DRAFT EIA & EMP FOR PROPOSED ROUGH STONE AND GRAVEL QUARRY CATEGORY – B1

(Public Hearing Upgraded after Terms of Reference (ToR) as per the provisions of EIA Notification 2006 & amendments thereof)

ToR Identification No. TO25B0108TN5958378N (F.No. 12024), dated 20/06/2025

PROPOSED QUARRY LEASE DETAILS	
SURVEY NOS	1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B, 1233/4B, 1233/5B2, 1233/9B, 1233/10, 1223/1B, 1234/1A and 1234/2B
VILLAGE	PUNNAM
TALUK	PUGALUR
DISTRICT	KARUR
EXTENT	1.46.25 ha
CLUSTER EXTENT	7.86.75 ha
MINEABLE RESERVES (upto 31m BGL)	ROUGH STONE: 3,96,055 Ts GRAVEL : 20,952 Ts
PROPOSED PRODUCTION QUANTITY FOR FIRST FIVE YEARS (upto 21m BGL)	ROUGH STONE : 282658.75 Ts GRAVEL : 20,952 Ts
PROPOSED PRODUCTION QUANTITY FOR SECOND FIVE YEARS (upto 31m BGL)	113396.25 Ts OF ROUGH STONE
LAND	PATTA LAND

(Sector No. 1(a) Sector No.1 as per NABET)
Category of the Project: B1 Cluster Mining, Total Cluster Area – 7.86.75 Ha
Baseline Monitoring Period – March 2025 to May 2025

APPLICANT

THIRU.G.SATHISHKUMAR,
S/O.GURUSAMY,
DOOR NO.2/90, PUNNAM, AYYANUR,
PUGALUR TALUK, KARUR DISTRICT, PIN CODE– 639136.

ENVIRONMENTAL CONSULTANT	LABORATORY
M/s. GLOBAL MINING SOLUTIONS ***(NABET Accredited & ISO 9001 Certified Consultant)*** **Plot No. 6, S.F.No. 13/2, A2, VS City,** **RC Chettypatty, Kottamettupatty, Omalur,** **Salem, Tamil Nadu – 636 455.** **NABET Accreditation No: NABET/EIA/23-26/SA 0241** ***Valid up to: 04.01.2026*** **Contact: 97502 23535 & 94446 54520** **Email: infoglobalmining@gmail.com,** **globalminingsolutionssalem@gmail.com**	**M/s. SHRIENT ANALYTICAL & RESEARCH LABS PRIVATE LIMITED** ***(NABL Accredited Testing Laboratory)*** ***Valid up to: 29.09.2025*** **#416/15, Dhargas Road, Perungalathur,** **West Tambaram, Chennai,** **Tamil Nadu, India.**

JUNE - 2025

AMENDMENT PAGE

SL	Page No.	Section / Clause / Para / Line (as Applicable)	Date of Amendment	Amendment Made	Reasons of amendment	Signature of Person Authorizing Amendment
1						
2						
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ACKNOWLEDGEMENT

M/s. Global Mining Solutions, Salem is very much thankful Thiru. G.Sathishkumar S/o.Gurusamy, Lessee for the confidence and trust placed on the organization for carrying out Environmental Impact Assessment (EIA) study for the proposed Rough Stone and Gravel quarry over a lease extent of 1.46.25 Ha., & Cluster extent of 7.86.75 Ha., located at Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State. and formulating the Environmental Management Plan (EMP). We also gratefully acknowledge the cooperation and assistance provided by concerned government authorities for collection of secondary information for the preparation of Draft EIA/EMP report. Our sincere thanks to the local people of Punnam Village and the nearby villages for their whole hearted cooperation and constant involvement during the entire field study without which the study would not have been possible.

For: M/s. Global Mining Solutions

(M. Prabu)

Managing Director

UNDERTAKING

In line with MoEF OM No. J – 11013/41/2006-IA. II (I) dated 5th October 2011, we hereby give our undertaking for owning the content and information in the EIA/EMP report submitted for EC of the proposed Rough Stone and Gravel quarry over a lease extent of 1.46.25 Ha & Cluster extent of 7.86.75 Ha., located at Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State.

For: M/s. Global Mining Solutions

Name: M.Manikandan

EIA Coordinator – Mining

UNDERTAKING

In Line with OM no. J-11013/41/2006-IA.II (1) dated 4th Aug 2009 and its Amendments, we hereby confirm that all Terms of Reference issued by Ministry of Environment, Forest and Climate Change vide ToR Identification No. TO25B0108TN5958378N (F.No.12024), dated 20.06.2025 of Draft EIA/EMP report for the proposed Stone Quarry over a lease extent of 1.46.25 Ha., & Cluster extent of 7.86.75 Ha., located at Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu Stat for the proposed production for first five years is 21m (Below Ground Level) 282658.75 Ts of Rough Stone, 20,952 Ts of gravel, second five years is 31m (Below Ground Level) 113396.25 Ts of Rough Stone formation from the proposed lease area and the details has been complied in the Draft EIA/EMP report is factually correct.

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

For: M/s. Global Mining Solutions

Name: M.Manikandan
EIA Coordinator – Mining

भारतीय गुणवत्ता परिषद्
QUALITY COUNCIL OF INDIA
QCI Creating an Ecosystem for Quality

NABET

National Accreditation Board for Education and Training

Certificate of Accreditation

Global Mining Solutions

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

*The organization is accredited as **Category-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 including opencast/ underground mining	1	1 (a) (i)	A
3	Thermal power plants	4	1 (d)	B
5	Metallurgical industries (ferrous)	8	3 (a)	A
6	Cement Plants	9	3 (b)	A
26	Building and construction projects	38	8 (a)	B
27	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated May 20, 2025, 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/25/3638 dated May 30, 2025. The accreditation needs to be renewed before the expiry date Eco Chem Sales and Services, Surat following due process of assessment.

Valid up to
January 4, 2026

Issue Date
May 30, 2025

Certificate No.
NABET/EIA/23-26/SA 0241

Varinder Kanwar

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.

DECLARATION BY EXPERTS

Declaration by Experts contributing to the proposed Stone Quarry over a lease extent of 1.46.25 Ha. & Cluster extent of 7.86.75 Ha in Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State.

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

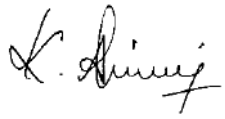
EIA Coordinator Name: M. Manikandan

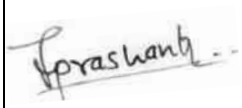
Signature & Date

Period of involvement: March 2025 to May 2025.

Contact information:

M/s Global Mining Solutions
Plot No.6, SF No. 13/2, A2, VS City, RC Chettypatty,
Kottamettupatty, Omalur,
Salem, Tamil Nadu – 636 455

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and Date
1	*AP*	*Dhanalakshmi Ramanathan*	*Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation measures for air pollution.* *Period: March 2025 to May 2025.*	
2	*WP*	*Abirami Kaliaperumal*	*Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact.* *Period: March 2025 to May 2025*	
3	*SHW*	*Ramadoss N*	*Assessment of waste generated from the project, suggested waste management practices.* *Period: March 2025 to May 2025*	
4	*SE*	*Sarasvathy K*	*Baseline SE studies. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan.* *Period: March 2025 to May 2025*	
5	*EB*	*Saravanan S*	*Baseline data collection of related to ecology of the area.* *Period: March 2025 to May 2025*	
6	*HG*	*Ravinthiran N*	*Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area.* *Period: March 2025 to May 2025*	

7	*AQ*	*Srilatha Thiruveedhula*	*Air quality modeling utilizing the area source model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures.* <u>*Period: March 2025 to May 2025*</u>	
8	*NV*	*Dhanalakshmi Ramanathan*	*Ambient noise study of the area. Incremental noise generation due to quarry operation and impact of the noise due to the project.* <u>*Period: March 2025 to May 2025*</u>	
9	*LU*	*Dhanalakshmi Ramanathan*	*Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment.* <u>*Period: March 2025 to May 2025*</u>	
10	*RH*	*S.V. Prashant*	*Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker.* <u>*Period: March 2025 to May 2025*</u>	
11	*SC*	*Shisupal Sing*	*Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil.* <u>*Period: March 2025 to May 2025*</u>	
12	*GEO*	*Valliappan Meyyappan*	*Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area.* <u>*Period: March 2025 to May 2025*</u>	

EIA CONTENT

FIGURE LIST

TABLE LIST

LIST OF ANNEXURES

COMPLIANCE TO TERMS OF REFERENCE

S.No	ToR Points	Reply	Pg. No
1.	**Seac Conditions - Site Specific**		
1	1. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of required statutory personnel, appropriate environmental management, system of maintaining the haul roads and village/panchayat roads, authorized blasting operation, Monitoring system of the environmental & other statutory compliances & its reporting status, 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	There are 5 quarries within a 500-metre radius. The proponent will take the initiative to form a cluster management committee once environmental clearance is obtained for this quarry as well as the other proposed quarry	-
2	The PP shall ensure the installation of CCTV at the proposed quarry site and ensure its inclusion during the EIA presentation.	Agreed. Will be complied	
2.	**SEAC Standard Condition**		
2.1	Terms of Reference		
1	In the case of existing/operation mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension	Not applicable. This is a fresh quarry.	-

	(ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working (vii) Quantity of material mined out outside the lining lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6m height and ultimate depth of not exceeding 50m.		
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.	The nearest habitation is located at a distance of 1.8 km (NE) and VAO certificate regarding the location of habitations within 300m radius is enclosed as Annexure – 5.	Annexure No-5
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of 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.	50m interval for 300m radius enumeration incorporated chapter 3	87
4	The PP shall submit a detailed hydrogeological report indicating the impact of proposed quarrying operations on the water bodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	The study is under progress. It will be incorporated in the final EIA & EMP.	-

5	The Project Proponent shall carry out Bio-diversity study through reputed institution and the same shall be included in the EIA report.	• There is no Reserve Forest / Sanctuaries located within 10km radius of the study area. • The lease area is a non-forest, Patta land and during the study period, there is no specific Fauna found within ML area. • Study of Biological Environment (Flora and Fauna) and their mitigative measures including Vegetation details are given in section 3.3.6, Chapter-3	106
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries. Tiger reserve etc. upto a radius of 25 km from the proposed site.	There is no Reserve Forest, National Parks, Corridors and Wildlife pathways in the core and buffer zone.	-
7	In case of proposed lease in an existing (or old) quarry where the benches are not formed(or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic institutions-CSIR Central Institute of Mining & Fuel Research/Dhanbad, NIRM/ Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Suratkal and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	This is a new quarry. However, a slope stability study will be conducted once the quarry depth reaches 31m BGL.	-

8	However, in case of the fresh/virgin quarries, the project shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30m below ground level.		
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, ll/l Class mines manager appointed by the proponent	Agreed. It will be incorporated in the final EIA & EMP.	-
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site	Agreed. The PP will use and ensure with controlled blasting techniques using Nonel and by reducing the explosive charge per delay to minimum, so there will be no adverse impact due to blasting and vibration.	-
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	Not applicable. This is a fresh quarry project.	-
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Not applicable. This is a fresh quarry project.	-
14	Quantity of minerals mined out. • Highest production achieved in any one year. • Detail of approved depth of mining.	Not applicable. This is a fresh quarry project.	-

	• 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 comer coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Complied. • Project coordinates superimposed in satellite imagery are given as Figure - 2.2, Chapter - 2. • The 10km Radius Index plan showing buffer zone is given as Figure - 3.1, Chapter - 3. • The geology and geomorphology map are provided in Figure - 3.24 & 3.25, Chapter - 3. • The Soil map is provided as Figure - 3.26, Chapter - 3.	59, 84, 122, 124
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	This is fresh quarry. The condition will be complied after commencement of the mining operation.	-
17	The proponent shall furnish photographs of adequate fencing, greenbelt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan	There are no major trees within ML area. Fencing and plantations are under process. Greenbelt / Plantation will be carried out in the safety zone to enhance the vegetative growth and aesthetic in the safety zone area. In the post mining stage, an area of 0.34.25 Ha will be under greenbelt and plantation. Refer section 4.2, chapter-4.	130
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology	The geological reserves are estimated to be 13,12,190 Ts of Rough stone and 29,288 Ts of Gravel.	56

	with justifications, the anticipated impacts of the mining operations on the surrounding, environment and the remedial measures for the same.	The mineable reserves of 2,82,658.75 Ts of Rough Stone & 20,952Ts of Gravel are observed. second five years (upto 31m BGL) 113396.25 Ts of Rough Stone	
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR" 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Complied. Please refer Figure 10.1	185
20	The Project Proponent shall conduct the Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD/TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitoring data, it may clearly be shown whether working all intersect ground water. Necessary data and documentation in this regard may be provided.	The study is under progress. It will be incorporated in the final EIA & EMP.	-
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.	Baseline data for meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during March 2025 to May 2025 and detailed in Chapter-3.	84 – 127
22	The Proponent shall carry out the cumulative impact study due to mining operations carried out in the quarry specifically with	Detailed cumulative impact study has been carried and the same is incorporated in the section 7.3, Chapter - 7.	165 – 174, Annexure No-4,

	reference to the specific environment in terms of air pollution, water pollution, & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	The letter received from Dept. of Geology and Mining, Karur stating the quarries detail within 500m radius is enclosed in Annexure – 4. Accordingly, a detailed Environment Management Plan is prepared considering air, water, noise and soil environment and the details are given in Chapter - 10.	181
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	• The runoff water during rainy season will be collected in the bottom quarry through proper drainage pattern and the collected water will be used for plantation and dust suppression during dry season. • Rain water harvesting Plan is given in section 4.5 of chapter 4. • The water balance is given in Figure 4.1 of chapter 4.	138, 154
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.	Land use pattern of the study area is detailed in Section 3.3.7, Chapter - 3. The anticipated impact on land and its mitigative measure are detailed in Section 4.2, Chapter - 4.	109, 130
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area distance from mine lease, its land use, R&R issues, if any, should be provided.	Not applicable**.** There is no generation of the OB & waste.	**-**
26	Proximity to Areas declared as' Critically Polluted'(or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance	No proximity to Critically polluted areas.	**-**

	certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and famished to the effect that the proposed mining activities could be considered.		
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The impact of the mining operations due to this quarry on water environment is studied and mitigation measures are proposed in Section 4.5, Chapter - 4. Rain water will be diverted into bottom of the project area by constructing drains to store and use for dust suppression and greenbelt development.	150
28	Impact on local transport infrastructure due to the Project should be indicated	Since the production is very less, only few trucks of 5/10T will be used for transport. The effect of transport on local transport will be negligible. Refer section 7.3.1, Chapter – 7.	164
29	A tree survey shall be carried out (Nos. name of species, age, diameter, etc) both within the mining lease applied area & 300m buffer zone and its management during mining activity	The details of flora in the core zone and the buffer zone are provided in section 3.3.6 Chapter - 3 There is no standing trees in proposed mine lease area.	107
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific	Complied. Mine Closure Plan has been incorporated in the approved Mining Plan and the same is incorporated in the section 7.7, Chapter – 7. Land use at mine closure stage are given in Table – 2.11 and Figure - 2.11 of Chapter 2.	177, 76-77
31	As part of the study of flora and fauna around the vicinity of the proposed site, the EIA Coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, where ever possible	Accepted. It will be done.	-
32	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to	• Greenbelt/Plantation will be carried out in and around the lease area to enhance the	80

	improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix – I in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	vegetative growth and aesthetic in the area. • In the post mining stage, an area of 0.34.25 Ha of safety zone will be developed with green belt.	
33	Taller/one year old saplings raised in appropriate size of bags; preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/horticulturist with regard to site-specific choices. The proponent shall earmark the green belt area with GPS coordinates all along the boundary of the project site with at least 3 m wide and in between blocks in an organized manner	Accepted. Green belt development work is in progress. Photographs on green belt/plantation will be furnished in Final EIA EMP report.	-
34	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A disaster management plan is prepared and the details are given in section 7.6, Chapter 7.	176
35	A risk assessment and Management plan shall be prepared and included in the EIA/EMP report for the complete life of the proposed quarry or till the end of the lease period	Risk assessment and its management is given in section 7.2, Chapter 7.	163
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational Health Impacts of the project and preventive measures are detailed under section 4.5.4 of Chapter-4.	152

37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No major impact on public health will be there since the villages are located more than 1km from the lease area. Details of CER and CSR are discussed under Chapter- 8.	179
38	The Socio-economic studies should be carried out within a 5km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Socio economic study is conducted both by visits and secondary data collection. Details are given in section 3.3.8, Chapter 3.	113
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of law against the Project should be given.	No litigation is pending	-
40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project is given in Chapter- 8.	178
41	If any quarrying operations were carried out in the proposed quarrying site for which now EC is sought, the project proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF & CC, Regional Office, Chennai or the concerned DEE/TNPCB.	Not applicable. This is a fresh quarry project.	-
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.	A detailed Environmental Management Plan considering entire life has been prepared and are detailed in section 10.6, chapter- 10. The sworn affidavit stating to abide the EMP for the entire life of mine will be submitted in Final EIA EMP report.	181 - 189

43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the condition mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986	Agreed	-
3	**Seiaa Specific Conditions**		
3.1	The Authority noted that the subject was placed in the 570th meeting of SEAC-II held on 23.05.2025. After detailed discussions, the Authority accepts the recommendation of SEAC-II and decided to grant **Terms of Reference (ToR) along with Public Hearing for the quantity of 3,96,055 Ts of Rough stone and 20,952 Ts of Gravel upto the depth of 31m BGL** as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC-II & normal conditions & the conditions mentioned below.	Agreed	
4.Cluster Management Committee			
1	Cluster management committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry	There are one existing and one proposed quarry located within 500-metre radius. The proponent will take the initiative to form a cluster management committee once environmental clearance is obtained for this quarry.	**-**
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	Agreed. Will be complied.	**-**
3	The List of members of the committee formed shall be submitted to AD/Mines before the	Agreed. The list of members of the committee formed will be	**-**

	execution of mining lease and the same shall be updated every year to the AD/Mines.	submitted to AD/mines after obtaining Environmental Clearance.	
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Agreed. Details of the Operation plan for cluster mining operations will be submitted once we get environmental clearance for all quarries proposed in the cluster area.	-
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.	Risk management plan for the individual quarry is given in this report. As far as cluster working condition is concerned, once the committee is formed, risk management as a cluster including inundation of clusters and the evacuation plan will be elaborated and the same will be submitted to the EIA.	-
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Environmental policy for the cluster will be framed by the cluster management committee and the policy will be in accordance with EPA Act, 1986 and its amendments, guidelines by MoEF&CC/SEIAA and other regulatory bodies. This policy will be displayed in the quarry.	-
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed. It will be complied as mentioned in the Point No.4	-
8	The committee shall 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.	There are no forest area and traditional practices within the project area. However, there are some agricultural lands around the project site. It may be affected due to the quarry operation as such dust particles sedimentation	-
10	Impact on soil flora & vegetation around the project site.		

		in the agricultural land. It will be controlled at the source level by proper dust separation as such wet drilling, controlled blasting and water sprinkling on the project roads and project surrounding roads. As per Air Quality Modelling the impact of the air quality limited to 0.5km radius. So, there is no impact for the Agriculture, Forestry, soil located within 10km radius.	
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.	There is no standing trees in proposed mine lease area.	-
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.	Complied. The details are given in section 3.3.6, Chapter- 3 and section 4.2, Chapter 4.	106, 130
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The detailed action plan has been described in the EMP (Chapter-10) for the sustainable management for the project area and its surroundings.	181
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Complied. The details are given in, Chapter- 4.	130
Forests			
15	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	There is no Reserve Forest located in the core and buffer zone area. The fauna commonly found in the core and buffer zone is given in section 3.3.6., Chapter- 3.	115
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	Complied. The details are given in section 3.3.6, Chapter- 3	108

17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Not Applicable. This is a dry barren land.	-
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	There is no any Reserved Forest located in the core and buffer zone area. There is no, National Parks, Corridors and Wildlife pathways.	-
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.	The hydrogeological study from a reputed institute is in progress; The Final EIA EMP report will be incorporated with hydrological studies.	-
20	Erosion Control measures.	There is no waste generation (OB) has been envisaged in this quarry. However, there may be erosion due to rainy season and that is limited within quarry area. The control measures are explained in section 4.2 to 4.5 of Chapter- 4.	130 - 154
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.	Complied. The baseline study details are incorporated in section 3.3, Chapter- 3. Anticipated impacts and its mitigation measures are detailed in section 4.5, Chapter- 4.	85 – 127 150
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 wastewater generation from this Quarry, so this is not applicable.	-
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Fragmentation impact on environment may be due to drilling and blasting. The anticipated impacts and	130 – 154

		mitigation measures are discussed in Chapter- 4.	
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.	• The Flora and Fauna study covering 10 km radius are detailed in section 3.3.6 of chapter- 3. • The impacts anticipated with respect to the environment of the project area is very negligible and it will be minimized within the project area. • Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area (refer Section 4.2, Chapter- 4).	115 130
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The impact of mining on soil environment has been discussed in section 4.3 under Chapter- 4.	136
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The anticipated impact and its mitigation measures for Water Environment are detailed in section 4.5 of Chapter- 4.	150
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.	There is no wastewater generation from this Quarry, so this is not applicable.	-
Energy			
28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilize the Energy shall be furnished.	Complied. The details are described in section 4.5 chapter- 4.	150
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.	• Only the best equipment will be used, and it will be properly and regularly maintained. Regular vehicular emission tests will be conducted on the transport vehicles to ensure minimal carbon emissions. • To further reduce carbon emissions, a good greenbelt has been planned. Refer Section 4.3.6, Chapter- 4.	137
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.	Complied. Mine Closure Plan has been prepared incorporated in the approved Mining Plan/precise area communication order and the same is incorporated in the Chapters.	177
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.	Complied. The details are described in Chapter- 10.	181
34	The Environmental Impact Assessment should hold detailed study on EMP with budget forGreen belt development and mine closure plan including disaster management plan.	• Green belt development plan is being planned to develop inside the safety zone area of 034.25Ha with 340 Nos of saplings and in addition, 200 Nos of saplings outside the lease area. • For this capital cost of INR 7.05 Lakhs and recurring cost of INR 23.56 Lakhs 10 year has been earmarked.	- 186-187

		• The breakup of the total EMP cost is detailed in Table 10.6 of Chapter 10.	
Risk Assessment			
35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Complied. The details are described in Chapter- 7.	163
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.	Complied. The details are described in Chapter- 7.	176
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.	There are no historical places, schools, cemeteries, HT and LT lines, bird sanctuaries, and wildlife sanctuaries within 300 meters of the proposed project area. In this regard, the project proponent has received an official letter from the Village Administrative Officer, punnam village, The letter copy enclosed as Annexure – 5.	Annexure No-5
38	As per the MoEF& CC office memorandum F.N0.22-65/2017-1A.11I dated: 30.09.2020 and20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.	Noted. It will be complied in the Final EIA/EMP report.	-
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	Complied. The PP has framed detail solid waste management system for the project area and the same will be executed by proper awareness and sign boards. The sign boards will be in	-

	environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	two language i.e., Vernacular language (Tamil) and common language (English). The plastic waste generation is very negligible and it will be collected from the source level in specific dustbin and disposed through the municipal bins.	

Standard Terms of Reference for (Mining of minerals)

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.	Not applicable. This is not a Violation Category Project. This proposal is for Environmental Clearance for B1 Category Cluster Situation.	
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.	The copy of LOI i.e. Precise Area Communication Letter in the name of all Lessee is attached as **Annexure2,**	
1.3	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	Noted & agreed.	
1.4	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).	Project coordinates superimposed in satellite imagery and given as Figure No – 2.2 in Chapter – 2. The geology and geomorphology map are provided in Figure No.3.24 3.25 Chapter 3.	59,84,122,124
1.5	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.	The details are incorporated in chapter 3	84

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.	The applied area is inspected by the VAO, Revenue Inspector of Mines, Assistant Director and confirmed the land is suitable for Rough stone quarrying operation with the land use policy of the state. VAO Certificate is attached as **Annexure 5,**	
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.	Environment policy details given chapter- 10.	185
1.8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	It is an open cast mining project. Blasting details are incorporated in **Chapter-2**	73
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.	The study area comprise of 10 km zone around the mine lease from. in **Chapter 2**	
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	Satellite imagery has been used to study the lease area and the details of land use is given in Chapter 3.	88

	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	There is no proposal for use of land outside the mine lease area for OB dumps, etc. There are no R&R issues involved in the project.	
1.12	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.	No forest land involved in the project.	
1.13	Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	Not applicable since no forest land involved within mine lease area.	
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	Not applicable since no forest land involved in mine lease area.	
1.15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	• There is no Reserve Forest / Sanctuaries located within 10km radius of the study area. Saruvumalai R F – 25.7km (NE)	83
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	Impact on Biological Environment is given in Chapter 3	106

	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.	• There is no Reserve Forest / Sanctuaries located within 10km radius of the study area. • Saruvumalai R F – 25.7km (NE)	83
1.18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	Details biological study (flora & fauna) within 10 km radius of the project site have been incorporated in **Chapter 3**	106
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 Department should be secured and furnished to the effect that the proposed mining activities could be considered.	There is no critically polluted area within 10 km radius of the mining area. Also, the project does not come under the 'Aravali Range'.	

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 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).	The project does not fall under CRZ.	
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.	There is no Rehabilitation and resettlement is involved. Land classified as Patta land	
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	Baseline environmental monitoring was conducted in the core zone and buffer zone during summer **march 2025to may 2025.** Site specific meteorological data was also collected during the study period. The monitoring location details and the monitoring results are discussed in **Chapter 3**.	84

	sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given		
1.23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Air quality modeling was carried out for the rough stone mining project using AERMOD as incorporated in **Chapter-4**	137
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.	Water requirement for the project and source are given in detail in **in Chapter 2**	66
1.25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable Water will be taken from out sources	
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.	Proposed water conservation measures including rainwater harvesting measures are discussed in **Chapter 4**	
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.	Impact of the project on the surface and ground water environment and necessary control measures are discussed in **Chapter 4**	132
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	Hydro Geological Study will be submitted in final EIA	

	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.		
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.	There is no seasonal stream or nallah flowing through the mining area.	
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.	Highest elevation: 180 AMSL Depth: 58 m (below from existing ground profile) i.e. 317m Below Ground Level as per TOR	
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.	There are no trees within ML area. Fencing and plantations are under process. Greenbelt / Plantation will be carried out in the safety zone to enhance the vegetative growth and aesthetic in the safety zone area. In the post mining stage, an area of 0.35.24 Ha will be under greenbelt and plantation.	
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	Traffic study details in chapter 7	175

	load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.		
1.33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Details of onsite facilities to be provided	
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.	Conceptual Plan and Section of the mine lease area is given in chapter-2	77
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.	Details of anticipated occupational health impacts and proposed preventive measures are discussed in **Chapter 4**	152
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	No major impact on public health will be there since the villages are located more than 1km from the lease area.	
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.	Details of CER and CSR are discussed under Chapter No. 8	179
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,	Environmental Management Plan for the project is discussed in detail in **Chapter 9**.	

	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	The public hearing comments will be submitted during final EIA report	
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.	There is no litigation pending against the project.	
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.	98.885Lakhs	
1.42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Disaster Management Plan is included in **Chapter 7**	176
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.	The Project benefits are clearly spelt out in **Chapter 8**.	178
1.44	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.	All general are followed while preparing EIA/EMP.	

	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. J11013/41/2006-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. 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.		

CHAPTER 1
INTRODUCTION

1.1 PURPOSE OF THE REPORT

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

Thiru.G.Sathishkumar Lessee, has obtained Precise Area communication letter from the Assistant Director, Department of Geology and Mining, Karur to quarry out Mineable reserves of 3,96,055 Ts of Rough Stone and 20,952 Ts of Gravel up to 31 BGL. Proposed production quantity for first five years 282658.75 Ts of Rough Stone, 20,952 Ts of gravel Over an extent of 1.46.25 ha., located at the Survey No. S.F.No. 1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B, 1233/4B, 1233/5B2, 1233/9B, 1233/10, 1223/1B, 1234/1A and 1234/2B of Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State. Hence, this proposed quarry falls under the cluster situation due to the following proposed and abandoned quarries located within 500m radius. The details are given below.

