5
4	Electrical Conductivity @25°C	µS/cm	IS :3025 Part 14- 1984(RA: 2019)	1058	Not Specified
5	Total dissolved solids	mg/l	IS 3025 Part 16-2023	528	2000
6	Total Suspended solids	mg/l	IS : 3025 Part 17-2022	BQL (LOQ:2.0)	Not Specified
7	Total Alkalinity as CaCO ₃	mg/l	IS 3025 Part 23- 2023	240	600
8	Total Hardness as CaCO ₃	mg/l	IS 3025 Part 21-2009(RA:2019)	205	600
9	Calcium as Ca	mg/l	IS 3025 Part 40-1991 (RA:2019)	80.0	200
10	Magnesium as Mg	mg/l	IS 3025 Part 46-2023	42.0	100
11	Chloride as Cl ⁻	mg/l	IS 3025 Part 32-1988 (RA: 2019)	93.0	1000
12	Sulphate as SO ₄	mg/l	IS 3025 Part 24/Sec 1: 2022	32.9	400
13	Nitrate as NO ₃	mg/l	IS 3025 Part 34-2023	4.89	45
14	Iron as Fe	mg/l	IS 3025 Part 53-2024	BQL(LOQ:0.05)	1.0
15	Manganese as Mn	mg/l	IS 3025 Part 59-2023	BQL(LOQ:0.02)	0.3
16	Fluoride as F	mg/l	IS 3025 Part 60-2008(RA:2017)	BQL(LOQ:0.1)	1.5
17	Ammonia as N	mg/l	IS 3025 Part 34-2023	BQL(LOQ:0.05)	0.5
18	Calcium as CaCO ₃	mg/l	IS 3025 Part 40-1991 (RA:2019)	199	-

*Limits-PERMISSIBLE LIMIT AS PER IS 10500: 2012

Note: BQL-Below Quantification Limit, LOQ - Limit of Quantification.

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T. Ram Ganesan
T. Ram Ganesan
Technical Manager

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Chettipalayam, Coimbatore - 641 201.

Report No : ESL/2503/W/1345
Report Date : 05.03.2025
Sample Code : ESL250322

SAMPLE DETAILS

Nature of Sample	Water	Sample Description	Ground Water - Borewell
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Pachapalayam Village
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Thaluka.		

S.No.	PARAMETER	UNIT	TEST PROCEDURE	RESULTS	*Limits
1	Odour	-	IS 3025 Part 5-2018	Agreeable	Agreeable
2	Turbidity	NTU	IS 3025 Part 10-2023	0.53	1
3	pH at 25 °C	-	IS 3025 Part 11-2022	7.48	6.5-8.5
4	Electrical Conductivity @25°C	µS/cm	IS :3025 Part 14- 1984(RA: 2019)	1535	Not Specified
5	Total dissolved solids	mg/l	IS 3025 Part 16-2023	767	2000
6	Total Suspended solids	mg/l	IS : 3025 Part 17-2022	BQL (LOQ:2.0)	Not Specified
7	Total Alkalinity as CaCO ₃	mg/l	IS 3025 Part 23- 2023	259	600
8	Total Hardness as CaCO ₃	mg/l	IS 3025 Part 21-2009(RA:2019)	256	600
9	Calcium as Ca	mg/l	IS 3025 Part 40-1991 (RA:2019)	146	200
10	Magnesium as Mg	mg/l	IS 3025 Part 46-2023	36.0	100
11	Chloride as Cl ⁻	mg/l	IS 3025 Part 32-1988 (RA: 2019)	155	1000
12	Sulphate as SO ₄	mg/l	IS 3025 Part 24/Sec 1: 2022	53.7	400
13	Nitrate as NO ₃	mg/l	IS 3025 Part 34-2023	6.45	45
14	Iron as Fe	mg/l	IS 3025 Part 53-2024	BQL(LOQ:0.05)	1.0
15	Manganese as Mn	mg/l	IS 3025 Part 59-2023	BQL(LOQ:0.02)	0.3
16	Fluoride as F	mg/l	IS 3025 Part 60-2008(RA:2017)	BQL(LOQ:0.1)	1.5
17	Ammonia as N	mg/l	IS 3025 Part 34-2023	BQL(LOQ:0.05)	0.5
18	Calcium as CaCO ₃	mg/l	IS 3025 Part 40-1991 (RA:2019)	364	-

*Limits-PERMISSIBLE LIMIT AS PER IS 10500: 2012

Note: BQL-Below Quantification Limit, LOQ - Limit of Quantification.

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Authorised Signatory

I. Ram Ganesan
I. Ram Ganesan
Technical Manager

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89, Thoppiyan Goundetr Thottam, Orattukuppai,
Chettipalayam, Coimbatore - 641 201.

Report No : ESL/2503/W/1346
Report Date : 05.03.2025
Sample Code : ESL250323

SAMPLE DETAILS

Nature of Sample	Water	Sample Description	Ground Water - Borewell
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Kallapalayam Village
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Thaluka.		

S.No.	PARAMETER	UNIT	TEST PROCEDURE	RESULTS	*Limits
1	Odour	-	IS 3025 Part 5-2018	Agreeable	Agreeable
2	Turbidity	NTU	IS 3025 Part 10-2023	BQL (LOQ:0.1)	1
3	pH at 25 °C	-	IS 3025 Part 11-2022	8.05	6.5-8.5
4	Electrical Conductivity @25°C	µS/cm	IS :3025 Part 14- 1984(RA: 2019)	858	Not Specified
5	Total dissolved solids	mg/l	IS 3025 Part 16-2023	428	2000
6	Total Suspended solids	mg/l	IS : 3025 Part 17-2022	BQL (LOQ:2.0)	Not Specified
7	Total Alkalinity as CaCO ₃	mg/l	IS 3025 Part 23- 2023	273	600
8	Total Hardness as CaCO ₃	mg/l	IS 3025 Part 21-2009(RA:2019)	150	600
9	Calcium as Ca	mg/l	IS 3025 Part 40-1991 (RA:2019)	58.0	200
10	Magnesium as Mg	mg/l	IS 3025 Part 46-2023	15.8	100
11	Chloride as Cl ⁻	mg/l	IS 3025 Part 32-1988 (RA: 2019)	31.0	1000
12	Sulphate as SO ₄	mg/l	IS 3025 Part 24/Sec 1: 2022	11.4	400
13	Nitrate as NO ₃	mg/l	IS 3025 Part 34-2023	3.94	45
14	Iron as Fe	mg/l	IS 3025 Part 53-2024	BQL(LOQ:0.05)	1.0
15	Manganese as Mn	mg/l	IS 3025 Part 59-2023	BQL(LOQ:0.02)	0.3
16	Fluoride as F	mg/l	IS 3025 Part 60-2008(RA:2017)	0.2	1.5
17	Ammonia as N	mg/l	IS 3025 Part 34-2023	BQL(LOQ:0.05)	0.5
18	Calcium as CaCO ₃	mg/l	IS 3025 Part 40-1991 (RA:2019)	144.8	-

*Limits-PERMISSIBLE LIMIT AS PER IS 10500: 2012

Note: BQL-Below Quantification Limit, LOQ - Limit of Quantification.

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J. Ram Ganesan
J. Ram Ganesan
Technical Manager

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M/S.R. Sathish Kumar (Rough Stone Quarry)
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Chettipalayam, Coimbatore - 641 201.

Report No : ESL/2503/W/1347
Report Date : 05.03.2025
Sample Code : ESL250324

SAMPLE DETAILS

Nature of Sample	Water	Sample Description	Ground Water - Borewell
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Chinnakuyili Village
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Thaluka.		

S.No.	PARAMETER	UNIT	TEST PROCEDURE	RESULTS	*Limits
1	Odour	-	IS 3025 Part 5-2018	Agreeable	Agreeable
2	Turbidity	NTU	IS 3025 Part 10-2023	BQL (LOQ:0.1)	1
3	pH at 25 °C	-	IS 3025 Part 11-2022	7.98	6.5-8.5
4	Electrical Conductivity @25°C	µS/cm	IS :3025 Part 14- 1984(RA: 2019)	927	Not Specified
5	Total dissolved solids	mg/l	IS 3025 Part 16-2023	463	2000
6	Total Suspended solids	mg/l	IS : 3025 Part 17-2022	BQL (LOQ:2.0)	Not Specified
7	Total Alkalinity as CaCO ₃	mg/l	IS 3025 Part 23- 2023	225	600
8	Total Hardness as CaCO ₃	mg/l	IS 3025 Part 21-2009(RA:2019)	160	600
9	Calcium as Ca	mg/l	IS 3025 Part 40-1991 (RA:2019)	98	200
10	Magnesium as Mg	mg/l	IS 3025 Part 46-2023	17	100
11	Chloride as Cl ⁻	mg/l	IS 3025 Part 32-1988 (RA: 2019)	87	1000
12	Sulphate as SO ₄	mg/l	IS 3025 Part 24/Sec 1: 2022	31.2	400
13	Nitrate as NO ₃	mg/l	IS 3025 Part 34-2023	4.23	45
14	Iron as Fe	mg/l	IS 3025 Part 53-2024	BQL(LOQ:0.05)	1.0
15	Manganese as Mn	mg/l	IS 3025 Part 59-2023	BQL(LOQ:0.02)	0.3
16	Fluoride as F	mg/l	IS 3025 Part 60-2008(RA:2017)	BQL(LOQ:0.1)	1.5
17	Ammonia as N	mg/l	IS 3025 Part 34-2023	BQL(LOQ:0.05)	0.5
18	Calcium as CaCO ₃	mg/l	IS 3025 Part 40-1991 (RA:2019)	244.7	-

*Limits-PERMISSIBLE LIMIT AS PER IS 10500: 2012

Note: BQL- Below Quantification Limit, LOQ - Limit of Quantification.

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



Authorised Signatory

I. Ram Ganesan
I. Ram Ganesan
Technical Manager

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Annexure- 11

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M/S.R. Sathish Kumar (Rough Stone Quarry)
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Chettipalayam, Coimbatore - 641 201.

Report No. : ESL/2503/S/1348
Report Date : 05.03.2025
Sample Code : ESL250325

SAMPLE DETAILS

Nature of Sample	Soil Analysis	Sample Description	Soil
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Project Site
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Thaluka.		

S.NO	PARAMETER	UNIT	TEST METHOD	RESULTS
1	pH (1:5 Suspension)	%	IS 2720 Part-26 : 1987 (RA- 2021)	6.81
2	Bulk Density	%	FAO Chapter 3, ESL/SOP/18:2023	1.12
3	Electrical conductivity, (1:5 Suspension)	mS/cm	IS -14767:2000 (RA 2021)	0.090
4	Total Nitrogen as N	Kg/ha	IS -14684:1999, RA:2019	158
5	Available Phosphorous,	Kg/ha	FAO Chapter 3, ESL/SOP/14:2023	20.7
6	Available Potassium	Kg/ha	FAO Chapter 3, ESL/SOP/17:2023	263
7	Exchangeable Calcium as Ca,	m.eq/100g	FAO Chapter 3, ESL/SOP/15:2023	16.6
8	Exchangeable Magnesium as Mg,	m.eq/100g	FAO Chapter 3, ESL/SOP/16:2023	4.84
9	Exchangeable Sodium as Na,	m.eq/100g	FAO Chapter 3, ESL/SOP/17:2023	2.18
10	Organic matter	%	IS 2720 Part- 22 : 1972 (RA- 2020)	1.36
11	Texture Classification		Bouyoucos G.J. Hydrometer method improved for making particle size analysis of soil. Argon. J. 54-464-465: 1962: 1962	Sandy
a)	Sand	%		87.5
b)	Clay	%		8.4
c)	Silt	%		4.1
12	Porosity	%	ICARDA page 53: 2013	0.60
13	Water Holding Capacity	Inches/foot	ICARDA page 28: 2013	5.2
14	Sodium Absorption Ratio (SAR)	meq/Kg	ESL/SOP/54:2024	1.04

End of Report



Authorised Signatory

T. Ram Ganesan
T. Ram Ganesan
Technical Manager

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TEST REPORT

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Report No. : ESL/2503/S/1349
Report Date : 05.03.2025
Sample Code : ESL250326

SAMPLE DETAILS

Nature of Sample	Soil Analysis	Sample Description	Soil
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Chettipalayam Village
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Thaluka.		

S.NO	PARAMETER	UNIT	TEST METHOD	RESULTS
1	pH (1:5 Suspension)	%	IS 2720 Part-26 : 1987 (RA- 2021)	6.73
2	Bulk Density	%	FAO Chapter 3, ESL/SOP/18:2023	1.18
3	Electrical conductivity, (1:5 Suspension)	mS/cm	IS -14767:2000 (RA 2021)	0.05
4	Total Nitrogen as N	Kg/ha	IS -14684:1999, RA:2019	124
5	Available Phosphorous,	Kg/ha	FAO Chapter 3, ESL/SOP/14:2023	26.8
6	Available Potassium	Kg/ha	FAO Chapter 3, ESL/SOP/17:2023	227
7	Exchangeable Calcium as Ca,	m.eq/100g	FAO Chapter 3, ESL/SOP/15:2023	9.8
8	Exchangeable Magnesium as Mg,	m.eq/100g	FAO Chapter 3, ESL/SOP/16:2023	2.89
9	Exchangeable Sodium as Na,	m.eq/100g	FAO Chapter 3, ESL/SOP/17:2023	1.47
10	Organic matter	%	IS 2720 Part- 22 : 1972 (RA- 2020)	0.83
11	Texture Classification		Bouyoucos G.J. Hydrometer method improved for making particle size analysis of soil. Argon. J. 54-464-465: 1962: 1962	Sandy
a)	Sand	%		85.4
b)	Clay	%		9.7
c)	Silt	%		4.9
12	Porosity	%	ICARDA page 53: 2013	0.63
13	Water Holding Capacity	Inches/foot	ICARDA page 28: 2013	5.4
14	Sodium Absorption Ratio (SAR)	meq/Kg	ESL/SOP/54:2024	1.07

End of Report



Authorised Signatory
I. Ram Ganesan
I. Ram Ganesan
Technical Manager

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M/S.R. Sathish Kumar (Rough Stone Quarry)
89, Thoppiyan Goundetr Thottam, Orattukuppai,
Chettipalayam, Coimbatore - 641 201.

Report No. : ESL/2503/S/1350
Report Date : 05.03.2025
Sample Code : ESL250327

SAMPLE DETAILS

Nature of Sample	Soil Analysis	Sample Description	Soil
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Pachapalayam Village
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Taluka.		

S.NO	PARAMETER	UNIT	TEST METHOD	RESULTS
1	pH (1:5 Suspension)	%	IS 2720 Part-26 : 1987 (RA- 2021)	6.83
2	Bulk Density	%	FAO Chapter 3, ESL/SOP/18:2023	1.21
3	Electrical conductivity, (1:5 Suspension)	mS/cm	IS -14767:2000 (RA 2021)	0.095
4	Total Nitrogen as N	Kg/ha	IS -14684:1999, RA:2019	224
5	Available Phosphorous,	Kg/ha	FAO Chapter 3, ESL/SOP/14:2023	36.7
6	Available Potassium	Kg/ha	FAO Chapter 3, ESL/SOP/17:2023	358
7	Exchangeable Calcium as Ca,	m.eq/100g	FAO Chapter 3, ESL/SOP/15:2023	18.3
8	Exchangeable Magnesium as Mg,	m.eq/100g	FAO Chapter 3, ESL/SOP/16:2023	5.27
9	Exchangeable Sodium as Na,	m.eq/100g	FAO Chapter 3, ESL/SOP/17:2023	2.41
10	Organic matter	%	IS 2720 Part- 22 : 1972 (RA- 2020)	1.41
11	Texture Classification		BouyoucosG.J. Hydrometer method improved for making particle size analysis of soil.Argon.J.54-464- 465: 1962: 1962	Sandy
a)	Sand	%		87.1
b)	Clay	%		8.6
c)	Silt	%		4.3
12	Porosity	%	ICARDA page 53: 2013	0.67
13	Water Holding Capacity	Inches/foot	ICARDA page 28: 2013	5.7
14	Sodium Absorption Ratio (SAR)	meq/Kg	ESL/SOP/54:2024	1.11

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M/S.R. Sathish Kumar (Rough Stone Quarry)
89, Thoppiyan Goundetr Thottam, Orattukuppai,
Chettipalayam, Coimbatore - 641 201.

Report No. : ESL/2503/S/1351
Report Date : 05.03.2025
Sample Code : ESL250328

SAMPLE DETAILS

Nature of Sample	Soil Analysis	Sample Description	Soil
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Kallapalayam Village
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Taluka.		

S.NO	PARAMETER	UNIT	TEST METHOD	RESULTS
1	pH (1:5 Suspension)	%	IS 2720 Part-26 : 1987 (RA- 2021)	6.91
2	Bulk Density	%	FAO Chapter 3, ESL/SOP/18:2023	1.16
3	Electrical conductivity, (1:5 Suspension)	mS/cm	IS -14767:2000 (RA 2021)	0.025
4	Total Nitrogen as N	Kg/ha	IS -14684:1999, RA:2019	260
5	Available Phosphorous,	Kg/ha	FAO Chapter 3, ESL/SOP/14:2023	48.6
6	Available Potassium	Kg/ha	FAO Chapter 3, ESL/SOP/17:2023	396
7	Exchangeable Calcium as Ca,	m.eq/100g	FAO Chapter 3, ESL/SOP/15:2023	5.6
8	Exchangeable Magnesium as Mg,	m.eq/100g	FAO Chapter 3, ESL/SOP/16:2023	2.21
9	Exchangeable Sodium as Na,	m.eq/100g	FAO Chapter 3, ESL/SOP/17:2023	1.18
10	Organic matter	%	IS 2720 Part- 22 : 1972 (RA- 2020)	0.56
11	Texture Classification		Bouyoucos G.J. Hydrometer method improved for making particle size analysis of soil. Argon, J. 54-464-465: 1962: 1962	Sandy
a)	Sand	%		88.5
b)	Clay	%		7.8
c)	Silt	%		3.7
12	Porosity	%	ICARDA page 53: 2013	0.62
13	Water Holding Capacity	Inches/foot	ICARDA page 28: 2013	5.3
14	Sodium Absorption Ratio (SAR)	meq/Kg	ESL/SOP/54:2024	1.05

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Technical Manager

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Chettipalayam, Coimbatore - 641 201.

TEST REPORT

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Report No. : ESL/2503/S/1352
Report Date : 05.03.2025
Sample Code : ESL250329

SAMPLE DETAILS

Nature of Sample	Soil Analysis	Sample Description	Soil
Sample Collected By	Enviro Solutions & Labs	Sample Condition	Good
Sampling Procedure	ESL/QSP/07	Sample Location	Chinnakuyili Village
Sample Collected On	25.02.2025	Sample Received On	25.02.2025
Analysis Started On	25.02.2025	Analysis Completed On	03.03.2025
Sample Collected At	R. Sathish Kumar (Rough Stone Quarry), 203/1B, Orattukuppai Village, Madukarai Thaluka.		