Table 1.1 Cluster Mines Details

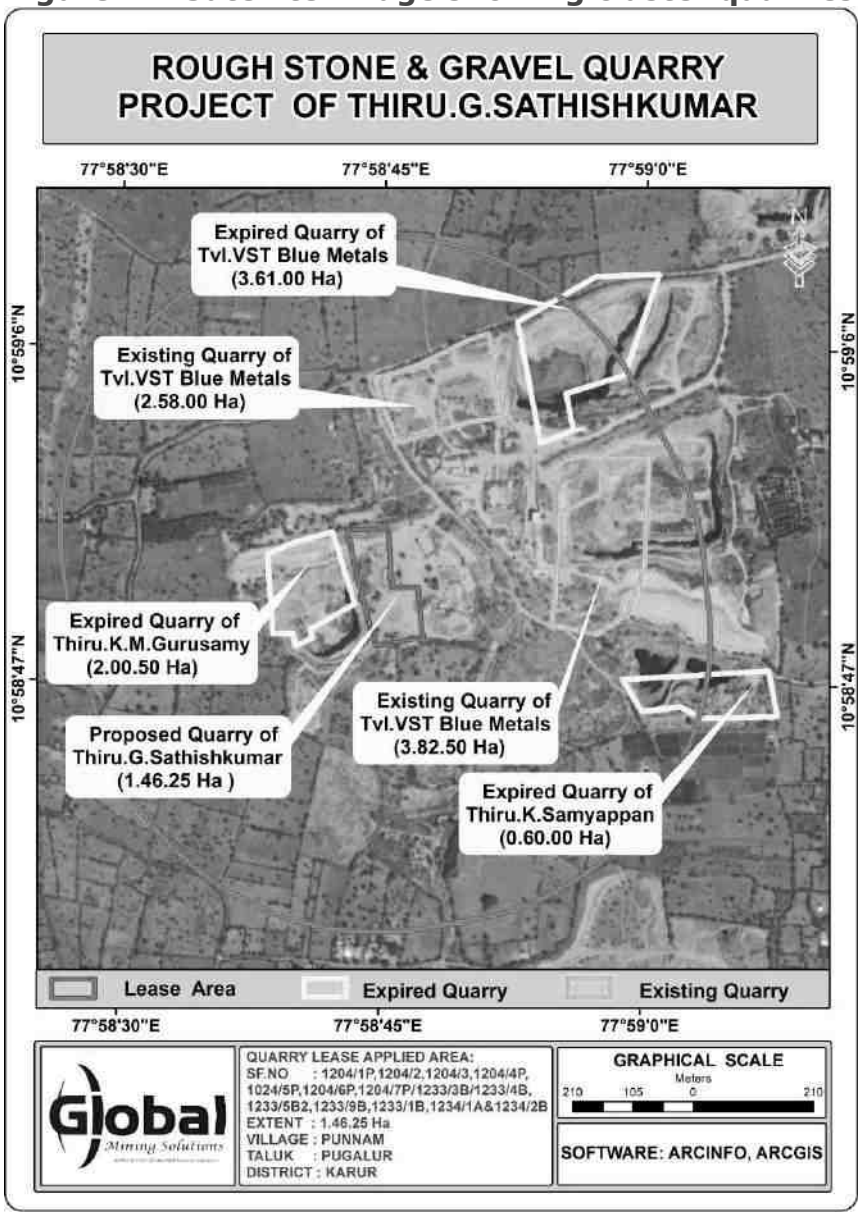
S.No	Name of the Quarry Owner	S.F. Nos, Taluk, Village & Extent (Ha)	Lease Period	Remarks
		Abandoned Quarry		
1.	K.Samyappan, S/o.Karuppana Gounder, Pungodai, Kulathupalayam, Vettamangalam, Karur District	1076/2 (P),Pugalur (T), Punnam (V),0.60.00 Ha	03.04.2007 to 02.04.2012	Abandoned Rough stone & Gravel Quarry

2.	K.M.Gurusamy, S/o.Marappan,2/90, Iyyanur, Punnam (Post), Aravakurichi Taluk, Karur District	1232/11 (P), 1232/1 (P), 1232/3, 1232/4 (P), 1232/5 (P), 1232/6 (P), 1232/7 (P), 1232/8 (P), 1232/9 (P), 1233/5 (P), 1233/6 (P), 1233/7 (P), 1238/8 (P), 1238/9 (P), Pugalur (T), Punnam (V), 2.00.50 Ha	03.12.2018 to 02.12.2023	Abandoned Rough stone & Gravel Quarry
3.	Tvl.VST Blue Metals, S.F.No.645/B1, Punnamchathiram, Erode Main Road, Aravakurichi Taluk, Karur District	1196/1A, 1196/1B (P), 1197/12A (P), Pugalur (T), Punnam (V), 3.61.0 Ha	23.10.2017 to 22.10.2022 Covid Extension 23.10.2022 to 22.04.2024	Abandoned Rough stone & Gravel Quarry
Existing Quarry				
1.	Tvl.VST Blue Metals, S.F.No.645/B1, Punnamchathiram, Erode Main Road, Aravakurichi Taluk, Karur District	1199/2, 1199/3, 1199/4, 1199/5, 1199/6, 1199/7, 1199/8, 1199/9, 1200/4, 1200/5, 1200/6, 1200/7, 1200/8, 1200/9, 1200/10, 1200/11, 1200/12, 1201 (P), Pugalur (T), Punnam (V), 3.82.50 Ha	15.11.2022 to 14.11.2028	Existing
2	Tvl.VST Blue Metals, S.F.No.645/B1, Punnamchathiram, Erode Main Road, Aravakurichi Taluk,	1197/1 (P), 1197/5, 1197/6, 1197/7, Pugalur (T), Punnam (V), 2.58.00 Ha	08.05.2023 to 07.05.2028	Existing

	Karur District			
Proposed Quarry				
1	G.Sathishkumar S/o.Gurusamy, Door No.2/90, Punnam, Ayyanur, Pugalur Taluk, Karur District	1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B, 1233/4B, 1233/5B2, 1233/9B, 1233/10, 1223/1B, 1234/1A and 1234/2B, Pugalur (T), Punnam (V), 1.46.25 Ha	-	Proposed Quarry
Area of Cluster		**7.86.75 Ha**		

As per EIA notification, 2006 and its subsequent amendments the proposed Thiru. G.Sathishkumar Rough Stone & Gravel Quarry, cluster is falls under Schedule 1(a) Mining of Minerals. It is further classified under Category B1 due to the overall extent of cluster area is 7.86.75 Ha which is >5 Ha. Satellite image of Quarries in Cluster is shown in Fig 1.1.

Figure.1.1 Satellite Image showing cluster quarries



The ToR for preparation of EIA/EMP was approved vide ToR Identification No. TO25B0108TN5958378N, dated 20/06/2025. This report has been prepared in line with the approved TOR for production of maximum excavation of 3,96,055 Ts of Rough stone and 20,952 Ts of Gravel up to the depth of 31m BGL for a period of five years.

1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

The proposed project is for mining of Rough Stone and gravel (under cluster) from the S.F.No. 1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B, 1233/4B, 1233/5B2, 1233/9B, 1233/10, 1223/1B, 1234/1A and 1234/2B over an area of 1.46.25 Ha in Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State. As per EIA notification, 2006 and its subsequent amendments the project comes under Schedule 1 (a) under Category B1 (Lease area >5 to 250 Ha). The proposed project details are given below.

(a) Proposed project details

Sl. No.	Description	Status/Remarks
1.	Sector	Non-coal mining
2.	Category of the project	B1
3.	Proposed mineral	Rough Stone and Gravel quarry
4.	Type of Lease	Fresh Quarry
5.	Extent of the lease	1.46.25 Ha
6.	Proposed depth of mining	31m BGL
7.	Method of mining	Opencast Semi-mechanized.
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years
10.	Mineable reserves (upto 31m BGL) (Quantity in Ts)	3,96,055 Ts of Rough Stone, 20,952 Ts of gravel
11.	Proposed production quantity for first five years (upto 21m BGL)	1,02,785 m3 (282658.75Ts) of Rough Stone, 10,476 m3 (20,952Ts) of gravel
12.	Proposed production quantity for second five years (upto 31m BGL)	113396.25 Ts of Rough Stone

(b) Profile of the project proponent

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

gravel quarry. The proposed land is owned patta land, please refer **Annexure no – 6.**

(c) Project proponent details

Name of the proponent : Thiru. G.Sathishkumar, S/o.Gurusamy
Status of the Proponent : Individual

Address G.Sathishkumar,
S/o.Gurusamy,
Door No.2/90, Punnam, Ayyanur,
Pugalur Taluk,Karur District.
Pin Code– 639136

1.3 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY, REGION:

The proposed quarrying operation Opencast Mechanized method with 5m bench height, 5m bench width and overall bench slope is less than 45°. The quarry operation involves shallow jackhammer drilling, slurry blasting, excavation, loading and transportation.

SIZE AND LOCATION OF THE PROJECT

(a) Size of the project

Table 1.2 Proposed project details

Sl. No.	Feature	Description
1	Type of land	Owned Patta land
2	Extent of lease area	1.46.25 Ha
3	Type of lease	Fresh Quarry
4	Geological Resource	Rough Stone – 13,12,190 Ts Gravel - 29,288 Ts
5	Mineable reserves (upto 31m BGL) (Quantity in Ts)	3,96,055 Ts of Rough Stone, 20,952 Ts of gravel
6	Proposed production quantity for first five years (upto 21m BGL)	1,02,785 m3 (282658.75Ts) of Rough Stone, 10,476 m3 (20,952Ts) of gravel

	Proposed production quantity for second five years (upto 31m BGL)	113396.25 Ts of Rough Stone
7	Proposed depth of mining	31m BGL

(b) Location of the project

The proposed project site is located in Punnam Village, Pugalur Taluk,Karur District, Tamil Nadu State and its Latitude: 10°58'49.10"N to 10°58'56.03"N and Longitude: 77°58'43.36"E to 77°58'47.79"E. with Survey of India Topo Sheet No. 58- F/13.

1.3.1 IMPORTANCE OF THE PROJECT TO THE COUNTRY AND REGION

There is an increasing demand for rough stone in India and other countries. Since the construction industry is rapidly growing now, there is an increasing demand for rough stone. Thus, this project will contribute not only to the demand of Rough Stone, but also provide employment opportunities to the nearby villages.

1.4 SCOPE OF THE STUDY -DETAILS OF REGULATORY SCOPING CARRIED OUT (AS PER TERMS OF REFERENCE):

Any mining project may cause environmental impacts near the project site during its operation. The type and intensity of impacts on various components of the environment may vary depending on the nature of the project, as well as its geographical location. The net impacts of the project can be quantified through Environment Impact Assessment (EIA) studies on Physical, Biological and Socio-economic environment. The EIA studies give a basis for preparing an Environmental Management Plan (EMP) to conserve the environment of the area.

For the purpose of preparing EIA/EMP the SEIAA, Tamil Nadu has issued a Terms of Reference ToR Identification No. TO25B0108TN5958378N, dated 20/06/2025 in accordance with the provisions of EIA Notification 2006 and its subsequent amendments. This EIA study includes both Core and Buffer zone i.e., the lease area and 10km radius of the project area respectively. This EIA report prepared based on the data generated from the summer season 2025 (March 2025 to May 2025) and all

individual components of environment are described in detail. An in-depth analysis of available information has been made for working out an effective Environmental Management Plan.

1.4.1 PRESENT STUDY

The Project Proponent has assigned M/s. Global Mining Solutions, Salem for conducting Environment Impact Assessment / Environmental Management Plan (EIA/EMP) for this project. The Environmental Impact Assessment and Environmental Management Plan of this cluster quarry addressing all the environmental related impacts and mitigation measures. The EMP report is based on the data generated from March 2025 to May 2025 by M/s. Shrient Analytical & Research Labs Private Limited, Chennai and the data generated by the FAE of the M/s. Global Mining Solutions, Salem. The study evaluates the prevailing baseline environmental conditions. The objectives of the present study are given below.

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

1.4.2 STATUS OF LITIGATIONS

This is Rough Stone and Gravel Quarry project. There is no litigation/court case pending against this project.

a. Precise Area Communication:

The Project Proponent has obtained Precise Area Communication from the Assistant Director, Department of Geology and Mining, Karur, vide Rc.No.582/Kanimam/2024, dated 26.02.2025. The letter copy enclosed as **Annexure – 2.**

b. Mining Plan Approval Letter:

The project proponent has prepared Mining Plan under rule 19 (1), 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Dept. of Geology & Mining, Karur vide Rc.No.582/Mines/2024 dated 12.03.2025. The approval letter along with approved plan is enclosed as **Annexure – 3.**

c. 500m radius quarry features:

The project proponent has obtained an official letter from Assistant Director, Dept. of Geology & Mining, Karur vide Rc.No.582/Mines/2024 dated 24.03.2025. The letter copy enclosed as **Annexure – 4.**

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

There are no historical places, schools, cemeteries, temples, bird sanctuaries, and wildlife sanctuaries within 300 metres of the proposed project area. In this regard, the project proponent has received an official letter from the Village Administrative Officer, Punnam village, dated 18.03.2025**. The letter copy enclosed as Annexure – 5.**

d. Project Proponent undertaking affidavit:

The project proponent has issued an affidavit under MoEF & CC O.M. No. 3- 50/2017-IA.III(Pt.) dated 30.05.2018 to comply with the direction of the Hon'ble SC made on 2.08.2017 in W.P. (C) 114 of 2014 in matter of Common Cause vs Union of India & Ors. The Affidavit copy is enclosed as **Annexure – 12.**

e. Land document of the proposed lease area:

It is patta land in the name of applicant (Thiru.G.Sathishkumar), vide patta no. 9952, 9920, 7060, the copy of the patta, Adangal and A-Register are enclosed as **Annexure-6.**

CHAPTER 2
PROJECT DESCRIPTION

2.1 TYPE OF PROJECT

The type of the project is Opencast Mechanized Mining to excavate Rough Stone and Gravel within the proposed Mine Lease area with drilling, blasting, loading and transportation. This project is located at S.F. No. 1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B,1233/4B, 1233/5B2, 1233/9B, 1233/10, 1223/1B, 1234/1A and 1234/2B over an extent of 1.46.25 Ha., in Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the project comes under Schedule 1 (a) under Category B1 (Lease area >5 to 250 Ha), considering cluster situation and the total cluster area is 7.86.75 Ha. The details of mines located in the cluster area is certified by Assistant Director, Dept. of Geology & Mining, Karur vide Rc.No. 582/Mines/2024 dated 24.03.2025.

Table 2.1 500m Radius Cluster Mines Details

S.No	Name of the Quarry Owner	S.F. Nos, Taluk, Village & Extent (Ha)	Lease Period	Remarks
		Abandoned Quarry		
1.	K.Samyappan, S/o.Karuppana Gounder, Pungodai, Kulathupalayam, Vettamangalam, Karur District	1076/2 (P),Pugalur (T), Punnam (V),0.60.00 Ha	03.04.2007 to 02.04.2012	Abandoned Rough stone & Gravel Quarry
2.	K.M.Gurusamy, S/o.Marappan,2/90, Iyyanur, Punnam (Post), Aravakurichi Taluk,	1232/11 (P), 1232/1 (P), 1232/3, 1232/4 (P), 1232/5 (P), 1232/6 (P), 1232/7 (P), 1232/8 (P), 1232/9 (P), 1233/5 (P), 1233/6 (P),	03.12.2018 to 02.12.2023	Abandoned Rough stone & Gravel Quarry

	Karur District	1233/7 (P), 1238/8 (P), 1238/9 (P), Pugalur (T), Punnam (V), 2.00.50 Ha		
3.	Tvl.VST Blue Metals, S.F.No.645/B1, Punnamchathiram, Erode Main Road, Aravakurichi Taluk, Karur District	1196/1A, 1196/1B (P), 1197/12A (P), Pugalur (T), Punnam (V), 3.61.0 Ha	23.10.2017 to 22.10.2022 Covid Extension 23.10.2022 to 22.04.2024	Abandoned Rough stone & Gravel Quarry
Existing Quarry				
1.	Tvl.VST Blue Metals, S.F.No.645/B1, Punnamchathiram, Erode Main Road, Aravakurichi Taluk, Karur District	1199/2, 1199/3, 1199/4, 1199/5, 1199/6, 1199/7, 1199/8, 1199/9, 1200/4, 1200/5, 1200/6, 1200/7, 1200/8, 1200/9, 1200/10, 1200/11, 1200/12, 1201 (P), Pugalur (T), Punnam (V), 3.82.50 Ha	15.11.2022 to 14.11.2028	Existing
2	Tvl.VST Blue Metals, S.F.No.645/B1, Punnamchathiram, Erode Main Road, Aravakurichi Taluk, Karur District	1197/1 (P), 1197/5, 1197/6, 1197/7, Pugalur (T), Punnam (V), 2.58.00 Ha	08.05.2023 to 07.05.2028	Existing
Proposed Quarry				
1	G.Sathishkumar S/o.Gurusamy, Door No.2/90, Punnam, Ayyanur, Pugalur Taluk, Karur District	1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B, 1233/4B, 1233/5B2, 1233/9B,	-	Proposed Quarry

		1233/10, 1223/1B, 1234/1A and 1234/2B, Pugalur (T), Punnam (V), 1.46.25 Ha		
Area of Cluster		**7.86.75 Ha**		

The total lease within the 500m radius (Proposed + Existing) (1 nos + 2 nos) works out to 7.86.75 Ha, including this lease area. As such, the cluster situation TOR is applicable for this project.

2.2 NEED FOR THE PROJECT

The need of the proposed Rough Stone quarry of Thiru.G.Sathiskumar.

Table 2.1a Salient features of the project

S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	Proposed
3	Category	B1
4	Nature of mineral	Fresh Quarry
5	Life of the mine	10 years
6	Geological reserves (upto 31m BGL)	13,12,190 Ts of Rough stone, 29,288 Ts of gravel
	Mineable reserves (upto 31m BGL)	3,96,055 Ts of Rough Stone, 20,952 Ts of gravel
	Proposed production quantity for first five years (upto 21m BGL)	282658.75 Ts of Rough Stone, 20,952 Ts of gravel
	Proposed production quantity for second five years (upto 31m BGL)	113396.25 Ts of Rough Stone
7	Waste generation and management	Nil
8	Bench height and width	Proposed bench height & width is 5.0m respectively and number of proposed benches is 7+1 Nos.
9	Ultimate pit depth	31 m BGL

10	End use	The excavated Rough Stone and Gravel is used for construction industries for Government & Public sector projects besides catering domestic housing and infrastructure projects in and around the district.

2.3 LOCATION (MAPS SHOWING GENERAL LOCATION, SPECIFIC LOCATION, PROJECT BOUNDARY & PROJECT SITE LAYOUT):

This project site is located in Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State. The Nearest Railway line is Erode 6.4km on (NE). The National Highway NH-81) Karur – Coimbatore 2.4km (S). The State Highway (SH-84) Karur – Kodumudi 3.1km (NE). The general location is given in Figure 2.1. The specific location is given in Figure 2.2.

FIGURE 2.1 LOCATION MAP

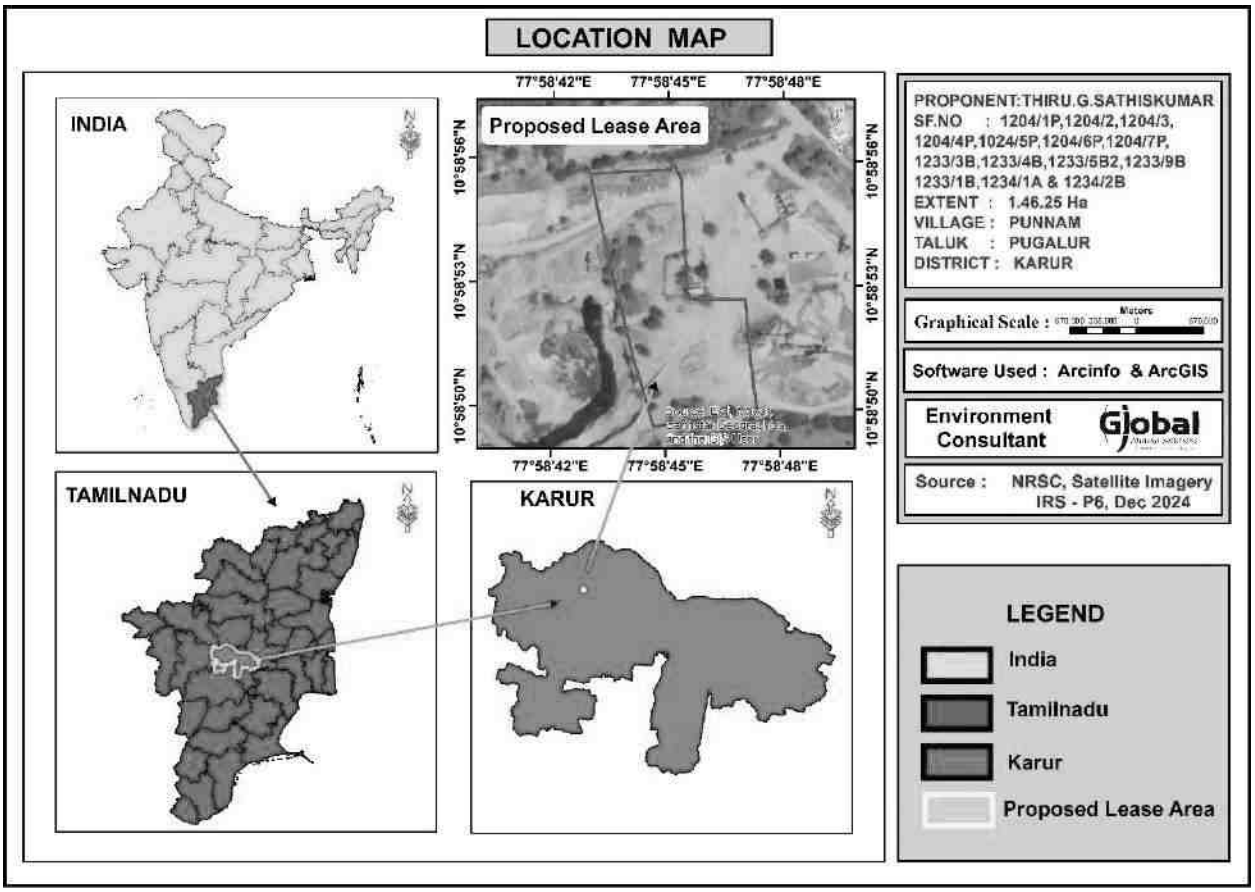


Table 2.2 Co-Ordinates of the Project Site

Corners	Co- ordinates		Distance between the corners
	Latitude	Longitude	
1	10° 58' 49.10"N	77° 58' 45.08"E	1-2 = 56.4m
2	10° 58' 50.79"N	77° 58' 44.56"E	2-3 = 84.0m
3	10° 58' 53.44"N	77° 58' 43.86"E	3-4 = 68.2m
4	10° 58' 55.61"N	77° 58' 43.36"E	4-5 = 63.6m
5	10° 58' 55.73"N	77° 58' 45.49"E	5-6 = 9.2m
6	10° 58' 56.03"N	77° 58' 45.46"E	6-7 = 14.2m
7	10° 58' 55.48"N	77° 58' 45.75"E	7-8 = 61.2m
8	10° 58' 53.49"N	77° 58' 45.87"E	8-9 = 33.4m
9	10° 58' 52.41"N	77° 58' 45.97"E	9-10 = 28.0m
10	10° 58' 52.41"N	77° 58' 46.89"E	10-11 = 17.2m
11	10° 58' 52.40"N	77° 58' 47.46"E	11-12 = 30.8m
12	10° 58' 51.40"N	77° 58' 47.54"E	12-13 = 33.4m
13	10° 58' 50.32"N	77° 58' 47.67"E	13-14 = 26.0m
14	10° 58' 49.58"N	77° 58' 47.79"E	14-15 = 17.4m
15	10° 58' 49.49"N	77° 58' 47.21"E	15-16 = 23.6m
16	10° 58' 49.32"N	77° 58' 46.45"E	16-1 = 42.2m

FIGURE 2.2 GOOGLE IMAGE SHOWING PROJECT SITE

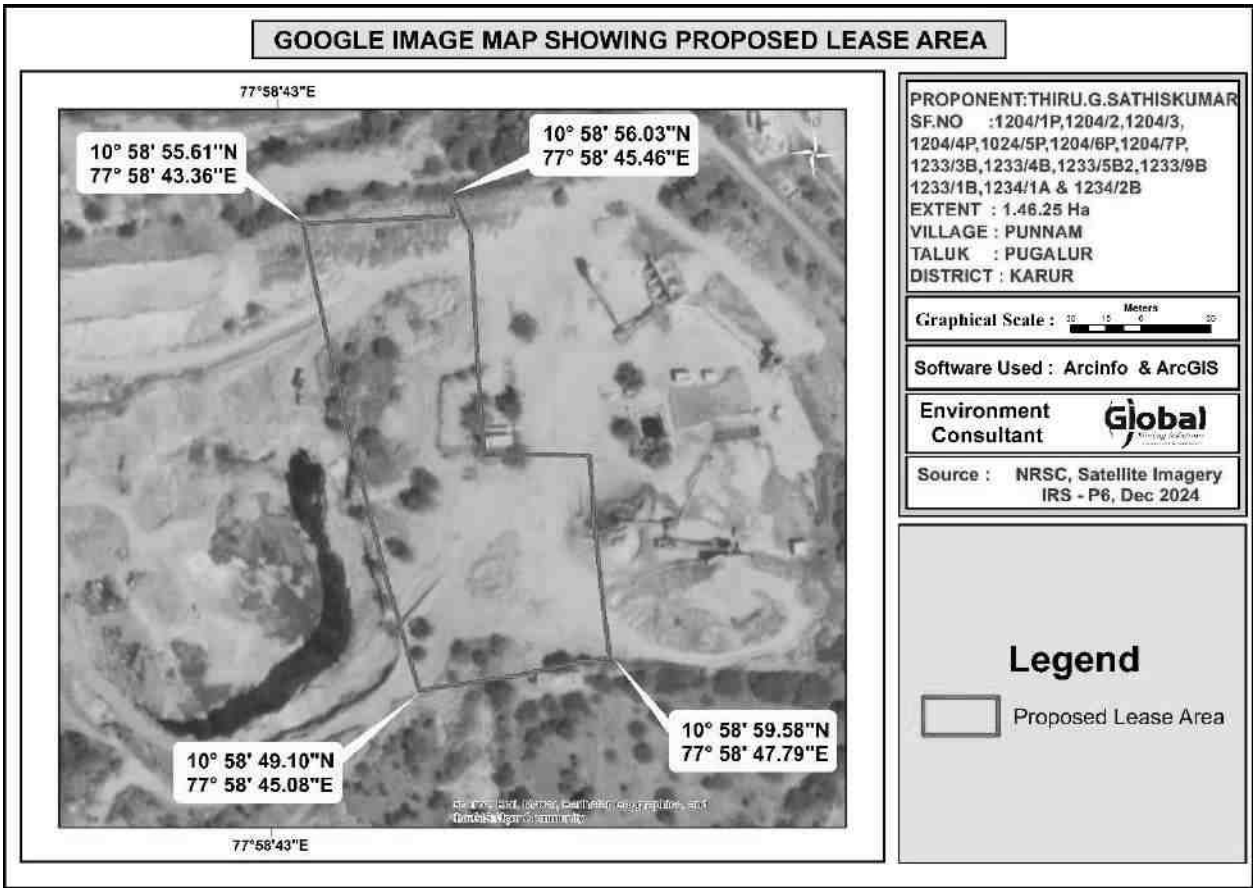
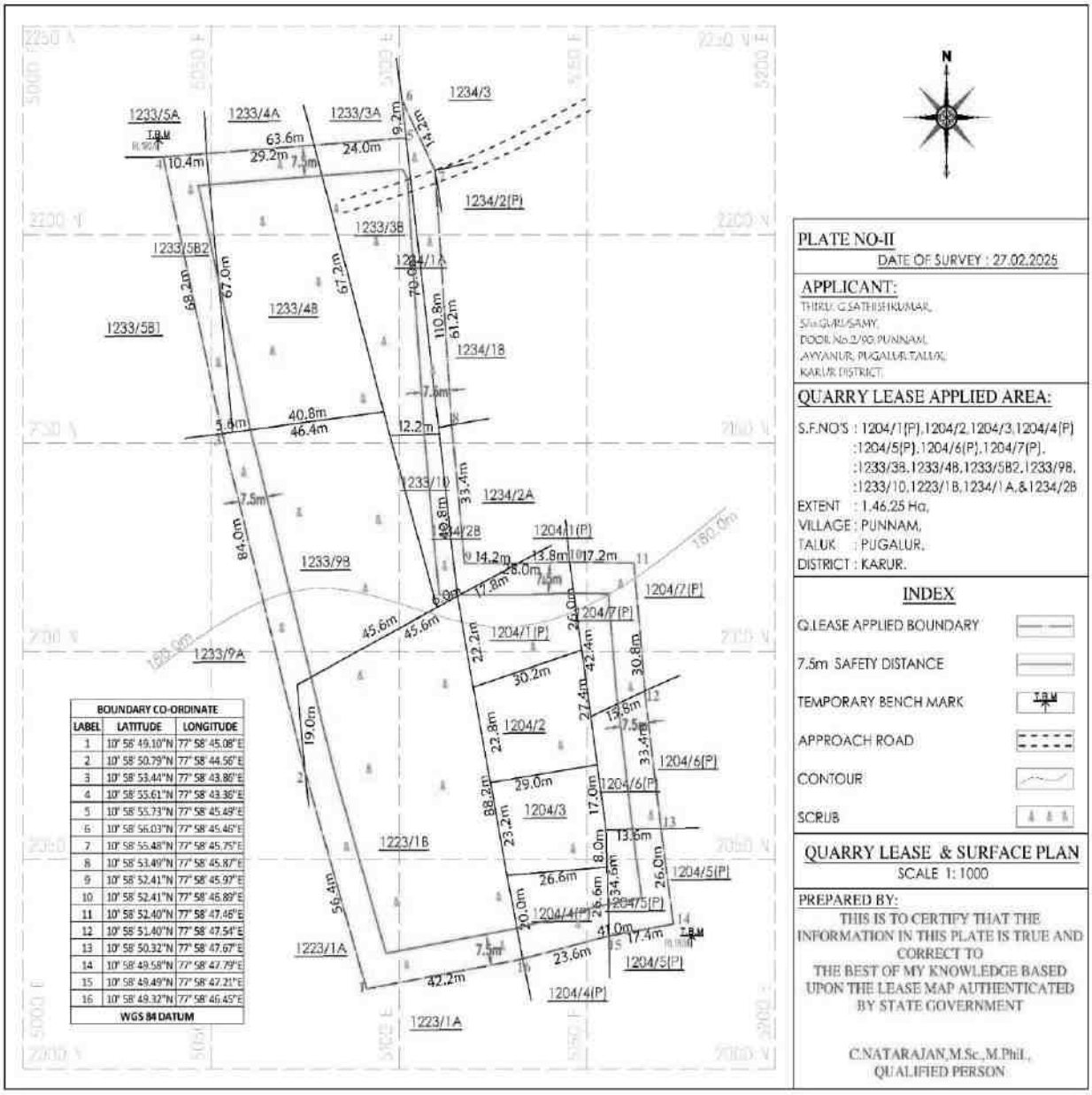


FIGURE 2.3 SURFACE PLAN OF THE PROJECT AREA



BOUNDARY CO-ORDINATE		
LABEL	LATITUDE	LONGITUDE
1	10° 58' 49.10"N	77° 58' 45.08"E
2	10° 58' 50.79"N	77° 58' 44.56"E
3	10° 58' 53.44"N	77° 58' 43.80"E
4	10° 58' 55.61"N	77° 58' 43.36"E
5	10° 58' 55.73"N	77° 58' 45.49"E
6	10° 58' 56.03"N	77° 58' 45.46"E
7	10° 58' 55.48"N	77° 58' 45.75"E
8	10° 58' 53.49"N	77° 58' 45.87"E
9	10° 58' 52.41"N	77° 58' 45.97"E
10	10° 58' 52.41"N	77° 58' 46.89"E
11	10° 58' 52.40"N	77° 58' 47.46"E
12	10° 58' 51.40"N	77° 58' 47.54"E
13	10° 58' 50.32"N	77° 58' 47.67"E
14	10° 58' 49.58"N	77° 58' 47.79"E
15	10° 58' 49.49"N	77° 58' 47.21"E
16	10° 58' 49.32"N	77° 58' 46.45"E
WGS 84 DATUM		

PLATE NO-II

DATE OF SURVEY : 27.02.2025

APPLICANT:

THIRU. G.SATHISHKUMAR,
S/o.GURUSAMY,
DOOR No.2/90, PUNNAM,
AYYANUR, PUGALUR TALUK,
KARUR DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NO'S : 1204/1(P),1204/2,1204/3,1204/4(P)
:1204/5(P),1204/6(P),1204/7(P),
:1233/3B,1233/4B,1233/5B2,1233/9B,
:1233/10,1223/1B,1234/1A,&1234/2B
EXTENT : 1.46.25 Ha,
VILLAGE : PUNNAM,
TALUK : PUGALUR,
DISTRICT : KARUR.

INDEX

Q.LEASE APPLIED BOUNDARY
7.5m SAFETY DISTANCE
TEMPORARY BENCH MARK
APPROACH ROAD
CONTOUR
SCRUB

QUARRY LEASE & SURFACE PLAN

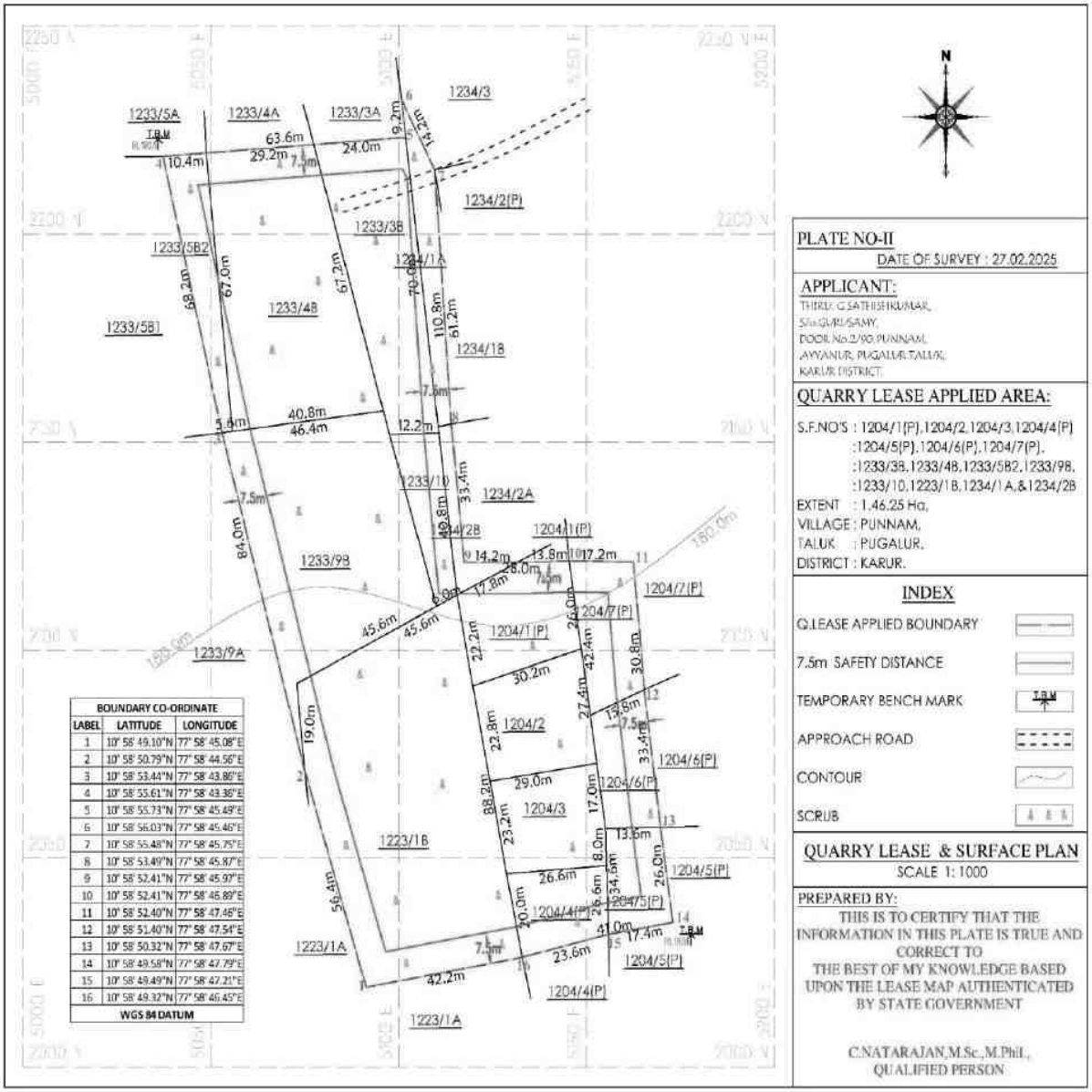
SCALE 1: 1000

PREPARED BY:

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

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

FIGURE - 2.4 GEOLOGY MAP OF PROJECT AREA



2.3.1 LAND USE OF THE PROJECT AREA

The proposed Mine Lease area is patta land and the Land use pattern of the project site is given below Table 2.3.

Table 2.3 Current Land Use Pattern			
S. No.	**Land Use**	**Present Area (Hect)**	**Area in use during the quarrying period (Hect)**
1	Quarrying Pit	Nil	1.10.00
2	Infrastructure	Nil	0.01.00
3	Roads (Temporary)	Nil	0.01.00
4	Green Belt	Nil	0.34.25
5	Unutilized	1.46.25	Nil
	Total	**1.46.25**	**1.46.25**

2.3.2 LAND USE AT MINE CLOSURE STAGE

Table 2.4 Land Use at Mine Closure Stage		
S. No.	**Land Use**	**Area in use during the quarrying period (Hect)**
1	Area left for water body	1.10.00
2	Green Belt	0.34.25
3	Remaining area	0.02.0
Total		**1.46.25**

2.3.3 SALIENT FEATURES OF THE LEASE AREA

Sr.No	Salient Features	Description
1	Nearest Roadway	• There is an existing road from the area leads to Pavithram – Pullaiyampalayam village road on 100m (E) • The Nearest Railway line is Karur - Erode 6.4km on (NE) • National Highway (NH-81) Karur – Coimbatore 2.4km (S) • The State Highway (SH-84) Karur – Kodumudi 3.1km (NE)
2	Nearest Village	Velayuthampalayam Village – 310m - South
3	Nearest Railway station	Karur – 11.5 Km – E
4	Nearest Airport	Salem 88.5km (N)

Figure 2.5 Topo Map showing existing site features

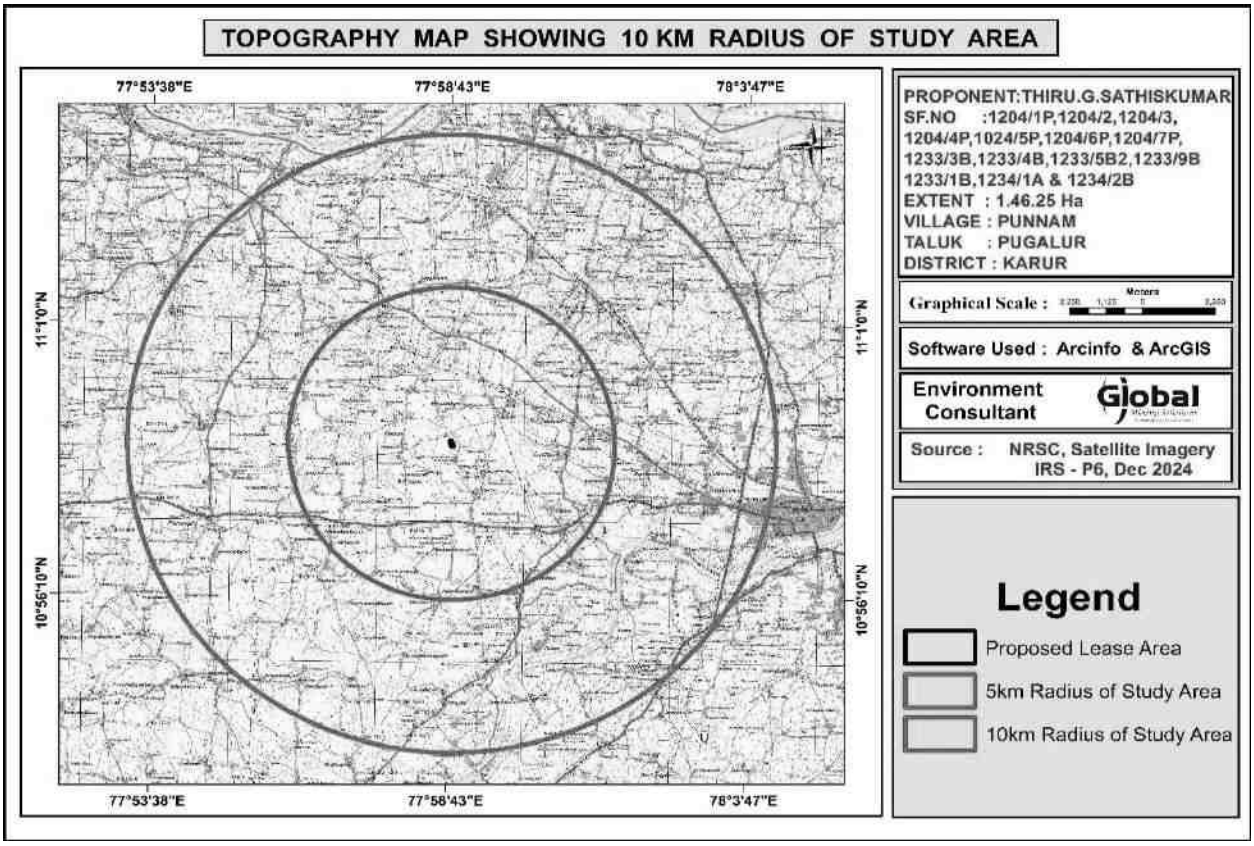


FIGURE 2.6 PROJECT SITE PHOTOGRAPHS

2.4 SIZE OR MAGNITUDE OF OPERATION(INCL.ASSOCIATED ACTIVITIES REQUIRED BY OR FOR THE PROJECT):

The proposed production is rough stone 2,82,658.75 Ts and 20,952 Ts Gravel by Opencast Semi-Mechanized mining method. Available Geological Resources of Rough stone 13,12,190 Ts and Gravel and 29,288 Ts. Cost of the project is Rs. 98.885 Lakh including land cost. Capital cost for EMP is Rs. 7.05 lakhs and recurring cost for the EMP is Rs. 23.56 Lakh/Annum.

2.4.1 STATUS OF STATUTORY CLEARANCES, PERMISSIONS, NO OBJECTION CERTIFICATES, CONSENTS:

The mining project will be implemented after getting all the Statutory Clearances, Permissions, No Objection Certificates, consents etc. which are required/necessary for this project under various Acts, Rules and Regulations is as given in table below:

Table - 2.5 Status of Statutory Clearances, Permissions, NOC, Consents

S.No	Particular	Status
1	Mining Plan Approval Status	The project proponent has prepared mining plan under rule 19(1) 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Dept. of Geology & Mining, Karur, vide Rc.No.582/Mines/2024, dated 13.03.2025.
2	Environment Clearance Status	ToR Letter Received vide file no TO25B0108TN5958378N, dated 20/06/2025.
3	Grant of Consent to Establish (CTE)	After 30 days from grant of EC (Duration as per TNPCB)
4	Grant of Consent to Operate (CTO)	After 30 days from grant of EC (Duration as per TNPCB)

2.5 PROPOSED SCHEDULE FOR APPROVAL & IMPLEMENTATION

Proposed schedule for approval of the proposed mining project is given as under:

Table - 2.6 Proposed Schedule for Approval

S.N	Activity Description	Oct 2025	Nov 2025	Dec 2025	Jan 2026
1	Submission of Final EIA/EMP Report to SEIAA-TN				
2	Consideration for EC by SEAC				
3	Recommendation of SEAC to SEIAA				
4	Grant of EC by SEIAA				

Proposed schedule has been prepared as per EIA Notification, 2006

Note: Application was submitted to Parivesh Portal on 03.04.2025, ToR was granted on 20.06.2025. Baseline data Collection during Summer Season (March to May 2025). After obtaining EC from SEIAA-TN, CTE and CTO under section 21 of the Air (Prevention and Control Act) 1981 and section 25/26 Water (Prevention and Control of Pollution Act) 1974 will be obtained from Tamil Nadu State Pollution Control Board (TNPCB).

2.5.1 IMPLEMENTATION

Implementation of the proposed mining project will be done in accordance with the existing Acts and Rules applicable on mining operations as well as in accordance with any Act/Rule/Guidelines issued by Central or State Government from time to time and as per Mining Plan and Progressive Mine Closure Plan approved by Assistant Director, Dept. of Geology & Mining, Karur, vide Rc.No. 582/Mines/2024 dated 12.03.2025.

2.6 TECHNOLOGY & PROCESS DESCRIPTION

2.6.1 BASIC REQUIREMENTS FOR THE PROJECT

The project requirements such as water, power, man-power, fuel, machinery with source of supply is described in the sections below.

2.6.2 WATER REQUIREMENTS

In the proposed mines water will be mainly used for domestic purpose, dust suppression & plantation. Total water requirement for the project is 4.0 KLD which will be sourced from outside agencies. Negligible sewage of 1.0 KLD will be generated, for which a septic tank with soak pit will be set up. The water balance diagram is given below.

FIG 2.7 WATER BALANCE DIAGRAM

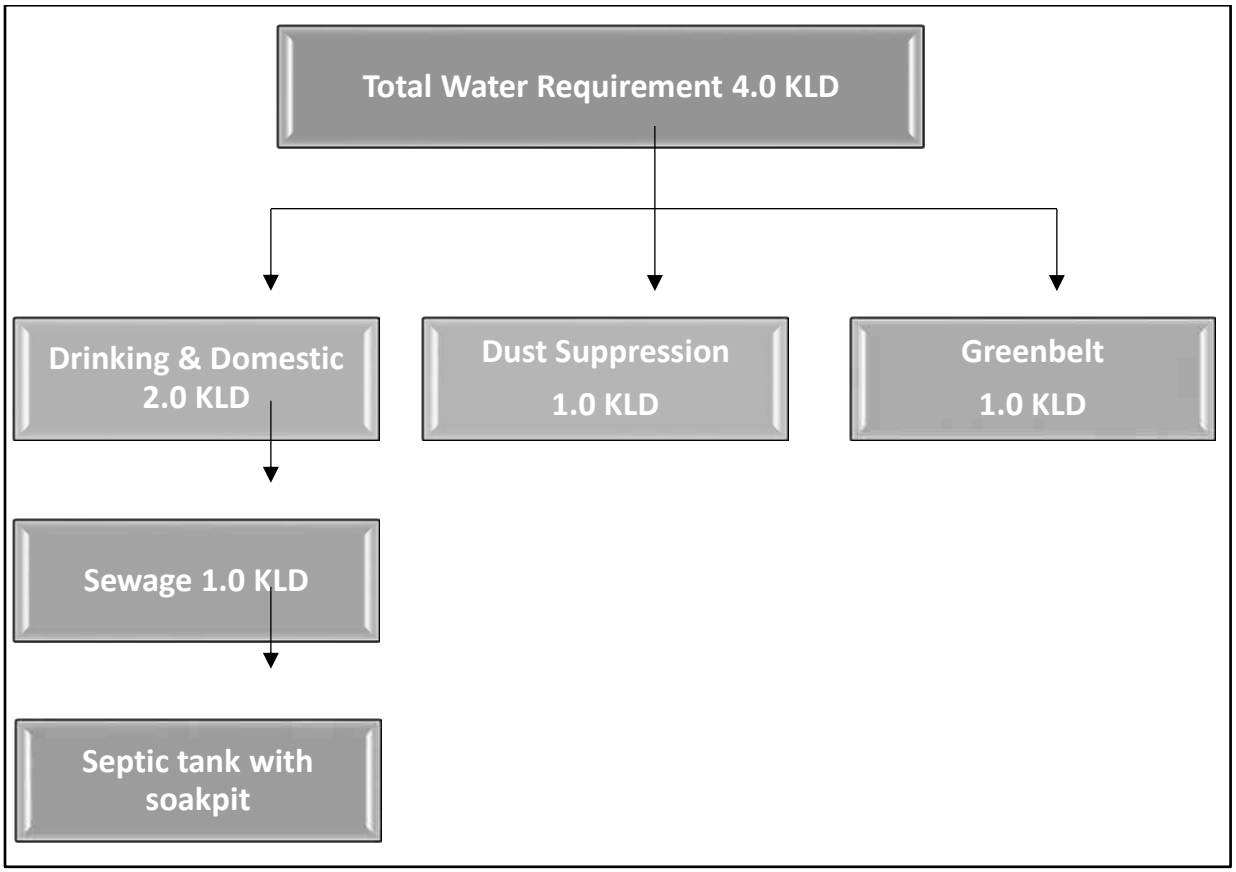


Table - 2.7 Water Requirement

S. No	Particular	Water Requirement (KLD)
1	Dust suppression	1.0
2	Drinking/Domestic	2.0
3	Greenbelt/Plantation	1.0
Total		4.0

2.6.3 POWER REQUIREMENT

Total Fuel requirement is 1,16,962 Litres for entire life of the project. Power will be used only in the office building

2.6.4 MAN POWER REQUIREMENT

Total Manpower requirement will be 23 persons which out of which 11 persons (Mines manager, Foreman, Mining Mate, etc.,) and other are drivers and workman's categories. Beside this, 12 workmen will be drivers and workmen. Preference will be given to the locals as per their eligibility.

S.No	Description	Employment potential
1	Mines Manager	1 No.
2	Foreman / Mate	2 Nos.
3	Operator	4 Nos.
4	Mechanic	1 No.
5	Driver	3 Nos.
6	Labours	12 Nos
	Total	**23 Nos**

2.6.5 EXTENT OF MECHANIZATION

Table 2.8 Machineries involved in the project

S.No.	Particulars	capacity	Motive Power	Nos
1.	Jack hammer	32mm dia	Compressed air	2
2.	Compressor	1 psi	Diesel drive	1
3.	Excavator with Bucket and Rock Breaker	0.90 m^3	Diesel drive	1
4.	Tippers	5/10 Ts	Diesel drive	3

Source: Approved Mining Plan

Note: The mining equipment's of the above capacities are adequate for total material handling requirements for the proposed production of Rough stone and Gravel in the ML area.

2.6.6 GEOLOGY AND TOPOGRAPHY

Topography

The mine lease area of 1.46.25 Ha is covered in the Survey of India Toposheet 58 F/13 and is bounded by Latitude: 10°58'49.10"N to 10°58'56.03"N and Longitude: 77°58'43.36"E to 77°58'47.79"E. No major river is found nearby the lease applied area. Water table is found at a depth of 68 m. Temperature of the area is reported to be 18^0 C to a maximum of 42^0 C during summer. Rainfall of this area is about 800 mm to 900 mm during the both NE & SW monsoons.

The topo map showing the lease area of the proposed quarry is given in Figure 2.1 and Satellite map showing proposed lease area is given in Figure 2.2.

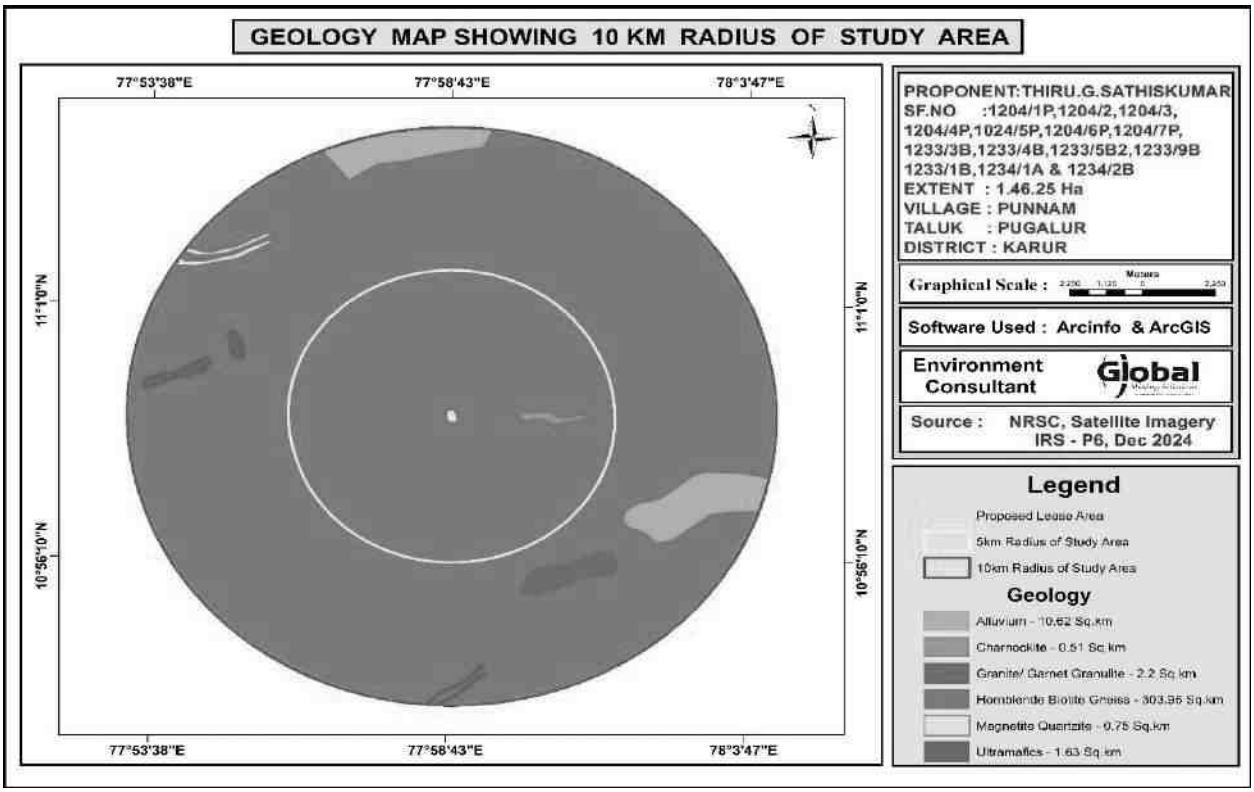
The elevation of the proposed quarry is 180 m (maximum) from MSL. There is no forest land in the mine lease area. The project site is dry land which is not fit for any cropping.

2.6.7 Regional Geology

The Core and 10 Km buffered zone geological features (Figure 2.28) shows that the Karur District forms part of the Archean complex of penisular gneiss. The general rock types of this area are Charnockite, Biotite gneiss, Migmatites and Anorthosites. Karur District is blessed with good reserves of Crystalline Limestone known as "Palayam belt" in Varavanai, Thennilai, Gudalur etc., villages in Kulithalai Taluk and the occurrences of good quality of pegmatite veins constituting with glassy Quartz and potash Feldspar in lensoid patches in Nagampalli and Pungambadi areas in Aravakurichi Taluk. The major mineral such as Limestone, Quartz and Feldspar and Magnesite and Duniteare exploited in Karur District and utilized in the mineral based industries. The Charnockite and Granite Gneiss rocks are found to occur in K.Paramathi, Athur, Thennilai, Punnam, Kuppam, Munnur, Karudayampalayam, Anjur villages in Karur and Aravakurichi Taluk are exploited to produce building materials and road metal (Jelly) and over burden soil appear as gray to reddish in colour called as graval.

Geologically, the entire district can be classified into hard rock and sedimentary formations. Hard rock Formation: - More than 90 percent of the district is underlain by hard rock of Archaean age. The gneissic type of Formation is the major formation among the various types of hard rocks. Charnockite occurs in this district as pockets in Karur and Aravakurichi taluks. Quartzites which are resistant to weathering are also seen as patches in Charnockite and gneissic varieties. Sedimentary Formation: - Recent alluvial deposits such as sand, silt, clay, gravel etc. which are transported sediments by river are found one other side of Cauvery river in Karur, Krishnarayapuram and Kulithalai blocks. These formations are overlying the hard rock *(Source – District Survey Report, Karur).*

FIGURE 2.8 REGIONAL GEOLOGY MAP-10 Km RADIUS FROM PROJECT AREA



2.6.8 Local Geology

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

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

The strike of the Charnockite formation is N80^{0}W –S80^{0}E with dipping towards NE80^0.

The general geological succession of the area is given as under.

	Age		Rock Type
▲	Recent	-	Gravelly soil
|	Unconformity		
|	Archaean		Dolerite dyke, Charnockite
|		-	Peninsular Gneissic complex and Calc Gneiss
|			

2.7 PROJECT DESCRIPTION INCLUDING DRAWING SHOWING PROJECT LAY OUT COMPONENTS OF PROJECT ETC., SCHEMATIC REPRESENTATION OF THE FEASIBILITY DRAWING WHICH GIVE INFORMATION IMPORTANT For EIA PURPOSE.

2.7.1 PROCESS DESCRIPTION

PROPOSED METHOD OF MINING

Opencast mechanized method with 5.0 m height 5.0m width and overall, 45^0 slope of the bench. It is proposed to excavate 3,96,055 Ts of Rough Stone and 20,952 Gravel. No wastage is envisaged as the entire material available is Rough Stone and Gravel only.

TIMING

Mining will be done on single shift basis. Timing will be 8 hours from 8 AM to 1 Noon and 2 PM to 5 PM. Lunch time will be provided between 1 Noon and 2 PM. Timing may be variable from season to season depending upon the sunrise and sunset. Weekly one day will be declared as holiday.

BENCH GEOMETRY

Height (max) and Width (max) of the benches will be maintained as 5m each and overall slope angle will be at around 45^0 with the horizontal.

DEVELOPMENT OF MINING FACES

The proposed mining method is Opencast Mechanized mining. Site preparation as such bush cleaning, approach road, office and sanitary facilities will be done after obtaining all the statutory clearances as such Environmental Clearance, Consent to Operate, Lease Deed, etc., Once site is ready will start the quarrying operation and it is anticipated in the month of March 2025.

DRILLING & BLASTING

Drilling will be done up to maximum depth of 31 m BGL (Drilling diameter will be 32 mm). Jackhammer will be used for drilling with water spray. Powder factor of explosives for breaking such hard rock shall be in the order of 6-7 Tonnes per Kg of explosives. Small dia 25 mm slurry explosive is proposed to be used for shattering and heaving effect for removal of Rough Stone & Gravel. The proposed blasting pattern is given as Figure 2.9.

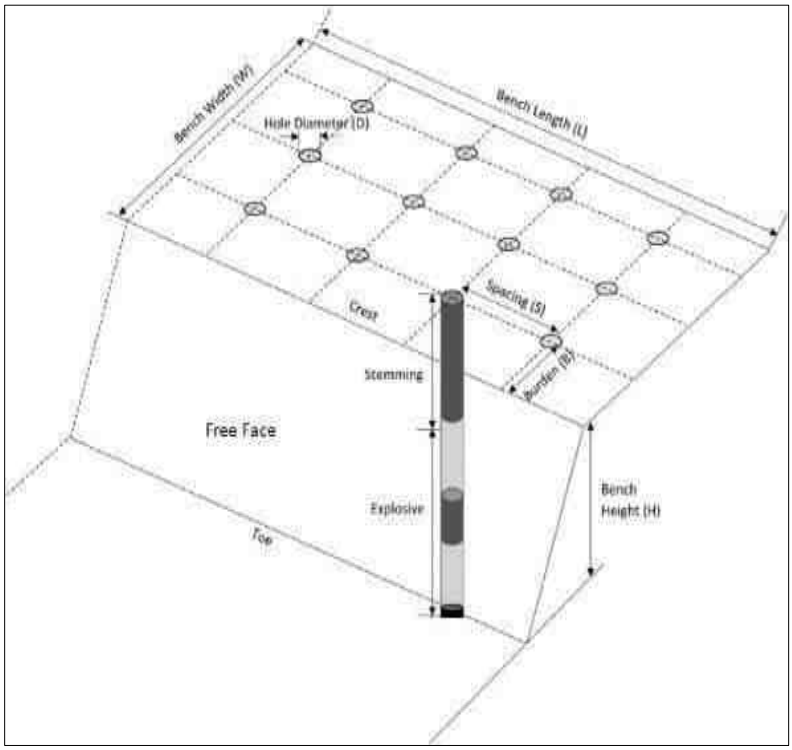


FIGURE 2.9 BLASTING PATTERN

LOADING& TRANSPORTATION OF ROUGH STONE AND GRAVEL

Hydraulic excavator will be used for lifting and loading of the rough stone and Gravel. This excavator in combination with Tippers (10MT) capacity of 3 nos will be used.

FIGURE 2.10 FLOW CHART OF THE QUARRY OPERATION

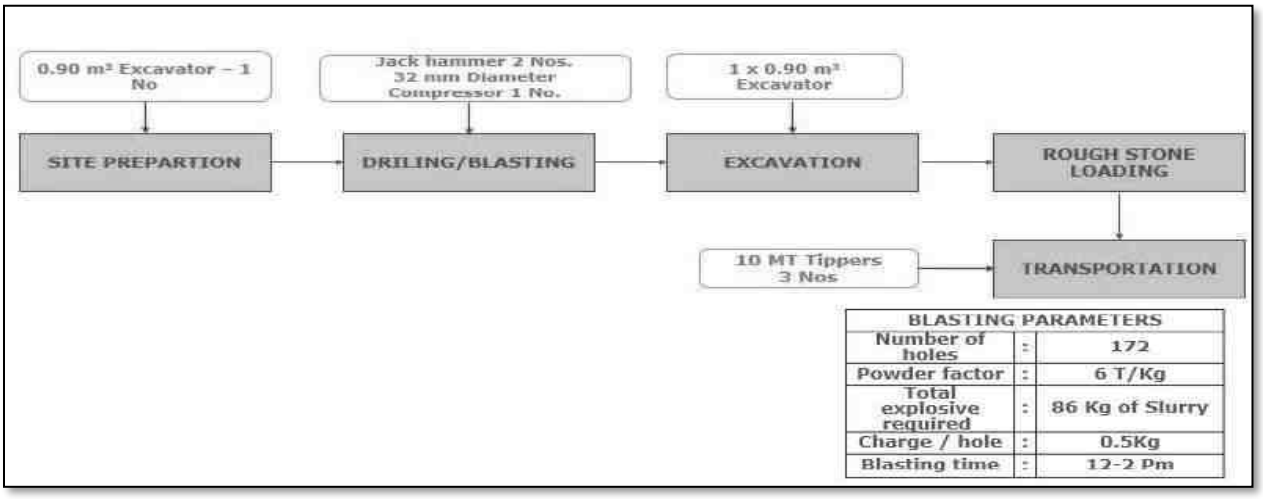


TABLE - 2.9 MINING DETAILS

Sl. No	Description	Details	Remarks
1.	Method of Mining	Opencast method of Semi Mechanized Mining with 5.0 m height 5.0 m width and overall 45^0 slope of the bench. Hydraulic excavator will be used for the excavation and 5/10T tippers will be used for the Hauling.	Excavator - 1 No. Tippers - 3 Nos.
2.	Mineral Use	The excavated Rough Stone will be used for construction industries for Government & Public sector projects besides catering for domestic housing and infrastructure projects in and around the district.	-
3.	Proposed Depth of mining for the	31m (BGL)	The water table in the area is around 58m BGL

	first five years		
4.	Proposed Production quantity	**Proposed production quantity for first five years (upto 21m BGL)** 282658.75 Tsof Rough Stone, 20,952 Ts of gravel **Proposed production quantity for second five years (upto 31m BGL)** 113396.25 Ts of Rough Stone	10 years
5.	Safety Zone	Out of 1.46.25 Ha, 0.34.25 Ha will be maintained as a Safety Zone during mining operations.	Around 342 nos. of saplings will be planted in this safe area.
6.	Water requirement	4 KLD	Procured by the outside water.
7.	Energy requirement	1,16,962 L of HSD (Entire Project Life)	All the equipment will be diesel-operated. No electricity is needed for mining operations.
8.	Manpower	Total manpower	This project will give employment opportunities to 23 people.
9.	Shift	General Shift	8.00 AM – 5.00 PM
10.	Project Cost	Rs. Rs.98.885Lakhs	Including Fixed Asset + Operational & EMP cost
11.	EMP Cost	30.61 Lakhs	5 years
12.	CER Cost	Rs. 3.0 Lakhs.	The amount will be utilized for the development of nearby government schools.