S.NO	PARAMETER	UNIT	TEST METHOD	RESULTS
1	pH (1:5 Suspension)	%	IS 2720 Part-26 : 1987 (RA- 2021)	6.79
2	Bulk Density	%	FAO Chapter 3, ESL/SOP/18:2023	1.19
3	Electrical conductivity, (1:5 Suspension)	mS/cm	IS -14767:2000 (RA 2021)	0.088
4	Total Nitrogen as N	Kg/ha	IS -14684:1999, RA:2019	198
5	Available Phosphorous,	Kg/ha	FAO Chapter 3, ESL/SOP/14:2023	32.2
6	Available Potassium	Kg/ha	FAO Chapter 3, ESL/SOP/17:2023	327
7	Exchangeable Calcium as Ca,	m.eq/100g	FAO Chapter 3, ESL/SOP/15:2023	12.5
8	Exchangeable Magnesium as Mg,	m.eq/100g	FAO Chapter 3, ESL/SOP/16:2023	4.02
9	Exchangeable Sodium as Na,	m.eq/100g	FAO Chapter 3, ESL/SOP/17:2023	1.87
10	Organic matter	%	IS 2720 Part- 22 : 1972 (RA- 2020)	1.18
11	Texture Classification		BouyoucosG.J. Hydrometer method improved for making particle size analysis of soil.Argon.J.54-464-465: 1962: 1962	Sandy
a)	Sand	%		87.9
b)	Clay	%		8.7
c)	Silt	%		3.4
12	Porosity	%	ICARDA page 53: 2013	0.64
13	Water Holding Capacity	Inches/foot	ICARDA page 28: 2013	5.0
14	Sodium Absorption Ratio (SAR)	meq/Kg	ESL/SOP/54:2024	1.09

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LANDUSE IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Total Geographical Area (in Hectares)	Forest Area (in Hectares)	Area under Non-Agricultural Uses (in Hectares)	Barren & Uncultivable Land Area (in Hectares)	Permanent Pastures and Other Grazing Land Area (in Hectares)	Land Under Miscellaneous Tree Crops etc. Area (in Hectares)	Culturable Waste Land Area (in Hectares)	Fallows Land other than Current Fallows Area (in Hectares)	Current Fallows Area (in Hectares)	Total Unirrigated Land Area (in Hectares)	Area Irrigated by Source (in Hectares)
2-5 km,Sulur Sub-District, Coimbatore District													
1	1	Kallapalayam	1141.05	0	48.67	0	0	0	0	74.47	716.44	0	301.47
2	2	Bogampatti	1876.93	0	261.7	3.84	0	0	231.48	561.49	269.69	355.2	193.53
Pollachi Sub-District, Coimbatore District													
3	1	Panappatti	1616.95	0	112.91	15.74	0	950.43	0	0	0	293.33	244.54
		total (a)	4634.93	0	423.28	19.58	0	950.43	231.48	635.96	986.13	648.53	739.54
5-10km,Sulur Sub-District, Coimbatore District													
4	1	Peedampalli	1359.65	0	425.06	0	0	0.74	41.9	343.91	292.54	110.26	145.24
5	2	Pappampatti	1024.82	0	162.72	0	0	0	0	8.19	660.33	0	193.58
6	3	Edayapalayam	1191.04	0	188.02	28.43	0	0	111.17	171.5	11.02	487.51	193.39
7	4	Sellakkarichal	2123.47	0	1214.97	0.81	0	0	99.51	0	79.3	0	728.88
8	5	Vadavalli	1874.47	0	267.3	0	0	0	0	0	1230.21	217.2	159.76
9	6	Appanaickenpatti	1745.38	0	195.98	0	0	0.17	193.19	432.36	345.9	337.24	240.54
Pollachi Sub-District, Coimbatore District													
10	1	Solavampalayam	1270.73	0	95.83	9.24	0	0	44.93	0	586.75	267.37	266.61
11	2	Kondampatty	2120.03	0	149.58	0	0	0.05	0	0	858.36	671.56	440.48
12	3	Vadasithur	1748.48	0	142.86	3.25	0	0	0	0	818.23	167.74	616.4
13	4	Mettubavi	1205.85	0	69.57	7.54	0	0	58.39	0	647	125.08	298.27
14	5	Arasampalayam	869.81	0	92.17	0	0	0.85	0	0	423.68	124.39	228.72
		total (b)	16533.73	0	3004.06	49.27	0	1.81	549.09	955.96	5953.32	2508.35	3511.87
		Grand Total (A+B)	21168.66	0	3427.34	68.85	0	952.24	780.57	1591.92	6939.45	3156.88	4251.41

**Source: District Primary Census Abstract, Coimbatore District of Tamilnadu State-2011*



AC 023875

தமிழ்நாடு தமில்நாடு TAMILNADU

S. மணிதண்டன.

முத்திரைத்தரள் விநியோகனயானர்
உரிமம் எண்: 19/2008/TRP
பஞ்சர் லீட், கைத்தட்டவு
தமிழ்நாடு ரூ: 500/-
தேதி 29.11.2024

சீத்குமார்
கோவை

குத்தகை ஒப்பந்தம்

வருடம் 1-க்கு ரூ.1,000/- (ஆயிரம்) குத்தகை வீதம் 13 (பதின்மூன்று) வருடம்
கெடுவு

2024 -ம் வருடம் நவம்பர் மாதம் - 29 -ந் தேதி

கோயமுத்தூர் மாவட்டம் , கோயமுத்தூர் - 641201, செட்டிபாளையம், கிருஷ்ணராயபுரம்
தோட்ட சாலை, கதவு எண் 9/48 என்ற விலாசத்தில் வசிக்கும் திரு. வேலுசாமி அவர்களின்
குமாரர் திரு.V. தினேஷ்குமார் -1 (Aadhaar- 5840 3129 4265) (Pan- BGMPD4084L)
(cell-9384106972)

(1) வது பார்ட்டி

(2) வது பார்ட்டி



P. K. K.

R. M.

1 புத்தகம் 2024 ம் வருடத்திய 13188
ம் ஆவணம் 11 தாள்களைக்கொண்டது.
1 வது தாள்
பதிவு அலுவலர்

கோயமுத்தூர் மாவட்டம், கோயமுத்தூர் - 641201, காரச்சேரி, மாரியம்மன் கோவில் அருகில், கதவு எண் 3/90-1 என்ற விலாசத்தில் வசிக்கும் திரு. பழனிச்சாமி அவர்களின் குமாரர் திரு. **P. கதிரேசன் -2** (Aadhaar- 2892 3296 8655) (Pan- CPSPK0980G) (cell- 9842243008) ஆகிய இருவரும் சேர்ந்து 1 வது பார்ட்டி, குத்தகைக்கு விடுபவர்.

கோயமுத்தூர் மாவட்டம், கோயமுத்தூர் - 641201, செட்டிபாளையம், ஓராட்டுக்குப்பை கிராமம், தொப்பையகவுண்டர் தோட்டம், கதவு எண் 89 என்ற விலாசத்தில் வசிக்கும் திரு. ரங்கசாமி அவர்களின் குமாரர் திரு. **R. சதீஷ்குமார் - 2** (Aadhaar- 3129 4342 3873) (Pan- FOYPS8173D) (cell-9600774662) -2 வது பார்ட்டி குத்தகைக்கு வருபவர் ஆகிய நாங்கள் அனைவரும் சேர்ந்து எழுதி வைத்துக் கொண்ட குத்தகை ஒப்பந்தம் என்னவென்றால்,

1 வது பார்ட்டிகள் மற்றும் 2 வது பார்ட்டி ஆகியோர்கள் பெயருக்கு சேர்ந்து கூட்டாக கடந்த 12.10.2023 ஆம் தேதியில் எழுதப்பட்டு கிணத்துக்கடவு சார்பதிவாளர் அலுவலகத்தில் 1 புத்தகம் 10854/2023 - ஆம் நெம்பராகப்பதிவு செய்யப்பட்ட கிரைய பத்திரப்படி பாத்தியப்பட்டதும் நம் மூவருடைய அனுபோகத்திலும் சுவாதீனத்திலும் இருந்து வரும் பூமி வகையறா சொத்தினை 2 வது பார்ட்டிக்கு குத்தகைக்கு கொடுத்து மேற்படி குத்தகைத் தொகையாக

» முதல் வருடத்தில் இருந்து பதின்மூன்று வருடம் வரை

வருடம் 1 க்கு- ரூ.1,000/-

» ஆக மொத்தம் சேர்ந்து

- ரூ.13,000/- வீதமும்

வீதம் ரொக்கமாக 1 ம் வது பார்ட்டிகள் பெற்றுக் கொண்டு 2 வது பார்ட்டிக்கு குத்தகைக்கு விட ஒப்புக் கொண்டு கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு இந்த குத்தகை ஒப்பந்தப் பத்திரம் எழுதப்பட்டுள்ளது.

» இதனடியில் கண்ட சொத்துக்களுக்கான குத்தகை கெடு 13 வருட காலத்திற்கு

அமுலில் இருக்கவேண்டியது.

(1) வது பார்ட்டிகள்

(2) வது பார்ட்டி



2 P. S. S. S.

புத்தகம்	2024	ம் வருடத்திய	13188
ம் ஆவணம்	11	தாளிகளைக் கொண்டது.	
2	வது தாள்		
			பதிவு அலுவலர்

க.ச.333 நெ காலைக்கும்

-- வடக்கு,

க.ச.203/1A நெ காலைக்கும்

-- தெற்கு,

க.ச.320 நெ காலைக்கும்

-- கிழக்கு,

தென்வடல் வண்டித்தடத்திற்கும்

-- மேற்கு,

இதன் மத்தியில் புஞ்சை ஏக்கர். 2.79 இந்த விஸ்தீரணமுள்ள பூமி சகிதம். மேற்படி பூமிக்கு மாமூலாக போக வர உண்டான தடத்தில் உங்களுடைய ஆள் வண்டி வாகனாதி களாக வாகன வகையறாக்கள் போக வர உண்டான தட பாத்தியமும் மூல ஆவணத்தில் கண்ட வழித் தட பாத்தியமும் ஆகிய இந்தச் சொத்துக்கள் சகிதம் .

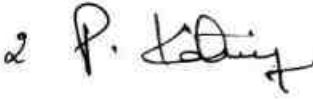
மேற்படி புஞ்சை பூமியானது தற்போதைய பட்டா எண் -1730 ன் படி க.ச.203/1B நெ காலையில் உள்ளது

(1) வது பாட்டிகள்

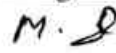
(2) வது பாட்டி

1. 

R. 

2. P. 

சாட்சிகள் : -----

வ. எண்	பெயர்	முதல் உறவினர்	விலாசம்	கையொப்பம்
1.	சதீஷ்	வெள்ளியப்பன்	2,147 இச்சி மர தோட்டம் பெரியகுயிலை குலுர் பச்சாபாளையம், கோயமுத்தூர்	
2.	சன்மதி	மணிமாறன்	15,247 பெரியார் நகர் கிணத்துக்கடவு	M. 



Prepared by

M.SATHYAPRIYA (ADVOCATE)

ENROLL No- MS 169/2018

A-31

Mobile - 737353 9686

1 புத்தகம்	2024	ம் வருத்திய	13188
ம் ஆவணம் 11 தாள்களைக்கொண்டது.			
4 வது தாளர்			
பதிவு அலுவலர்			

உறுதிமொழி

DECLARATION

இந்த ஆவணத்தினை எழுதிக் கொடுப்பவரும், எழுதிப் பெறுபவர்களும் கீழ்க்கண்ட உறுதிமொழியை அளிக்கிறோம்.

வழக்கிடை ஆவண சொத்து பதிவுச் சட்டம் 1908 பிரிவு 22 (A) மற்றும் 22 (B) க்கு உட்பட்டதல்ல எனவும், ஆவணத்துடன் இணைக்கப்பட்ட அனைத்து ஆவணங்களும் இந்திய தண்டனைச் சட்டம் 1860 பிரிவு 470 ன் படி Forgery Documents அல்ல எனவும், ஆவணத்தை எழுதிப்பெறுபவர் அனைத்து ஆவணங்களையும் பரிசீலித்து வில்லங்கம் சரிபார்த்து எழுதி பெறுகிறார் எனவும், சொத்து மாற்றுச்சட்டம் 1882- ன் படி சொத்து பரிமாற்றம் தொடர்பான அனைத்து பிரிவுகளுக்கும் உட்பட்டு செயல்பட்டு உள்ளோம் எனவும் உறுதிமொழி அளிக்கிறோம்.

(நதிப்பேராணை எண் 22163 / 2018 இல் வழங்கப்பட்ட தீர்ப்புரையின் அடிப்படையில்)

இந்த ஆவணத்தில் கண்ட சொத்தானது நீர்நிலைகள், நீர்வழிப் பாதைகள் நீர் பிடிப்பு பகுதிகளில் கட்டுப்படவில்லை என உறுதிசெய்கிறோம், மேலும் இதனில் தங்களுக்கு தவறான தகவல் அல்லது உறுதியளிக்கப்பட்டதாக பின்னாளில் கண்டு பிடிக்கப்பட்டால் அதனால் நாங்கள் சட்டப்பூர்வ நடவடிக்கைகளுக்கு உட்படுத்தப்படுவோம் என்பதையும் அறிவோம்.

1 அடி பரட்டி

2 அடி பரட்டி

1. 

RNT

2 P. Kalai



பத்தகம் 2024	ம் வருடத்திய 13188
ஆவணம் 11	தாள்களைக்கொண்டது.
வது நாள்	
பதிவு அலுவலர்	



தமிழ்நாடு அரசு

வருவாய் மற்றும் பேரிடர் மேலாண்மைத் துறை

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

மாவட்டம் : கோயம்புத்தூர்

பகுதி : மதுக்களம்

வருவாய் கிராமம் : ஓராட் ஓக்குப்பம்

பரப்பளவு : 1730

உரிமையாளர்கள் பெயர்

- | | | | | |
|----|-------------|------|---------------|---|
| 1. | வேதூச்சாமி | மகன் | நீவேஷ் குமார் | - |
| 2. | புறவிச்சாமி | மகன் | சுஜிதேசன் | - |
| 3. | சங்கராமி | மகன் | சுஜிதேசன் | - |

புவி எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புகள்
		பாப்பு	நீர்வை	பாப்பு	நீர்வை	பாப்பு	நீர்வை	
		ஹெக்ட - எர்	ரூ - டை	ஹெக்ட - எர்	ரூ - டை	ஹெக்ட - எர்	ரூ - டை	
203	18	1 - 13.00	1.40	--	--	--	--	2023/0103 /12/515021--- Digitally signed:Lawrence T Zonal Deputy Tahsildar 31/10/2023 06:47:13:PM
		1 - 13.00	1.40					

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை.
1. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/14/047/01730/130741 என்று குறிப்பு எண்ணை உடனீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 29-11-2024 அன்று 10:57:13 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1 வது பக்கம்

2 வது பக்கம்

P.H

1.

29-11-24, 11:00

1 of 1

2 P.H



1 புத்தகம் 2024 ம் வருடத்திய	13188
ம் ஆவணம் 11	தாள்களைக் கொண்டது
6	வது தாளி
பதிவு அலுவலர்	

A-33



Camping

Unnamed Road, Tamil Nadu 641201, India

Latitude
10.9185009

Altitude
444 m

Longitude
77.0652317

Saturday 23 November 2024 05:49 PM

1. சிவ பாரதி
[Signature]



2. சிவ பாரதி
[Signature]

2. P. [Signature]

1. பத்திரம்	2024	ம் வருடத்தில்	13188
2. ஆலோசனை	11	தாரிகைகள் கொண்டு	
3. விசாரணை			
[Signature]			

भारत सरकार
GOVERNMENT OF INDIA

தினேஷ்குமார்
Dineshkumar
பிறந்த நாள்/DOB :
13-07-1989
ஆண் / Male

5840 3129 4265

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

भारत सरकार
GOVERNMENT OF INDIA

முகவரி: தலைத் / தலைப் பெயர்:
வேலுசாமி, 848, கிருஷ்ண ராயபுரம்
ரோட, செட்டிபாளையம்,
கோயம்புத்தூர் தெற்கு,
கோயம்புத்தூர், தமிழ் நாடு,
641201

Address: S/O: Velusamy,
848, Krishna rayapuram
thotta road, Chettipalayam,
Coimbatore South,
Coimbatore, Tamil Nadu,
641201

1947
1800 300 1947
help@uidai.gov.in
www.uidai.gov.in
P.O. Box No. 1947,
Bangalore-560 001

भारत सरकार
GOVERNMENT OF INDIA

கதிர்சன்
Kathiresan
பிறந்த நாள் / DOB : 01/10/1993
ஆண்/ Male

2892 3296 8655

எனது ஆதார், எனது அடையாளம்

भारत सरकार
GOVERNMENT OF INDIA

முகவரி: தலை கதிர்சன், நகரா-
மாரியம்மன் கோவில் அருகில்
காரச்சேரி, கோவை, தமிழ் நாடு. 641201

Address: S/o Kathiresan, 390-1, Near
Mariyamm Kovil, Karacheri,
Coimbatore, Tamil Nadu, 641201

Print Date : 05/01/2023

2892 3296 8655

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

भारत सरकार
GOVERNMENT OF INDIA

ர சதீஷ்குமார்
R Sathishkumar
பிறந்த நாள் / DOB : 23/04/1986
ஆண் / MALE

3129 4342 3873

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

भारत सरकार
GOVERNMENT OF INDIA

முகவரி:
பெயர்: ரங்கசாமி, 89,
தென்னாப்பாடிவட்டம், 8
தோட்டம், ஓரட்டி குப்பை,
செட்டிபாளையம்,
கோயம்புத்தூர், தமிழ் நாடு,
641201

Address:
S/O: Rangasamy, 89,
THOTTAM, ORATTUKUPPAI,
Chettipalayam, Coimbatore
South, Coimbatore, Tamil Nadu,
641201

1947
1800 300 1947
help@uidai.gov.in
www.uidai.gov.in
P.O. Box No. 1947,
Bangalore-560 001

1 வது பக்கம்

2



2 வது பக்கம்

PMA

2 P. Kaling

1 புத்தகம் 2024 ம் வருடத்திய: 13188

ம் ஆவணம் 11 நாள்களைக் கொண்டது.

8 வது தாளி

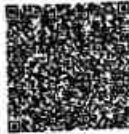
13/02/2024



இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

பதிவு அடையாளம் / Enrollment No. 2043/66422/00567

To
சதீஷ்
Sathish
S/O Veliyappan
2/147 ICHI MARA THOTTAM
PERIYA KULAI SULUR TALUK
Pachapalayam
Periyakulilai
Sulur Coimbatore
Tamil Nadu 64201
9656596041
321738707
MA217387071FT



உங்கள் ஆதார் எண் / Your Aadhaar No. :

7431 4482 0541

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



இந்திய அரசாங்கம்
Government of India



சதீஷ்
Sathish
பிறந்த நாள் / DOB : 26/03/2000
ஆண்பால் / Male

7431 4482 0541

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



2 ஆய்வு பார்ட்டி

RAT

2. P. K. Sathish

1 புதிதாகம் 2024 ம் வருடத்திய 13188
ம் ஆவணம் 11 தாள்களைக் கொண்டது.
9 வது தாள்
பதிவு துணைவன்

R/கிணத்துக்கடவு/புத்தகம்-1/13188/2024

2024 ஆம் ஆண்டு நவம்பர் மாதம் 29ம் தேதி பிப 12.31 மணியளவில் கிணத்துக்கடவு சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்து கட்டணம் ரூ 510/- செலுத்தியவர்.

இடது பெருவிரல்



R.AT

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

புத்தகம் 2024 டி வந்த திதி	13188
ம ஆவணம் 11	தபவகளைக்கொண்டது.
10	சமது தான்
	பதிவு அலுவலர்

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



"சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் ரேகை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : UKC:053639a0b3e5e53c274be5ba1e78d5f267d842 (Details from UIDAI : Dineshkumar S/O: Velusamy, 13-07-1989, xxxxxxxx4265)



எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



P. K. S.

"சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் ரேகை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : UKC:9056350cae14879169487db0dd19320b7c1bdc (Details from UIDAI : Kathiresan Palanisami, 01-09-1993, xxxxxxxx8655)



எழுதி வாங்கியதாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



R.AT

"சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் ரேகை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : UKC:9707952f280fd093f949e7a85ef152ebcac207 (Details from UIDAI : R Sathishkumar S/O: Rangasamy, 23-04-1996, xxxxxxxx3873)



R/கிணத்துக்கடவு/புத்தகம்-1/13188/2024

2024 ஆம் ஆண்டு நவம்பர் மாதம் 29ம் நாள்

கிருஷ்ணசாமி நா
சார்பதவாளர்,
கிணத்துக்கடவு
பதிவு

R/கிணத்துக்கடவு/புத்தகம்-1/13188/2024 எண்ணாகப் பதிவு செய்யப்பட்டது

நாள் 29/11/2024
கிணத்துக்கடவு

கிருஷ்ணசாமி நா
சார்பதவாளர்,
கிணத்துக்கடவு

57217702



1 புத்தகம்	2024	ம் வருடத்திய	13188
ம் ஆவணம்	11	தாள்களைக்கொண்டது.	
11	வது தாள்	பதிவு அலுவலர்	

உ.உ. எண்: 3041/2024/அ2, தாள்: 11-06-2024

[illegible]

2. உரிமை பேராயனின் மனச்சாட்சி பெறுதல் முறை :

த.ப. 203/1A ௧௩. பாண்டிச்சேரி மதுரை மாவட்டம்

க.ச. 333 அடிக் பரம்பலாங்கி திராவிட மொழி

உ.ப. 320 திரு. காமசுந்தரி நியமனம்

உ.உ. 203/2 டி. நெய்வேலி மன்றம் அமைப்பதற்கு.