2.7.2 YEAR WISE PRODUCTION & EXCAVATION DETAILS

Year wise Production of Rough stone and Gravel from the area will be upto maximum capacity. The recovery factor is up to 100% hence no waste expected to be generated. All excavated quantity is saleable. The summary of proposed development and production during the mine plan period is given in Table 2.10.

Table 2.10 Summary of production for 5 Years

Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Gravel in m^3	Rough stone in m^3	Bulk Density	Gravel in Ts	Mineable Reserves of Rough stone in Ts
I	XY-AB	I	97	45	1	4365	-	2.00	8730.00	-
		II	96	42	5	-	20160	2.75		55440.00
Total						**4365**	**20160**	-	**8730.00**	**55440.00**
II	XY-AB	I	11	45	1	495	-	2.00	990.00	-
		II	11	42	5		2310	2.75	-	6352.50
	XY-CD	I	52	72	1	3744	-	2.00	7488.00	-
		II	52	69	5		17940	2.75	-	49335.00
Total						**4239**	**20250**	-	**8478.00**	**55687.50**
III	XY-CD	I	26	72	1	1872		2.00	3744.00	-
		II	25	69	5	-	8625	2.75	-	23718.75
		III	41	59	5	-	12095	2.75	-	33261.25
Total						**1872**	**20720**	-	**3744.00**	**56980.00**
IV	XY-CD	III	31	59	5	-	9145	2.75	-	25148.75
	XY-AB	III	72	32	5	-	11520	2.75	-	31680.00
Total						**-**	**20665**	-	**-**	**56828.75**
V	XY-AB	III	30	32	5	-	4800	2.75	-	13200.00
		IV	97	22	5	-	10670	2.75	-	29342.50
		V	92	12	5	-	5520	2.75	-	15180.00
Total						**-**	**20990**	--		**57722.50**
grand Total						**10476**	**102785**		**20952.00**	**282658.75**

2.7.3 CONCEPTUAL PERIOD

During conceptual stage the mined-out area will be converted into water reservoir and safety zone as well as upper benches will be used for plantation at the conceptual

period. It will also serve the purpose as socio economic and corporate social responsibility of the lessee by way of supplying water for irrigation purpose or at will of the local people. This will help in ground water recharging as well. The conceptual plan and section of mine lease area is given in Figure 2.11. Ultimate extent and size of the quarry at the conceptual stage is given below as Table 2.11 and Land Use pattern is given as Table 2.11 The conceptual plan is given as Figure 2.11.

TABLE 2.11 Ultimate Pit Dimension

Pit No.	Length (max) (m)	Width (Avg) (m)	Depth (max) (m)
Ultimate Pit dimension at the end of Mining Plan Period as per approved Mining Plan			
I	186	59	21m BGL
Ultimate Pit dimension at the end of the lease period			
I	186	59	31m BGL

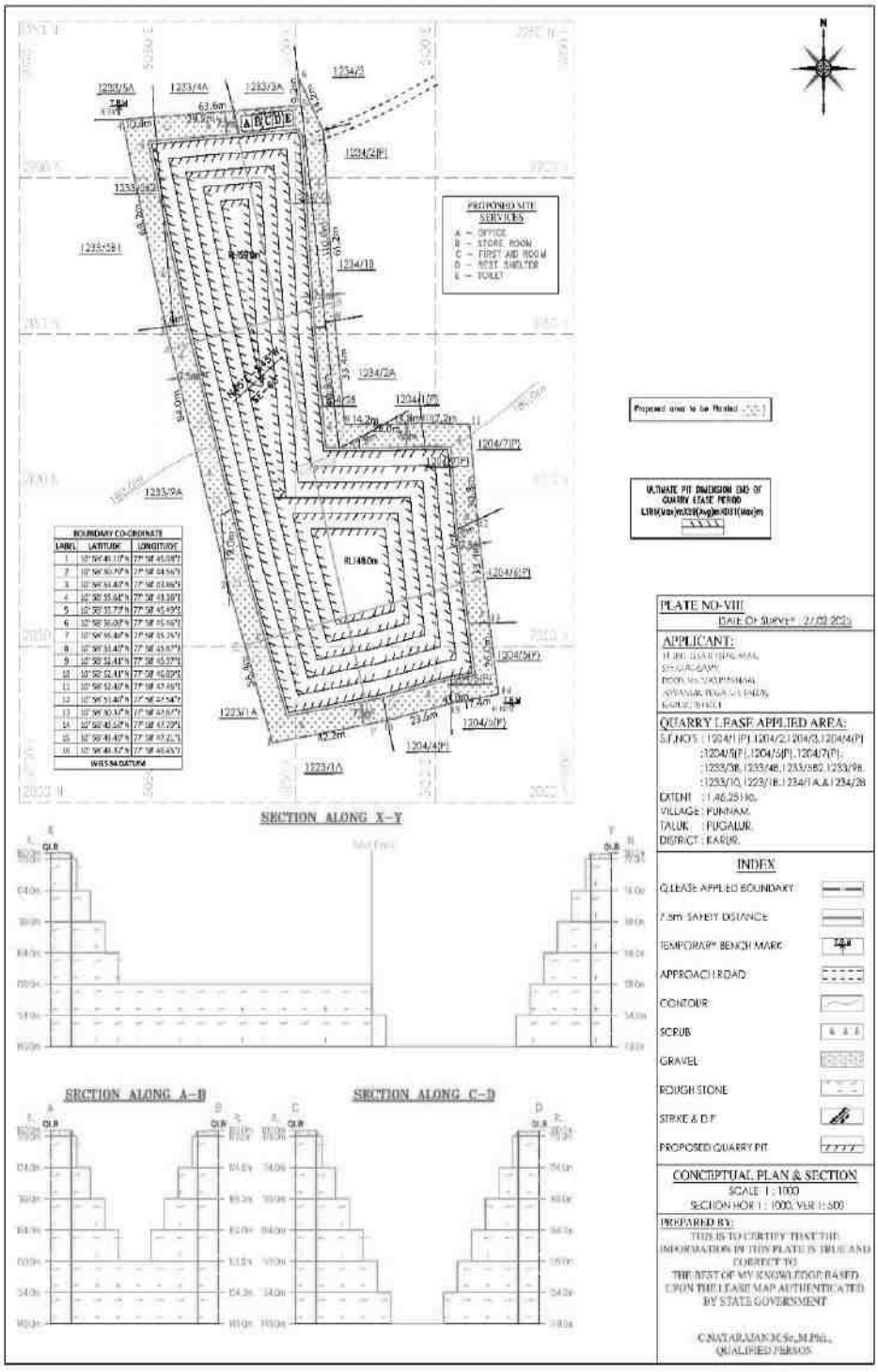


FIGURE 2.11 CONCEPTUAL PLAN

2.8 DESCRIPTION OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT TO MEET ENVIRONMENTAL STANDARDS ENVIRONMENTAL OPERATING CONDITIONS, OR OTHER EIA REQUIREMENTS (AS REQUIRED BY THE SCOPE)

The mitigation measures given in this section are for management of the emissions (particulate or gaseous), Noise pollution, wastewater & surface run-off generated from the mining operations to meet the environmental standards and environmental operating conditions are as follows:

2.8.1 AIR QUALITY MANAGEMENT

Drilling

Drilling machines are proposed to be equipped with wet drilling arrangements and cyclone dust collectors.

Blasting

- Controlled blasting is proposed to be adopted and optimum use of explosive energy will help in reducing the air pollution.
- Secondary blasting will be avoided.
- Rock breakers are proposed to be used for breaking over sized boulders in order to reduce the dust generation.
- Use of good quality of explosives having proper oxygen balance with regular monitoring.
- Ensuring proper stemming after charging of explosives. Proper stemming material will help in minimizing dust throw thereby lowering the spread of dust particles in ambient air pollution.
- Water spray on blasted muck pile before dozing/loading to control dust generation.

Loading & Transportation

- Water spray on haulage roads, access roads, operating benches and proper maintenance of haul roads.
- Development of green belt/plantation around mine boundary, roads and other places will be carried out to control the air pollution.
- Proper maintenance of the HEMMs & transportation vehicles will be done.
- Vehicular emissions will be kept under norms.
- Personal Protective Equipment like dust masks will be provided to all employees. ➢ Regular air quality monitoring will be carried out.
- Compliance of conditions laid by MoEF&CC and TNPCB to minimize environmental impacts

2.8.2 NOISE MANAGEMENT

Drilling

- Drilling with sharp drill bits to achieve optimum drilling performance and to reduce noise generation at source will be adopted.
- Personal protective equipments i.e. earplug in drilling & in high noise area shall be used.

Blasting

- As blasting will be done in accordance with standards prescribed by DGMS for controlled blasting; therefore, ground vibrations will not affect the structures in the vicinity of mine area.
- Explosives charge per hole and per delay will be maintained as per DGMS guidelines.
- Blasting will be carried out by use of non-electric detonators (NONEL) system and the impacts of noise generated due to blasting are momentary.
- Vibrations and noise generated by blasting will be monitored regularly

Transportation

- Adequate silencers in HEMMs will be provided to reduce generation of noise.
- Proper and regular maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- All HEMMs will be equipped with acoustic a/c closed cabins for operators.
- The workers employed at HEMMs will be provided with protective equipment, earmuffs and earplugs as protective measures from the high noise level generated at the mine site and wherever required.
- Development of green belt & plantation around the mining activity and other areas, will be carried out.
- Regular monitoring of noise will be carried out.

2.8.3 WATER MANAGEMENT

Waste Water

Septic Tanks and soak pits will be provided for the disposal of effluent generated from mine office.

Surface Run-off

- Garland drains are proposed to be constructed around the temporary overburden soil dump to channelize the runoff water from dumps and also around the active pit to restrict rainy water from entering in to the working pit.
- Rain water falling directly into the mine pits will be stored and used for plantation & dust suppression.
- Regular monitoring of water quality will be carried out

GREENBELT/ PLANTATION

The mine lease area is devoid of major plantation. Shrubs and bushes are majorly found within the lease area. The proponent has planned to develop green belt in an area of 0.34.25 Ha. Trees like Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc., will be planted around the mine lease area. A total of 340 trees are planned to be planted. Spacing will be 3m x 3m.

2.9 ASSESSMENT OF NEW & TESTED TECHNOLOGY FOR THE RISK OF TECHNOLOGICAL FAILURE:

From the nature and extent of the deposit, the reserves and the quality have been proved with adequate degree of reliability. Considering the type of mineralization, opencast mechanized method is the most feasible method for mining in the proposed mine lease. It is also a matter of fact that the mining machineries are upgrading with time and therefore the project proponent would act fast to adopt more advanced equipment and automation for safe and environment friendly mining technology in the years to come.

*****

CHAPTER 3
DESCRIPTION OF THE ENVIRONMENT

3.1. STUDY AREA, PERIOD COMPONENTS AND METHODALOGY

The project area is located in Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State over an extent of 1.46.25 Ha., The project area is considered as Core zone and the area in the surrounding 10km radius is considered as Buffer Zone. The baseline environmental monitoring was conducted by Shrient Analytical & Research Labs Private Limited, Chennai it is an NABL and MOEF recognized laboratory for various components of environment, viz. Air, Noise, Water, Land was carried out during Summer Season i.e. March 2025 to May 2025 in the study area covering 10 km radial distance from the rough stone and Gravel mine. Other environmental data on flora and fauna, land-use pattern, forest etc. were also generated through field surveys and secondary information collected from different State Govt. departments. Sampling methods and analysis. Socio-economic survey was conducted, through interaction with the people, sarpanch and medical officers by floating questionnaires and collection of information are supported by census data for demographic structures, amenities, and infrastructure availability within the study area. Baseline values for various environmental components are discussed in this Chapter.

ENVIRONMENTAL SETTING OF THE STUDY AREA

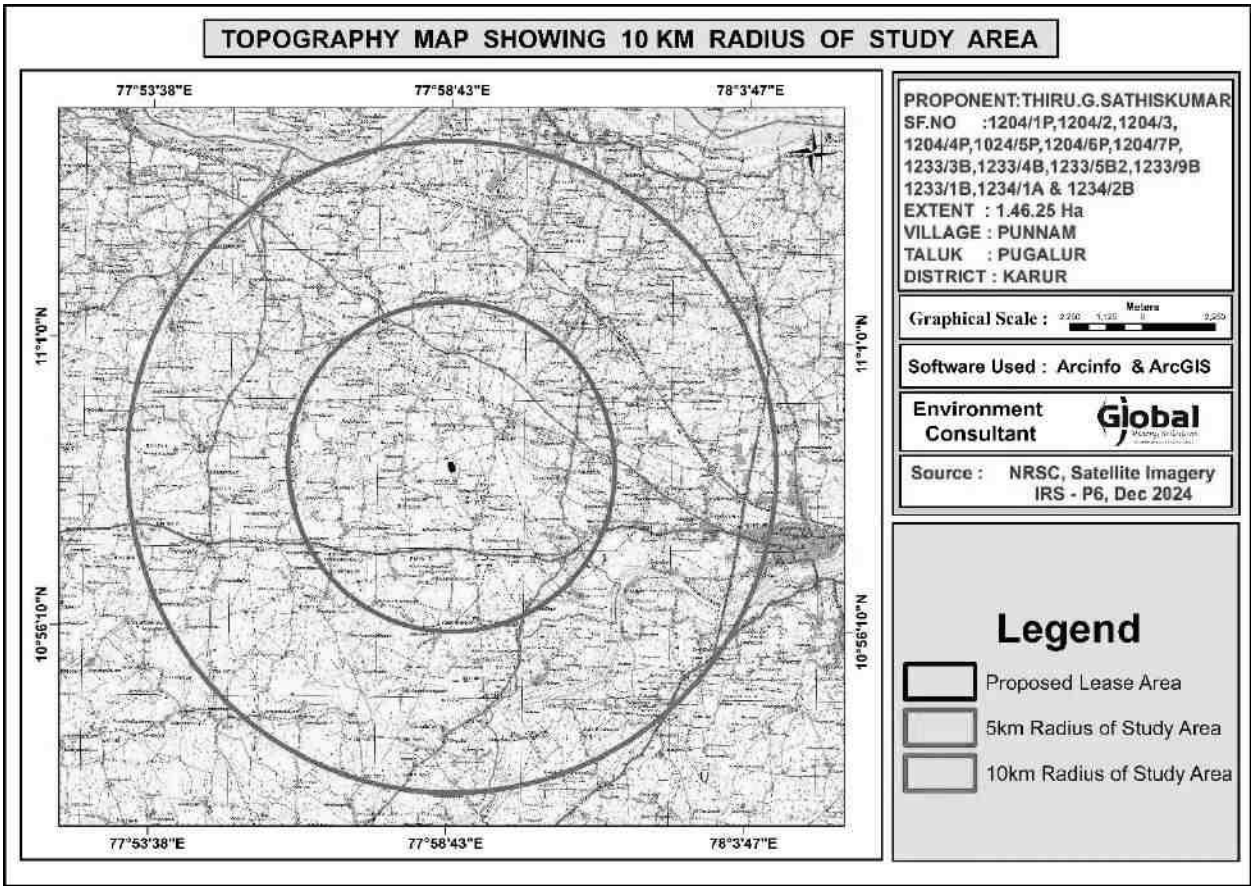
Table 3.1 Description of the lease area

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

<table>
<tr><td>A</td><td>Wetlands, water courses or other water bodies,</td><td><table>
<tr><td>Water bodies</td><td>Distance</td><td>Direction</td></tr>
<tr><td>Uppar Odai</td><td>4.5 Km</td><td>S</td></tr>
<tr><td>Amaravathi River</td><td>6.2 Km</td><td>SE</td></tr>
<tr><td>Kaveri River</td><td>9.3 km</td><td>NW</td></tr>
<tr><td>Noyil River</td><td>9.6 km</td><td>NW</td></tr>
</table></td></tr>
<tr><td>B</td><td>Coastal zone, biospheres,</td><td>Nil within 10km radius</td></tr>
<tr><td>C</td><td>Mountains, forests</td><td>Saruvumalai R F – 25.7km (NE)</td></tr>
<tr><td>3</td><td>Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration</td><td>Nil within 15km radius</td></tr>
<tr><td>4</td><td>Inland, coastal, marine or underground waters</td><td>Nil within 15km radius</td></tr>
<tr><td>5</td><td>State, National boundaries</td><td>Nil within 15km radius</td></tr>
<tr><td>6</td><td>Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas</td><td>Nil within 15km radius</td></tr>
<tr><td>7</td><td>Defense installations</td><td>Nil within 15km radius</td></tr>
<tr><td>8</td><td>Densely populated or built-up area</td><td>Densely Populated Karur, 11.0km (E)</td></tr>
<tr><td>9</td><td>Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)</td><td>Densely Populated Karur, 11.0km (E)</td></tr>
<tr><td>10</td><td>Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)</td><td>Nil</td></tr>
<tr><td>11</td><td>Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)</td><td>Nil</td></tr>
</table>

12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No. The area is not prone to earthquakes, floods, etc.

FIG 3.1 ENVIRONMENTAL SETTING OF THE STUDY AREA



STUDY PERIOD

The relevant information and data (both primary and secondary) were collected in core as well as buffer zone (10 km distance from the mine boundary) during Summer Season (March., to May., 2025) in accordance with the guidelines for preparation of EIA studies in order to assess the impact of the mine site within the 10 Km study area on existing physical, biological and social environment.

3.2 ESTABLISHMENT OF BASELINE FOR VALUED ENVIRONMENTAL COMPONENTS:

Information on the following components/parameters were collected to understand the existing scenario of the core and buffer area:

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

BASELINE DATA COLLECTION

Baseline environment data on various components of the environment in the study area were collected during Summer Season (March., to May., 2025) to assess the present scenario of the area. Details are given in the table given below.

Baseline data collection During Post Monsoon Season (March., to May., 2025)

Sr.No	Environmental Component	Primary data		
		Parameters	Frequency	Monitoring/ Sampling locations
1	Land	Agriculture, Habitation, Industry, Stony waste/ Quarries, Forest area, Plantation/ Vegetation, Open scrub, Water bodies etc.	Once in a Season	10 km radius study area
2	Meteorology	Temperature, Relative Humidity, Wind Speed, Wind Direction.	Hourly	1
3	Air	PM10, PM2.5, SO2, NO2, CO & PAH	twice a week (24 hourly)	6

4	Noise	Equivalent noise levels in Leq in dB (A)	Once in a season (day & night time)	6
5	Water	Parameters as per IS 10500 - 2012	Once in a season	
A	Ground Water & SW	Parameters As per IS 2720/USDA	Once in a season	6 +2(sw)
6	Soil	Parameters As per IS 2720/USDA	Once in a season	6
7	Biological Environment	Flora and Fauna	Once in a season	Study Area
8	Socio-Economic Environment	Socio-Economic Environment	Once in a season	Study Area

INSTRUMENTS USED FOR ENVIRONMENTAL BASELINE DATA COLLECTION

The following instruments were used at the site for environmental baseline data collection work.

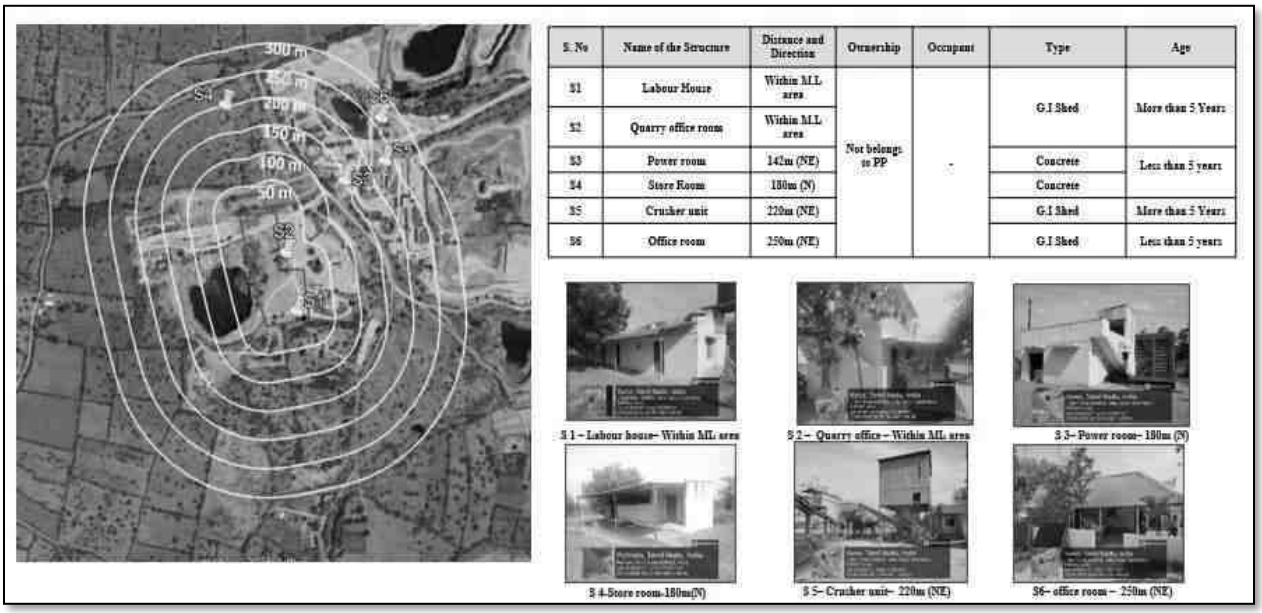
- Respirable Dust Sampler with attachment for gaseous Pollutants, Envirotech APM 460.
- Fine Particulate Matter (FPS) Sampler APM 550
- Sound Level Meter Model Envirotech SLM - 100
- Digital D.O. Meter Model - 831 E (CPCB Kit)
- Weather Monitoring Station Model Enviro WM 271
- Water Level Indicator and
- Global Positioning System (GPS) Apart from collecting samples of air, water, noise and soil from representative sampling points given in proceeding sections, the data on land use, vegetation and agricultural crops were also collected by the field team through interaction with a large number of local inhabitants of the study area and different Government departments/agencies. This provided an excellent opportunity to the members of the field team for obtaining clear scenario of the existing environment of the study area.

3.3. BASE MAP OF ALL ENVIRONMENTAL COMPONENTS

(ENUMERATION OF THE STRUCTURES LOCATED WITHIN 1.0 KM RADIUS FROM THE PROPOSED QUARRY SITE)

A site survey has been conducted to identify and list structures located within a 1 Km radius from the proposed Quarry and are detailed below. There are permanent structures within a 1 km radius from the project site. The PP has obtained a letter from Village Administrative Office (VAO), Punnam stating that there are no structures situated within 300 Km radius.

FIG 3.2 GOOGLE MAP SHOWING 50M INTERVAL FOR 300M RADIUS FROM THE LEASE AREA



S. No	Name of the Structure	Distance and Direction	Ownership	Occupant	Type	Age
S1	Labour House	Within M.L area	Not belongs to PP	-	G.I Shed	More than 5 Years
S2	Quarry office room	Within M.L area				
S3	Power room	142m (NE)			Concrete	Less than 5 years
S4	Store Room	180m (N)			Concrete	
S5	Crusher unit	220m (NE)			G.I Shed	More than 5 Years
S6	Office room	250m (NE)			G.I Shed	Less than 5 years

S 1 – Labour house– Within ML area

S 2 – Quarry office – Within ML area

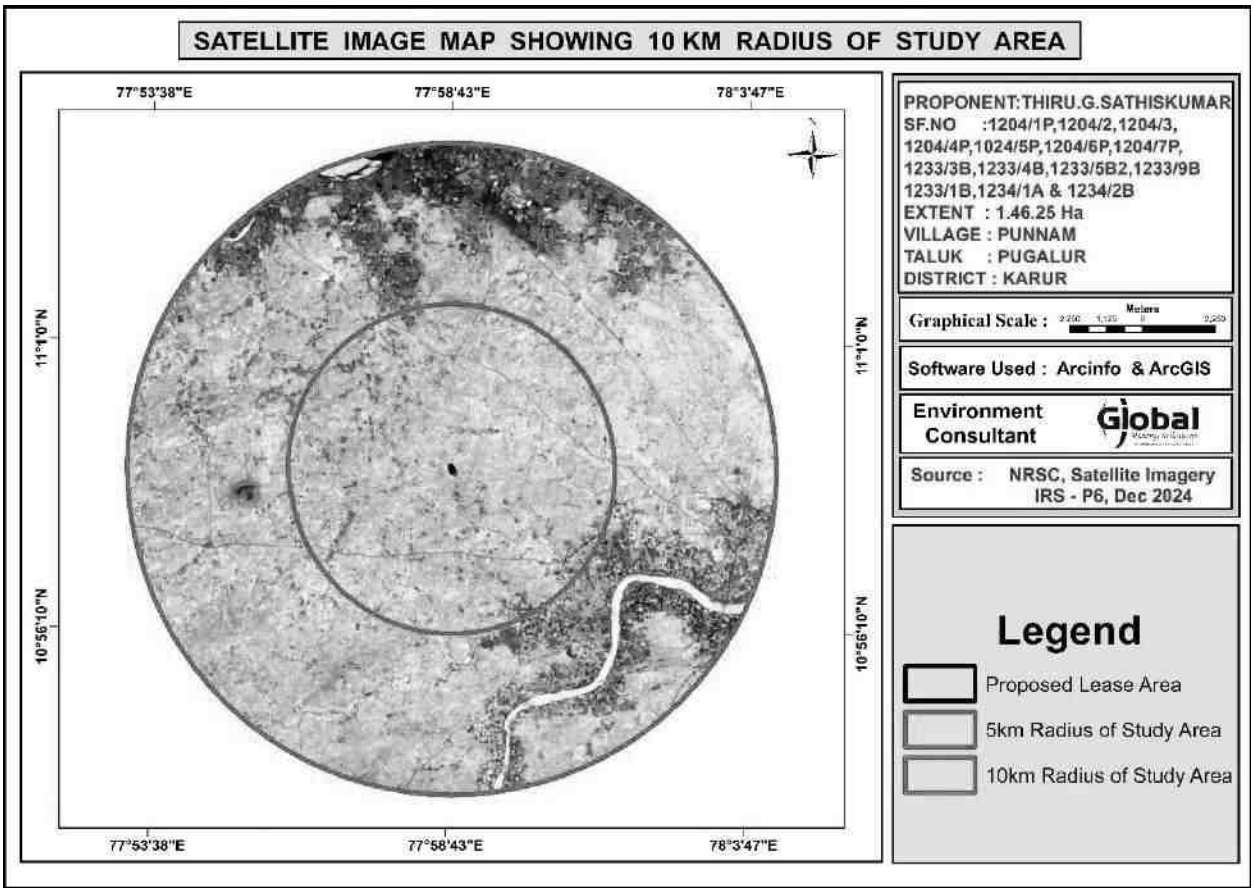
S 3– Power room– 180m (N)

S 4-Store room-180m(N)

S 5– Crusher unit– 220m (NE)

S6– office room – 250m (NE)

FIGURE - 3.2a SATELLITE MAP OF THE PROJECT AREA (10 KM RADIUS)



3.3.1 METEOROLOGICAL ENVIRONMENT

Meteorological conditions prevailing in the buffer zone is given below

Climate

The climatic conditions of Karur are tropical in nature. In winter, there is much less rainfall than in summer. According to Köppen and Geiger, this climate is classified as Aw. The average temperature in Karur is 28.2°C | 82.7 °F. Approximately 724 mm | 28.5 inch of rainfall occurs on a yearly basis. Karur experiences a moderate climate, and the summers are not easy to define.

Rainfall

The Average Annual Rainfall data received from 2019 to 2024 are given below.

Table 3.2 - Rainfall data

Annual Rainfall in mm						Normal rainfall in mm
2019	2020	2021	2022	2023	2024(As on 30.09.2024)	
524.5	1258.4	919.8	722.7	558.5	359.1	655.0

Source: Tamilnadu Water Supply and Drainage Board, Karur District

Relative Humidity

High relative humidity between 46.02% and 73.37% prevail throughout the year. Relative humidity is maximum in the morning and minimum in the evening However, the coastal areas will be comparatively more humid.

Seismic information

The study area falls in Zone II, which comes under the least active zone. The seismic map of India is given as Fig 3.3.