(5.19.27)

தஞ்சாவூர் த/வா பகுதிச்சாமி சிவனடி குமார 7/10-ம் வகுப்பு
ஆகிய கருவகம் சேர்ந்து மகாத்மா பையன் குமார்
குஞ்சுரை உரிமம் அதுவரை எந்தவித அடக்கமணையும்
இல்லை என தெரிவிப்பும் சம்பந்தம் இல்லை.

கெற்படி பூமியில் அடக்கம் 300 மீ தொலைவுக்குள்
ஆடு காற்றாணையும், கதிரில் 300 மீ தொலைவுக்குள்
அரசி புறம்போக்கு குமாரியும், ஆடு குமாரியும்,
கெற்பில் அப்பராசகார சேனில் குமாரியும், கிழக்கில்
மண்பாறையின் கீழ்க்கைச் சேரிநீர் தாழ்ந்து மருமலர்
குமாரியும் அமைந்துள்ளது.
குஞ்சுரை உரிமம் கருவகம்.

* கெற்படி பூமியில் அரசி புறம்போக்கு நிலம் ஏஜம்
இல்லை.

* கெற்படி பூமியிலிருந்து 300 மீ கீற்றாணை
நகரம் குடியிருப்பு பகுதிகளோ, அங்கீகரிக்கப்பட
வாங்கு மண்பாறையோ, கீட்டு மண்பாறையோ
எதுவும் இல்லை.

* கெற்படி பூமியானது நகர்ப்புற உச்சுவரையிலும்
1978-ன் கீழ் வகுப்பிடமுள்ளது.

* கெற்படி பூமியானது நில சீர்திருத்த சட்டம்
1961-ன் கீழ் வகுப்பிடமுள்ளது.

* கெற்படி பூமியில் குளங்கள், மதுர் பற்றிய
குளங்களும் ஆகிய அபிமானத்தோடு தவிர
ஏஜம் இல்லை.

* கெற்படி பூமியில் புறநாட்டில் கிண்தாண்டலோ
அல்லது அணையுயர்ந்த மரங்களோ ஏஜம் இல்லை.

* கெற்படி பூமியில் 50 மீ கீற்றாணை உயர் பற்றி தாது
இல்லாதது கீழ்க்கண்ட ஏஜம் கருவகம்.

* கெட்டிய பூறுபுலகீழ் 300 மீ கீற்றலால்
குதிய லாநீர்ம் லாநில வருஞ்சுபவை களி ஏஜும்
கிள்ளை.

எனவே மஹாத்ரி சஜிஷ்டுமார் த/தப ரங்கங்காமி
 எண்பதுக்கு ஆதாய்க்கும்படியாக கிராமம் க.ச. 203/13 உட.
 காலையன் 4-கடையர். 1.13.0 அளவுகிள்ளுவர்ள நுமிந்த
 10 ஆண்டுகளுக்கும் குடியாக கீழ்க்கு உரிமை உடைய
 பரிசீலனை செய்ய அரசு அறிக்கை பணியிற் சமர்ப்பிக்கப்படுகிறது.

கிணாயிடி: கிராம சபைகளைத் துரி

சு.நி.சு.
29/06/2024
சிராம நிர்வாக அலுவலர்
19, ஓராட்டுக்குப்பை சிராமம்
மதுக்கரை வட்டம்

தொழில்நுட்ப

நில அருகாமல் அங்குள்ளார்,
முகம் மூடிக் காலம் லாசியம் கண்டால்.

MINE PLAN



MINING PLAN

FOR GRANT OF ROUGH STONE & GRAVEL QUARRYING LEASE
[PREPARED UNDER RULE 19 (1), 20, 41 & 42 OF TAMILNADU MINOR MINERAL
CONCESSION RULES, 1959 AND AMENDED TAMILNADU MINOR MINERAL
CONSERVATION AND DEVELOPMENT RULES, 2010]

LOCATION

EXTENT : 1.13.00 HECTARES
SURVEY NO. : 203/1B
VILLAGE : ORATTUKUPPAI
TALUK : MADUKKARAI
DISTRICT : COIMBATORE
STATE : TAMILNADU

APPLICANT ADDRESS

Mr. R. SATHISHKUMAR,
S/o RANGASAMY
89, THOPPAIYA GOUNDER THOTTAM,
ORATTUKUPPAI, CHETTIPALAYAM,
COIMBATORE DISTRICT, TAMILNADU- 641 201
MOBILE – +91 9600774662

PREPARED BY

A. ALLIMUTHU., (RQP)
REG.NO . RQP/DMG/HYD/85/2022,
D.NO.1/231,PATTAKARNAVALAVU,
CHINNAMUTHIYAMPATTI, PUDUPPALAYAM (PO),
EDAPADDI (TK), SALEM DISTRICT,
TAMIL NADU – 636 306.
MOBILE : +91 97886 36242,
E-mail : allimuthu1973@gmail.com

R. But

Mr. R. SATHISHKUMAR,
S/O Rangasamy
89, Thoppaiya Gounder Thottam,
Orattukuppai, Chettipalayam,
Coimbatore District, Tamilnadu- 641 201
Mobile – +91 9600774662



CONSENT LETTER FROM THE MINE OWNER

The Mining Plan in respect of Rough Stone & Gravel Quarry over an extent of 1.13.00 Hectares in S.F.No. 203/1B at Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamilnadu State has been prepared by Mr. A. ALLIMUTHU , Recognized Qualified Person, Reg.No. RQP / DMG / HYD / 85 / 2022

I request the Assistant Director, Dept. of Mining and Geology, Coimbatore District to make further correspondence regarding modifications of the Mining Plan with the said Recognized Person on this following Address,

A. ALLIMUTHU.,
D.No-1/231, Pattakarnavalavu,
Chinnamuthiyampatti, Pudupalayam (PO),
Edapaddi Taluk, Salem District,
Tamilnadu – 636 306.

Mobile: +91 97886 36242
E-mail: allimuthu1973@gmail.com

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

Place : Coimbatore

Date : 18/10/2024

RMT
R. SATHISHKUMAR,

Mr. R. SATHISHKUMAR,
S/O Rangasamy
89, Thoppaiya Gounder Thottam,
Orattukuppai, Chettipalayam,
Coimbatore District, Tamilnadu- 641 201
Mobile – +91 9600774662

DECLARATION OF MINE OWNER

The Mining Plan in respect of **Rough Stone & Gravel** quarry over an extent of **1.13.00 Hectares** in S.F.No. **203/1B** at **Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamilnadu 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.

Place: *Coimbatore*

Date: *18/10/2024*

R. S.
R. SATHISHKUMAR,

A. ALLIMUTHU.,

D.No-1/231, Pattakarnavalavu,
Chinnamuthiyampatti, Pudupalayam (PO),
Edapaddi Taluk, Salem District,
Tamilnadu – 636 306.

Mobile: +91 97886 36242

E-mail: allimuthu1973@gmail.com



CERTIFICATE

This is to certify that the provisions of Minor Minerals Conservation & Development Rules, 2010 (MMCDR, 2010) have been observed in the Mining Plan for grant of **Rough Stone & Gravel** quarrying lease over an extent of **1.13.00 Hectares** in S.F.No. **203/1B** at **Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamilnadu State** for quarry lease.

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

Certified

Place : *Salem*

Date : *13/10/2024*

A. Allimuthu
Recognized Qualified Person
A. ALLIMUTHU

A.ALLIMUTHU, M.Sc.,M.Phil.,
Recognized Qualified Person
RQP / BMG / HYD / 85 / 2022

A. ALLIMUTHU.,

D.No-1/231, Pattakarnavalavu,
Chinnamuthiyampatti, Pudupalayam (PO),
Edapaddi Taluk, Salem District,
Tamilnadu – 636 306.

Mobile: +91 97886 36242

E-mail: allimuthu1973@gmail.com

CERTIFICATE

Certified that in preparation of Mining Plan for Rough Stone & Gravel quarry over an extent of 1.13.00 Hectares in in S.F.No. 203/1B at Orattukuppai Village, Madukkarai Taluk, Coimbatore District, Tamilnadu State prepared for Mr. R. Sathishkumar, 89, Thoppaiya Gounder Thottam, Orattukuppai, Chettipalayam, Coimbatore District, Tamilnadu State, covers all the provisions of Mines Act, Rules and Regulations, etc. made there under and whenever specific permissions are required the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Miners Health will be strictly implemented.

Certified

Place : Salem

Date : 18/10/2024

A. Allimuthu.
Recognized Qualified Person

A. ALLIMUTHU

A. ALLIMUTHU, M.Sc., M.Phil.,
Recognized Qualified Person
RGP / DMG / HYD / 86 / 2022



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LIST OF ANNEXURE

S.No	Description	Annexure No
1	Precise Area Communication Letter issued from the Assistant Director, Department of Geology & Mining, Coimbatore District.	I
2	FMB Sketch along with Measurements	II
3	Land Documents (Patta, A.Register, Adangal, etc.,)	III
4	Copy of Identity Proof	IV
5	Copy of RQP Certificate	V

R. Ant

LIST OF PLATES

S.No	Description	Plate No	Scale
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2	Satellite Image 500m Radius	II	1: 5000
3	Route Map	II-A	Not to Scale
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5	Geological & Surface Plan	IV	1:1000
6	Geological Cross Section	V	Horizontal -1:1000 Vertical – 1:1000
7	Year Wise Production & Development Plan	VI	1:1000
8	Production Cross Section	VII	Horizontal -1:1000 Vertical – 1:1000
9	Conceptual Plan	VIII	1:1000
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11	Environment Plan	X	1:5000

R. J. M.

MINING PLAN

FOR ROUGH STONE & GRAVEL QUARRYING LEASE



(PREPARED UNDER RULE 19(1), 20, 41 & 42 OF TAMILNADU MINOR MINERAL CONSERVATION RULES, 1959 AND AMENDED TAMILNADU MINOR MINERAL CONSERVATION AND DEVELOPMENT RULES, 2010)

1.0 INTRODUCTION:

The Applicant, **Mr. R. SATHISHKUMAR**, residing at 89, Thoppaiya Gounder Thottam, Orattukuppai, Chettipalayam, Coimbatore District has applied for grant of permission for quarrying Rough Stone & Gravel over an extent of 1.13.00 Hectares, located in Survey.No – 203/1B at Orattukuppai Village of Madukkarai Taluk, Coimbatore District, Tamilnadu State. The excavated Rough Stone is used for building and road construction and also used for crushing units and Gravel is used for filling and leveling of low lying areas of road projects and other infrastructure development work in and around the district.

1. The application was meritoriously processed and precise area communication letter issued by the Assistant Director, Department of Geology & Mining, Coimbatore District has passed an order vide R.C.No.419/ Kanimam / 2024. dated 04.10.2024.
2. The applicant has to submit Mining Plan and to get approval from the Assistant Director, Department of Geology & Mining, Coimbatore District and to obtain Environmental Clearance from the State Level Environment Impact Assessment Authority SEIAA, Tamil Nadu State, notified by MoEF and Climate Change and the procedure prescribed under the EIA Notification,2006 and by incorporating all the details proposed in the letter No. SEIAA-TN/Minor Minerals/2012 dated 17.04.2013 of State Level Environmental Impact Assessment Authority.
3. Geological Resources is estimated at $4,06,980\text{m}^3$ of Rough Stone up to a depth of 34m & $22,600\text{m}^3$ of Gravel up to a depth of 2m and Mineable Reserves is estimated at $1,13,338\text{m}^3$ of Rough Stone up to a depth of 34m and $15,744\text{m}^3$ of Gravel up to a depth of 2m after leaving necessary safety distance from the lease boundary.

R-AM



4. Environmental parameters,

i. Forest Conservation Act, 1980: (Reserve Forest)

Walayar R.F – 20km - West

ii. Interstate Boundary:

Walayar, Kerala – Tamil Nadu Border – 25km - SW

iii. Wildlife (Protection) Act, 1972:

The area does not attract the Wild Life Sanctuary around 10km Radius from the boundary of lease applied area.

iv. The Coastal Regulation Zone (CRZ) Notification 1991:

The quarry is located at a distance of 130km from the Arabian Sea in the western side. Hence, the project doesn't attract the C.R.Z. Notification, 1991.

5. 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 are within standard as prescribed by the DGMS and MoEF.
- iv) Avoid uneven rat hole mining and follow scientific and systematic mining by safe bench system of open cast mining.
- v) Unnecessary Land degradation will be avoided or damaged land should be reclaimed or rehabilitated.
- vi) Mining near major fracture zones if any will be avoided to control ground water fluctuation in the adjacent agricultural lands.
- vii) Emission test of vehicles will be in tack to maintain minimum emission level of flue gases.
- viii) Noise level will not exceed 80dB and the vehicles will 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 will be strictly adhering to.
- x) And any other conditions as stipulated by the concerned authorities will be followed to protect the environment.



2.0 EXECUTIVE SUMMARY:

a.	Name of the village	ORATTUKUPPAI
b.	Geological Resources of Rough Stone	4,06,980m ³
c.	Geological Resources of Gravel	22,600m ³
d.	Mineable Reserves of Rough Stone	1,13,338m ³
e.	Mineable Reserves of Gravel	15,744 m ³
f.	Extent of the lease area	1.13.00 Ha
g.	Proposed Life of Mine	Five Years
h.	Proposed depth of mining	37m
l.	Method of mining/ level of mechanization	Open cast, semi mechanized mining with a bench height of 5m and bench width of 5m is proposed.
m.	Cost of Project	
	a. Fixed Cost	65,00,000/-
	b. Operational Cost	40,00,000/-
	c. EMP Cost	5,30,000/-



3.0 GENERAL INFORMATION:

3.1	a.	Name of the Applicant	:	R. SATHISHKUMAR
	b.	Address of the Applicant with phone no and e-mail id if any	:	89, Thoppaiya Gounder Thottam, Orattukuppai, Chettipalayam, Coimbatore District, Tamilnadu- 641 201 Mobile – +91 9600774662
	c.	Status of Land	:	Patta Land
3.2	a.	Mineral which the Applicant intends to mine	:	Rough Stone & Gravel
	b.	Precise area communication Letter details	:	R.C.No.419/ Kanimam / 2024. dated 04.10.2024
	c.	Period of permission / lease granted	:	Five Years
	d.	Name and Address of the RQP preparing Mining Plan	:	A. ALLIMUTHU D.No-1/231, Pattakarnavalavu, Chinnamuthiyampatti, Pudupalayam (PO), Edapaddi Taluk, Salem District, Tamilnadu – 636 306. Mobile: +91 97886 36242 E-mail: allimuthu1973@gmail.com
	e.	RQP Reg no.	:	[RQP/DMG/HYD/85/2022] Valid upto 25-04-2032

4.0 LOCATION:

a) Details of the area:

STATE & DISTRICT	TALUK	VILLAGE	SF.NO.	EXTENT(HA)
Tamilnadu, Coimbatore	Madukkarai	Orattukuppai	203/1B	1.13.00

Route:

COIMBATORE $\xrightarrow{16\text{km}}$ CHETTIPALAYAM $\xrightarrow{4\text{km}}$ CHINNAKUYILI $\xrightarrow{240\text{m}}$ SITE

RAT

Classification of the Area: **Patta land** (Patta No – 1730)

a) Ownership occupancy of applied area (Surface rights): Consent/Property of

V. Dineshkumar, P.Kathiresan & R.Sathishkumar in Survey no. 203/1B

b) Existence of Public Road / Railway Line if any nearby and approximate distance:

Nearest Public Road is **Orattukuppai** road at a distance of **240m**.

Nearest Railway Station is **Podanur** at a distance of **10km**.

Infrastructures nearby are given as under,

Sl. No	Particulars	Location	Approximate distance in km
1	POST OFFICE	CHETTIPALAYAM	4
2	TOWN	CHETTIPALAYAM	4
3	POLICE STATION	CHETTIPALAYAM	5
4	FIRE STATION	KINATHUKADAVU	10
5	GOVT. HOSPITAL/PHC	CHETTIPALAYAM	4
6	GOVT. SCHOOL	CHETTIPALAYAM	5
7	DSP OFFICE	PODANUR	10
8	RAILWAY STATION	PODANUR	10
9	NEAREST AIRPORT	COIMBATORE	20
10	SEA PORT	COCHIN	203

Topo sheet No. with latitude and longitude: Toposheet No: **58F/1** & The **6** Pillars Reading as follows,

BOUNDARY CO-ORDINATES		
P.No.	LATITUDE	LONGITUDE
1	10° 55' 07.45"N	77° 03' 55.86"E
2	10° 55' 06.09"N	77° 03' 55.70"E
3	10° 55' 03.82"N	77° 03' 55.78"E
4	10° 55' 04.56"N	77° 03' 51.86"E
5	10° 55' 07.31"N	77° 03' 52.14"E
6	10° 55' 07.71"N	77° 03' 52.28"E
DATUM WGS-84		

PART - A

5.0 GEOLOGY AND MINERAL RESERVES:



5.1	Topography	1. The lease applied area is exhibits Plain Area covered by Rough stone & Gravel formation. The remaining land in the proposed area is partially covered with shrubs, herbs, grass, climbers, bushes, etc 2. Massive rock & gravel is observed in the area. No major river or Pond is found nearby applied area. 3. The maximum and minimum temperatures for the District during summer and winter vary between 35 °C to 18 °C 4. The average annual rainfall in the plains is around 700 mm with the northeast and the southwest monsoons contributing to 47% and 28% respectively to the total rainfall.														
5.2	Regional Geology	Coimbatore district is covered by rocks belonging to Archean age comprising the Khondalite group, Charnockite Group, migmatite group, Sathayamangalam group, Bhavani Group and Alkali complex of Proterozoic age and Recent to Late Pleistocene rocks of Cainozoic age. <table><tr><th>Lithology</th><th>Age</th></tr><tr><td>Black soil & laterite</td><td>Recent</td></tr><tr><td>Alkali Complex</td><td>Proterozoic</td></tr><tr><td>Bhavani & Satyamangalam Group</td><td>Archaean formation</td></tr><tr><td>Migmatite & Peninsular gneiss</td><td>Archaean formation</td></tr><tr><td>Charnockite</td><td>Archaean formation</td></tr><tr><td>Khondalite</td><td>Archaean formation</td></tr></table>	Lithology	Age	Black soil & laterite	Recent	Alkali Complex	Proterozoic	Bhavani & Satyamangalam Group	Archaean formation	Migmatite & Peninsular gneiss	Archaean formation	Charnockite	Archaean formation	Khondalite	Archaean formation
Lithology	Age															
Black soil & laterite	Recent															
Alkali Complex	Proterozoic															
Bhavani & Satyamangalam Group	Archaean formation															
Migmatite & Peninsular gneiss	Archaean formation															
Charnockite	Archaean formation															
Khondalite	Archaean formation															
5.3	Geology of the Precise Area	The area is mainly composed of crystalline metamorphic complex. The rock type majorly noticed in the area for lease is Biotite Gneiss. Which is mainly composed Hornblende, biotite mica, Quartz, and Feldspar with some ferromagnesian minerals. The grain size is medium to course. The strike of the Charnockite formation is N35°E-S35°W with dipping towards 60°S.														

PHOTOGRAPH SHOWS GENERAL VIEW OF THE LEAST AREA



FIG: 1

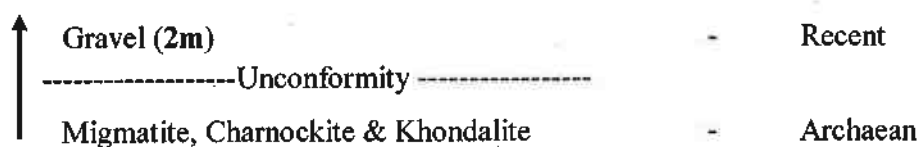


FIG: 2



CLOSE VIEW OF THE ROCK

The Biotite gneiss is part of peninsular gneisses, a high grade metamorphic rock. It is typically brown to black colour and grain size is coarse grained. It is suitable for construction purposes because of its high strength, colour, high density, low porosity etc.