FIG 3.3 SEISMIC MAP OF INDIA

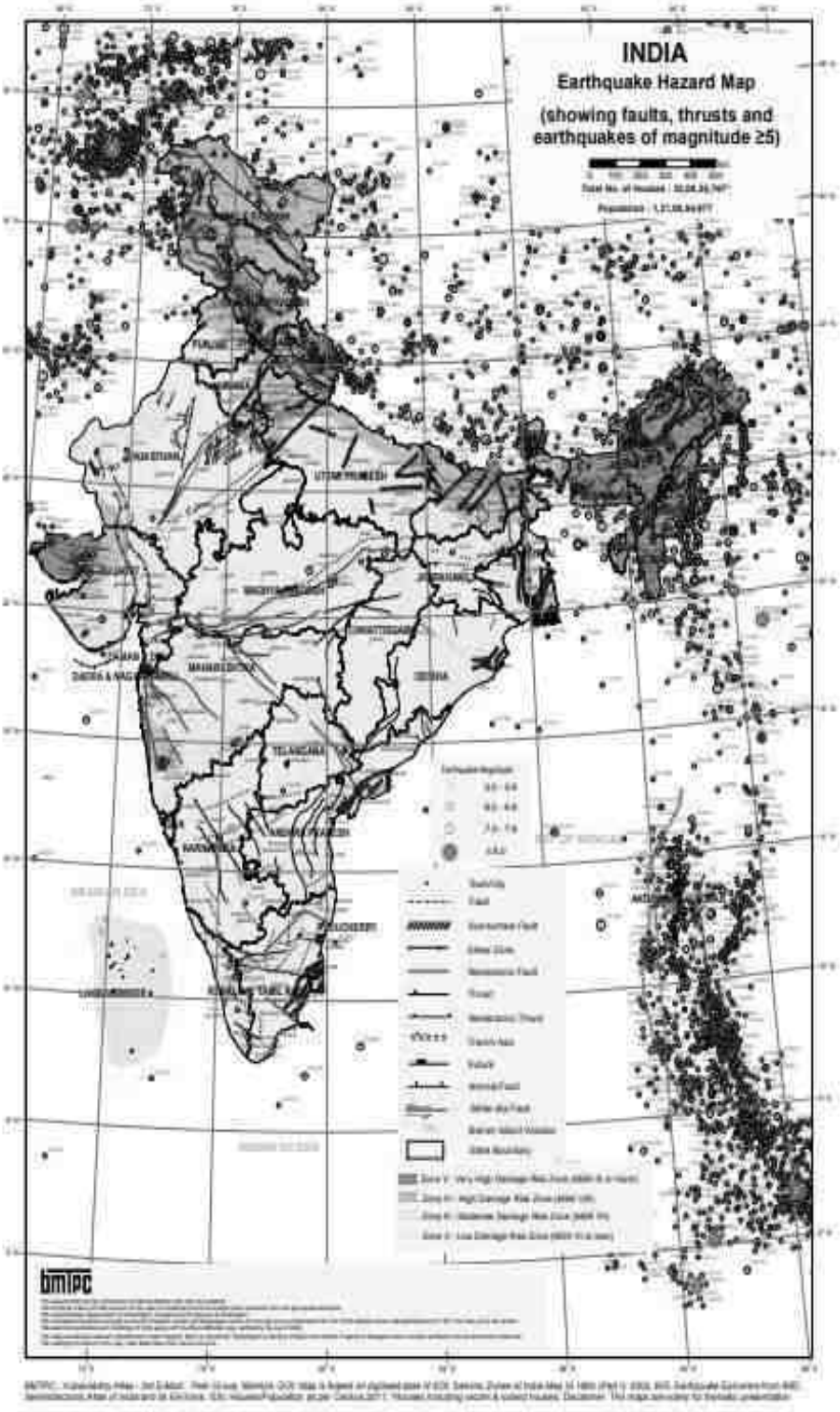
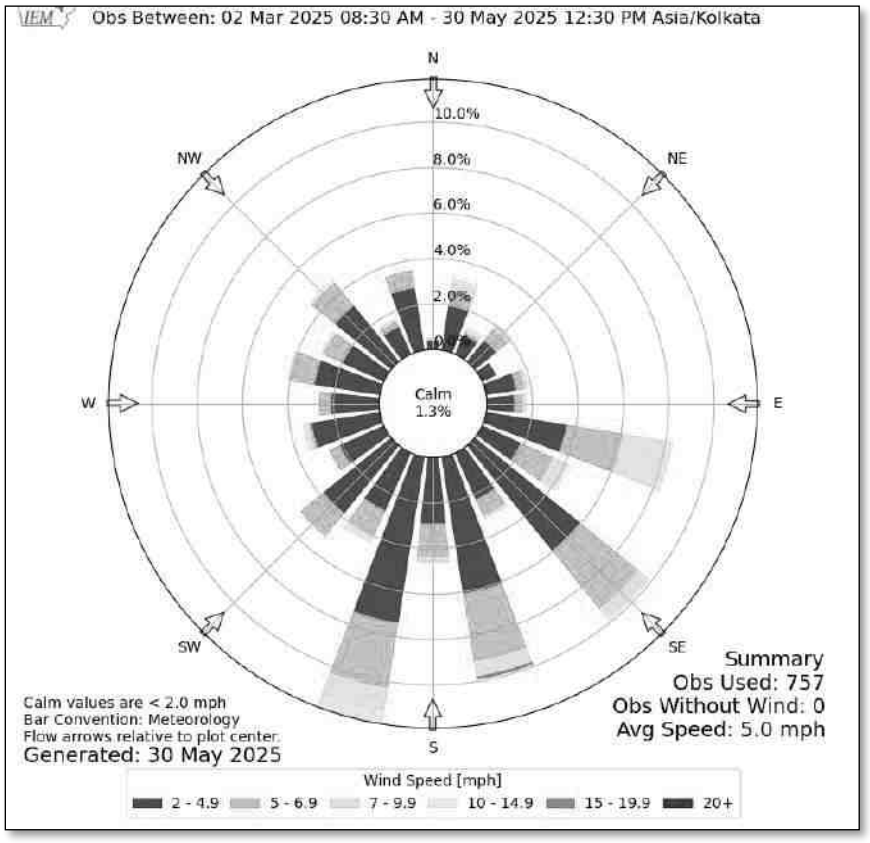


FIG 3.4 WIND ROSE PLOT DURING MARCH TO MAY 2025



Meteorological data of the project area

The meteorological data collected in the study area from March 2025 to May 2025 which includes Temperature, Wind speed, Wind direction and Relative humidity. The predominant wind blows from West. The temperature of the area is reported to be 24.4°C and 27.1°C during summer.

3.3.2 AMBIENT AIR MONITORING DATA

Ambient air quality monitoring has been carried out in 6 locations. One in the core zone and remaining five locations in the buffer zone areas. Monitoring locations have been chosen such that the measurement represents the overall air condition

prevailing in the area. The study area represents mostly rural environment with stone mining quarries & crushers.

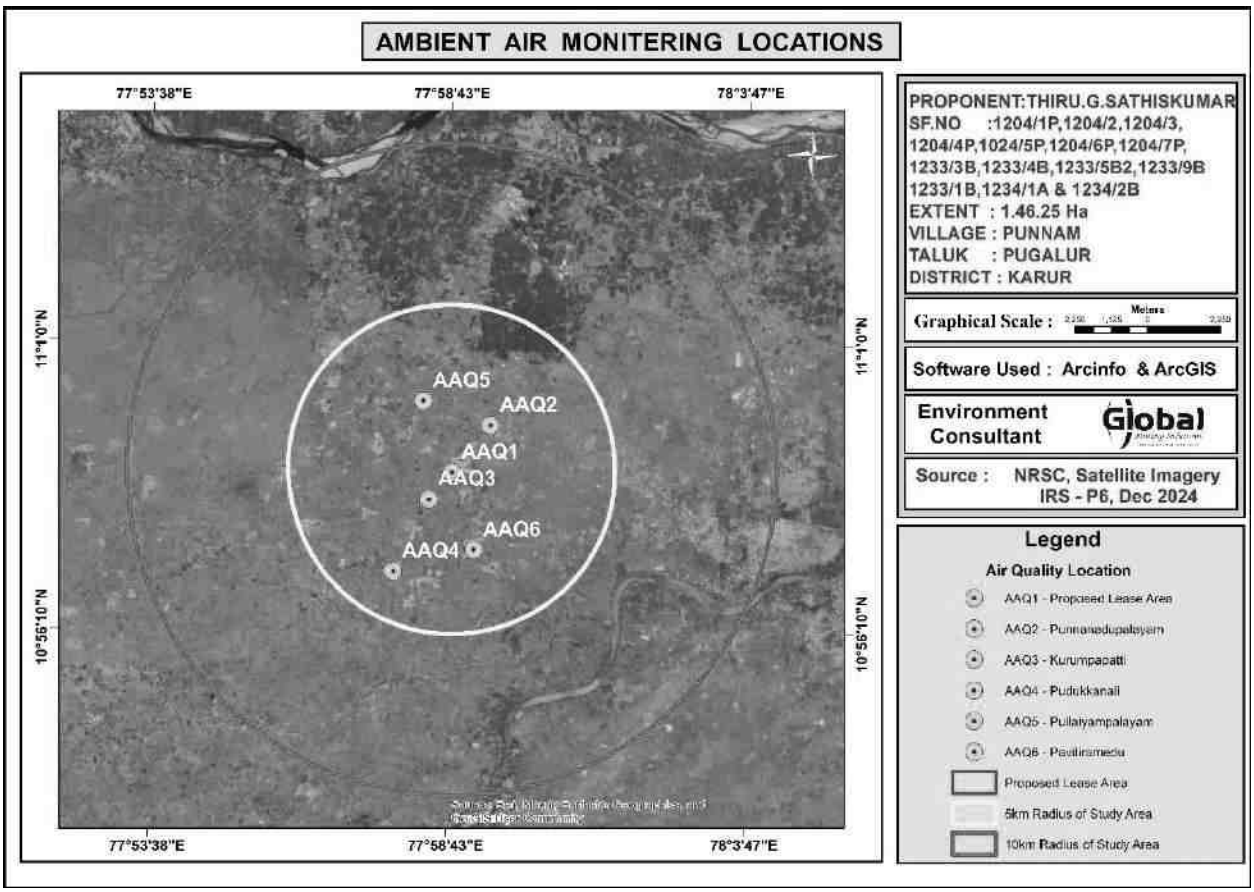
The regional climatologically data, was used as a guideline to know the predominant wind direction during study period. The locations were identified keeping in view predominant wind directions prevailing during study period, sensitive receptors, human settlements, and mining activities around.

The levels of Respirable Particulate Matter (PM10), Fine Particulates (PM2.5), Sulphur Dioxide (SO2) and Oxides of Nitrogen (NOx) were monitored for establishing the baseline status. PM10 were sampled with the help of Respirable Dust Samplers on filter papers and SO2 & NOx were absorbed in the respective absorption media in the impingers attached to RD samplers and analyzed Spectro-photometrically. PM2.5 was monitored with the help of Fine Particulate Samplers. The monitoring locations for ambient air study are given in Table – 3.3 and Figure 3.5 below.

Table 3.3: Details Of Ambient Air Quality Monitoring Locations

S. No.	Station Code	Locations	Distance & Direction	Coordinates
1	AAQ 1	Project site	Core Zone	10°58'49.76"N 77°58'46.19"E
2	AAQ 2	Punnanadupalayam village	1.89 km, NW	10°59'37.39"N 77°59'24.85"E
3	AAQ 3	Near Govt school, Kurumpapatti	1.12 km, SW	10°58'22.40"N 77°58'22.83"E
4	AAQ 4	Pudukkanali village	3.59 km, SW	10°57'9.57"N 77°57'46.78"E
5	AAQ 5	Pullaiyampalayam village	2.44 Km, NW	10°57'9.57"N 77°58'16.38"E
6	AAQ6	Pavitiramedu village	2.46 Km, SE	10°57'31.64"N 77°59'8.98"E

FIG 3.5 BASE MAP OF AMBIENT AIR MONITORING LOCATIONS



The concentrations of various air pollutants at the 6 locations are given below. For all the components in the table, the unit are in μg/m^3.

Table.3.4 Results of Air sampling Analysis in 6 locations

Station ID	Min	Max	Avg.
Particulate matter PM-$_{2.5}$ (μg/m^3)			
AAQ-1	25.4	33.6	29.5
AAQ-2	20.1	25.5	22.8
AAQ-3	20.2	25.5	22.85
AAQ-4	17.6	22.6	20.1
AAQ-5	16.6	23.1	19.85
AAQ-6	21.7	26.0	23.85
CPCB NAAQS 2009 for PM $_{2.5}$ - 60 μg/m^3			
Particulate matter PM-$_{10}$ (μg/m^3)			
AAQ-1	55.1	72.9	64
AAQ-2	42.9	54.3	48.6

Station ID	Min	Max	Avg.
AAQ-3	42.8	54.4	48.6
AAQ-4	38.2	47.4	42.8
AAQ-5	36.1	49.9	43
AAQ-6	46.7	55.9	51.3
CPCB NAAQS 2009 for PM $_{10}$ - 100 µg/m^3			
Sulphur Di-oxide as SO_2 (µg/m^3)			
AAQ-1	4.7	6.5	5.6
AAQ-2	4.3	5.3	4.8
AAQ-3	3.9	5.5	4.7
AAQ-4	4.2	8.8	6.5
AAQ-5	3.4	5.6	4.5
AAQ-6	3.8	5.3	4.5
CPCB NAAQS 2009 for SO_2 – 80 µg/m^3			
Oxide of Nitrogen as NO_2 (µg/m^3)			
AAQ-1	7.7	13.0	10.3
AAQ-2	7.8	10.6	9.2
AAQ-3	7.6	10.8	9.2
AAQ-4	5.4	10.1	7.75
AAQ-5	6.2	8.5	7.35
AAQ-6	7.9	11.9	9.9
CPCB NAAQS 2009 for NO_2 – 80 µg/m^3			

The results are summarized in graph and given as below Fig. 3.6

FIG 3.6 AMBIENT AIR QUALITY DATA A1 - MINE LEASE AREA

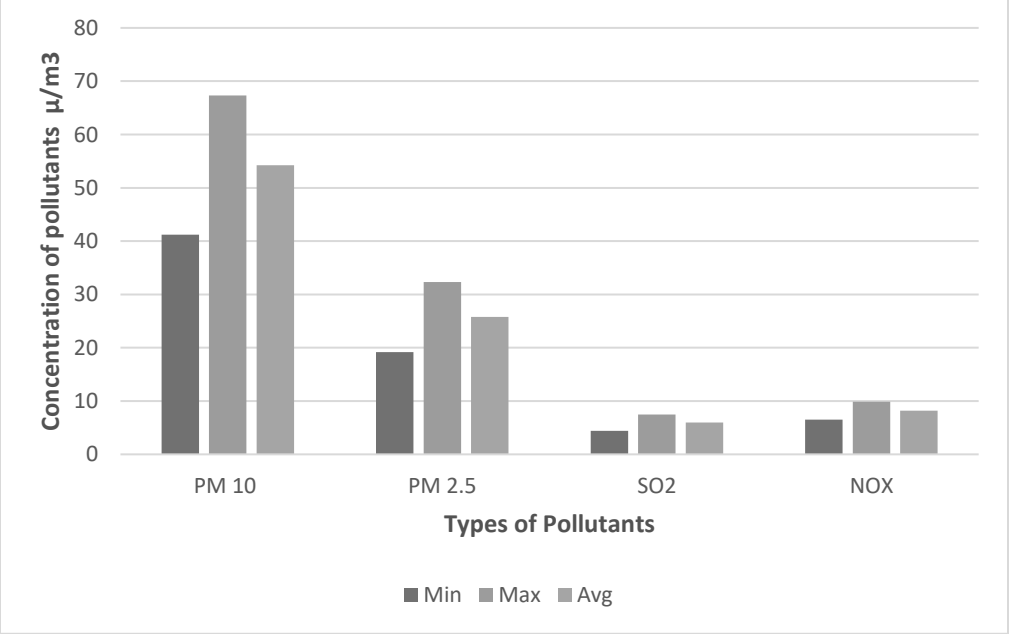


FIG 3.7 AMBIENT AIR QUALITY DATA A2 - PUNNANADUPALAYAM VILLAGE

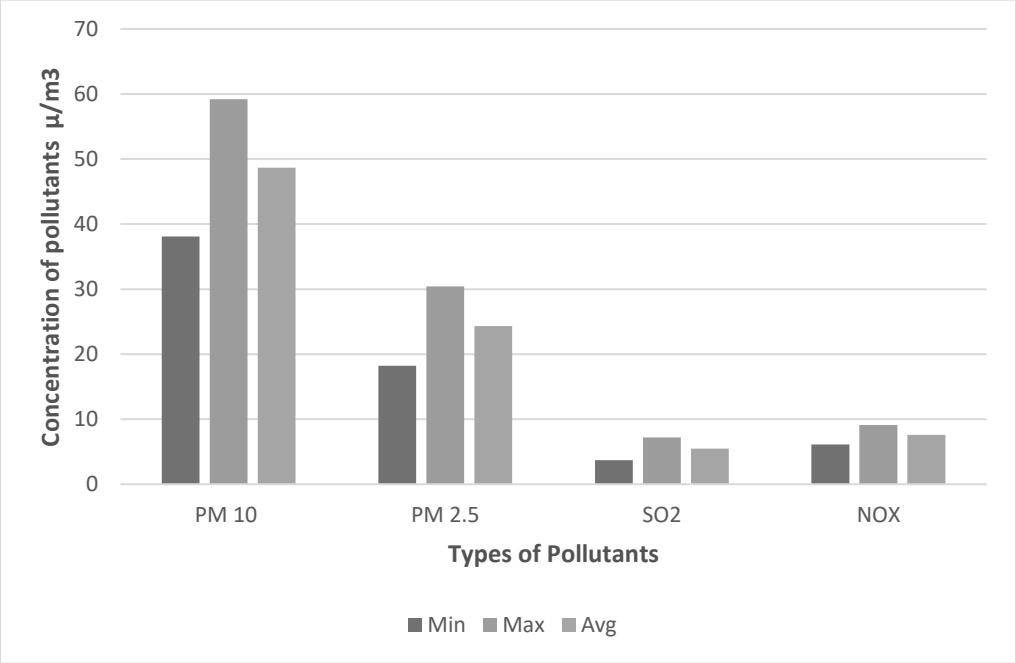


FIG 3.8 AMBIENT AIR QUALITY DATA A3 - NEAR GOVT SCHOOL, KURUMPAPATTI

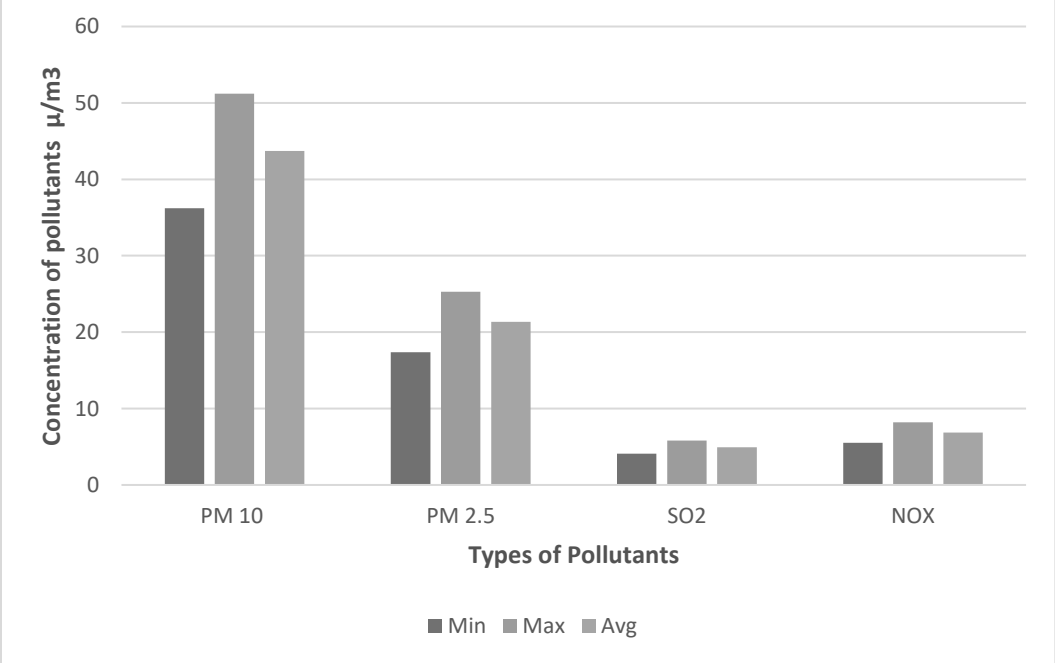


FIG 3.9 AAQ DATA A4 - PUDUKKANALI VILLAGE

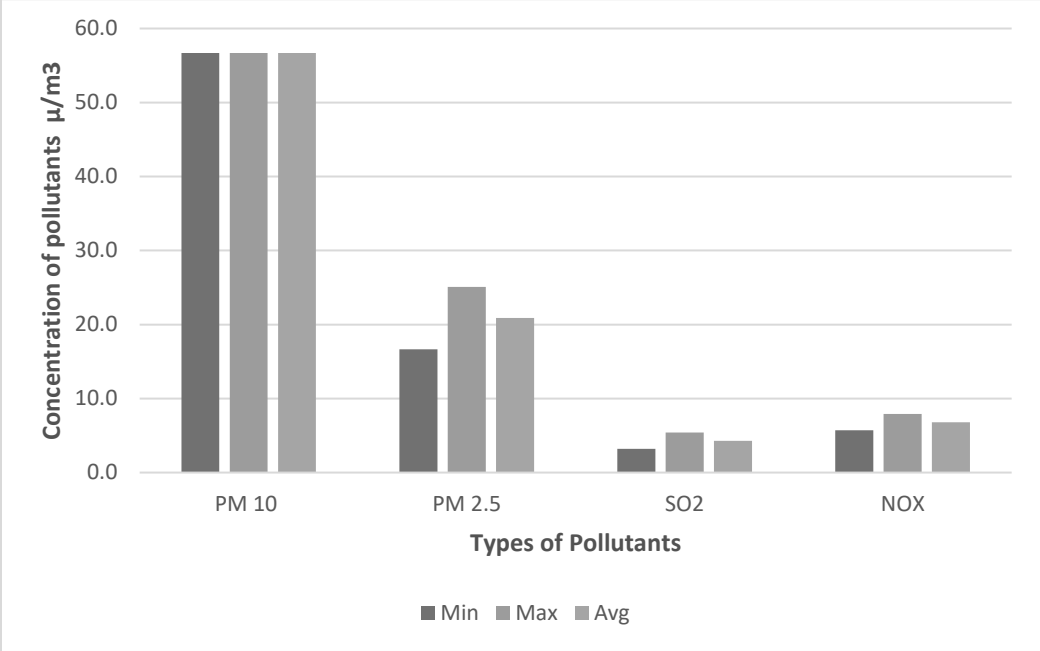


FIG 3.10 AMBIENT AIR QUALITY DATA A5 - PULLAIYAMPALAYAM VILLAGE

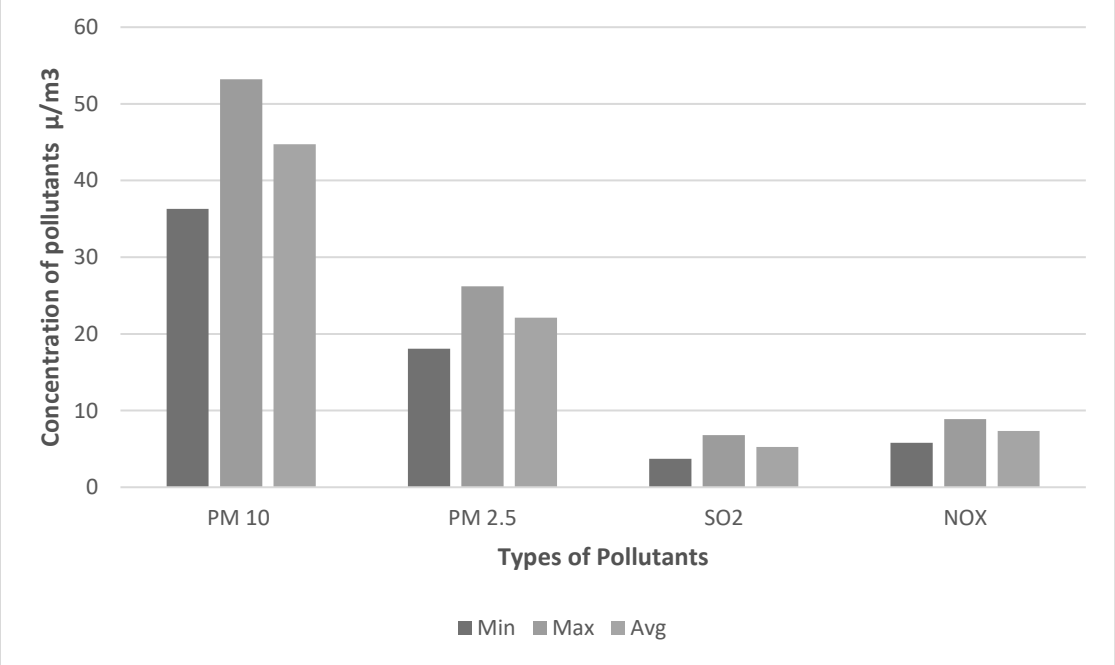
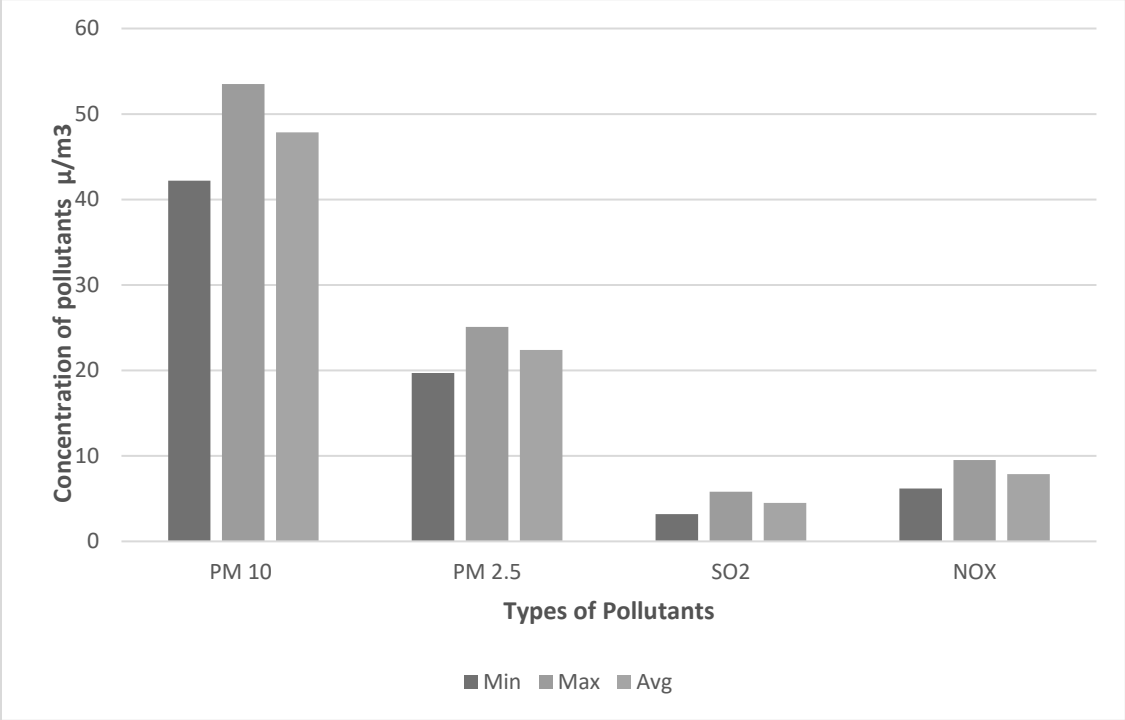


FIG 3.11 AMBIENT AIR QUALITY DATA A6 - PAVITIRAMEDU VILLAGE



From the above results, it is observed that the ambient air quality with respect to PM_{10}, $PM_{2.5}$, SO_2, and NO_2 at all the monitoring locations was within the permissible limits specified by CPCB.

3.3.3 WATER ENVIRONMENT

Assessment of baseline data on water environment includes:

- Identification of water resources
- Collection of water samples
- Analyzing water samples collected for physico-chemical parameters as per standards.

Surface Water

There is Amaravathi River is located at a distance of 6.2 km in Southeast direction of lease area. The rainfall over the area is moderate, the rainwater storage in open wells, trenches is in practice over the area and the stored water acts as source of freshwater. The prevailing status of surface water quality has been assessed during

the study period. Surface water quality locations and results are provided in Table 3-14 and Figure 3.11.

Ground Water

The rainfall is the main source for the availability of water both in surface and sub-surface. The quantum of rainfall varies every year depending upon the monsoon. However, the extraction of surface and sub-surface water is increasing year by year. It leads to environmental impact on the water sources like depletion of water level, deterioration of water quality. It makes the demand for the quantification of available water and also its quality for various purposes like agriculture, industries, drinking and domestic purposes. Total six (06) ground water monitoring locations were identified for assessment in different villages around the project site based on the usage of sub surface water by the settlements/ villages in the study area. The groundwater results are compared with the acceptable and permissible water quality standards as per IS: 10500 (2012) for drinking water. Groundwater quality monitoring locations and results are given in Table 3.5 and Figure 3.11.

Sampling Locations

six (6) ground water samples were collected from the study area and were analysed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on water bodies. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012. The water sampling locations are given in Table 3.5 and shown as Figure 3.12.

The monitoring locations were selected based on:

- Location of the major water bodies
- Location of project site,
- Likely areas that can represent baseline conditions

  Water bodies nearby

Table 3.5 Water Sampling Locations

S.NO	Location Code	Monitoring Locations	Latitude and longitude
Ground Water			
1	GW1	Project site	10°58'49.76"N 77°58'46.19"E
2	GW2	Punnanadupalayam village	12°12'12.58"N 79°45'32.60"E
3	GW3	Near Govt school, Kurumpapatti	10°58'22.40"N 77°58'22.83"E
4	GW4	Pudukkanali village	10°57'9.57"N 77°57'46.78"E
5	GW5	Pullaiyampalayam village	11° 0'1.48"N 77°58'16.38"E
6	GW6	Pavitiramedu village	10°57'31.64"N 77°59'8.93"E

FIG 3.12 BASE MAP OF GROUND WATER SAMPLING LOCATIONS

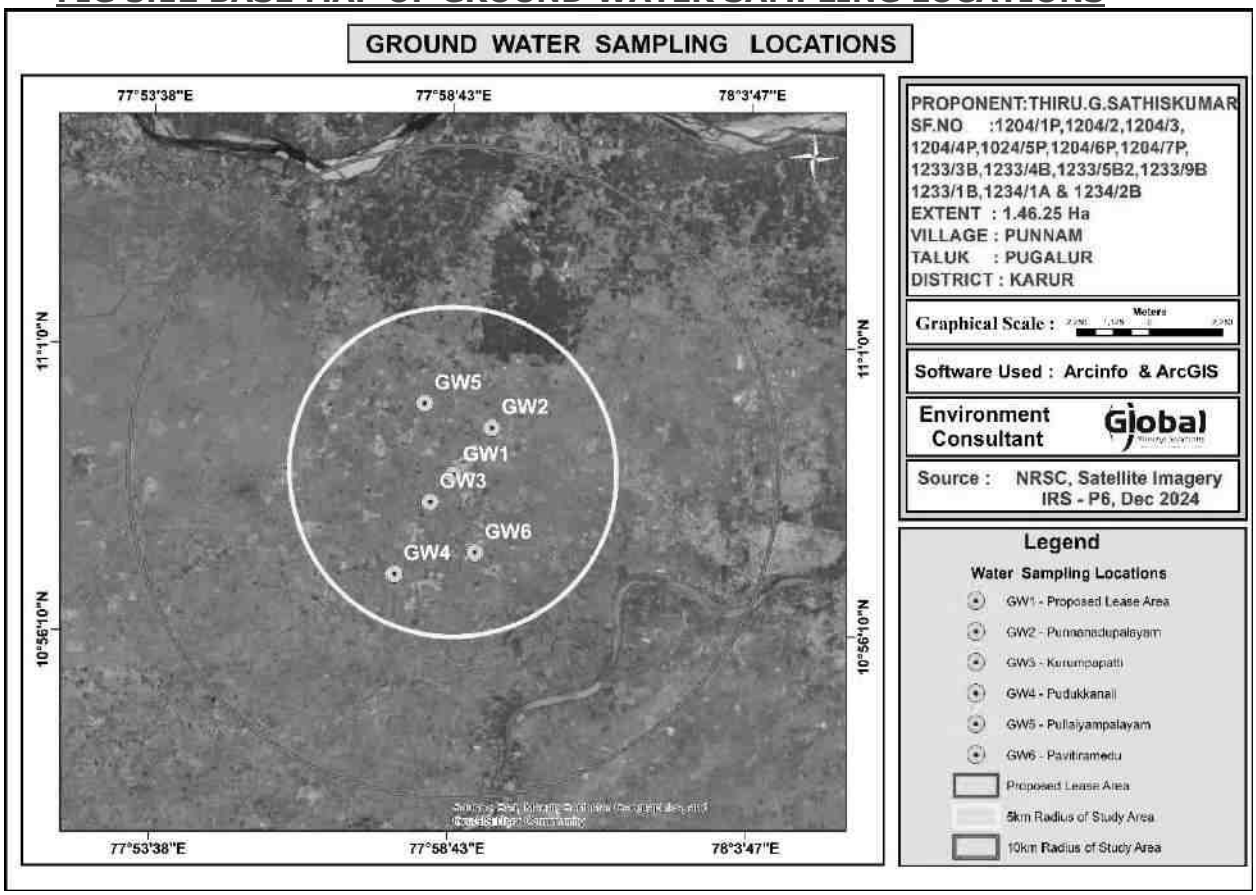


FIG 3.12a BASE MAP OF SURFACE WATER SAMPLING LOCATIONS

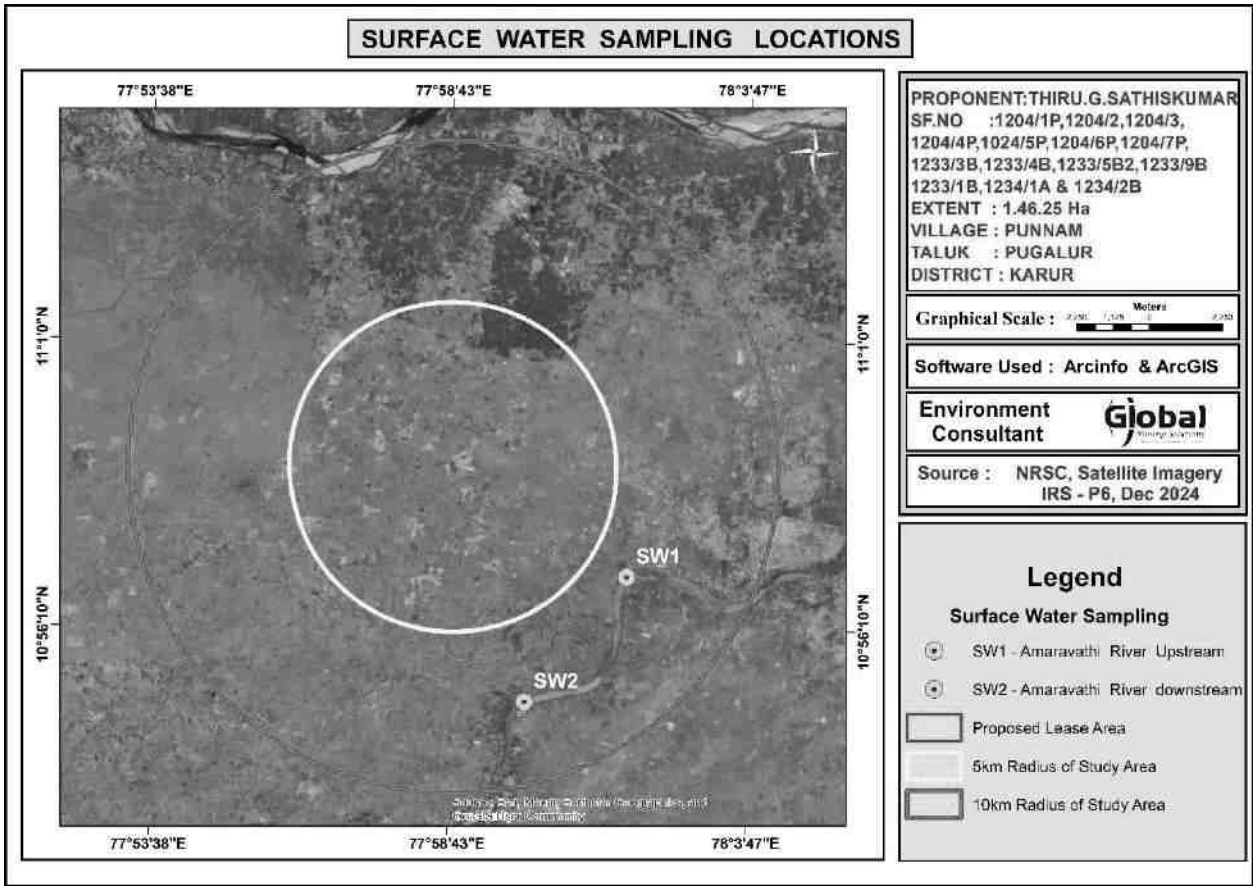


Table 3.6 Surface Water Analysis Results

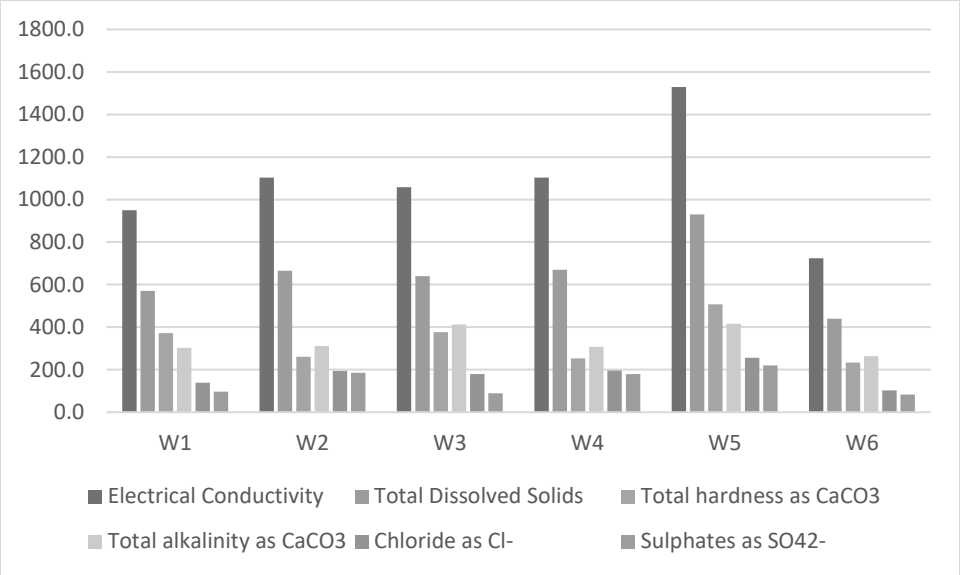
Sr.No	Parameter	Unit	SW1	SW2	Surface water standard s (IS 2296 Class-A)
1	Odour	-	Agreeable	Agreeable	-
2	Turbidity	NTU	<1	<1.0	1
3	pH at 25 ˚C	-	7.32	7.58	6.5-8.5
4	Electrical Conductivity	µs/cm	401.9	743.4	-
5	Total Dissolved Solids	mg/l	252	456	500
6	Total hardness as CaCO3	mg/l	176	212	-
7	Calcium as Ca	mg/l	38.2	40.4	300
8	Magnesium as Mg	mg/l	19.3	26.6	-
9	Calcium as CaCO3	mg/l	95.4	101	-
10	Magnesium as CaCO3	mg/l	80.6	111	-
11	Total alkalinity as CaCO3	mg/l	72.2	156	-
12	Chloride as Cl-	mg/l	56.8	132	-
13	Free Residual chlorine as Cl-	mg/l	BDL(D.L-0.2)	BDL(D.L-0.2)	250
14	Sulphates as SO42-	mg/l	56.0	78.9	400
15	Iron as Fe	mg/l	0.11	0.13	1.0
16	Nitrate as NO3	mg/l	4.67	5.42	20
17	Fluoride as F	mg/l	0.72	0.69	1.5
18	Manganese as Mn	mg/l	BDL(D.L-0.05)	BDL(D.L-0.05)	0.5
19	COD	mg/l	BDL (D.L - 4.0)	BDL (D.L - 4.0)	-
20	BOD	mg/l	BDL (D.L - 2.0)	BDL (D.L - 2.0)	-
21	TSS	mg/l	12	16	-
22	DO	mg/l	6.5	6.3	-

The samples were analyzed by Shrient Analytical & Research Labs Private Limited; Chennai and the results are summarized above.

Table 3.7 Results of Ground Water sampling Analysis in 6 locations							Specification/ Limit (As per IS:10500: 2012)	
	W1	W2	W3	W4	W5	W6	Desirable	Permissible
Odour	AGREEABLE	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	<1	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	Agreeable	Agreeable
pH at 25 ˚C	7.36	<1.0	<1.0	<1	<1	<1	6.5 - 8.5	No Relaxation
Electrical Conductivity	1217	7.42	7.39	7.85	7.94	7.21	1	5
Total Dissolved Solids	736	1950	1189	1016	720.4	821.8	500	2000
Total hardness as CaCO3	492	1172	715	616	435	496	1	15
Calcium as Ca	106	345	326	142	216	276	200	600
Magnesium as Mg	54.5	79.6	66.8	27.4	48	69.6	200	600
Calcium as CaCO3	265	35.0	38.2	17.6	23	24.5	75	200
Magnesium as CaCO3	227	199	167	68.5	120	174		
Total alkalinity as CaCO3	284	146	159	73.5	96.0	102		
Chloride as Cl-	212	462	294	192	210	233	250	1000
Free Residual chlorine as Cl-	BDL (D.L - 0.2)	496	108	234	128	146	30	100
Sulphates as SO42-	115	BDL(DL-0.2)	BDL(DL-0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	45	No Relaxation
Iron as Fe	0.07	312	286	180	48.9	52.1	200	400
Nitrate as NO3	2.32	BDL(DL-0.01)	BDL(DL-0.01)	0.03	0.05	0.04	1	No Relaxation
Fluoride as F	0.57	4.26	3.34	2.67	1.28	1.96	0.1	0.3
Manganese as Mn	BDL (D.L - 0.05)	0.52	0.41	0.46	0.42	0.55	Not Specified	Not Specified

Some of the common parameters including EC, TDS, Total Hardness, Total Alkalinity, Chlorides and Sulphates in the 6 locations were plotted and the graph is provided below.

FIG 3.13 VALUES OF FEW COMMON PARAMETERS IN WATER ANALYSIS



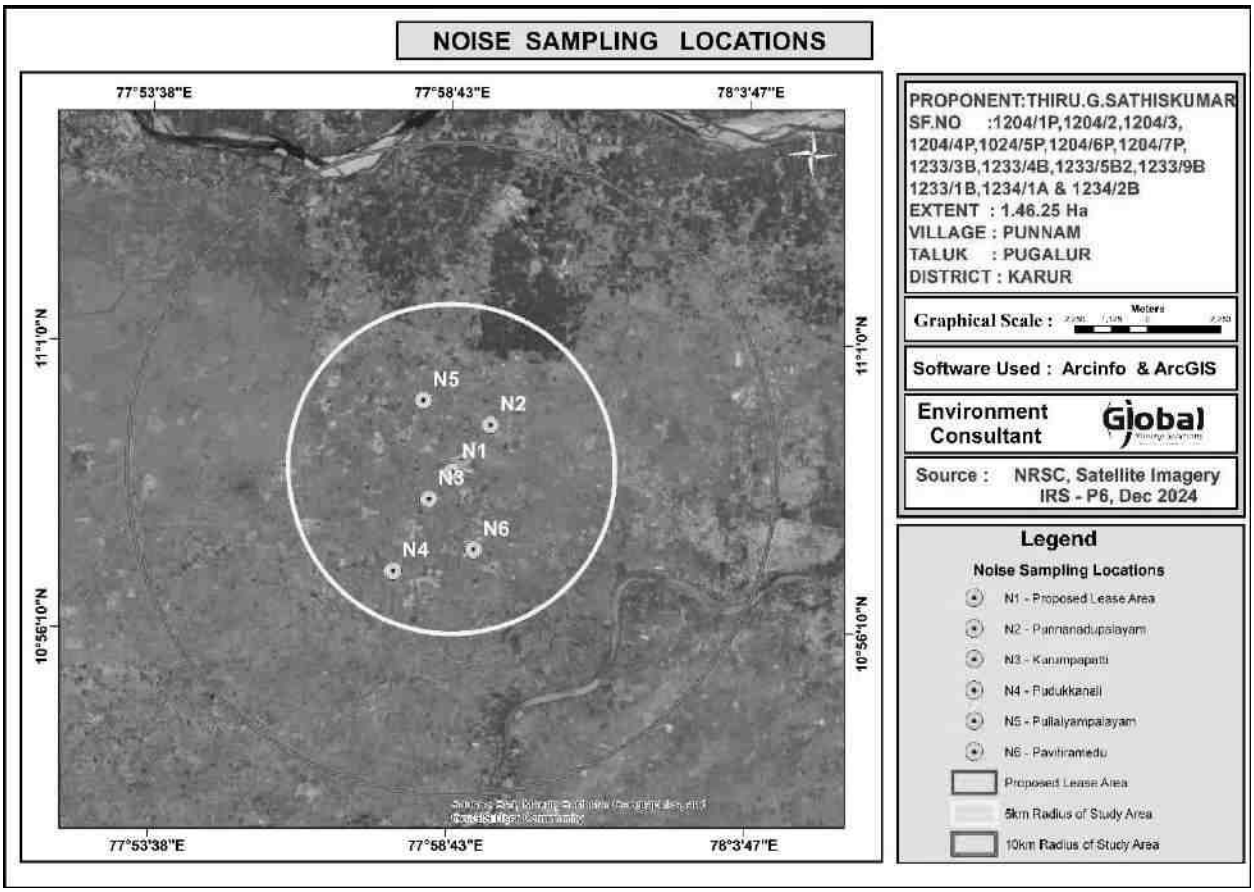
All the values were found to be within the permissible limits.

3.3.4 NOISE MONITORING

Noise level monitoring was calculated using a noise level meter by NABL Accredited lab and the results are summarized below.

The noise monitoring locations are given in Fig 3.14

FIG 3.14 BASE MAP OF NOISE MONITORING LOCATIONS



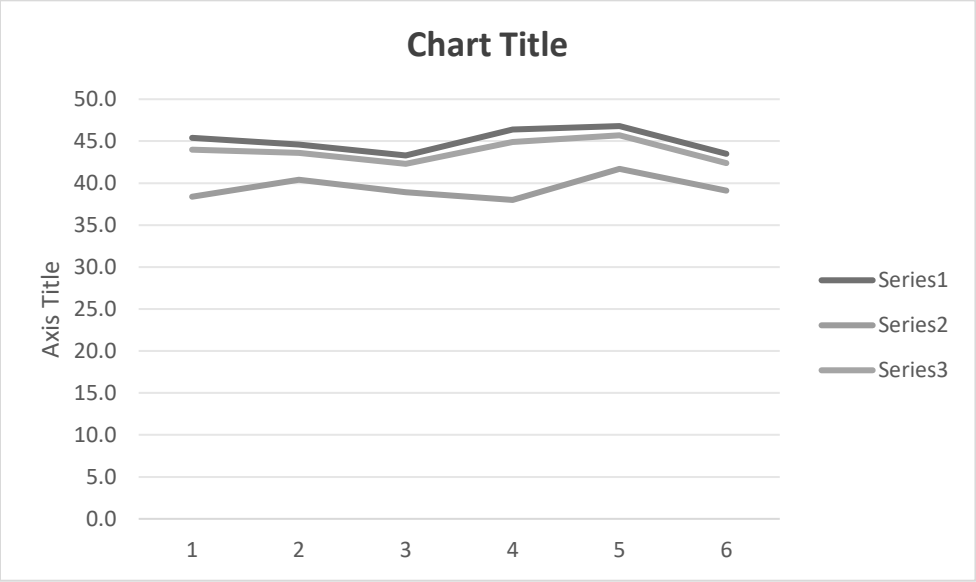
The results are given in Table below.

Table 3.8 Noise monitoring results

S. No	Location	Day equivalent	Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	Project site	49.7	42.7	75	70
2	Punnanadupalayam village	45.9	38.3		
3	Near Govt school, Kurumpapatti	48.4	38.7		
4	Pudukkanali village	47.2	39.6		
5	Pullaiyampalayam village	46.1	38.1		
6	Pavitiramedu village	49.7	39.3		

The results are plotted as below.

FIG 3.15 DAY AND NIGHT EQUIVALENT VALUES IN 6 LOCATIONS

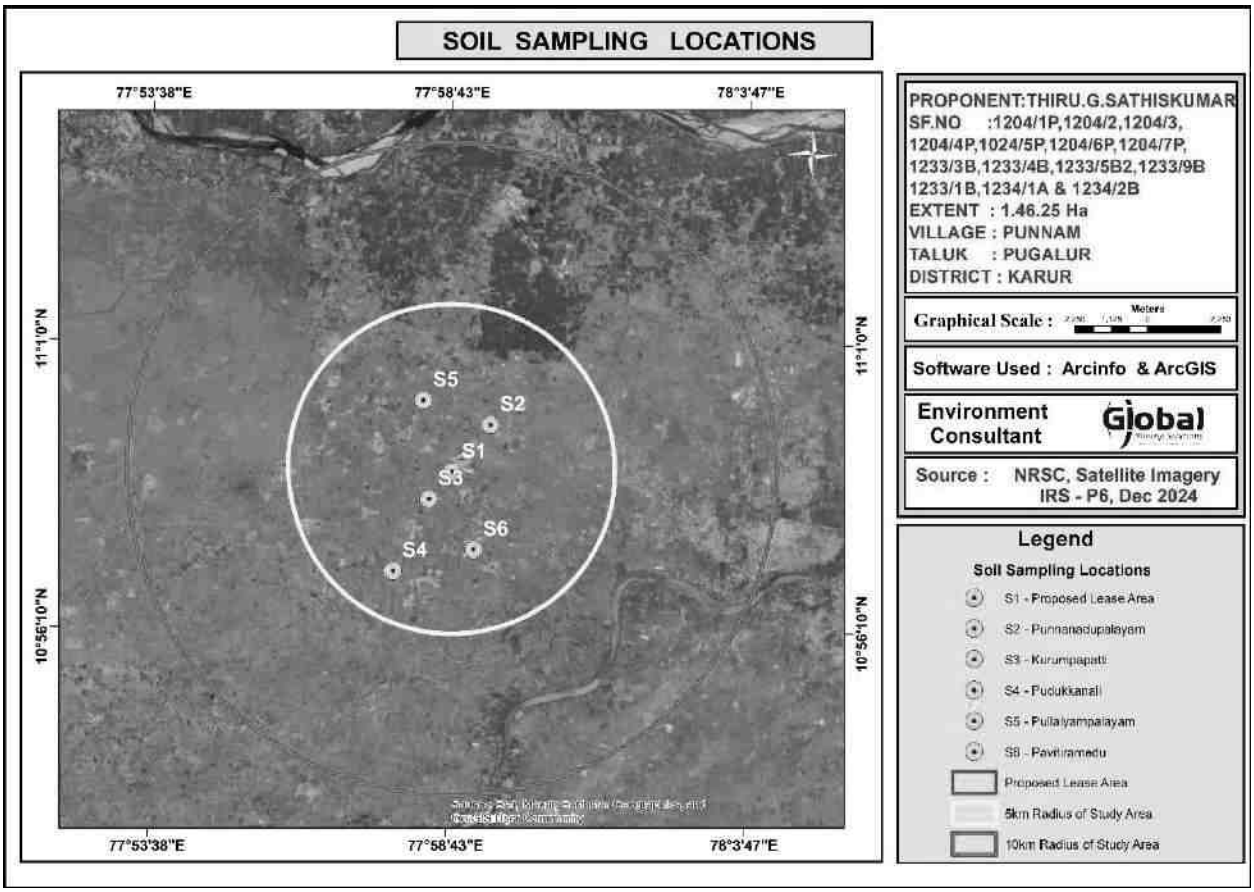


All the values are found to be within CPCB norms.

3.3.5 SOIL SAMPLING ANALYSIS

Soil samples have been collected from the mine lease area and 5 other locations from Punnanadupalayam village, Near Govt school, Kurumpapatti, Pudukkanali village, Pullaiyampalayam village and Pavitiramedu village. The locations are shown in figure below.

FIG 3.16 BASE MAP OF SOIL SAMPLING LOCATIONS



The results are summarized in the table below.

Table 3.9 Results of Soil Sample Analysis

S. No	Parameter	Unit	S1	S2	S3	S4	S5	S6
1	pH at 25 °C	-	8.23	6.32	6.96	6.22	6.14	6.72
2	Electrical Conductivity	µmhos/ cm	92.77	46.72	181.2	79.25	21.94	92.21
3	Dry matter content	%	88.50	96.98	95.82	96.47	96.58	95.24
4	Water Content	%	11.50	3.02	4.18	3.53	3.42	4.76
5	Organic Matter	%	0.31	1.1	0.98	0.58	0.79	1.3
6	Soil texture	-	SILT LOAM	silty clay	silty clay loam	silt loam	silt loam	loam
7	Grain Size Distribution	%						
	i. Sand		25.67	8.82	13.29	24.17	28.42	32.88
8	ii. Silt	%	58.62	46.57	47.55	67.77	52.72	48.93

9	iii. Clay	%	15.71	44.61	39.16	8.06	18.86	18.19
10	Phosphorous as P	mg/kg	0.57	1.9	2.4	1.2	3.1	2.5
11	Sodium as Na	mg/kg	787	420	1055	598	356	404
12	Potassium as K	mg/kg	533	670	876	764	737	646
13	Nitrogen and Nitregenous Compounds	mg/kg	352	270	296	644	230	452
14	Total Soluble Sulphate	%	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)
15	Porosity	%	19.2	18.4	19.1	16.7	18.9	19.5
16	Water Holding Cabacity	Inches/ foot	42	36	40	42	38	40

3.3.6 BIOLOGICAL ENVIRONMENT

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

Flora in the study area

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

Core Zone

During the field visit, it is observed that there are no national parks / Sanctuaries / forests in the 10km buffer area. The study area is devoid of any major plantations.

Table 3.10 Flora in Core Zone

S.No.	Scientific name	Vernacular/English name	Type of flora
1	*Borassus flabellifer*	Pana Nangu	Trees
2	*Lantana trifolia*	Unnichedi	Shrubs
3	*Calotropis gigantea*	Erukku	

4	*Cassia auriculata*	Aavarai	
5	*Achyranthes aspera*	Nayuruvi	

Buffer zone

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

Table 3.11 - Flora in Buffer zone

S.No.	Scientific name	Vernacular/English name	Type of flora
1	*Ficus Carica*	Athi Maram	Trees
2	*Acacia nilotica*	Karuvelai	
3	*Azadirachta indica*	Neem	
4	*Cassia auriculata*	Aavarai	
5	*Casuarina equisetifolia*	Savukku	
6	*Albizia amara*	Arappu	
7	*Cocos nucifera*	Thennai	
8	*Acacia nilotica*	Karu- velamaram	
9	*Tamarindus indica*	Puli	
10	*Delonix regia*	Cemmayir Konrai	
11	*Ficus benghalensis*	Aalamaram	
12	*Borassus flabelliformis*	Panna-maram	
13	*Ficus religiosa*	Arasamaram	
14	*Carica papaya*	Papaya	
15	*Tectona grandis*	Thekku	
16	*Ziziphus mauritiana*	Elandai	
17	*Thespesia populnea*	Poovarasam	
18	*Jatropa gossypifolia*	Kaatamanaku	Shrubs
19	*Hibiscus rosa sinensis*	Sembaruthi	
20	*Euphorbia geniculata*	Amman Pacharisi	
21	*Calotropis gigantea*	Yerukku	
22	*Ricinus communis*	Aamanakku	
23	*Tecoma stans*	Arali	
24	*Aloe vera*	Kathalai	
25	*Catharanthus roseus*	Nithyakalyani	Herbs
26	*Acalypha indica*	Kuppaimeni	
27	*Mimosa pudica*	Thottacherungi	
28	*Tephrosia purpurea*	Wild indigo	
29	*Coccinia grandis*	Kovai	Climbers
30	*Cissus quadrangularis*	Pirandai	

31	*Jasminum angustifolium*	malli	
32	*Ziziphus oenoplia*	Ilandai	
33	*Cymbopogon*	Kanam	Grasses
34	*Cyperus rotundus*	Kora grass	
35	*Cynodon dactylon*	Arugu	

Fauna in the study area

Table 3.12 - Fauna in buffer zone

S.No.	Scientific name	Common name	Type of fauna	Schedule of wild life protection act
1	*Funambulus pennanti*	Palm Squirrel	Mammals	IV
2	*Funambuus palmarum*	Three stripped palm squirrel		IV
3	*Mus rattus*	Indian rat		IV
4	*Felis catus*	Cat		-
5	*Canis lupus familiaris*	Indian dog		-
6	*Bos Indicus*	Indian Cow		-
7	*Sus scrofa domesticus*	Domestic pig		-
8	*Lepus nigricollis*	Indian Hare		IV
9	*Mus musculus*	Common Mouse		IV
10	*Bufo melanostictus*	Toad	Reptiles & Amphibians	IV
11	*Chameleon zeylanicum*	Chameleon		IV
12	*Bungarus caeruleus*	Common krait		IV
13	*Ptyas mucosa*	Rat snakes		IV
14	*Rana hexadactyla*	Frog		IV
15	*Calotes versicolar*	Lizard		IV
16	*Bubulcus ibis*	Cattle Egret	Birds	IV
17	*Coracias benghalensis*	Indian Roller		IV
18	*Corvus splendens*	Common Crow		V
19	*Passer domesticus*	House Sparrow		IV

20	*Acridotheres tristis*	Common Myna		IV
21	*Streptopelia chinensis*	Pigeon		V

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

3.3.7 LAND USE

Remote Sensing Satellite Data Used for the Study

For Land-use and land cover study, sensing satellite data of Geo EYE has been used as per Figure No. 1. A land use map showing 10 Km radial distance. The geographical coordinates of the project are Latitude 10°58'49.10"N to 10°58'56.03"N and Longitude: 77°58'43.36"E to 77°58'47.79"E.

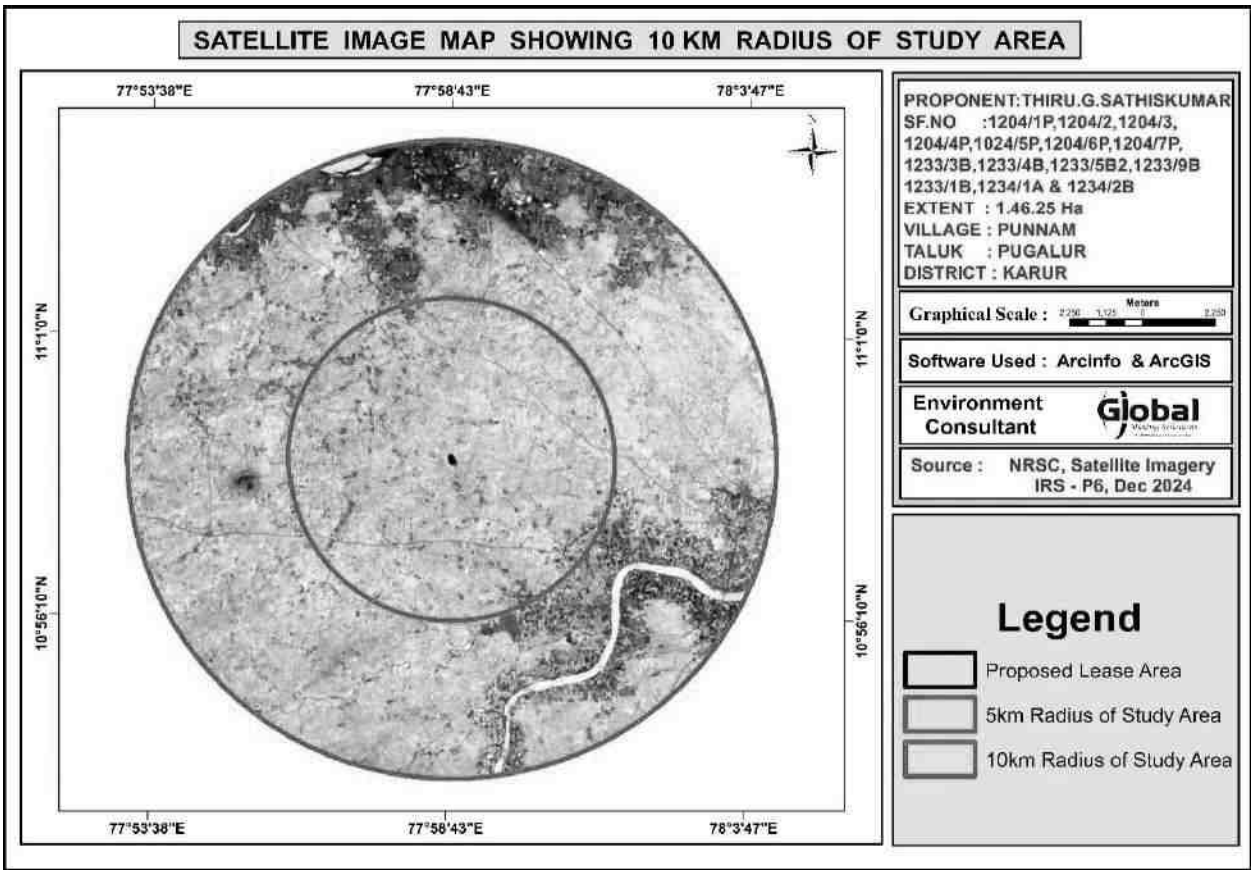


Figure No. 3.17: Remote Sensing Satellite Image

Selection of remote sensing satellite image (RSI) is on the availability of cloud free data and interpretability of predominant landuse and land cover (LULC) category. The examination of satellite data showed that the region is always covered by clouds with lesser percentage during summer due to cluster habitation. But rained crops are cultivated during southwest monsoon and hence a data acquired during first onset of precipitation is preferred so as to delineate crop and fallow land parcels of agricultural category. Delineation of scrub land is also possible since land with scrub could be easily distinguished from crop vegetation and separated. This may be an arduous task during monsoon since the entire area would be witnessed with sudden sprout of lush natural vegetation, mostly *prosopis*, with first onset of precipitation.