5.4 DETAILS OF EXPLORATION

Already Mined out:

The Proposed lease area is virgin area and was not disturbed by earlier quarrying activity.

5.5 METHOD OF ESTIMATION OF RESERVES

* As far as Rough stone & Gravel is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone & Gravel within the field and careful evaluation of body lustre, physical properties, engineering properties, commercial aspects etc.,

* Totally two sections have been drawn, one section drawn length wise as (A-B) and another one Section drawn width wise as (X-Y) to cover maximum area considered for lease.

* The Topographical, Geological plan and sections demarcated the commercial, marketable Rough stone & Gravel deposit has been prepared in Scale 1:1000 and Sections have been drawn with a scale of Hor 1:1000 and Ver 1:1000 respectively.

* Please refer Plate No. VI & VII Rough stone & Gravel are terms of Cubic Meters (Volume) only.

a) GEOLOGICAL RESOURCES

The Geological resources are estimated as 4,06,980m³ of Rough stone up to a depth of 34m and 22,600m³ of Gravel to a depth of 2m. Details of estimation of Geological resources are given below,

Geological Resources of Rough Stone					
Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m ³)
AB-XY	445-410	114	105	34	406980
TOTAL					406980

Geological Resources of Gravel				
Section	MSL	Area (m)	Depth(m)	Volume (m ³)
AB-XY	447-445	11300	2	22600
TOTAL				22600



b) MINEABLE RESERVES

The mineable reserves are estimated as 1,13,338m³ of Rough stone up to a depth of 34m and 15,744m³ of Gravel to a depth of 2m after leaving the safety distance of 7.5m for adjacent Patta lands and 10m for Government lands from the boundary of lease applied area as indicated in precise area communication letter and relevant mining laws in force. Details of estimation of mineable reserves are given below,

Mineable Reserves of Rough Stone					
Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m ³)
AB-XY	445-440	91	77	4	28028
	440-435	83	69	5	28635
	435-430	73	59	5	21535
	430-425	63	49	5	15435
	425-420	53	39	5	10335
	420-415	43	29	5	6235
	415-410	33	19	5	3135
TOTAL					113338

Mineable Reserves of Gravel					
Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m ³)
AB-XY	447-445	96	82	2	15744
Total					15744

R. M. A.



6.0 MINING

6.1 Mining Methods:

Opencast method of semi mechanized mining with 5m vertical bench height and width 5m of the bench is not less than bench height.

However, as far as the quarrying of Rough stone & Gravel is concerned, observance of the provisions of Regulation 106(2)(b) as below is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the below 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.

6.2 Mode of working:

Mode of working is semi-mechanized quarrying operation using shot hole drilling with the help of compressor and jack hammer for smooth blasting. The raw materials are removed using Hydraulic excavator and loaded directly to the tippers. The mineral is transported to the crushing plants, where it is crushed to required sizes. The height and width of bench is designed as 5m.

6.3 Details of Overburden / Mineral Production proposed for the five years

The development involves only removal of 2m gravel to be generated out of production. The five years production is 1,13,338m³. Production plan is shown in plate VI to VII.

Year	Gravel (m ³)	Rough Stone (m ³) (Production/Year)
I	12956	22484
II	2788	22449
III	---	22645
IV	---	22870
V	---	22890
Total	15744	113338

R.AT

Year wise Production and Developments							
Year	Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m ³)	Production / Year
I	AB-XY	445-440	73	77	4	22484	22484
II	AB-XY	445-440	18	77	4	5544	22449
		440-435	49	69	5	16905	
III	AB-XY	440-437	34	69	5	11730	22645
		435-430	37	59	5	10915	
IV	AB-XY	435-430	36	59	5	10620	22870
		430-425	50	49	5	12250	
V	AB-XY	430-425	13	49	5	3185	22890
		425-420	53	39	5	10335	
		420-415	43	29	5	6235	
		415-410	33	19	5	3135	
TOTAL						113338	113338

Gravel Year Wise Development						
Year	Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m ³)
I	AB-XY	447-245	79	82	2	12956
II	AB-XY	447-245	17	82	2	2788
TOTAL						15744

The mineable reserves are estimated as 1,13,338m³ of Rough Stone up to depth of 34m for period of first five years only and 15,744m³ of Gravel up to depth of 2m Above ground level for period of two years only.

Production quantity per day (1Load=6m³approx) (1Year=260 Working days)

Rough stone quantity = 1,13,338m³ / 6 = 18,890 Loads
= 1,13,338m³ / 1300 days (5 Years)
= 87m³ or 15 Lorry Loads per day

Gravel quantity = 15,744m³ / 6 = 2624 Loads
= 15,744m³ / 520 days (2 Years)
= 30m³ or 5 Lorry Loads per day

The applicant ensures the total approved quantity of proposed reserves in benches will not exceed the quarrying operation. Besides the Rough stone & Gravel locked up in bench loss will be exploited after obtaining necessary permission from Director General of Mines Safety, Chennai region by submit the relevant documents, appropriate safety plans and its necessary mitigation safety measures etc.,

6.4. Details of mining machinery deployed and their specification:

The machineries are proposed to be purchased or hired for use in mines for systematic operation and development.

a) Drilling:

Drilling of shot-holes will be carried out using compressor and Jack Hammer combination. Depth of holes shall be 2-3m and the spacing shall be 0.95m and burden shall be 0.50m. To estimate a correct blasting geometry and to effect a perfect pre-determined fragmentation and fly rock control, certain amount of trial blast is a prerequisite. Details of drilling equipment are tabulated below,

Type	No	Dia of hole	Make	Motive
Jack Hammer	2	33 mm	Atlas copco	Air
Compressor	1	-	Chicago Newmatic	Diesel

b) Loading Equipment:

Loading shall be done by Excavator into tippers from the working place. Gravel and rough stone shall be dumped in the site. The applicant is proposed to engage one Hydraulic excavator and one hydraulic rock breaker with 1.2M³ capacity and 4 tippers of 10/20 tonnes capacity for transportation of rock and internal transport of rock.

Type	No.	Capacity	Make	Motive
Hydraulic Excavator	1	1.20 M ³	L&T Komatsu	Diesel
Hydraulic Rock breaker	1	-	JCB	Diesel

c) Transportation

Transport of Gravel and Rough stone shall be done by Tippers of 10-20 tonnes capacity. Water tanker will be used for the transportation and supply of water to site as well as sprinkling of water along the haul roads.

Type	No.	Capacity	Make	Motive
Tipper	4	10-20 MT	Tata / Ashok Leyland / Bharath Benz	Diesel
Water Tanker	1	10 KL	Ashok Leyland / TATA	Diesel

6.5 DISPOSAL OF OVERBURDEN/WASTE

The excavated Gravel is $15,744\text{m}^3$ up to a depth of 2m and it is used for filling and leveling of low lying areas of road projects and other infrastructure development work in and around the district. There is no overburden (weathered rock). Here, the recovery is taken as 100% of total production.

6.6 Brief Note on Conceptual Mining Plan:

Conceptual plan is prepared with an objective of long term systematic development of mines. This involves bench layouts, selection of ultimate pit limit and pit slope.

Ultimate Pit Dimension: The ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible area etc., The Ultimate pit Dimensions of the mine is given as under.

ULTIMATE PIT DIMENSION			
PIT	Avg. L(m)	Avg. W(m)	Depth (m)
I	97	83	37

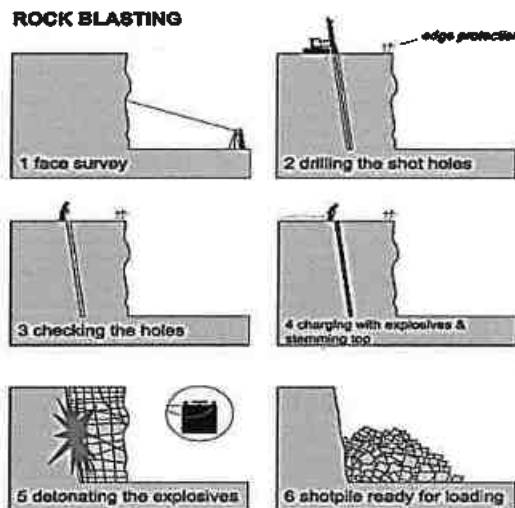
During extraction, each bench will be maintained at 5m height and 5m width. The quantum of excavation is estimated as $1,13,338\text{m}^3$ to a depth of 34m. The quantity of Gravel is estimated as $15,744\text{m}^3$ to a depth of 2m. Entire quantity of excavated Gravel will be used for filling and leveling of low lying areas of road projects and other infrastructure development work.

7.0 BLASTING:

The massive formation shall be broken into pieces of transportable size by drilling and blasting using jack hammers and shot hole blasting. Since the bench height needs to be maintained at 5.0 m, two sub benches will be created of 2.5 m height each and the benches will be joined / merged together to form 5.00 m height. Blast hole will be, preferably by jack hammer where the diameter is normally 33 mm and the depth of the hole is approximately 2.4 m. Blasting pattern is generally square or rectangle or zig zag with burden of 0.5m and spacing of 0.75 meters. Usually single / double row of holes is blasted along free face to achieve optimum powder factor and best fragmentation. Blasting pattern is generally square or rectangle or staggered, The Burden and Spacing will be decided as per the requirements of the size of the boulders, generally the burden ranging from 2.00 to 2.50 meters and spacing of 2.50 to 3.00 meters.

Diameter of the hole	33 mm
Spacing	0.75m
Burden	0.5m
Depth	2.4m
Charge / Hole	0.125kg/ stick, 3 stick/ Hole = 0.375Kg
Pattern of hole	Zig-Zag
Inclination of hole	70° from the horizontal.
Quantity of rock broken	0.5 x 0.75 x 2.4 x 2.5 = 2.25 MT
Blasting efficiency @ 90%	2.25 x 90% = 2 MT / hole

Subsequent to the drilling and blasting, the material so fragmented / loosened from the rock mass will be crushed or broken with the help of the rock breakers. Then material will be loaded into tippers with the help of the excavator. Thereafter the material is loaded into trucks / tippers of 10-20 tonnes capacity with the help of the excavator. The loaded material is then transported to the site or crusher units.



Types of Explosives

Following explosives are recommended for efficient blasting with safe practices. Nitrate mixture of slurry explosives are used for blasting. Powder factor is approximately 4 tonnes per kg of explosive.

Sl. No.	Description	Class	Division	Type
1	Nitrate Mixture	2	0	Nitrate Mixtures
2	Safety fuse	6	3	Blue sump fuse coils
3	NONEL	6	3	Non-Electric Detonator

MEASURES PROPOSED TO MINIMIZE GROUND VIBRATION DUE TO BLASTING

The following steps shall be adopted to control ground vibration due to blasting.

1. The minimum recommended delay time of 8ms will be maintained to minimize ground vibration to avoid constructive interference of blast vibration waves and hence its impact or amplitude.
2. Maximum numbers of holes blasted at a time is generally limited to 20 to 30 with milli second delay detonators (MSDD) to mitigate adverse impacts like throw, ground vibration etc.
3. Maximum number of holes is generally limited to 30 with non-electric detonators (NONEL) to mitigate adverse impacts such as air blast, fly rock and ground vibration. The Ignition will be the Non-Conventional and Eco- Friendly method by NONEL (Non-Electric Detonators).
4. Charge per hole depends on the powder factor designed for each hole, based on the quantum of blasting, strength of rocks, fracture pattern etc.
5. The hole will be blasted in two phases, each one after the other, by inserting one NONEL at bottom and another one at the middle of the hole. The hole will be blasted one after the other with a delay of 17 ms. The bottom portion will be blasted first and the middle one next with a blast gap of 17 ms. The blast delay will be 42ms from row to row. A schematic diagram of drilling and blasting pattern show here

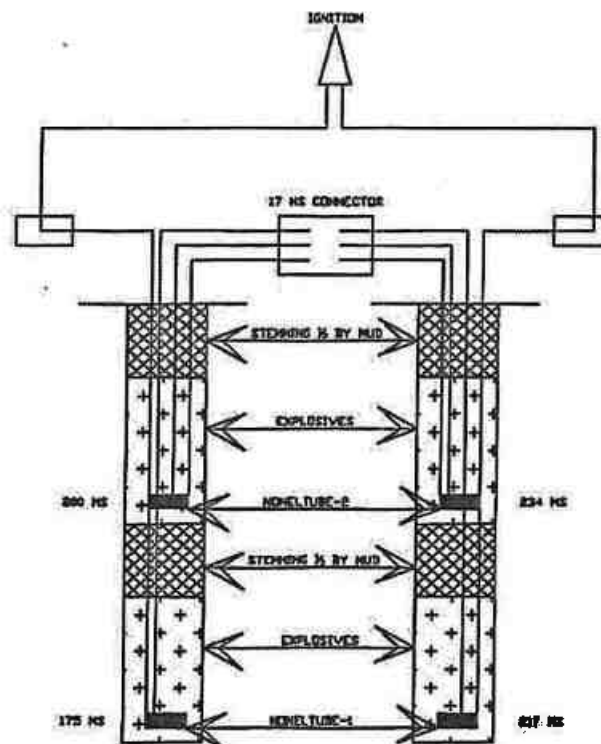


NONEL IS STRUCTURED AS FOLLOWS

- 2mm diameter tube is prepared in different length (4 Mts to 25 Mts)
- The tube filled with PETN (Penta erythritol tetra nitrate).
- Bottom end of the Tube is crimped with Detonator which is having Delay Element, ASA and PETN at the bottom.
- Top end of the tube is connected with connector having 17 MS (Milli Second).

NONEL LOADING INTO THE BLAST HOLE

- The Nonel Detonator is pricked into the Nitrate Mixtures and dropped into the Blast Hole.
- Then the Nitrate mixtures are dropped inside the Hole.
- One third of the Hole is filled with stemming material (MUD).
- As like 20 Holes are loaded with Explosives & Nonel.
- The holes are connected through the MS Connector which is crimped at top of the Nonel Tube.
- Only one Detonator is connected with first Nonel Tube.
- Finally the detonator is ignited and the blast is completed.
- Each and every hole is blasted with a 17 Milli Second delay.
- The delays are given for 20 Holes.



ADVANTAGES OF NONEL

1. Eco-Friendly initiation method.
2. Is used mainly during the rainy season because it is Non-Electric Detonator.
3. It is bottom ignition.
4. The Noise is less.
5. Fly Rock & Vibration is less.
6. Fragmentation is good.



NONEL

STORAGE OF EXPLOSIVES AND SAFETY MEASURES TO BE TAKEN WHILE BLASTING

1. The applicant proposes to store the explosives as per the Indian Explosives Act, 1884.
2. The applicant will engage an authorized blaster to carry out blasting.
3. Controlled blasting is proposed by adopting all the safety measures as per "MMR 1961" and with the permission of DGMS. Blasting will be performed as per requirement on the face.
4. First Aid Box is a statutory requirement and will be made available.
5. Necessary precautionary announcement will be carried out and sirens will be blown before the blasting operation. The blasting time is proposed between 12pm to 12.30pm.
6. Instructions in common language will be given to all employees and Regular safety inspection will be done by a competent person and Proper training on safety will be given to all employees. Proper warning signs will be displayed at respective areas.
9. Proper, safe and careful handling and use of explosives by competent Blasters having Blaster's Certificate of Competency issued by DGMS.

10. Proper security system to prevent theft/ pilferage, unauthorized entry into Magazine area and checking authorized persons to prevent carrying of match box, lights, mobile phones, cigarette or Beedi, etc.



FLY ROCK HAZARD CONTROL & NOISE CONTROL

- Inter row delay will be selected in such a manner, so that each row pushes its burden in a forward direction rather than in an upward direction.
- Stemming length will be kept not less than the burden.
- It will be ensured that the burden will not be excessive.
- Detonating fuse will not be used & Blasts will be planned properly to eliminate noise.

Before beginning of drilling & blasting operations, the applicant will identify the hazards from the knowledgeable person who had worked in masonry stone mining and being trained to recognize the hazards as well as to inform the authority for quickly corrective action to eliminate such hazards. The applicant will use engineering and administrative control measures, personal protective equipment (PPE) including respiratory protection and training to protect workers involved in drilling & blasting activities. Engineering control measures such as substitution, isolation, containment and ventilation which are the primary means of preventing or reducing exposures to airborne hazards during drilling & blasting operations have to be implemented by the applicant.

PERSONAL PROTECTIVE EQUIPMENTS (PPE)

1. Ear Plug
2. Spectacles
3. Nose Mask
4. Helmet
5. Leather gloves
6. Safety shoes or boots
7. Provide training to quarry employees on quarry operation, health, safety hazards, how to use controls, personal hygiene practices, safe work practices and the use of respirators.

PREVENTIVE MEASURES

1. Respirators will not be used as the only means of preventing or minimizing exposures to airborne contaminants. Dust source controls such as containment systems, local exhaust systems, and good work practices will be implemented as the primary means of protecting



workers. When dust source controls cannot keep exposures below the recommended exposure limits, controls should be supplemented with the use of respiratory protection.

2. Environmental monitoring by trained personnel will be conducted in all blasting applications. This is necessary to ensure that workers will not be over exposed than the prescribed exposure limit as fixed by the authorities.
3. Anytime environmental conditions, airborne contaminants and their concentrations will be maintained within the permissible limit.

8.0 MINE DRAINAGE:

8.1 Depth of water table:

There is no major river, stream or canal flowing within the applied lease area and its surrounding. Bore well exists near to the proposed area. The mining activity will reach only up to a depth of 37m (Max) or 410m above MSL. The water table is located below 60-65m (387-382m above MSL) from the lowest point of mining and hence it may not touch the Ground water table. In case of necessity, the accumulated rainy water (free from suspended solid material) from pit bottom may be allowed to flow out after settling through a check dam & allowed to spill over adjoining areas, facilitating uptake by native plants. Normally, the mine will be closed during rains. The same will also be used for watering saplings/trees in the plantation site. The excess water will be allowed to be stored in the public tank for irrigation.

8.2 Arrangements and Place where the mine water is finally proposed to be discharged

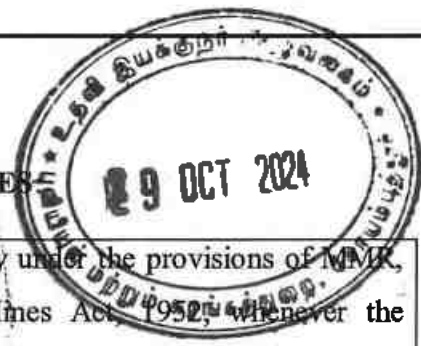
The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 100 lpm and it shall be pumped about periodically by a stand by diesel powered Centrifugal pump. The quality of water is potable.

9.0 OTHER PERMANENT STRUCTURES:



9.1	Habitations/ Village (300m)	:	There are no inhabited sites within the radius of 300m from the boundary of lease area under Rule 30(1-A) (a) TNMMCR 1959. The Nearest Village habitation is Orattukuppai are about 1.8 km on west side of the lease applied area.
9.2	Power lines (HT/LT)	:	There is no HT power lines located within the safety distance as prescribed under Tamilnadu Minor Minerals Concession Rules, 2015.
9.3	Water bodies (River, Pond, Lake, Odai, Canal etc.)	:	Noyyal River is situated at a distance of 8 km towards the NW side of the lease area.
9.4	Archeological / Historical Monuments	:	There are no Archeological / Historical Monuments within a radius of 500m.
9.5	Road (NH, SH, Village Road etc)	:	Nearest Public Road is Orattukuppai road at a distance of 240m from lease boundary. SH-163 Palladam – Cochin Frontier road at distance of 1.8km towards NW side of the lease area. NH-544 Salem – Cochin Highway at distance of 6km towards NW side of the lease area.
9.6	Places of Worship	:	There is no Places of Worship within a radius of 500m
9.7	Reserved Forest / Forest / Social Forest / Wild Life Sanctuary etc.,	:	Walayar Reserve Forest is located 20km towards the west side of the quarry lease area.
9.8	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	:	The inter State border is at a distance of 25km.
9.9	Any Other Structures	:	There are some quarry area adjacent to the lease area.