Methodology Adopted for the Land Use Study

Present study involves micro level analysis of landuse pattern showing 10 km radius and changes in landuse pattern using satellite data. This necessitates a careful analysis of satellite data adopting a well-defined methodology.

To cater the requirement, a preliminary assessment of terrain using digital analysis helping to infer relationship between terrain and landuse has been carried out. Such an approach provides lucid understanding of landuse units and enhances the knowledge on the landuse pattern assisting in impact assessment.

The knowledge base thus generated is used to delineate various landuse units while carrying out interpretation of the satellite image. The derived landuse information is transformed into a GIS based spatial database using geo-referencing techniques. Besides, a limited but well focused field investigation also carried out and coordinates of significant landuse units using handheld GPS (Global Positioning System) are gathered to be used as control points for geo-referencing. Interpreted landuse units are verified in the field to carryout necessary corrections wherever is required before preparing final landuse map.

Using the image elements such as color, tone, texture, size, shape and associated elements various landuse units are delineated following the categorization and nomenclature adopted for the national level landuse classification system as recommended by National Remote Sensing Centre (NRSC), Department of Space, Government of India. Some of the landuse units that are identified in the study area are listed in Table No. 3.13given below.

Field Verification:

Field verification involved collection, verification and record of the different surface features that create specific spectral signatures / image expressions on FCC. In the study area, doubtful areas identified in course of interpretation of imagery is systematically listed and transferred on to the corresponding SOI topographical maps for ground verification. In addition to these, traverse routes were planned with reference to SOI topographical maps to verify interpreted LU/LC classes in such a manner that all the different classes are covered by at least 5 sampling areas, evenly distributed in the area. Ground truth details involving LU/LC classes and other ancillary information about crop growth stage, exposed soils, landform, nature and type of land degradation are recorded and the different land use classes are taken the Land use map.

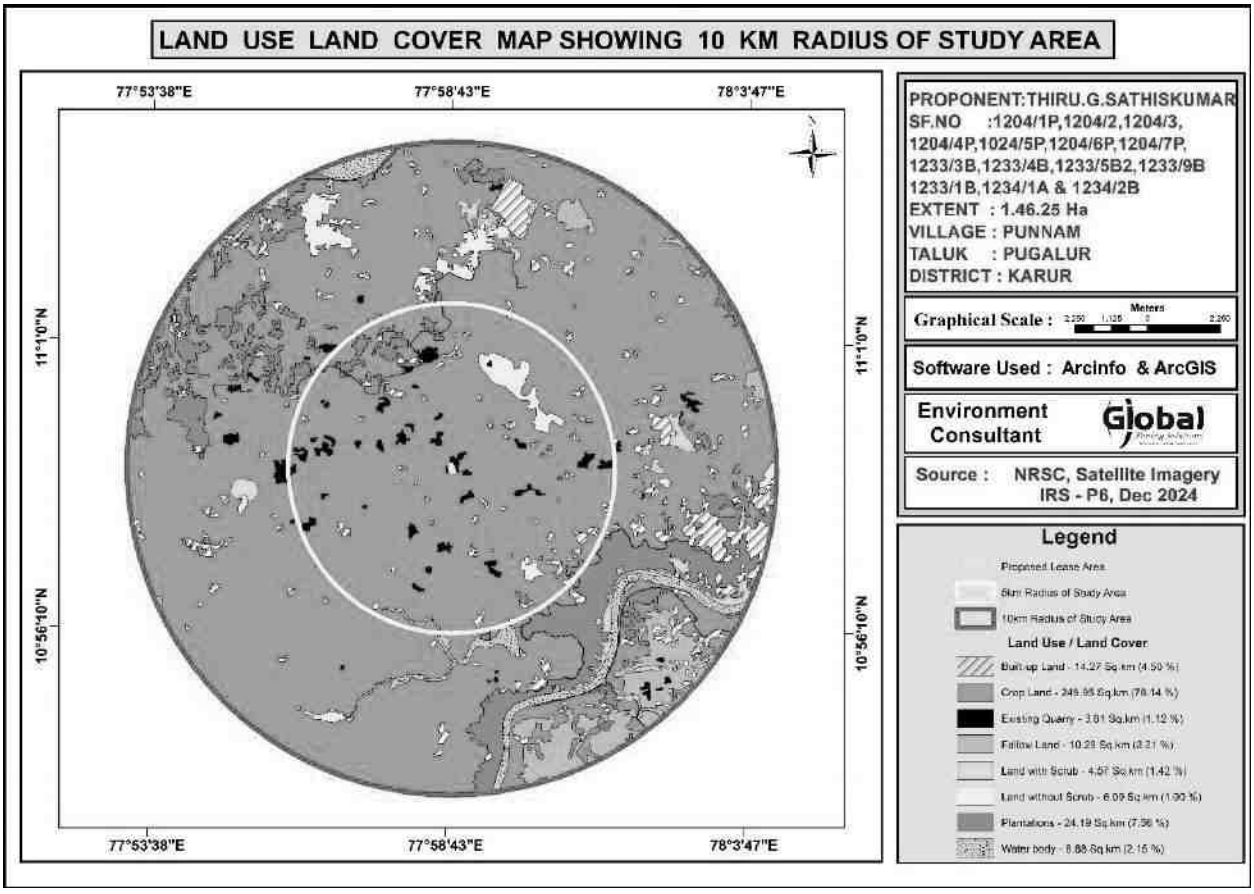
Table No.3.13: Major Land use Units of the Study Area

Sr.No	1st level classification	2nd level classification
1	Built-Up Or Habitation	Residential
		Commercial / Industrial
2	Agriculture	Crop / Fallow Land
		Plantation
3	Water Bodies	Reservoir / Lake / Pond
		River
4	Vegetation Cover	Scrub
		Open Vegetation
		Close Vegetation
		Mangroves
5	Waste Land	Open Without Scrub
		Open With Scrub
6	Others	Mudflow
		Salt Pan
		Brick Manufacturing

Land Use Pattern of 10 km Radial Buffer Area of Project Site

A supervised classification (Digital Interpretation) technique has been adopted for land use classification based on the NRSA Classification Level II for the preparation of land use mapping. The satellite images from NRSC satellite imagery IRS-P6 December 2024 as well as the projection UTM (Universal Traverse Mercator) and datum WGS1984 (World Geodetic System), Northern Hemisphere. The main objective of this section is to provide a baseline status of the study area covering 10 km radius around the mine site so that temporal changes due to the mining activities on the surroundings can be assessed in future. The land use map of the study area is given in Figure 3.18

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

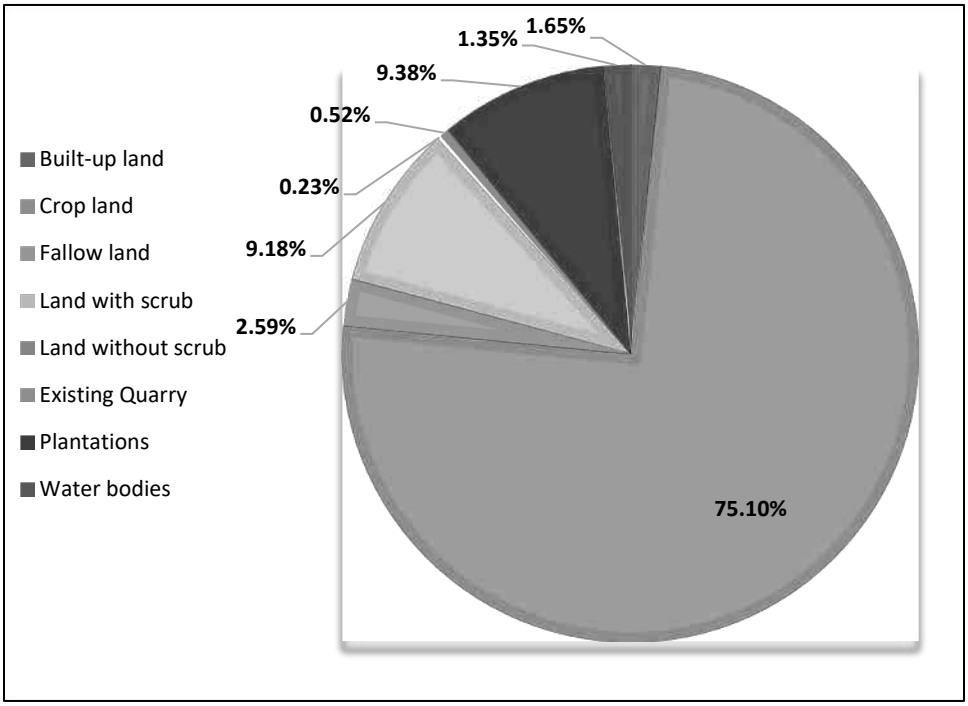


Land Use / Land Cover Classification classified into first level classification and second

level classification and major land use/land cover classes were demarcated in the study area following Level II classification. A thematic map of 1:50,000 scale was generated incorporating these classified categories considering the area of the project.

Table No. 3.14: Major Land Use Units of the Study Area in Percentage

Sl.No.	Land Use / Land Cover	Area in Sq.Km	Area in Percentage
1	Built-up land	5.35	1.65
2	Crop land	241.5	75.10
3	Fallow land	8.36	2.59
4	Land with scrub	29.63	9.18
5	Land without scrub	0.76	0.23
6	Existing Quarry	1.7	0.52
7	Plantations	30.21	9.38
10	Water bodies	4.94	1.35
	Total Area	**322.45**	**100**



It is inferred that the majority of the land in the study area is Agriculture land (includes crop land) 75.10% followed by Plantations. The total built up mining area within the study area is 1.65%. The cluster area of contributes about 0.52% of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

3.3.8 SOCIOECONOMIC ENVIRONMENT

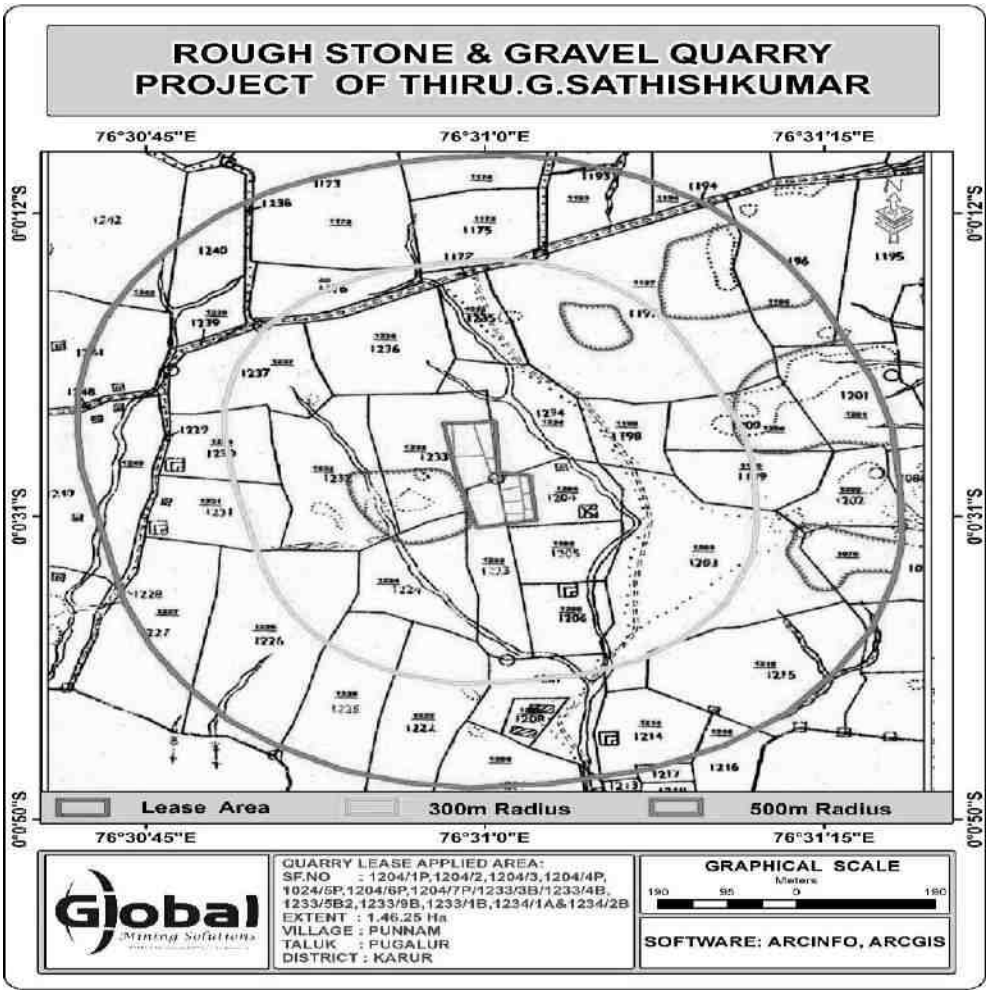
The socio-economic environment of the study area is studied by conducting primary sites through site visits and conducting sample surveys. The secondary data obtained from Census 2011 is also used. The following data area collected from secondary data:

- Demographic pattern.
- Health pattern
- Occupational structure.

3.11.1 DETAILS OF VILLAGES

The profile of the villages located in the study area is given in Fig 3.19 below.

FIG 3.19 VILLAGE MAP OF THE STUDY AREA



DETAILS OF VILLAGES

The project is located in Pugalur Taluk, Karur District. From the secondary data, there are 18 villages were observed in the study area of 10km radius. List of villages are given below.

Table 3.15 - Village details in study area

S.No.	Village/Town Name	Radius	Taluk Name	District Name
1	Karvazhi	1-5km	Pugalur	Karur
2	Monjanur (East)			
3	Monjanur (West)			
4	Thennilai (East)			
5	Thennilai (West)			

6	Thennilai (South)			
7	Anjur	6-10km		
8	Athipalayam			
9	Elakkaturamachandrapuram			
10	Gudalur (West)			
11	Gudalur (East)			
12	K.Paramathi			
13	Kodanthur (North)			
14	Kodanthur (South)			
15	Munnur			
16	Nadanthai (North)			
17	Nadanthai (South)			
18	Thukkachi			

The total population is 36728 which comprise of 18167 males and 18561 females. The table below shows that the male and female population ratios are equal. Among the total population 1.6% belong to Scheduled Tribes, 20.35% are Scheduled Caste and the balance 78.05% people belong to other castes. Among the total population, 65.22% of the people are literate. Among the total population, 37.45% are literate males and 27.77% are literate females. Also the total population, 46.41% are total workers and 53.59% are total non-workers. This results shows that the male literates are higher than the female literates.

Table 3.16 - Population profile of the study area

Particulars	No of Population	Percentage (%)
A. Population break-up by Gender		
Male Population	18167	49.95
Female Population	18561	50.05
Total	**36728**	**100**
B. Population break-up by Caste		
Scheduled Caste	10191	20.35
Scheduled Tribes	11	1.6

Others	26526	78.05
Total	**36728**	**100**
C. Literacy Level		
Male Literate Population	13754	37.45
Female Literate Population	10201	27.77
Male Illiterate	4413	12.02
Female Illiterate	8360	22.76
Total	**36728**	**100**
D. Occupational structure		
Total Workers	23648	46.41
Total Non-workers	13080	53.59
Total	**36728**	**100**

The results are plotted in figures below.

FIG 3.20 GENDER-WISE POPULATION DISTRIBUTION

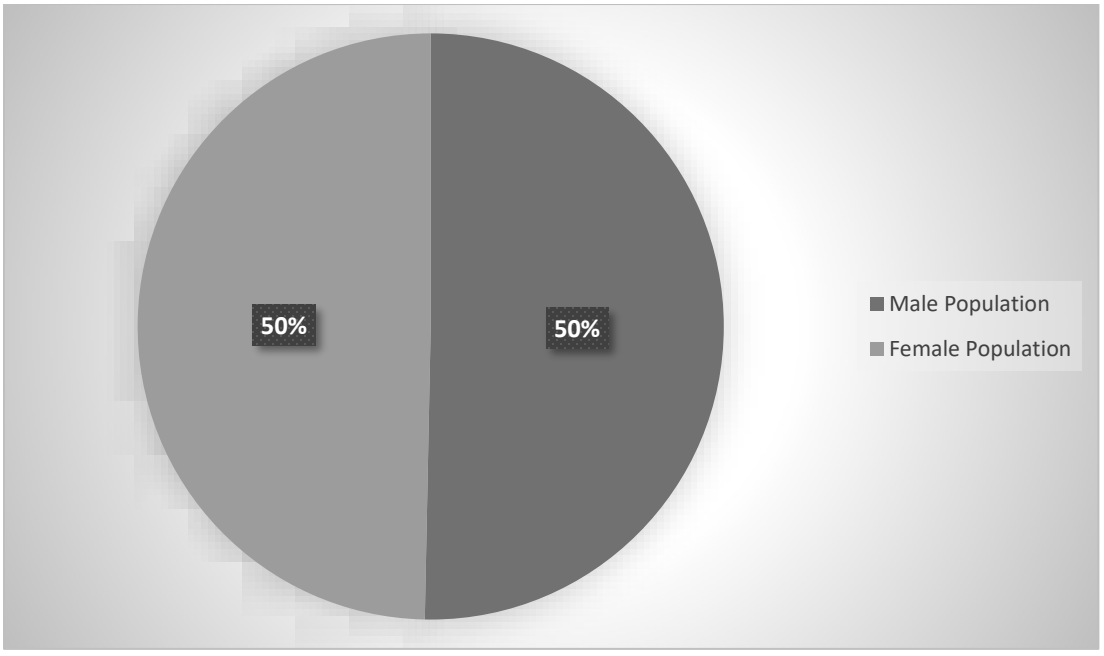


FIG 3.21 GENDER WISE LITERACY DISTRIBUTION

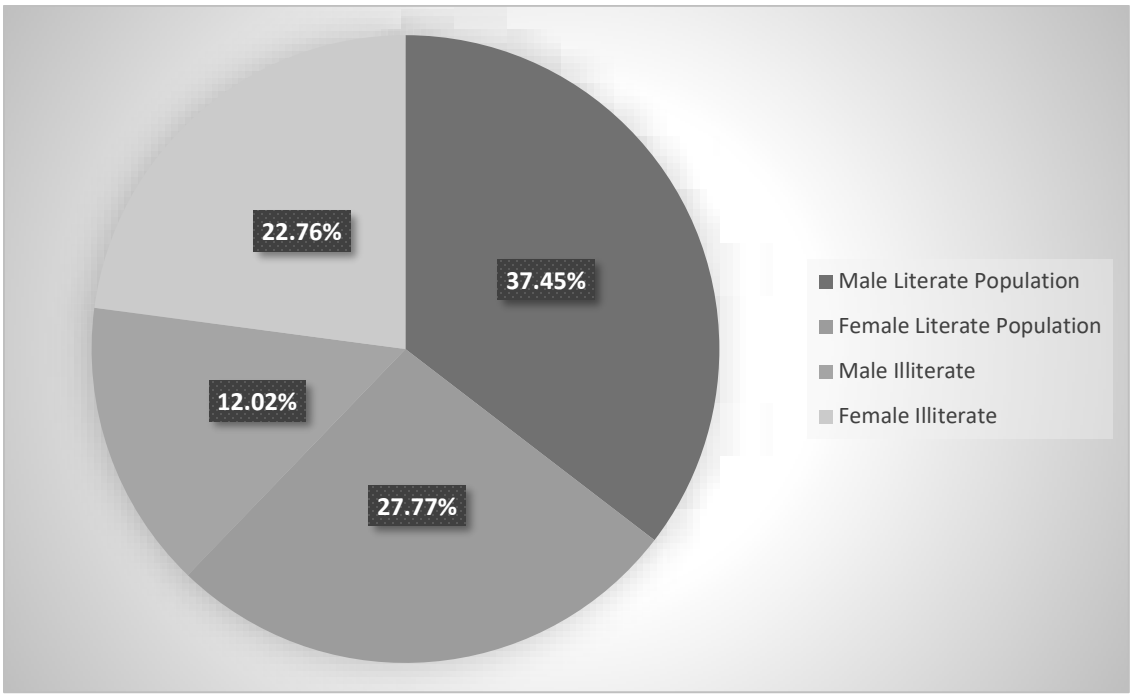
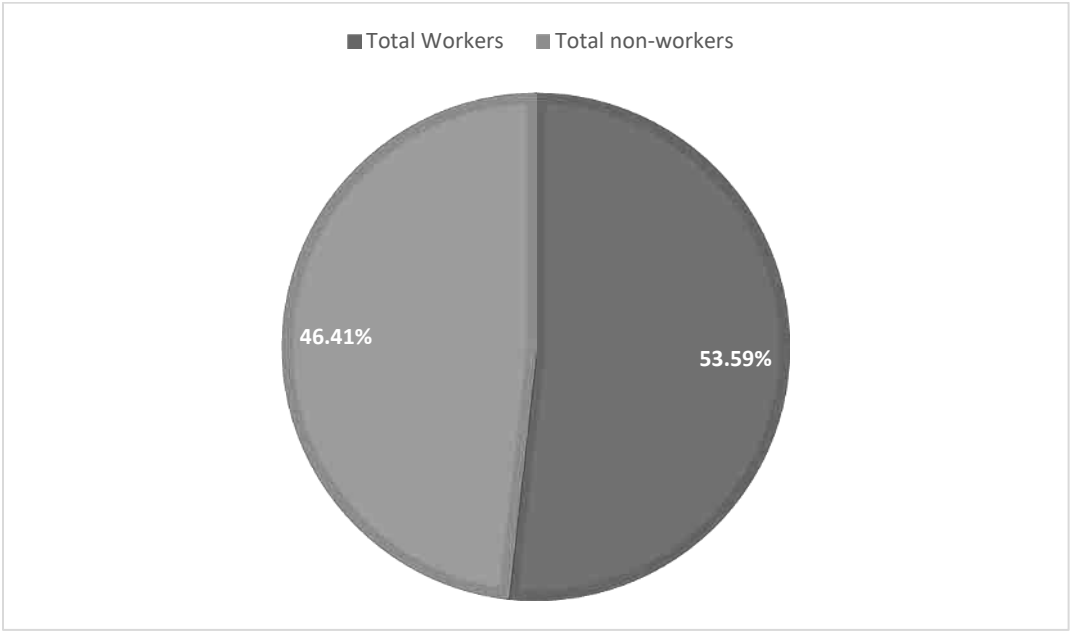


FIG 3.22 OCCUPATIONAL STRUCTURE WITHIN BUFFER ZONE



Infrastructure facilities in the study area

Education

Table 3.17 Educational infrastructure -10 km radius from proposed mine lease

S. No.	Particulars	Available in village (Nos)
1	Govt. Primary School	17
2	Govt. Middle School	10
3	Govt. Secondary School	4
4	Govt. Senior Secondary School	2
5	Govt. Arts and Science Degree College	0
6	Govt. Engineering College	0
7	Govt. Medicine College	0
8	Govt. Management Institute	0
9	Govt. Polytechnic	0
10	Govt. Vocational Training School/ITI	0

In the study area, there are totally 58 Primary Schools functioning in these 18 rural villages. Among them 6 villages have 2 primary schools, 3 villages have 3 primary schools, 8 villages have more than 3 primary school

Healthcare

In the study area, the following facilities are available.

Table 3.18 Medical Infrastructure-10 km radius from proposed mine lease

S.No.	Particulars	Available in village (Nos)
1	Community Health Centre	0
2	Primary Health Centre	2
3	Primary Health Sub Centre	9
4	Maternity And Child Welfare Centre	2
5	TB Clinic	2
6	Hospital Allopathic	0
	Veterinary Hospital	4

Other Infrastructure

The other infrastructure facilities available are given below.

Table 3.19 Other Infrastructure-10 km radius from proposed mine lease		
S.No.	**Particulars**	**Available in village**
1	Tap Water-Treated	18
2	Covered Well	14
3	Hand Pump	12
4	Tube Wells/Borehole	17
5	Post office	2
6	Public bus services	15
7	Commercial Bank	2
8	Cooperative bank	2

Sample Survey

The expert visited 5 villages in the study area namely Punnanadupalayam village, Near Govt school, Kurumpapatti, Pudukkanali village, Pullaiyampalayam village and Pavitiramedu village. Discussions were held with the people from nearby locality to study the social and economic conditions prevailing in the area. The expert also visited nearby hospitals, primary health centres and Nalmukkal. The following observations were made.

Primary schools are available in many villages. For hospital facilities, people in the locality have to go to hospital in Punnanadupalayam which is about 1.89 Km from the lease area. Major schools with higher secondary and senior secondary schools are located in Kurupapatti . The major Punnam Union located in the area is KARUR. Facilities like petrol pump stations, ATM facility are available in Punnam.

3.3.9 HYDROGEOLOGY OF THE STUDY AREA

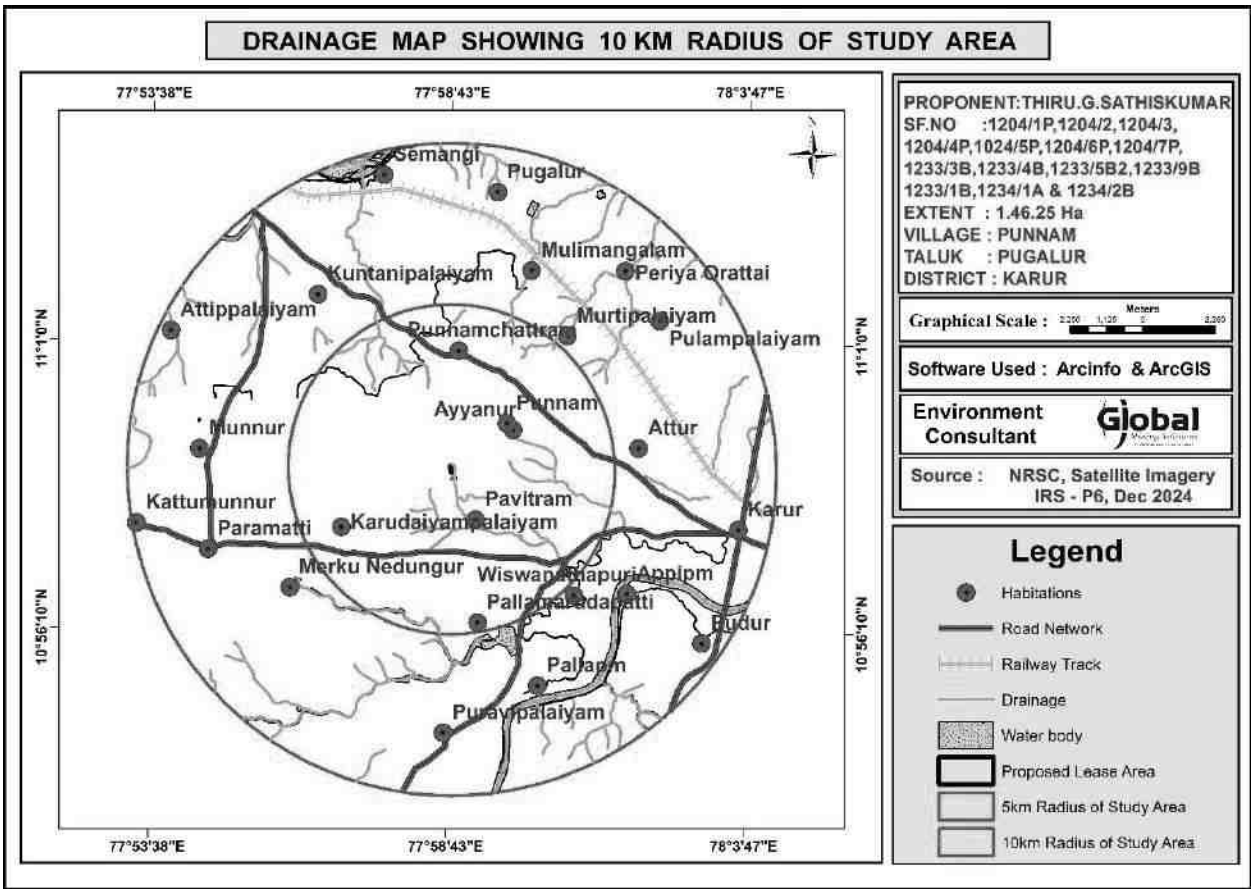
There is Amaravathi River is located at a distance of 6.2 km in Southeast direction of lease area. The hydrological and hydrogeological pattern of the study area is studied in detail using satellite imagery.

HYDROGEOLOGICAL STUDY

To assess the hydrogeological condition of the surrounding proposed mine lease area. The study area is located in Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu

State is considered to understand the nature of the general hydrogeological conditions of the surrounding proposed mine lease area.

FIGURE 3. 23 10 KILOMETER RADIUS OF THE DRAINAGE MAP



PHYSIOGRAPHY AND DRAINAGE

Proposed Mine lease area is dry Patta land with majority of the area is observed with hard rock formation. There is no any seasonal or perennial Odai within the M.L area. The drainage pattern of the region is plane to sub-dendritic.

Drainage: The drainage pattern study reveals that from the proposed mine lease area with around 1 Km radius and 10 Km study observed in Figure 3.20. There is Amaravathi River is located at a distance of 6.2 km in Southeast direction of lease area of the proposed site.