10.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES



10. 1	Employment Potential (Management & Supervisory personal)	As per Mines safety under the provisions of MMR, 1961 under the Mines Act, 1952, whenever the number of workers employed is more than 10, it is preferred to have a qualified Mines Mate to keep all the production workers directly under his control and supervision. A mines clerk shall also be appointed to keep the registers and record of the mine and make necessary entries for the persons employed in the mines. The following man power is proposed for quarrying rough stone & gravel during the five years period to achieve the proposed production and to comply with the provisions of the Government norms. <table><tr><td>1.</td><td colspan="3">Management & supervisory staff</td></tr><tr><td></td><td colspan="2">Mines Manager</td><td>1</td></tr><tr><td rowspan="5">2.</td><td rowspan="5">Skilled</td><td>Operator</td><td>4</td></tr><tr><td>Mechanic</td><td>1</td></tr><tr><td>Mate cum Blaster</td><td>1</td></tr><tr><td>Magazine Keeper</td><td>1</td></tr><tr><td>Mines Foreman</td><td>-</td></tr><tr><td>3.</td><td>Semi – skilled</td><td>Driver</td><td>6</td></tr><tr><td rowspan="2">4.</td><td rowspan="2">Unskilled</td><td>Musdoor / Labours</td><td>5</td></tr><tr><td>Office Boy</td><td>1</td></tr><tr><td colspan="3">Total</td><td>20 Nos</td></tr></table> Allowing 10% absenteeism, the no. of employees on roll will be around 18. It will be ensured that child labors will not be engaged for quarrying operation.	1.	Management & supervisory staff				Mines Manager		1	2.	Skilled	Operator	4	Mechanic	1	Mate cum Blaster	1	Magazine Keeper	1	Mines Foreman	-	3.	Semi – skilled	Driver	6	4.	Unskilled	Musdoor / Labours	5	Office Boy	1	Total			20 Nos
1.	Management & supervisory staff																																			
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		Office Boy	1																																	
Total			20 Nos																																	

RAT

10.2	a.	Welfare Measures Drinking Water	Drinking water shall be provided to the nearby public. Quantity for Drinking and dust suppression and Green belt of water is 8 KLD. Minimum quantity of 9 KLD is required. Drinking water will be purchased and water for dust suppression and green belt development will be sourced from open well in site as well as purchased from outside.
	b.	Sanitary facilities	Latrines & urinals shall be maintained at convenient places for use of labours separately for males and females. Washing facilities shall also be arranged.
	c.	First Aid Facility	Being a small mine, First Aid station will be provided. First aid training will be given to selected employees and such Qualified First Aid personnel will be nominated to attend emergency first aid treatment.
	d.	Labour Health	As per Rule 45(A) Mines Rule, 1955, Periodic medical examination has to be arranged for occupational health once in a year in addition to attending medical treatment of occupational injuries.

10.3 Precautionary safety measures to the Laborers

- All the quarry workers will be provided with Safety device include such as safety helmet, mine goggles, ear muffs, ear Plugs, dust mask, sand respirator (avoid silica dusts forms-Silicosis), reflector jackets, safety thick shoes, etc., as Personnel Productive Equipment (PPE) as per the circulars and amendments made for Mine Labours under the guidance of DGMS.



Helmet



Mine Goggles



Ear Muffs



Ear Plugs



Dust Mask



Sand Respirator



Reflector Jackets



Shoes



- Periodically medical checkup will be conducted for all workers for any health problems.
- Proper training and induction will be given by qualified and experienced safety officer to all employees about the safe and systematic quarrying operation.
- The drillers and workers are sent for vocational training periodically to carry out the quarrying operations scientifically to safeguard the men machinery and mineral and to create awareness of conventional opencast quarrying operation.

PART – B

11.0 ENVIRONMENT MANAGEMENT PLAN

11.1) Existing Land use Pattern:

The applied area is dry barren land and devoid of agriculture and habitations and the area is not used for the specific vegetation. The surrounding area is practiced by the seasonal cultivation.

S. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hectares)
1.	Area under quarrying	---	0.75.10
2.	Infrastructure	---	0.01.00
3.	Roads	0.00.10	0.01.10
4.	Green Belt	0.35.80	0.35.80
5.	Dump	---	---
6.	Unutilized	0.77.10	---
	Total	1.13.00 Ha	1.13.00 Ha

11.2) Water Regime:

i) Water:

Water drawn from the nearest bore well is potable and is used for a long period. No adverse health hazardous was reported due to quality of water like fluorosis. TDS, COD, BOD, Salinity, hardness, etc. Mineral water shall be supplied in cans for drinking purposes or RO systems shall be provided.

ii) Air quality:

The air quality will be affected by the Suspended Particulate Matter (SPM) generated by the blasting, jack hammer drilling, loading and unloading during the quarrying operation.

The following mitigation measures will be carried out, Mist water spraying will be carried out by means of water sprinklers to suppress dust emission in the Haul roads. The native species of Neem etc., will be planted along the lease boundary and Safety buffer zone.

The quarried out materials will be fully covered by the Tarpaulin during transportation to avoid the spillage of materials. The Air quality will be monitored periodically as per the norms and mitigates measures carried out to prevent dust and air propagation in to the air.

Operators, those exposed directly to such conditions will be provide such as (PPE) Personnel Protective Equipment's like Dust mask, Ear plug, Helmet, Gloze etc., as per the Mines Act -1952.

.iii) Water quality:

A water sample from the open well adjacent to the mine will be checked in consultation with NABL approved agency to assess hardness, salinity, color, specific gravity, P^H, turbidity, COD, BOD, fluorine etc.

iv) Noise levels:

Nowhere the noise level should exceed the permissible limit of 80db during the quarry working hours.

The drivers will be strictly instructed to move the vehicle during the transportation not exceeding 40.0 Km per Hour, Sentries with Red Flag & whistle will be posted in village junction and regulate traffic.

v) Vibration levels:

No activity to test vibration of longitudinal waves and its peak particle velocity.

11.3) Flora and Fauna

Neem tree, Aavaram chedi(Tanner's Cassia), Thorny bushes, Shrubs are noticed within lease area. Neem, Panai(Palm Tree), Coconut trees and Mullumaram(Prosopis Juliflora) are noticed the surrounded area. No plants of botanical interest and animals of zoological interest are noticed in this area.

11.4) Human Settlement

The nearest habitations with the population, approx. distance within 5.0Km radius from the proposed quarry site are as given under,

S. No	Name of the Village	Approximate distance (km)	Direction from lease area	Approximate population
1.	Kallapalayam	4	NE	1200
2.	Orattukuppai	1.8	West	1500
3.	Chinnakuyili	2.2	East	700
4.	Pachapalayam	2	SE	1300



11.5) ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Facts to be considered for EIA are,

- i) Dust generation,
- ii) Temporary storage and utilization of gravel
- iii) Land degradation
- iv) Adverse effect on water regime
- v) Socio-economic benefits arising out of Mining

i) Dust:

Dust expected to be generated from drilling, hauling roads, place of excavation etc. will be suppressed by periodical wetting of land by spraying.

ii) Temporary storage and Utilization of Gravel:

Gravel shall be dumped within lease area and will be used for filling and leveling of low lying areas of road projects and other infrastructure development work within the district.

iii) Land degradation:

Land degradation by means of cutting the trees and removal of fertile soil does not arise. Proposed usage of land for five years shall be less than 1.13.00 Ha. Afforestation will be started during the first year of mining operation itself.

iv) Measures to minimizing adverse effect on water regime:

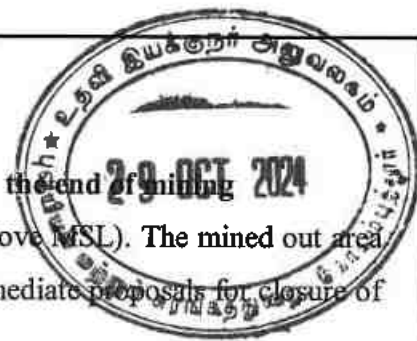
No chemicals or hazardous substances are likely to be quarried during the mining of rough stone and hence, the quality of ground water will not be affected. The water to be pumped will be pure and potable and therefore it will not affect any water regime of the area.

v) Socio-Economic benefits arising out of Mining:

- Employment opportunities of the nearby Villagers.
- Cultural development of the nearby Villagers.

11.6) Proposal for Waste Management:

There is no waste anticipated during in this Rough stone & Gravel quarry operation. The quarried out materials 100% will be utilized.



11.7) Reclamation of Land affected during mining activities and at the end of mining

The present mining is proposed to an average depth of 37m (410m above MSL). The mined out area will be fenced on top of open cast working with barbed wires. No immediate proposals for closure of pit as the Rough Stone & Gravel persist still at deeper level.

11.8) Programme for Afforestation

Native Trees will be planted along the lease boundary with an interval of 5m. The rate of survival expected to be 80% in this area. Appropriate native species of Neem, Pungan, Teak and Casuarinas Saplings will be planted approach roads, service roads, nearby villages, village roads, government school etc.,

Year	No. of Saplings proposed to be planted	Survival %	No. of Saplings expected to be grown	Name of the species
I	50	80%	40	Teak, Pungai & Neem
II	50	80%	40	
III	50	80%	40	
IV	50	80%	40	
V	50	80%	40	

11.9) Proposed financial estimate / budget for (EMP) Environment Management

S.No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges for monitoring		
				6 months	Per Year	5 Years
1	Ambient Air quality monitoring	5000	4	20000	40000	2,00,000
2	Water sampling and analysis	10000	1	10000	20000	1,00,000
3	Noise level monitoring	500	4	2000	4000	20,000
4	Ground vibration monitoring	2500	2	5000	10000	50,000
Total EMP Cost				37000	74000	3,70,000



a) Fixed Asset Cost

i)	Land Cost	:	Rs 56,00,000
ii)	Refilling / Fencing	:	Rs 3,00,000
iii)	Laborers Shed	:	Rs 2,00,000
iv)	Canteen facility	:	Rs 1,00,000
v)	Other items	:	Rs 3,00,000
	Total		Rs 65,00,000/-

b) Operational Cost:

i)	Machinery cost	:	Rs 40,00,000
	Excavator with Breaker, Tipper ,Compressor, Jack Hammer, Pump etc (Owned +Hired)		
	Total	:	Rs. 40,00,000/-

c) EMP Cost:

i)	Drinking water facility for the laborers	:	Rs 1,80,000
ii)	Sanitary arrangement	:	Rs 1,00,000
iii)	Safety kits & protective equipments	:	Rs 1,00,000
iv)	Dust control	:	Rs 50,000
v)	Afforestation etc.	:	Rs 1,00,000
	Total		Rs 5,30,000/-
	Total Project Cost		: Rs 1,10,30,000/-

11.10. Corporate Environment Responsibility (CER):

The Applicant shall be distributed Note books, Stationary items to nearby Govt Primary School and to conduct the Medical camp, Environment awareness program, etc., to nearby villages after consultation with local panchayat authorities.

The Applicant shall ensure that a minimum of 2.0% from the Total project cost (Rs.2,20,600/-) for the entire lease period will be utilized for the CER Activities.

District Mineral Fund @10% of the Royalty shall be given to the Dept. of Geology and Mining.

12.0 MINE CLOSURE PLAN

12.1. Closure activity:

This mining plan is prepared for 5 years and the quantity of mineral excavated during this period is only 1,13,338m³. The Closure activity will start during the first year itself. The Afforestation along the Buffer area will be done initially and the mined out area will be afforested once the bench is formed. At the closure of the mining activity the entire area will be restored completely by Tree plantation.

The proposed area is a plain surface area having a highest and lowest elevation of 445m & 447m respectively. Mining will be done from top by developing benches 5 X 5 m. There will not be any land degradation because the mining activity will be limited depth only. After extraction of the material up to ultimate pit limit of 37m(410m above MSL), the mined out pit will be used for water storage.

12.2. Re-vegetation:

It is proposed to develop green belt in areas covering the proposed land, which includes regions along the mine lease boundary and the reclaimed area. Grass and bushes will be planted in areas prone to erosion. Other areas will be fertilized 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. Before re-vegetation, the land will be properly prepared by spreading the soil which is rich in organic contents. Vegetation will be self-sufficient after planting and require no fertilization or maintenance.

12.3. Steps proposed for phased restoration, reclamation of already mined out areas

In case of steep slopes, fencing shall be made to control accident due to inadvertent entry of animals and local persons. Plantation shall be made over small dumps to prevent soil erosion/wash outs and help ecological balance.

12.4. Mitigation measures to be undertaken for safety and restoration / reclamation of the already mined out area

The area applied for quarry lease was not disturbed by earlier quarrying. The land ecology shall be preserved during Mine closure by proper terracing and stabilization with plantations.

12.5. Measures to be under taken on mine closure as per Act & Rules

Fencing shall be made around open cast working as per DGMS circulars.





12.6. Safety and Security:

Safety measures will be implemented to the prevent access to surface opening excavations. Working area will be fenced with Barbed wires.

12.7. Disaster Management and Risk Assessment:

In order to handle emergency situations, an organizational chart entrusting responsibility to various project personnel will be prepared with their specific roles during the emergency. Assembly points will be setup farthest from the quarry location where workers would assemble in case of emergency. Fire protection system will be setup at mine site which consist of Portable Handheld appliances suitable for extinguishing small fires. Other emergency services like First Aid center, Vehicle to rush to nearby hospital etc., will be provided.

12.8. Care and Maintenance during temporary discontinuance:

During the temporary discontinuance the working place will be fenced completely & a board of Discontinuance will be hanged on the main entrance of the working place. One watchman will be kept on the leaset area to watch the area and look after the survival of the plants.

12.9. Economic Repercussions of closure of mine & man power retrenchments:

Five years mining will generate employment potential and general financial status and socio economic conditions of approx. 20 laborers will be improved.

12.10. Abandonment Cost:

Abandonment is not proposed during five years of mining. But implementation of waste management, retaining wall and afforestation is proposed as continues process. Cost of these is around Rs. 1,00,000/- per year.

13.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT:



Overview:

- Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- There is no deep hole drilling and heavy blasting of this lease area.
- The Applicant will endeavor every attempt to quarry the Rough stone & Gravel economically without any wastage and to improve the environment and ecology.

Mining Plan with Mine Closure Plan is prepared under the provisions of Tamilnadu Minor Minerals Concession Rules, 1959 for quarrying Rough Stone & Gravel with due consideration of environmental parameters so as to obtain Environmental Clearance (EC). Systematic mining and blasting techniques will ensure safety and create eco-friendly environment.

R. Sathish Kumar

R. SATHISHKUMAR
(Applicant)

A. Allimuthu

A. ALLIMUTHU
(RQP/DMG/HYD/85/ 2022)

A. ALLIMUTHU, M.Sc., M.Phil.,
Recognized Qualified Person
RQP/DMG/HYD/85/ 2022

This Mining Plan is Approved
subject to the conditions / stipulation
& indicated in the Mining Plan Approval
Letter No: 419/Mines/2024 dt 29.10.24
office of the A.D. Geology & Mining, Coimbatore

This Mining Plan is Approved based on the
incorporation of the particulars specified
in the letter of the commissioner of Geology
and Mining, Chennai ref No: 3863/L.O/G-1
Dated 19.11.2012 and subjected to further
fulfillment of the condition laid down under
Tamilnadu Minor Mineral Concession Rules 1959

[Signature]
ASSISTANT DIRECTOR
DEPARTMENT OF GEOLOGY & MINING
COIMBATORE DISTRICT

29/10/24

R. Sathish Kumar

ந.க.எண்.419/கனிமம்/2024

உதவி இயக்குநர் அலுவலகம், திரு. ரங்கசாமி, 89,
புலியியல் மற்றும் சுரங்கத்துறை,
மாவட்ட ஆட்சியர் அலுவலக வளாகம்,
கோயம்புத்தூர் - 18*

நாள் 04.10.2024

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - கோயம்புத்தூர் மாவட்டம்
மதுக்கரை வட்டம் - ஓராட்டுக்குப்பை கிராமம் - புல
எண்.203/1B-ல் 1.13.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில்
சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம்
கோரி திரு.R.சதீஷ்குமார் என்பவர் விண்ணப்பம் செய்தது -
வரைவு சுரங்கத்திட்டம் சமர்ப்பிக்க அறிவுறுத்துதல் -
தொடர்பாக.

- பார்வை:**
1. திரு.R.சதீஷ்குமார், த/பெ. ரங்கசாமி, 89,
தொப்பையகவுண்டர் தோட்டம், ஓராட்டுக்குப்பை,
செட்டிபாளையம், கோயம்புத்தூர் என்பவரின் விண்ணப்பம்
நாள் 08.05.2024
 2. இவ்வலுவலக கடிதம் இதே எண். நாள்: 15.05.2024 மற்றும்
06.09.2024
 3. வட்டாட்சியர், மதுக்கரை கடிதம் ந.க.எண்.1744/2022/அ6
நாள்: 08.07.2024
 4. வருவாய் கோட்டாட்சியர், கோயம்புத்தூர் தெற்கு
அவர்களின் கடிதம் மூ.மு.எண்.3041/2024/அ2 நாள்:
12.07.2024.
 5. செயல் அலுவலர், செட்டிபாளையம் பேரூராட்சி,
செட்டிபாளையம் கடிதம் ந.க.எண்.1294/2024 நாள்:
19.09.2024.
 6. கோயம்புத்தூர் புலியியல் மற்றும் சுரங்கத்துறை உதவி
புலியியலாளர் அவர்களின் தணிக்கை குறிப்பு நாள்:
20.08.2024.

பார்வை 1-ல் கோயம்புத்தூர் மாவட்டம், செட்டிபாளையம், 89, தொப்பையகவுண்டர்
தோட்டம், ஓராட்டுக்குப்பை என்ற முகவரியில் வசிக்கும் திரு.ரங்கசாமி என்பவரின் மகன்
திரு.R.சதீஷ்குமார் என்பவர் கோயம்புத்தூர் மாவட்டம், மதுக்கரை வட்டம்,
ஓராட்டுக்குப்பை கிராமம், புல எண்.203/1B-ல் 1.13.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா
பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம்
கோரி உரிய ஆவணங்களுடன் விண்ணப்பித்துள்ளார்.

பார்வை 3,4, 5 மற்றும் 6-ல் கண்ட கடிதங்களில் கோயம்புத்தூர் மாவட்டம்,
மதுக்கரை வட்டாட்சியர், கோயம்புத்தூர் தெற்கு வருவாய் கோட்டாட்சியர்,
செட்டிபாளையம் பேரூராட்சி செயல் அலுவலர் மற்றும் புலியியல் மற்றும் சுரங்கத்துறை
உதவி புலியியலாளர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கோயம்புத்தூர் மாவட்டம்,

மதுக்கரை வட்டம், ஓராட்டுக்குப்பை கிராமம், புல எண்.203/1B-ல் 1.13.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் திரு.R.சதீஷ்குமார் என்பவருக்கு சாதாரணர்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

எனவே, கோயம்புத்தூர் மாவட்டம், மதுக்கரை வட்டம், ஓராட்டுக்குப்பை கிராமம், புல எண்.203/1B-ல் 1.13.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 1959-ம் வருடாந்தி தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.19-ன் கீழ் 5 வருட காலங்களுக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்க உகந்த புலமாக கருதி அறிவிப்பு செய்யப்படுகிறது.

மேலும், திரு.R.சதீஷ்குமார் என்பவர் மூன்று மாத காலத்திற்குள் வரைவு சுரங்கத்திட்ட அறிக்கை (Draft Mining Plan) கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு தயார் செய்து கோயம்புத்தூர் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநரிடம் ஒப்புதல் பெற்றும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 41 & 42-ன் படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவாணைச் சான்று பெற்று சமர்ப்பிக்குமாரும் அறிவுறுத்தப்படுகிறது.

நிபந்தனைகள்

1. அருகில் உள்ள பட்டா நிலத்திற்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
2. அனுமதி கோரும் புலத்தின் தெற்கு பகுதியில் உள்ள அரசு புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணி மேற்கொள்ள வேண்டும்.
3. அனுமதி கோரும் புலத்தின் கிழக்கு பகுதியில் செல்லும் வண்டிப் பாதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணி மேற்கொள்ள வேண்டும்.
4. அனுமதி கோரும் புலத்தினை அரசு அங்கீகாரம் பெற்ற நிறுவனத்தினரால் DGPS (Differential Global Positioning System)-ன் படி ஆய்வு செய்யப்பட்டு ஒவ்வொரு எல்லைத் தூண்களும் நடப்படவேண்டும்.
5. அருகிலுள்ள பட்டா நிலங்கள் மற்றும் பொது மக்களுக்கும் எவ்வித இடையூறும் இன்றி குவாரி பணி மேற்கொள்ள வேண்டும்.


உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை
கோயம்புத்தூர்.

பெறுநர்:
திரு.R.சதீஷ்குமார்,
த/பெ. ரங்கசாமி,
89, தொப்பையகவுண்டர் தோட்டம்,
ஓராட்டுக்குப்பை,
செட்டிபாளையம்,
கோயம்புத்தூர்

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : மதுக்கரை

கிராமம் : ஓராட்டுக்குப்பை [47]



புல எண் :

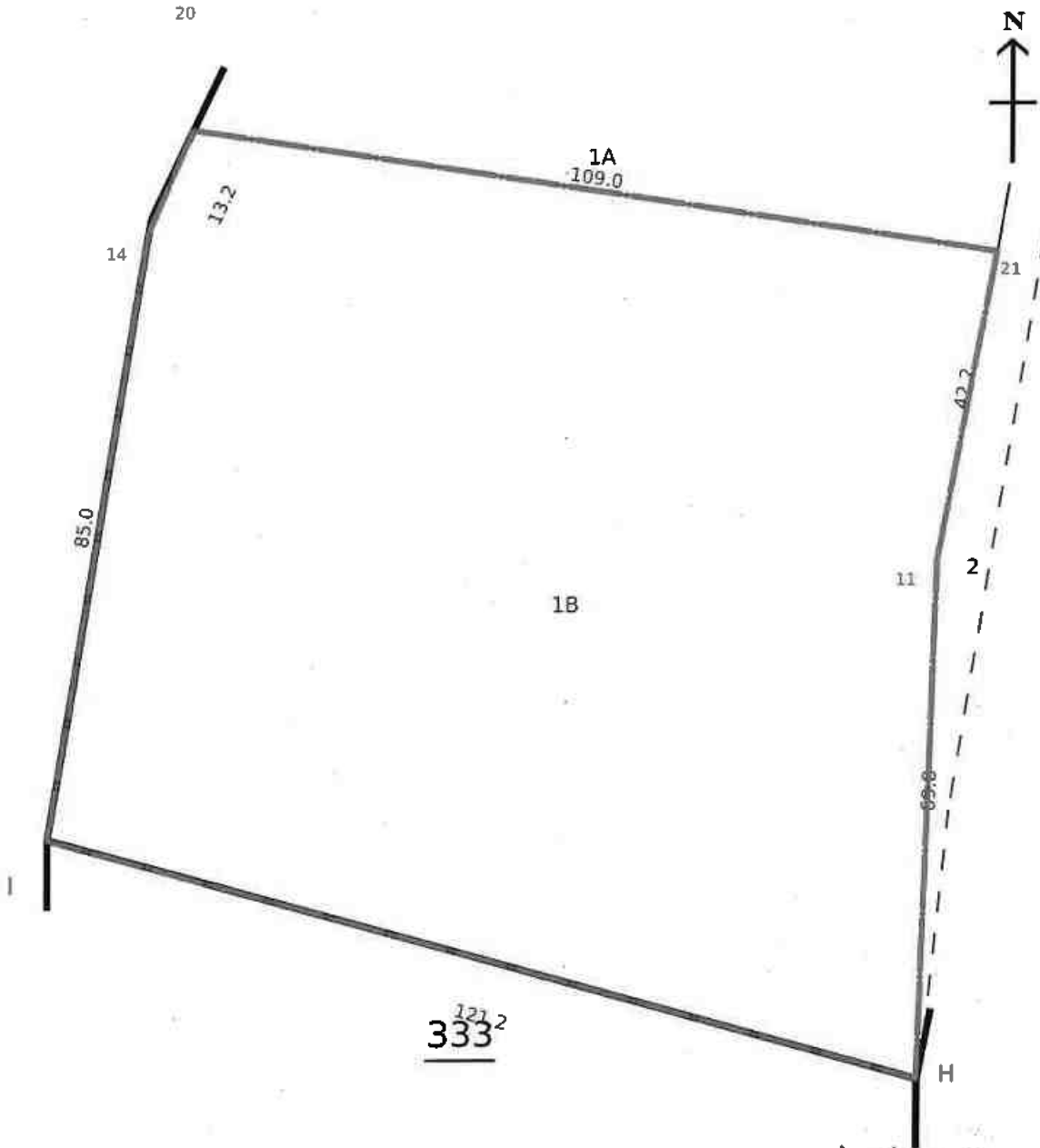
203/1B

பரப்பளவு :

எக்டர் 01 ஏர் 13.00

அளவு :

1 : 890



333¹²¹2



LEASE AREA

A. Allimuthu
A. ALLIMUTHU, M.Sc., M.Phil.
Recognized Qualified Person
ROP/DMG/HYD/86/2022

Data Digitally Signed By
SATHYAN A

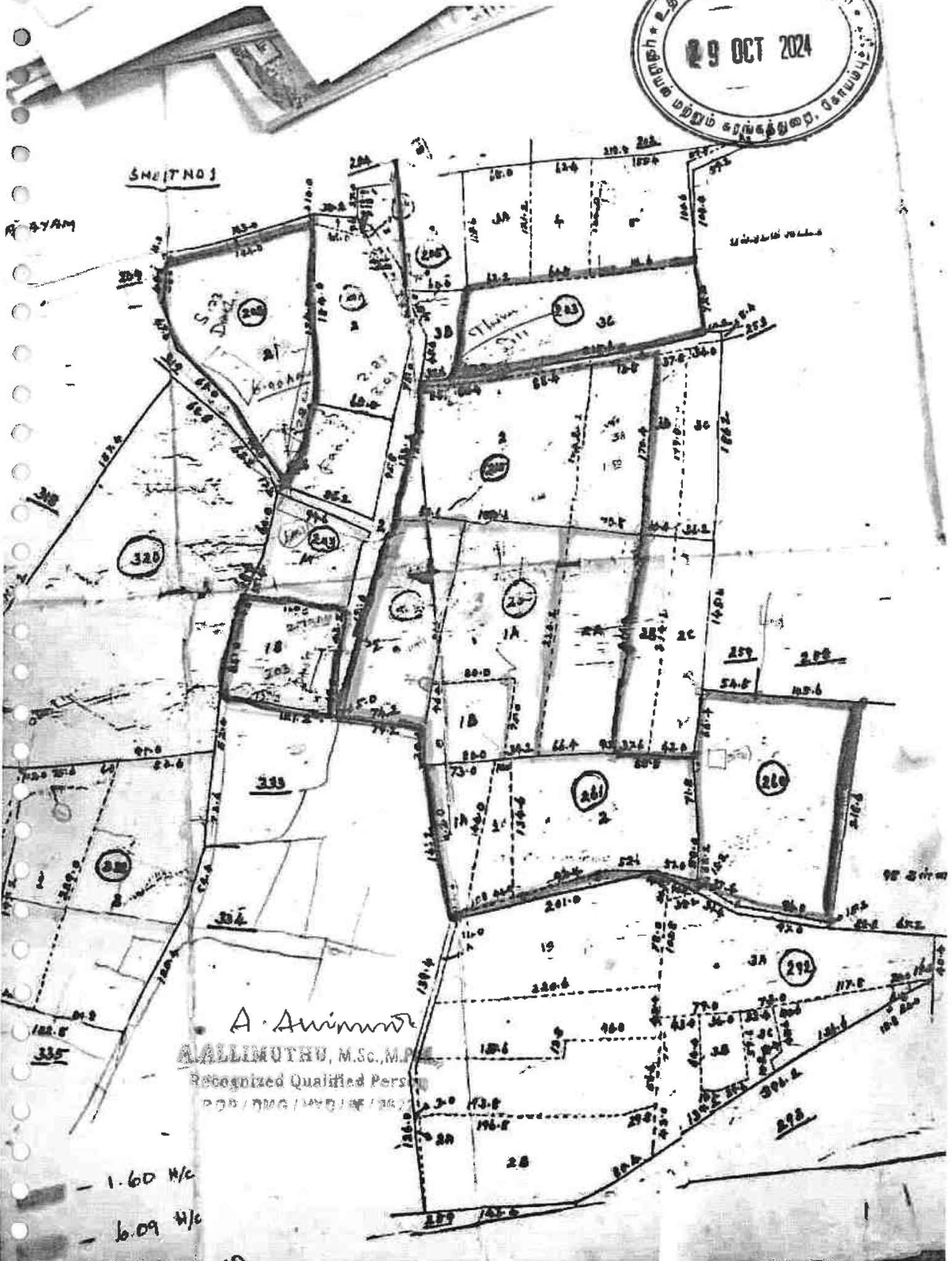
Date of Issue: 17-10-2024 16:24:40

Survey and Settlement Department, Government of TamilNadu

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A. Animur
A. ALLIMUTHU, M.Sc., M.P.
Recognized Qualified Person
P.O. / P.O. / P.O. / P.O. / P.O.

1.60 H/c
6.09 H/c

RMA



தமிழ்நாடு அரசு

வருவாய்த் துறை

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



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : மதுக்கரை

வருவாய் கிராமம் : ஓராட்டுக்குப்பை

பட்டா எண் : 1730

உரிமையாளர்கள் பெயர்

- | | | |
|---------------|------|---------------|
| 1. வேலுச்சாமி | மகன் | தினேஷ் குமார் |
| 2. பழனிச்சாமி | மகன் | கதிரசேன் |
| 3. ரங்கசாமி | மகன் | சதீஷ்குமார் |



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	
203	1B	1 - 13.00	1.40	--	--	--	--	2023/0103/12/515021- -- ----- 31-10-2023
		1 - 13.00	1.40					

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/14/047/01730/130741 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 17-10-2024 அன்று 04:15:32 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

அ-பதிவேடு விவரங்கள் - ஊரகம்



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : மதுக்கரை

கிராமம் : ஓராட்டுக்குப்பை

1. புல எண்	203	9. மண் வயனமும் ரகமும்	8 - 4
2. உட்பிரிவு எண்	1B	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-1b	11. தீர்வை (ரூ - ஹெ)	1.24
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	1 - 13.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.40
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	1730
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	1	16. பெயர்	தினேஷ் குமார் மற்றும் 26பர்

குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து
1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய
தளத்தில் 12/14/047/203/1B/140741 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து
உறுதி செய்துகொள்ளவும்.

R. Ant



தமிழ்நாடு தமிழ்நாடு TAMIL NADU

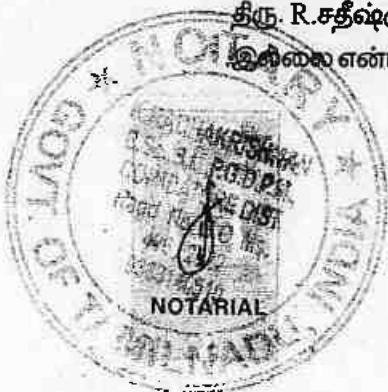
17AC 327649

11/3/2024 v. Dineshkumar
Coimbatore

சம்மதக் கடிதம்

கோயம்புத்தூர் மாவட்டம், மதுக்கரை வட்டம், கிருஷ்ணராயபுரம் 9/48, தோட்டத்துசாளை என்ற முகவரியில் வசித்துவரும் திரு. வேலுசாமி அவர்களின் மகன் V. தினேஷ்குமார், கிணத்துக்கடவு வட்டம், செட்டிபாளையம் வழி, 3/90-1, காரச்சேரி என்ற முகவரியில் வசித்துவரும் திரு. பழனிச்சாமி அவர்களின் மகன் P. கதிரசேன் ஆகிய நாங்கள் இருவரும், மனுதாரர் திரு. R. சதீஷ்குமார் என்பவருக்கு எழுதிக்கொடுக்கும் சம்மதக் கடிதம் என்னவென்றால்,

கோயம்புத்தூர் மாவட்டம், மதுக்கரை வட்டம், ஓராட்டுக்குப்பை கிராமம், பட்டா எண் 1730-ன் படி க.ச.எண் 203/1Bல் மொத்தம் 1.13.00 ஹெக்டேர் பரப்பு பூமியானது எங்களுக்கும் மனுதாரர் திரு. R. சதீஷ்குமார் ஆகிய மூவருக்கும் கூட்டாகப் பாத்தியப்பட்டது. மேற்படி பூமியில் சாதாரணக்கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க கோவை மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை துணை இயக்குநர் அவர்களால் குத்தகை ஒப்பந்தப்பத்திரம் நிறைவேற்றப்படும் நாளிலிருந்து பத்து ஆண்டுகளுக்கு சாதாரணக்கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க மனுதாரரான திரு. R. சதீஷ்குமார் என்பவருக்கு குத்தகை உரிமம் வழங்க எவ்வித ஆட்சேபமையும் இல்லை என்பதை இச்சம்மதக் கடிதத்தின் மூலம் தெரிவித்துக் கொள்கிறோம்.



K. RADHAKRISHNAN,
B.Sc.B.I., LL.B.,
ADVOCATE & NOTARY,
Office: 244, 1st Floor, Liberty Street,
COIMBATORE - 641 014.

G.O. Ms. No. 4327/10-2022

A-87

இப்படிக்கு

P. K. Sathish Kumar

R. S.



भारत - सरकार
GOVERNMENT OF INDIA



ர சதீஷ்குமார்
R Sethishkumar
பிறந்த நாள் / DOB : 23/04/1998
ஆண் / MALE



3129 4342 3873

உதவர - சாதாரண மனிதனின் அதிகாரம்



முகவரி:
அ/மொ: ரங்கசாமி, 89,
தொப்பியாவுண்டர்
தொட்டம், ஓரட்டுப்பை,
செட்டிபாளையம்,
கோயம்புத்தூர், தமிழ் நாடு,
641201

Address:
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THOPPIYA GOUNDER
THOTTAM, ORATTUKUPPAI,
Chettipalayam, Coimbatore
South, Coimbatore, Tamil Nadu,
641201

1800 300 1847

1800 300 1847 help@uidai.gov.in www.uidai.gov.in P.O. Box No. 1847, Bengaluru-560 001

RMA





**GOVERNMENT OF TELANGANA
DEPARTMENT OF MINES AND GEOLOGY**

**CERTIFICATE OF REGISTRATION
AS RECOGNIZED QUALIFIED PERSON
TO PREPARE MINING PLAN**

[Under Rule 14(2) of Granite Conservation and Development Rules 1999 & Rule 7(B) of Telangana State Minor Mineral Concession Rules, 1966]

* * * * *

Sri A. Allimuthu, S/o Arumugam, D.No.1/231, Pattakarnavalavu, Chinnamuthiyampatti, Puduppalayam Post, Edapaddi Taluk, Salem District, Tamil Nadu-636306 whose photograph and signature is affixed herein above, having given evidence of his qualification and experience is hereby granted recognition under Rule 14(2) of Granite Conservation & Development Rules, 1999 and Rule 7(B) of Telangana State Minor Mineral Concession Rules, 1966 as Recognized Qualified Person (RQP) to prepare Mining Plan.

Registration Number :

RQP/DMG/HYD/85/2022

This Recognition is valid for period of (10) years with effect from 26.04.2022.

This certificate will liable to be withdrawn/cancelled in the event of furnishing the wrong information/documents in the Mining Plan submitted by the Recognized Qualified Person.

Place: Hyderabad,

Date: 26.04.2022.



DIRECTOR OF MINES AND GEOLOGY

A. Allimuthu
A. ALLIMUTHU, M.Sc., M.Phil.,
Recognized Qualified Person
RQP/DMG/HYD/85/2022

Signed by D Ronald Rose
Date: 26-04-2022 09:41:13
Reason: Approved

RAT



PLATE No.I

LOCATION MAP

Scale - 1:50,000

INDEX

LOCATION OF THE QUARRY

LATITUDE : 10° 55' 03.82"N to 10° 55' 07.71"N
LONGITUDE : 77° 03' 51.86"E to 77° 03' 55.86"E

TOPO SHEED No.58F/01

LOCATION

EXTENT : 1.13.00 HECTARES
S.F.No. : 203/1B
VILLAGE : ORATTUKUPPAI
TALUK : MADUKKARAI
DISTRICT : COIMBATORE
STATE : TAMILNADU

APPLICANT

THIRU.R.SATHISH KUMAR,
S/o.RANGASAMY,
89, THOPPAIYA GOUNDER THOTTAM,
ORATTUKUPPAI VILLAGE,
CHETTIPALAYAM,
COIMBATORE DISTRICT.

DATE OF SURVEY: 09.10.2024

PREPARED BY:

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ME AND IS CORRECT TO THE
BEST OF MY KNOWLEDGE

A. Allimuthu

A.ALLIMUTHU
(RQP/DMG/HYD/85/ 2022)

CONVENTIONAL SYMBOLS

Express highway: with toll; with bridge; with distance stone			
Roads, metalled: according to importance			
Roads, double cartway: according to importance			
Unmetalled road: Cart-track: Pack-track with pass: Foot-path			
Streams: with track in bed; underground: Canal			
Dams: masonry or rock-filled; earthwork: Weir			
River: dry with water channel; with island & rocks: Tidal river			
Submerged rocks: Shoal: Swamp: Reeds			
Wells: lined; unlined: Tube-well: Spring: Tank: perennial; dry			
Embankments: road or rail: tank: Broken ground			
Railways, broad gauge: double; single with station; under constn			
Railways, other gauges: double; single with distance stone; do			
Mineral line or tramway: Km. Cutting with tunnel			
Contours with sub-features: Rocky slopes: Cliffs			
Sand features: (1)flat: (2)sand-hills(permanent) (3)dunes(shifting)			
Towns or Villages: inhabited: deserted: Fort			
Huts: permanent; temporary: Tower: Antiquities			
Temple: Chattri: Church: Mosque: Idgah: Tomb: Graves			
Lighthouse: Lightship: Buoy: lighted; unlighted: Anchorage			
Mine: Vine on trellis: Grass: Scrub			
Palms: palms; other: Plantain: Coconut: Bamboo: Other trees			
Areas: cultivated; wooded: Surveyed tree			
Boundary, international			
state: demarcated; undemarcated			
district: subdivision; tahsil or taluk; forest			
Boundary pillars: surveyed; unlocated			
Height, triangulated station; point, approximate	Δ200	.200	.200
Bench-mark: geodetic; tertiary; canal	BM 63.3	BM 63.3	.63
Post office: Telegraph office: Overhead tank			
Rest house or inspection bungalow: Circuit house: Police station			
Camping ground: Forest: reserved; protected		RF	PF
Spaced names: administrative; locality or tribal	KIKRI		NAGA
Hospital: Dispensary: Veterinary: Hospital / Dispensary		+	
Aerodrome: Helipad: Tourist site			
Power line: with pylons surveyed; with poles unsurveyed			



PLATE No.II

SATELLITE IMAGE

500m RADIUS

Scale - 1:5000

INDEX

LEASE BOUNDARY ☐

500m RADIUS ☐

300m RADIUS ☐

LOCATION

EXTENT : 1.13.00 HECTARES

S.F.No. : 203/1B

VILLAGE : ORATTUKUPPAI

TALUK : MADUKKARAI

DISTRICT : COIMBATORE

STATE : TAMILNADU

APPLICANT

THIRU.R.SATHISH KUMAR,
S/o.RANGASAMY,
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A.ALLIMUTHU
(RQP/DMG/HYD/85/ 2022)

RWS

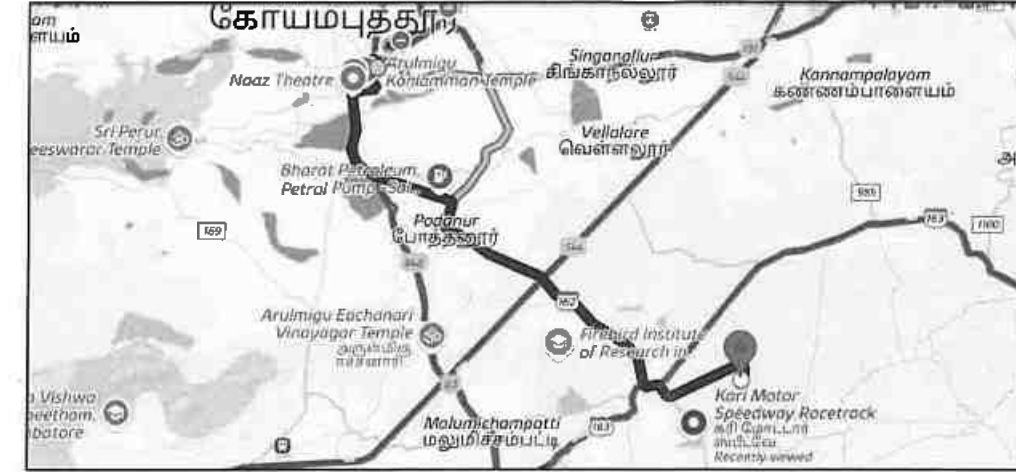


PLATE No.II-A

ROUTE MAP

LOCATION

EXTENT : 1.13.00 HECTARES
S.F.No. : 203/1B
VILLAGE : ORATTUKUPPAI
TALUK : MADUKKARAI
DISTRICT : COIMBATORE
STATE : TAMILNADU

APPLICANT

THIRU.R.SATHISH KUMAR,
S/o.RANGASAMY,
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DATE OF SURVEY: 09.10.2024

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(RQP/DMG/HYD/85/ 2022)

R M

250mN
0mE

200mN

150mN

100mN

50mN

0mN
0mE

50mE

100mE

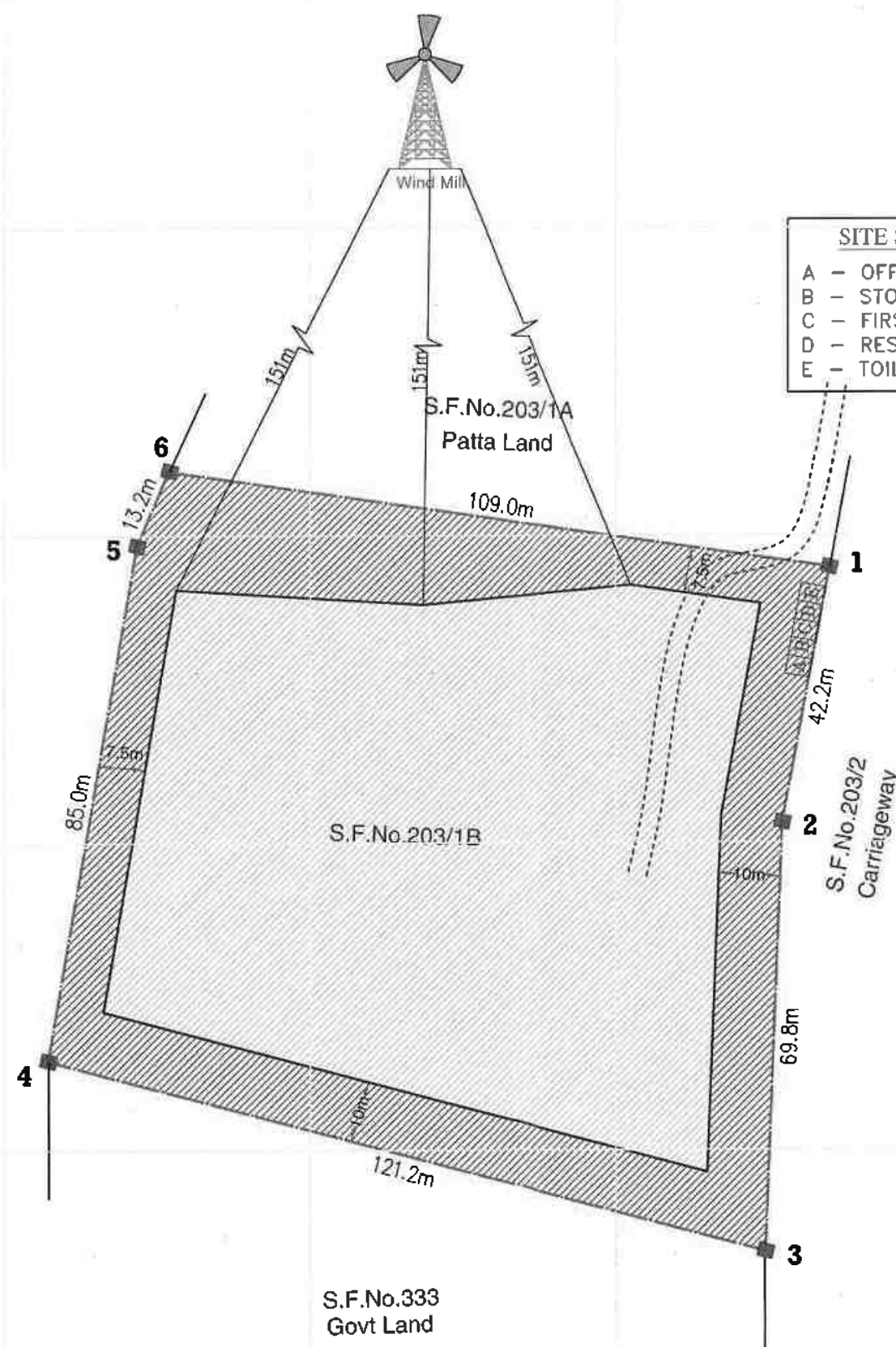
150mE

200mE

250mE

0mN
300mE

BOUNDARY CO-ORDINATES		
P.No.	LATITUDE	LONGITUDE
1	10° 55' 07.45"N	77° 03' 55.86"E
2	10° 55' 06.09"N	77° 03' 55.70"E
3	10° 55' 03.82"N	77° 03' 55.78"E
4	10° 55' 04.56"N	77° 03' 51.86"E
5	10° 55' 07.31"N	77° 03' 52.14"E
6	10° 55' 07.71"N	77° 03' 52.28"E
DATUM WGS-84		

S.F.No.320
Patta Land

SITE SERVICES

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



PLATE No.III

LEASE PLAN

Scale - 1:1000

INDEX

LEASE BOUNDARY



APPROACH ROAD



MINING AREA



SAFETY ZONE



BOUNDARY PILLAR



LOCATION

EXTENT : 1.13.00 HECTARES
 S.F.No. : 203/1B
 VILLAGE : ORATTUKUPPAI
 TALUK : MADUKKARAI
 DISTRICT : COIMBATORE
 STATE : TAMILNADU

APPLICANT

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 S/o.RANGASAMY,
 89, THOPPAIYA GOUNDER THOTTAM,
 ORATTUKUPPAI VILLAGE,
 CHETTIPALAYAM,
 COIMBATORE DISTRICT.

DATE OF SURVEY: 09.10.2024

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A.ALLIMUTHU
 (RQP/DMG/HYD/85/ 2022)

GEOLOGICAL & SURFACE PLAN

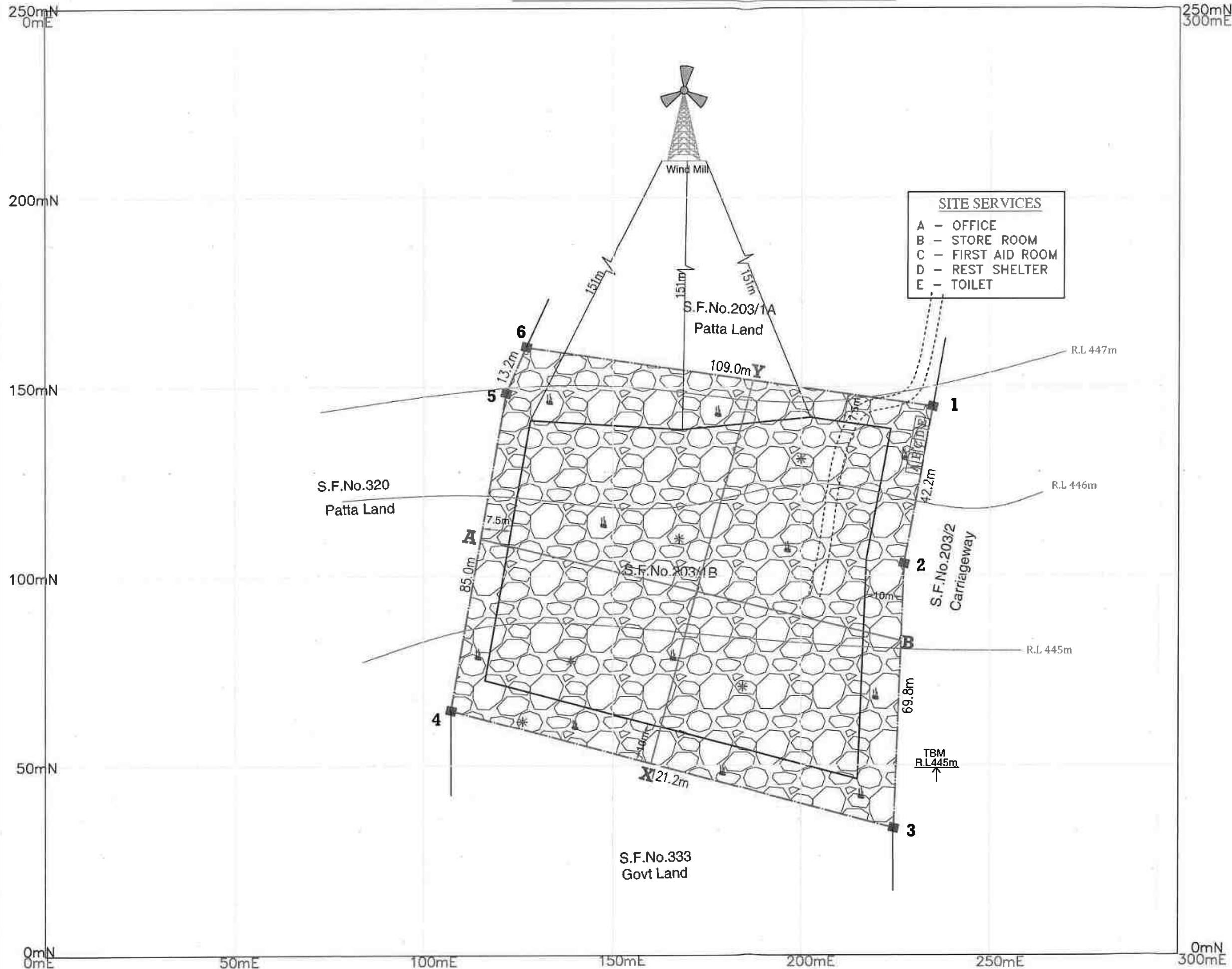


PLATE No.IV

GEOLOGICAL & SURFACE PLAN

Scale - 1:1000

INDEX

GRAVEL	
ROUGH STONE	
CONTOUR LINE	
SHRUP	
TEMPORARY BENCH MARK	
LEASE BOUNDARY	
APPROACH ROAD	
SAFETY ZONE	

LOCATION

EXTENT : 1.13.00 HECTARES
S.F.No. : 203/1B
VILLAGE : ORATTUKUPPAI
TALUK : MADUKKARAI
DISTRICT : COIMBATORE
STATE : TAMILNADU

APPLICANT

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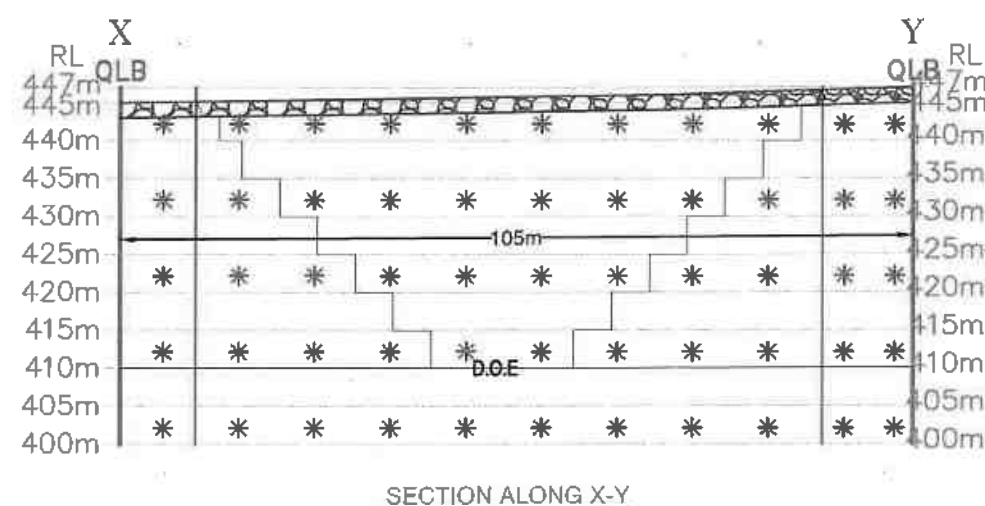
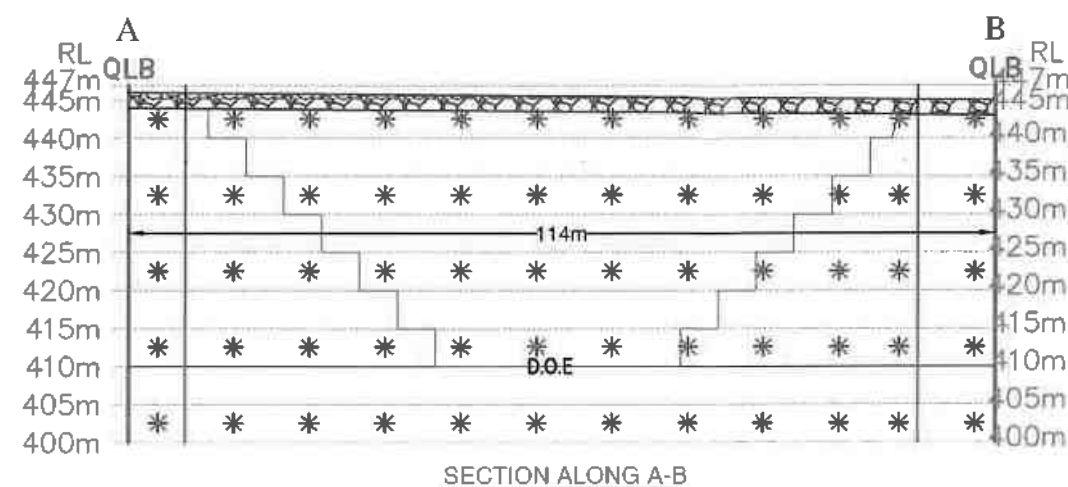
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(RQP/DMG/HYD/85/ 2022)



Geological Resources by Cross Sectional Method of Rough Stone					
Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m³)
AB-XY	445-410	114	105	34	406980
TOTAL					406980.0

Geological Resources of Gravel				
Section	MSL	Area (m²)	Depth(m)	Volume (m³)
AB-XY	447-445	11300	2	22600
TOTAL				22600.0

PLATE No.V

GEOLOGICAL CROSS SECTIONS

Scale : Horizontal = 1:1000
Vertical = 1:1000

INDEX

GRAVEL	
ROUGH STONE	
LEASE BOUNDARY	
BUFFER ZONE	
DEPTH OF ESTIMATION	

LOCATION

EXTENT : 1.13.00 HECTARES
S.F.No. : 203/1B
VILLAGE : ORATTUKUPPAI
TALUK : MADUKKARAI
DISTRICT : COIMBATORE
STATE : TAMILNADU

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COIMBATORE DISTRICT.

DATE OF SURVEY: 09.10.2024

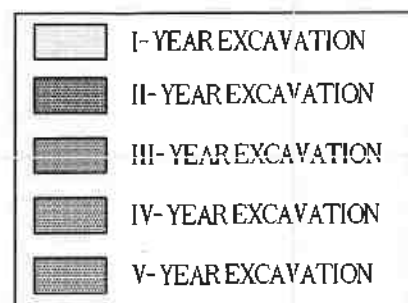
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A.ALLIMUTHU
(RQP/DMG/HYD/85/ 2022)

YEAR WISE PRODUCTION AND DEVELOPMENTS PLAN



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



PLATE No.VI
YEAR WISE PRODUCTION AND DEVELOPMENTS PLAN
 Scale - 1:1000

- INDEX**
- LEASE BOUNDARY
 - APPROACH ROAD
 - MINING BENCHES

LOCATION

EXTENT : 1.13.00 HECTARES
 S.F.No. : 203/1B
 VILLAGE : ORATTUKUPPAI
 TALUK : MADUKKARAI
 DISTRICT : COIMBATORE
 STATE : TAMILNADU

APPLICANT

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 S/o.RANGASAMY,
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 CHETTIPALAYAM,
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 A.ALLIMUTHU
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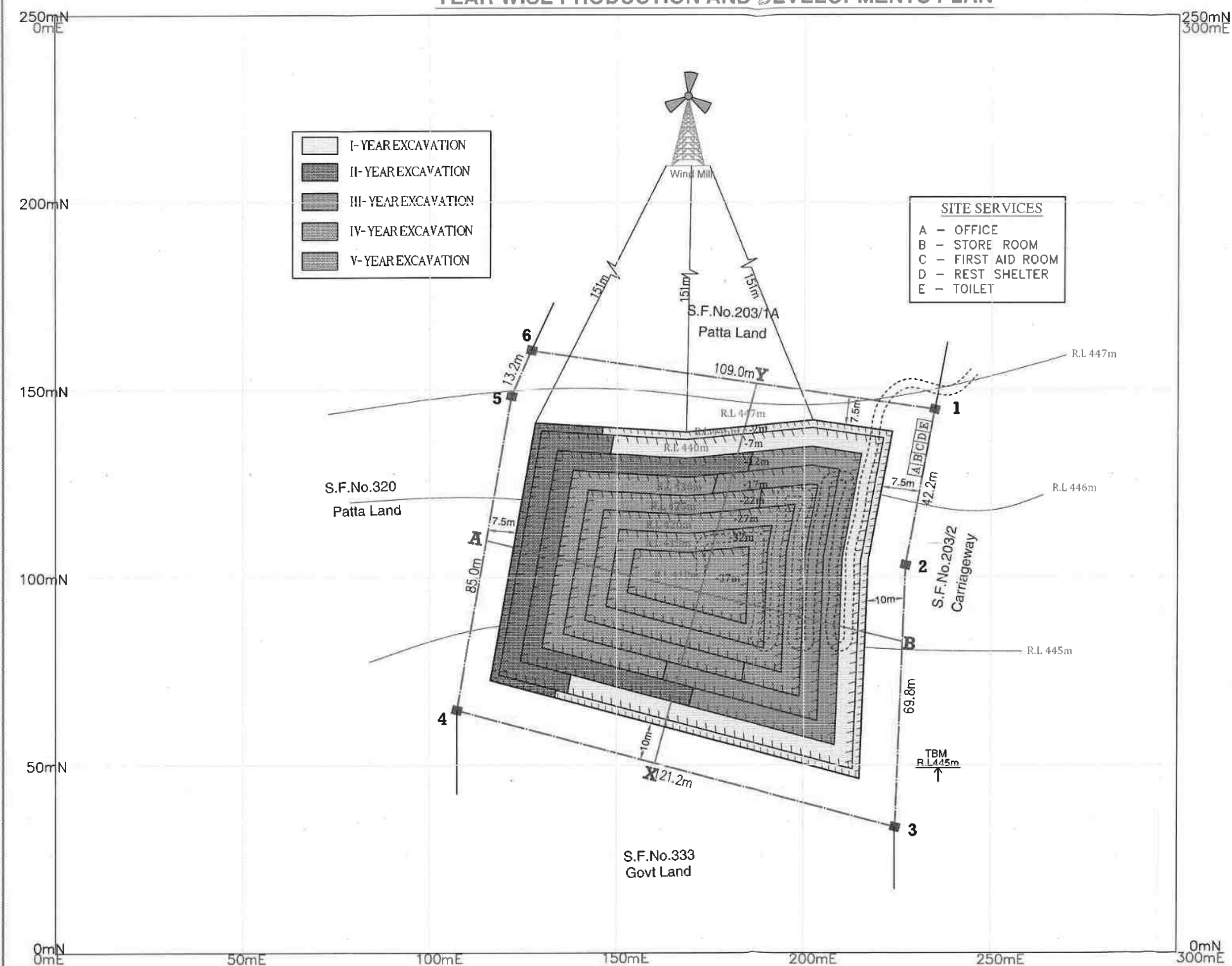




PLATE No.VII

PRODUCTION CROSS SECTIONS

Scale : Horizontal = 1:1000
Vertical = 1:1000

INDEX

GRAVEL	
ROUGH STONE	
LEASE BOUNDARY	
BUFFER ZONE	
DEPTH OF MINING	
ULTIMATE PIT LIMIT	

LOCATION

EXTENT : 1.13.00 HECTARES
S.F.No. : 203/1B
VILLAGE : ORATTUKUPPAI
TALUK : MADUKKARAI
DISTRICT : COIMBATORE
STATE : TAMILNADU

APPLICANT

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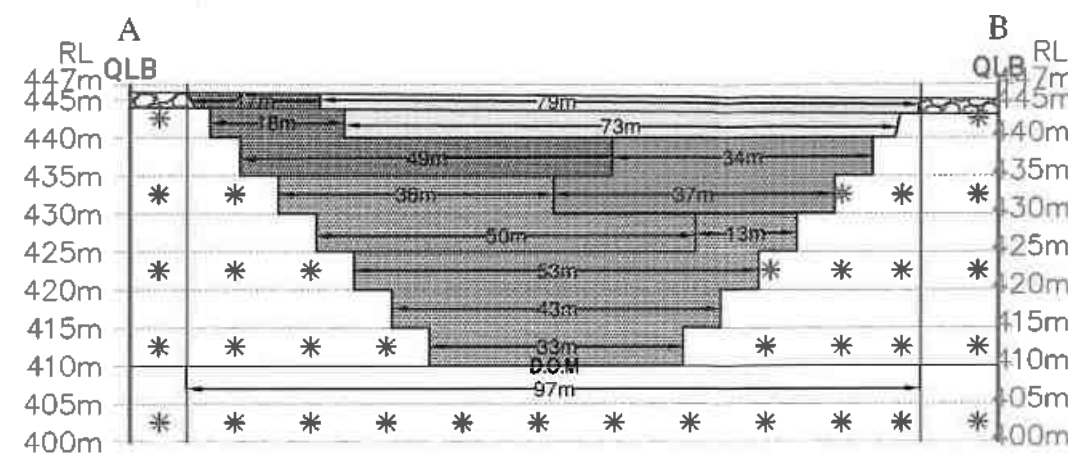
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PREPARED BY:

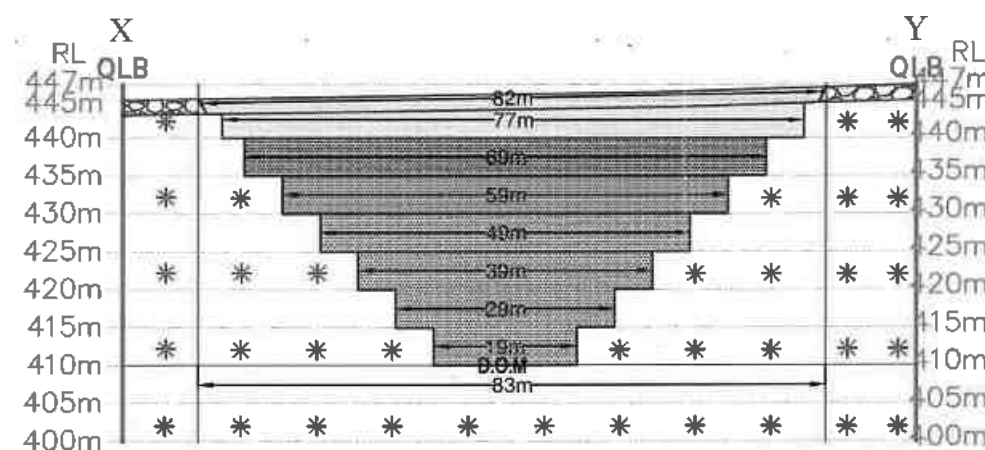
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A. Allimuthu

A.ALLIMUTHU
(RQP/DMG/HYD/85/ 2022)



SECTION ALONG A-B



SECTION ALONG X-Y

	I- YEAR EXCAVATION
	II- YEAR EXCAVATION
	III- YEAR EXCAVATION
	IV- YEAR EXCAVATION
	V- YEAR EXCAVATION

Gravel Year Wise Development						
YEAR	Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m³)
I-YEAR	AB-XY	447-245	79	82	2	12956
II-YEAR	AB-XY	447-245	17	82	2	2788
TOTAL						15744.0

Ultimate Pit Dimention			
Pit No.	(Max) Length (m)	(Max) Width (m)	Depth(m)
I	97	83	37

Rough Stone Yearwise Production and Developments							
Year	Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m ³)	production / year
I-Year	AB-XY	445-440	73	77	4	22484	22484
II-Year	AB-XY	445-440	18	77	4	5544	22449
		440-435	49	69	5	16905	
III-Year	AB-XY	440-437	34	69	5	11730	22645
		435-430	37	59	5	10915	
V-Year	AB-XY	435-430	36	59	5	10620	22870
		430-425	50	49	5	12250	
V-Year	AB-XY	430-425	13	49	5	3185	22890
		425-420	53	39	5	10335	
		420-415	43	29	5	6235	
		415-410	33	19	5	3135	
TOTAL						113338.0	113338.0

CONCEPTUAL PLAN

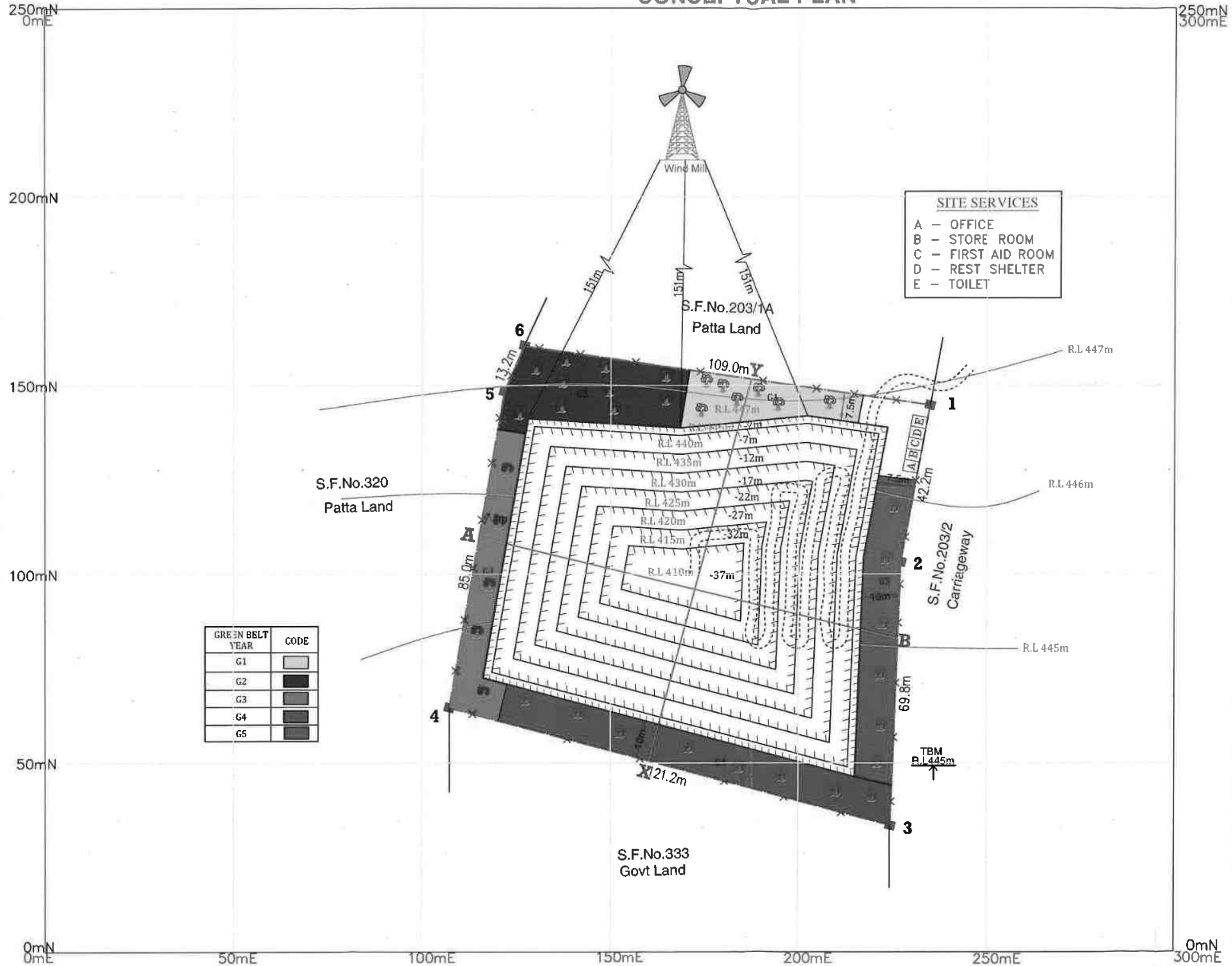


PLATE No.VIII

CONCEPTUAL PLAN

Scale - 1:1000

INDEX

LEASE BOUNDARY
FOR FENCING

APPROACH ROAD

PIT LIMIT AT THE END
OF THE MINE LIFE

AREA OF AFFORESTATION

MINING BENCHES

LOCATION

EXTENT : 1.13.00 HECTARES
S.F.No. : 203/1B
VILLAGE : ORATTUKUPPAI
TALUK : MADUKKARAI
DISTRICT : COIMBATORE
STATE : TAMILNADU

APPLICANT

THIRU.R.SATHISH KUMAR,
S/o.RANGASAMY,
89, THOPPAIYA GOUNDER THOTTAM,
ORATTUKUPPAI VILLAGE,
CHETTIPALAYAM,
COIMBATORE DISTRICT.

DATE OF SURVEY: 09.10.2024

PREPARED BY:

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A. Allimuthu

A.ALLIMUTHU
(RQP/DMG/HYD/85/ 2022)



PLATE No.IX

CONCEPTUAL CROSS SECTIONS

Scale : Horizontal = 1:1000
Vertical = 1:1000

INDEX

GRAVEL	
ROUGH STONE	
LEASE BOUNDARY	
BUFFER ZONE	
DEPTH OF ESTIMATION	
ULTIMATE PIT LIMIT	

LOCATION

EXTENT : 1.13.00 HECTARES
S.F.No. : 203/1B
VILLAGE : ORATTUKUPPAI
TALUK : MADUKKARAI
DISTRICT : COIMBATORE
STATE : TAMILNADU

APPLICANT

THIRU.R.SATHISH KUMAR,
S/o.RANGASAMY,
89,THOPPAIYA GOUNDER THOTTAM,
ORATTUKUPPAI VILLAGE,
CHETTIPALAYAM,
COIMBATORE DISTRICT.

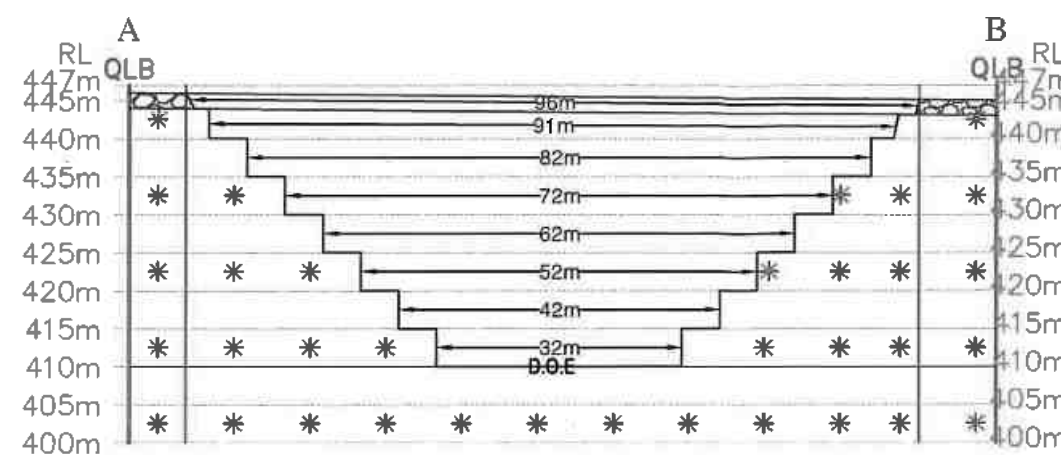
DATE OF SURVEY: 09.10.2024

PREPARED BY:

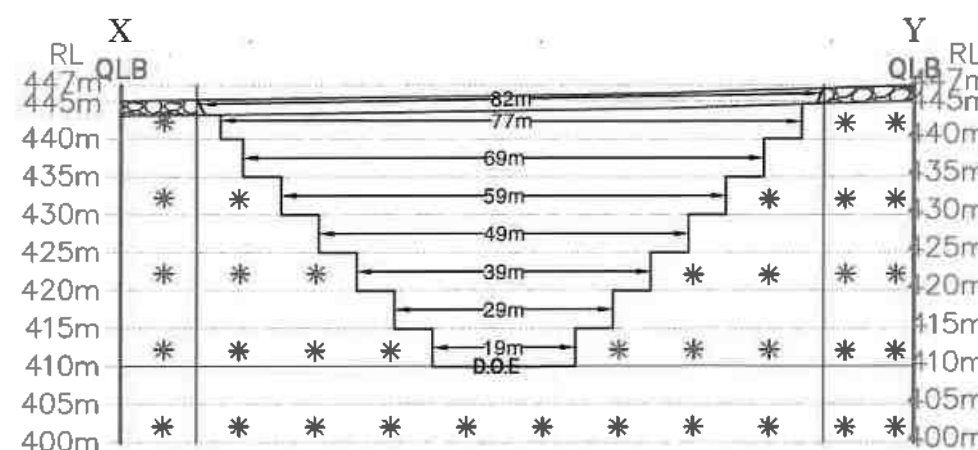
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SECTION ALONG A-B



SECTION ALONG X-Y

Rough Stone Mineable Reserves by Cross Sectional Method					
Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m³)
AB-XY	445-440	91	77	4	28028
	440-435	83	69	5	28635
	435-430	73	59	5	21535
	430-425	63	49	5	15435
	425-420	53	39	5	10335
	420-415	43	29	5	6235
	415-410	33	19	5	3135
TOTAL					119338.0

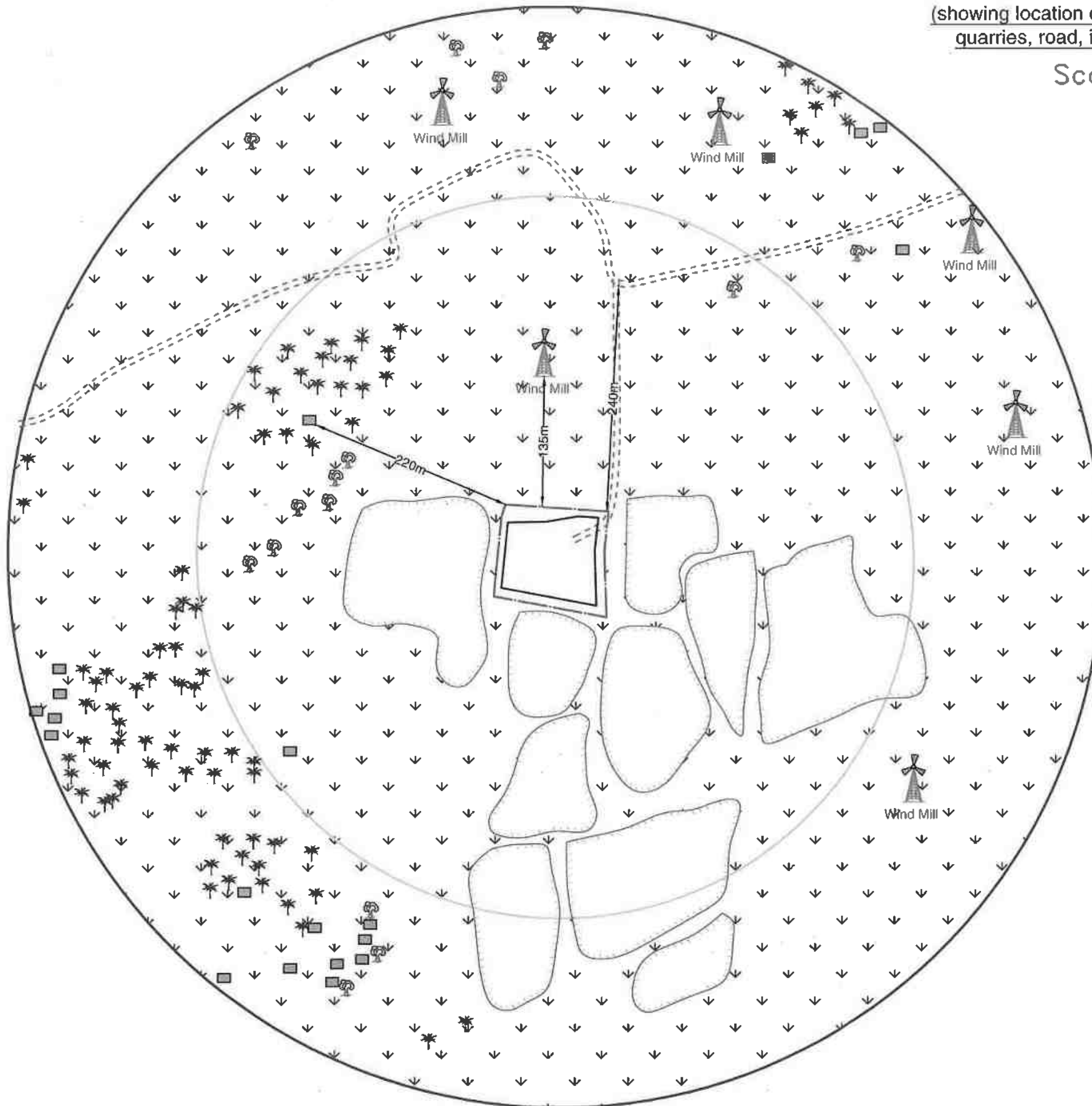
Mineable Reserve of Gravel					
Section	MSL	Length (m)	Width (m)	Depth(m)	Volume (m³)
AB-XY	447-445	96	82	2	15744
Total					15744.0

PRESENT & POST LAND USE PATTERN			
DESCRIPTION	PRESENT AREA (Ha)	AREA IN USE DURING THE QUARRYING PERIOD (Ha)	COLOR CODE
AREA UNDER QUARRYING	Nil	0.75.10	
INFRASTRUCTURE	Nil	0.01.00	
ROADS	0.00.10	0.01.10	
GREEN BELT	0.35.80	0.35.80	
DUMP	Nil	Nil	
UN-UTILIZED AREA	0.77.10	Nil	
GRAND TOTAL	1.13.00	1.13.00	

ENVIRONMENT PLAN

(showing location of habitation, water bodies, Vegetation, quarries, road, infra structure around 500m Radius)

Scale - 1:5,000



DESCRIPTION	NEAREST DISTANCE (m)	DIRECTION
LEASE BOUNDARY	---	CENTRE
HOUSE / BUILDING / SHED	220m	NORTH WEST
WATER BODIES	---	---
VILLAGE ROAD	240m	NORTH
PRIVATE ROAD	---	---
QUARRIES	5m	WEST
RIVER	---	---
WIND MILL	135m	NORTH
500m BUFFER ZONE	---	---
300m BUFFER ZONE	---	---
TREES	---	---
DRY/ AGRI LAND	---	---
ODAI	---	---
LOCATION		APPLICANT
EXTENT	: 1.13.00 HECTARES	THIRU.R.SATHISH KUMAR,
S.F.No.	: 203/1B	S/o.RANGASAMY,
VILLAGE	: ORATTUKUPPAI	89, THOPPAIYA GOUNDER
TALUK	: MADUKKARAI	THOTTAM,
DISTRICT	: COIMBATORE	ORATTUKUPPAI VILLAGE,
STATE	: TAMILNADU	CHETTIPALAYAM,
		COIMBATORE DISTRICT.

DATE OF SURVEY: 09.10.2024

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