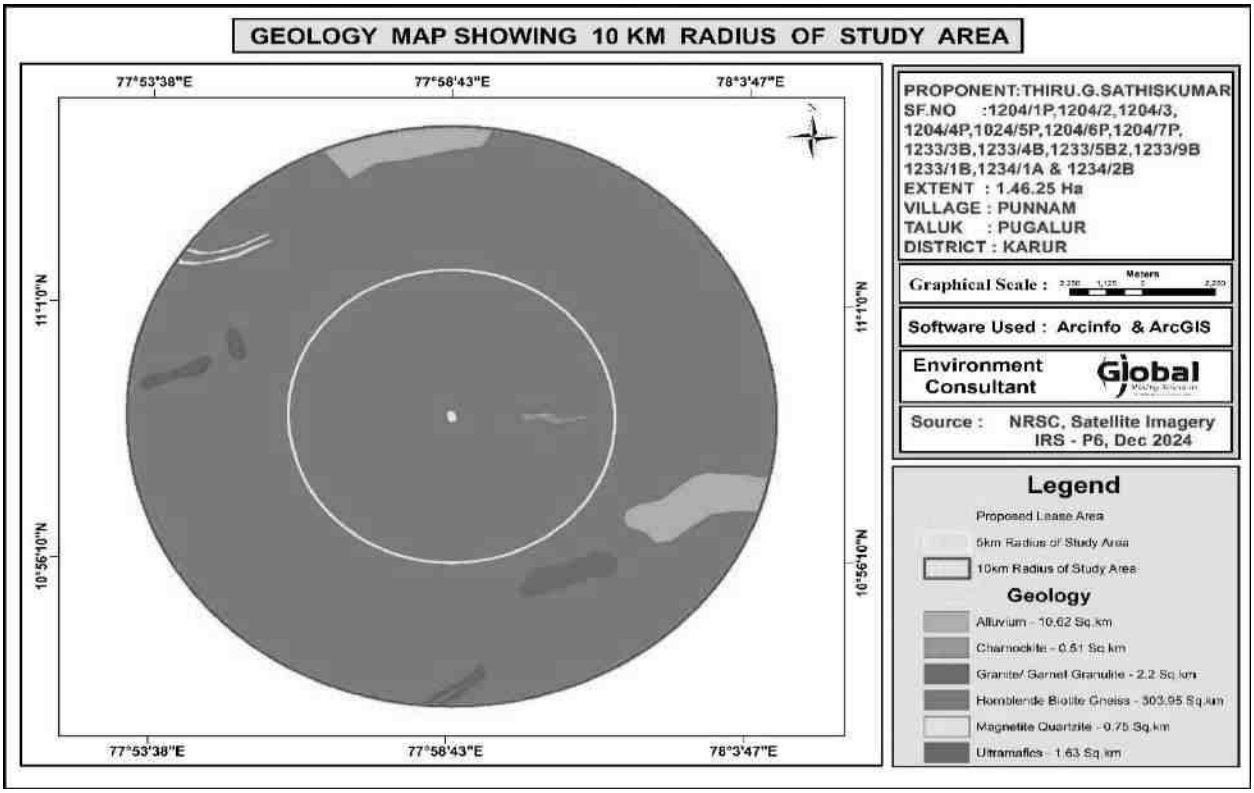
GEOLOGY, GEOMORPHOLOGY AND SOIL

Geology:

The regional geology of the study area is shown below Figure 3.24. The type of rock formation in the core and buffer zone is composed of Granite, Garnet Granulite, Hornblende Biotite Gneiss, Metagabbro Pyroxenite, Pink Migmatite, Pyroxene Granulite and Ultramafics. The geology of the study area is detailed below.

Sl.No.	Geological description	Area in sq.km	Area in percentage
1	Granite, Garnet Granulite	0.67	0.21
2	Hornblende Biotite Gneiss	315.35	97.77
3	Metagabbro Pyroxenite	0.16	0.05
4	Pink Migmatite	2.8	0.87
5	Pyroxene Granulite	0.64	0.20
6	Ultramafics	2.9	0.90
Total		**322.52**	**100.00**

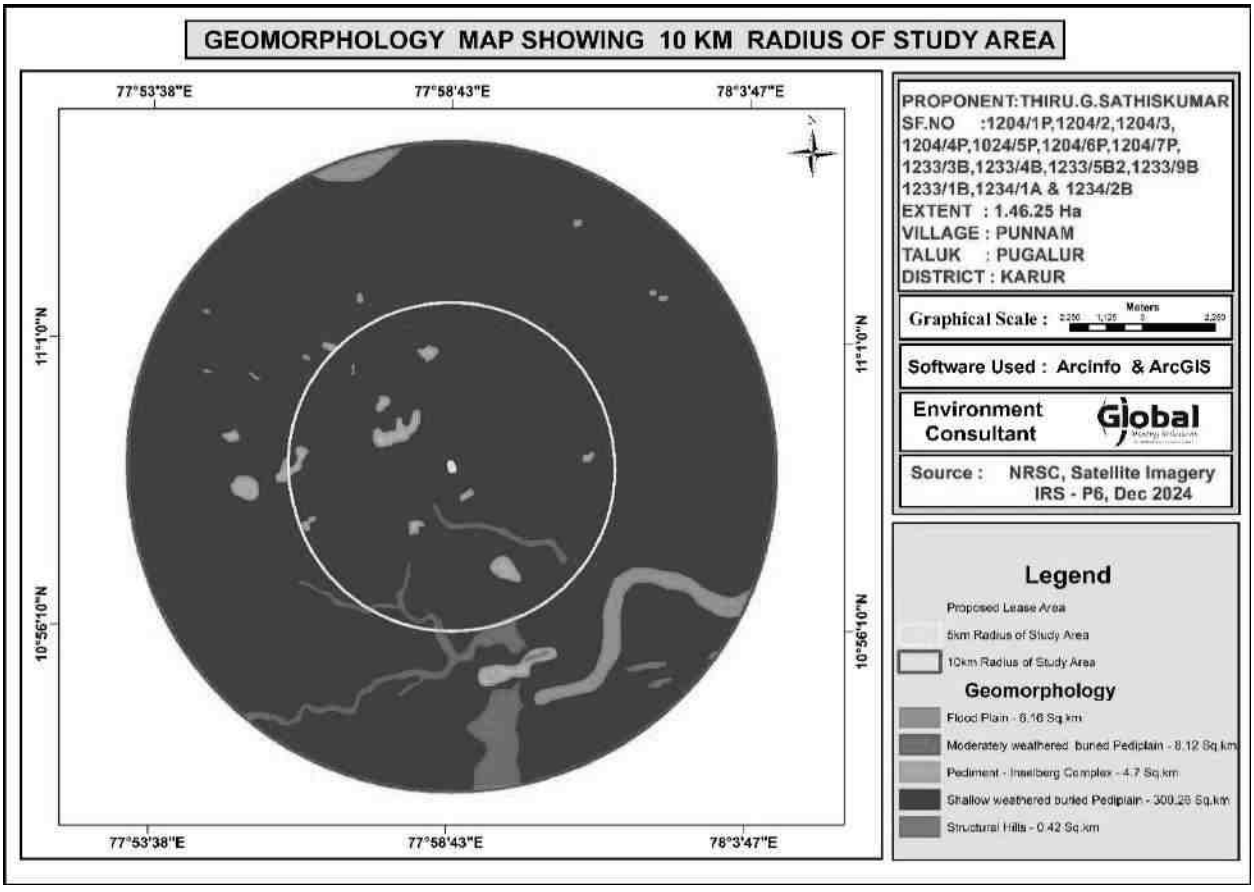
FIGURE 3. 24 10 KILOMETER RADIUS OF THE GEOLOGY MAP



Geomorphology: Predominantly the buffer zone is dominated by Pediplain Weathered buried as detailed below. The geomorphology of the study area is given in Figure 3.25.

Sl.No.	Geomorphological description	Area in Sq.Km	Area in Percentage
1	Pediment	1.96	0.60
2	Pediplain Weathered buried	320.26	99.30
3	Structural Hills	0.3	0.10
Total		**322.52**	**100.00**

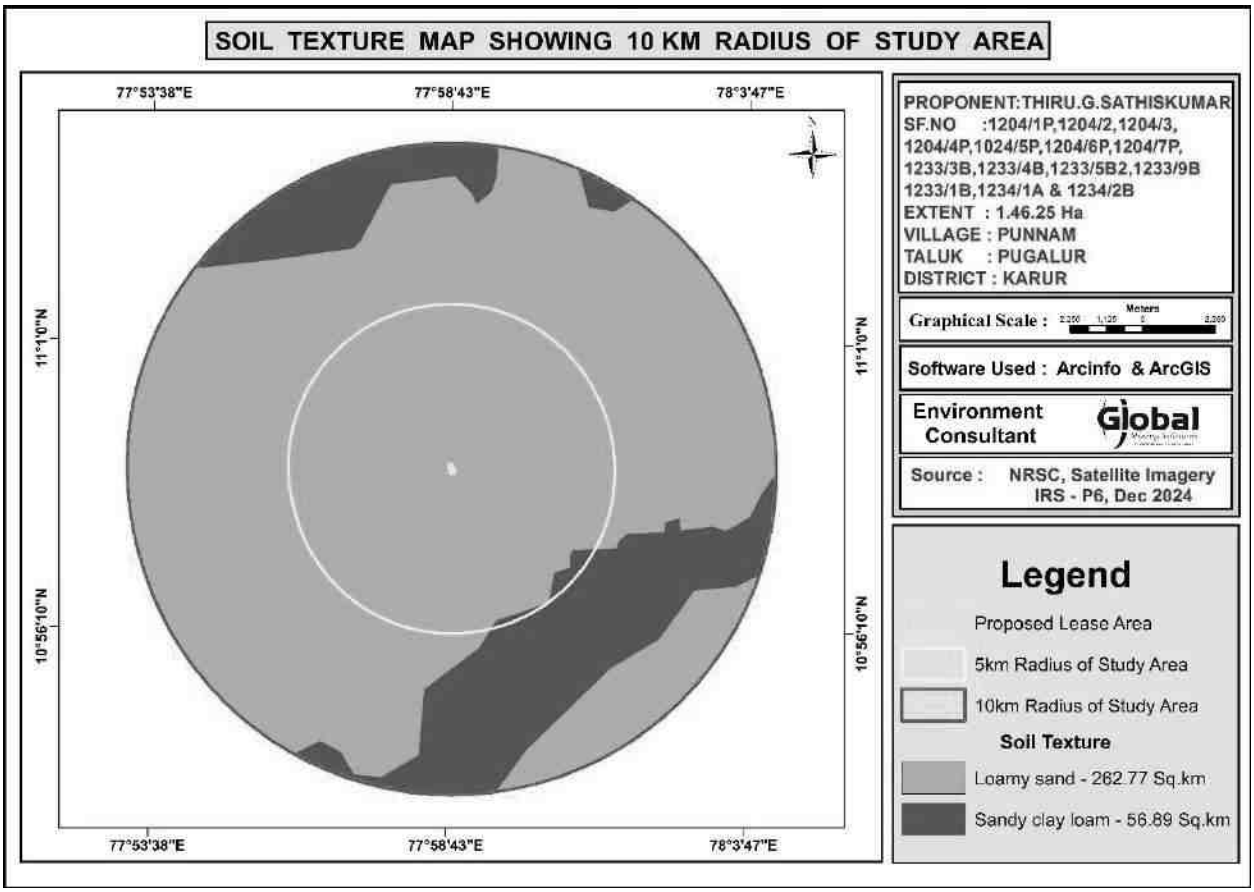
FIGURE 3. 25 10 KM RADIUS OF THE STUDY AREA GEOMORPHOLOGY MAP



Soil: The study area is mainly dominated by well-drained soil category. Soil map of Core & Buffer Zone map is given in Figure 3.26. Soil map of the study area is detailed below.

Sl.No.	Soil drainage pattern	Area in Sq.km
1	Well-drained soil	295.41
2	Somewhat excessively drained soil	27.12

FIGURE 3.26 10 KM RADIUS OF THE STUDY AREA SOIL TYPE MAP



BELOW GROUND LEVEL (BGL)

Figure 3.26 & 3.27 shows the Non-Monsoon and Monsoon water level map of the study area.

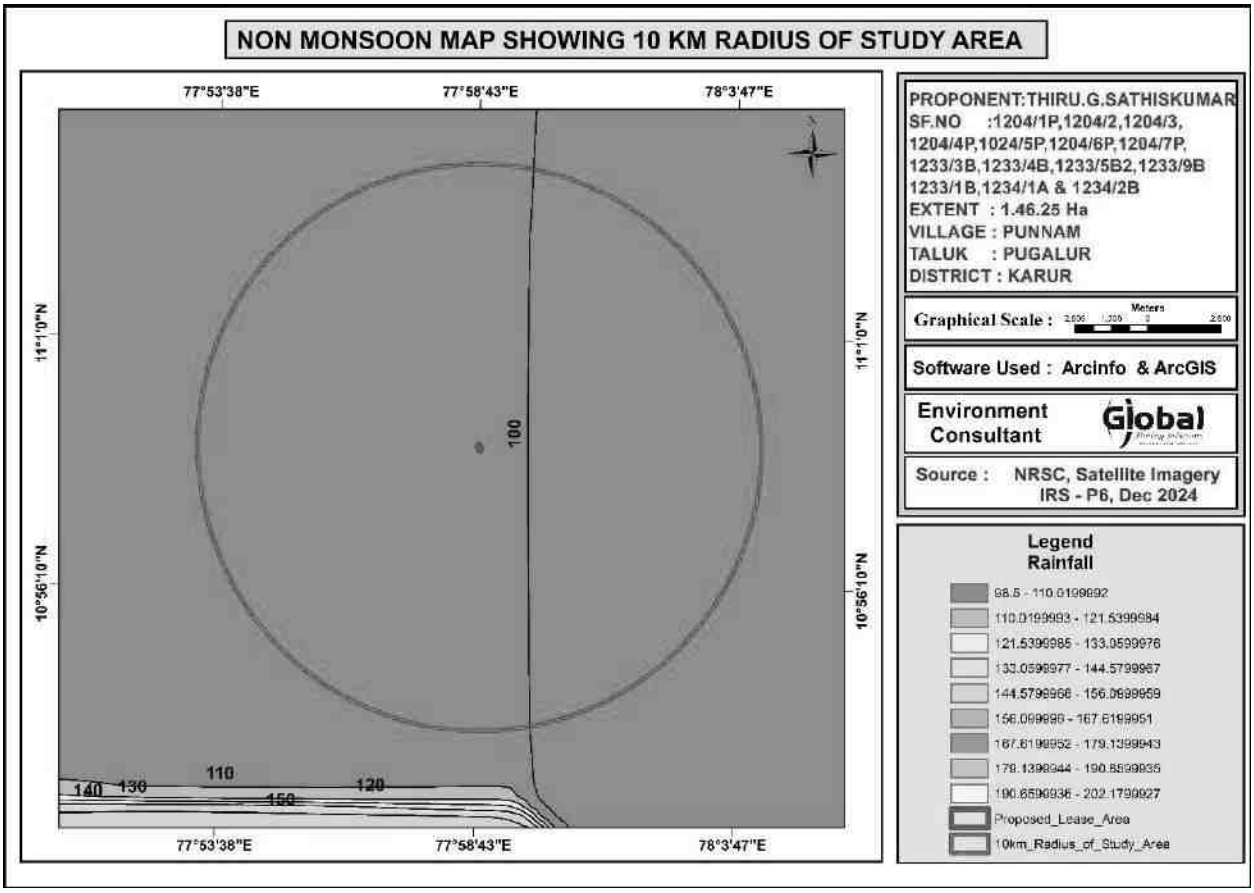


FIGURE 3.27 NON-MONSOON WATER LEVEL MAP OF THE STUDY AREA

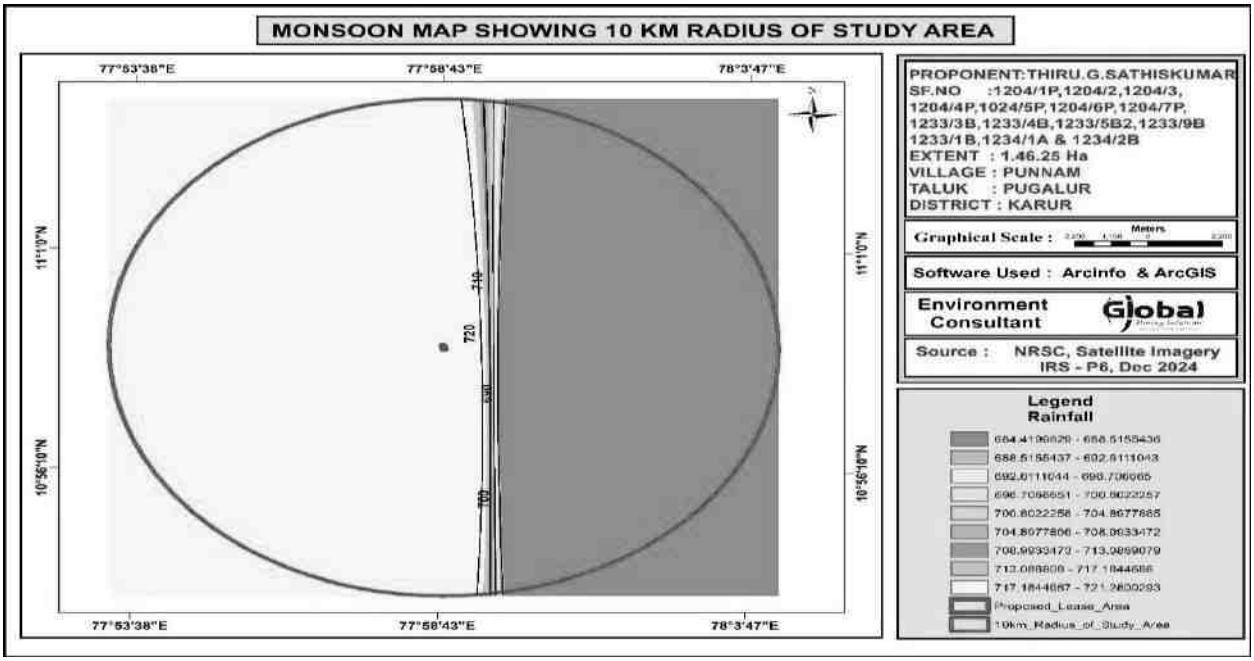


FIGURE 3.28 MONSOON WATER LEVEL MAP OF THE STUDY AREA

FIELD INVESTIGATION

The temporary seasonal streams water flow from center to outer most area. There is Amaravathi River – 6.2km (SE).

The water is temporarily found only during the rainy season.

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

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

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

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

CHAPTER 4

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

INTRODUCTION

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

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

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

4.1 DETAILS OF INVESTIGATED ENVIRONMENTAL IMPACTS DUE TO PROJECT LOCATION POSSIBLE ACCIDENTS, PROJECT DESIGN, PROJECT CONSTRUCTION, REGULAR OPERATIONS FINAL DECOMMISSIONING OR REHABILITATION OF A COMPLETE PROJECT.

This is a proposed Rough Stone Quarry & Gravel Quarry of S.F.No. 1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B, 1233/4B, 1233/5B2,1233/9B, 1233/10, 1223/1B, 1234/1A and 1234/2B over an extent of 1.46.25 Ha in Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State. The method of mining is Opencast mechanized with a bench width and height of 5m. It is proposed to excavate to 3,96,055 Ts of Rough Stone and 20,952 Ts gravel formation up to a depth of 31 m (BGL) for the period of five years. There is no stream/odai within the mine lease area.

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

The entire mine lease area is Patta land. The project area of 1.46.25 Ha boundary barrier except in eastern direction. It is proposed to be altered by effective quarrying operation such as excavation (1.10.0 Ha), Infrastructure (0.01.0), Road (0.01.0 Ha) and green belt will be developed in the safety zone of 0.34.25 Ha. The ultimate depth of quarrying is proposed with maximum depth of 31m BGL and will not intersect the ground water table.

4.2 MEASURES FOR MINIMIZING AND /OR OFFSETTING ADVERSE IMPACTS IDENTIFIED

<table>
<tr><th>Aspect</th><th>Impact</th><th>Mitigation measures</th></tr>
<tr><td>Topography</td><td>The area is almost plain topography covered by rough stone and Gravel formation. Quarrying activity will lead to change in geological setting of the area i.e., Due to the quarrying activity in the mine lease area will leads to affect the aesthetic view on the environment. Further, due to the movement of heavy vehicles in and around the mine lease area will leads to affect the surrounding agricultural lands, ecology and biodiversity, human habitations due to the emissions from vehicles like SO_2, NO_x, PM_{10}, $PM_{2.5}$, etc., The existing land use pattern is given as under.
<table>
<tr><th>Land Use</th><th>Present Area (Hect)</th><th>Area in use during the quarrying period (Hect)</th></tr>
<tr><td>Quarrying Pit</td><td>Nil</td><td>1.10.00</td></tr>
<tr><td>Infrastructure</td><td>Nil</td><td>0.01.00</td></tr>
<tr><td>Roads</td><td>Nil</td><td>0.01.00</td></tr>
<tr><td>Green Belt</td><td>Nil</td><td>0.34.25</td></tr>
<tr><td>Unutilized</td><td>1.46.25</td><td>Nil</td></tr>
<tr><td>Total</td><td>1.46.25</td><td>1.46.25</td></tr>
</table></td><td>The major impact due to this project on land environment is the change in land use. Mining activity will be carried out upto a depth of 31 m Below ground level. At the end of mining period, the quarried pit will act as a water reservoir to store the rain water.
Land Use at the end of mine will be as follows.
<table>
<tr><th>Land Use</th><th>Area in use during the quarrying period (Hect)</th></tr>
<tr><td>Area left for water body</td><td>1.10.00</td></tr>
<tr><td>Green Belt</td><td>0.34.25</td></tr>
<tr><td>Remaining area</td><td>0.02.00</td></tr>
<tr><td>Total</td><td>1.46.25</td></tr>
</table>
At the mine closure stage 1.46.25 Ha of lease area will be left as rain water harvesting pond 1.10.00Ha will be developed with green belt.
Greenbelt shall be developed around the mine lease area and the details has been given below.
<table>
<tr><th>Year</th><th>Species</th><th>No. of trees</th><th>Spacing</th><th>Survival</th></tr>
<tr><td>I</td><td rowspan="3">Pungai, Vagai, Vembu,</td><td>340</td><td rowspan="3">3m x 3m</td><td rowspan="3">80%</td></tr>
<tr><td>II</td><td>-</td></tr>
<tr><td>III</td><td>-</td></tr>
</table></td></tr>
</table>

The ultimate pit dimension of the mine lease area is given below.

Pit dimension during end of the first five years			
Pit No.	**Length (max) (m)**	**Width (Avg) (m)**	**Depth (max) (m)**
I	186	59	21 m Below ground level

Ultimate Pit dimension at the end of Mining plan Period			
Pit No.	**Length (max) (m)**	**Width (Avg) (m)**	**Depth (max) (m)**
I	186	59	31 m Below ground level

If mining is not done systematically it will leads to the dumping failure in the mining area.

IV	Manjal konrai, Naval, Puvarasu, etc	-		
V		-		
Total		**340**		

Due to the thick vegetation around the mine lease area and sprinkling of water around the haul roads the dust emissions arise from the vehicles will be controlled.

At the end of mining period, fencing will be provided around the mine lease area to arrest the entry of public/cattle to the mining area.

The rough stone and Gravel are proposed to quarry 5m bench height and 5m width with 45^0 slope and with conventional opencast Mechanized method. As per the approved mining plan a safety distance of 7.5m shall be provided. There is no overburden anticipated during the entire Rough Stone and Gravel quarrying operation. The excavated rough stone and Gravel will be directly loaded into tipper to the needy crusher/other buyers.

Drainage	Mine drainage is surface water or groundwater that drains from an active or abandoned mine. One of the adverse impact of mine drainage is it will contaminate the ground water.	As per the approved mining plan the ultimate pit limit is 31m (BGL). The ground water table is reported as 58 m. In the proposed mining plan only 31m below ground level has been envisaged as workable depth for safe & economic quarrying for the entire lease period. Hence the quarrying operation may not affect the ground water.
Soil Quality and Agriculture	In monsoon seasons due to the excavation of minerals soil erosion and sediment deposition will occur in the nearby water bodies.	It is proposed to quarry upto a depth of 31m below ground level and the nearby water table is 58m. So, the mining activity will not affect the ground water. To prevent the soil erosion during monsoon season, garland drain will be constructed with silt traps.
Visual impact on surrounding environment	Quarrying activities and rock extraction generally cause several environmental effects on the surrounding areas. The alteration of landscape due to activities like excavation, drilling or blasting, in particular, often generates a visual impact on the receptors set in the surroundings. Among these effects, the shape, extent, or chromatic contrast of the mining surface with the original land form may represent a huge loss of appeal for the growth of new urban settlements.	The reclamation of the post mined quarry surface is aimed at restoring the ecological balance taking into account geological parameters but also local flora and climate. Further the ultimate depth of mining is 58m. In the post mining stage, the quarried out pit will be used for rainwater harvesting.

4.2.1 SOLID WASTE GENERATION AND MANAGEMENT

The plastic waste generation is very negligible and it will be collected from the source level in specific dustbin and disposed through the municipal bins.

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

4.2.2 WATER ENVIRONMENT

Impact on Surface Water Resources

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

Amaravathi River – 6.2km (SE). Water table is found at a depth of 58m.

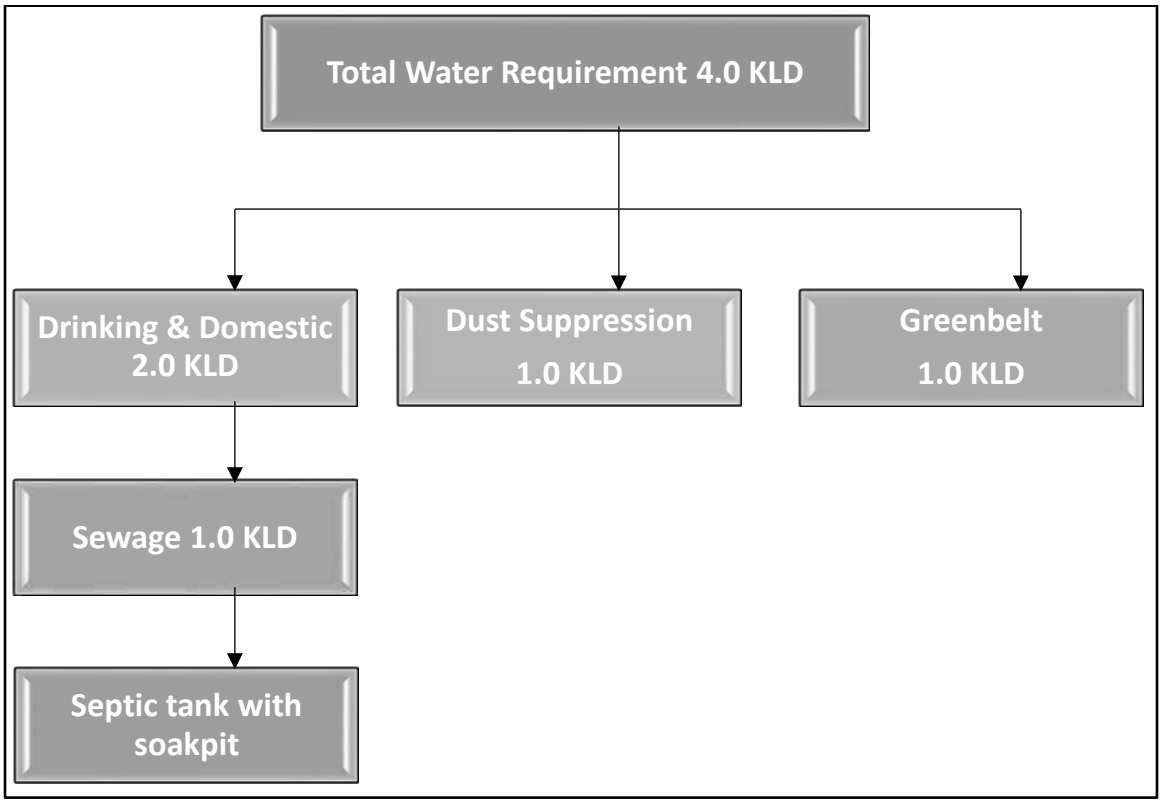
Since these water bodies are located outside the lease area and there is no discharge of effluent or any untreated water from the mines will be made into these water bodies, there is no major impact. The project proponent will restrict the mining operation only within the lease and no other work will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

Impact due to Water use in Mines

In the proposed mines water will be mainly used for domestic purpose, dust suppression & plantation. Total water requirement for the project is 4.0KLD which will be sourced from outside agencies. Negligible sewage of 1.0 KLD will be generated,

for which a septic tank with soak pit will be set up. The water balance diagram is given below.

FIG 4.1 WATER BALANCE DIAGRAM



Impact on Ground Water

The mining activity is not likely to intersect ground water as the ground water table occurs at a depth of 58 m. The mining will go up to the maximum depth of 38 m BGL. So, there will be no chance of intersecting the ground water table by the mining activity. So, the impact of mining on the ground water is not envisaged.

Mitigation measures

- Entire lease area will be provided with proper garland drains.
- Check wears will be provided to prevent solids from wash off.

- Construction of garland drains around freshly excavated so that flow of water with loose material is prevented.
- The mine water will be passed through the natural slopes and valleys and gets accumulated in the settling tank (Bottom pit)

Ground water environment in buffer zone

The scenario of ground water in Karur District, Pugalur Taluk is given below.

TABLE 4.1 Ground Water Level Status in Villupuram District

S. No.	Assessment Unit (Firka)	Net Annual Ground water availability	Existing gross ground water consumption for irrigation	Existing gross ground water consumption for domestic and industrial water supply	Existing gross ground water consumption for all uses	Stage of ground water development	Category
1	Pugalur	1,329.84	1,209.06	14.08	1223.15	92%	Critical

Source: nwm.gov.in

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

4.2.3 VEGETATIONVEGETATION IN THE CORE ZONE

The mine lease area is devoid of major plantation. Shrubs and bushes are majorly found within the lease area. The proponent has planned to develop green belt in an area of 0.34.25 Ha. Trees like Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indiaca will be planted around the mine lease area. A total of 340 trees are planned to be planted. Spacing will be 3m x 3m.

FAUNA

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

Table 4.2 Impacts and mitigation measures for Fauna

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

4.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF ENVIRONMENTAL COMPONENTS.

4.3.1 IMPACT DUE TO MINING OPERATION

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

4.3.2 IMPACT ON AIR ENVIRONMENT

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

4.3.3 Air Emissions

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

4.3.4 Quantitative Estimation of Impacts on Air Environment

An attempt has been made to predict the incremental rise of various ground level concentrations above the baseline status in respect of air pollution due to proposed is 2,82,658.75 Ts of Rough stone and 20,952 Ts of Gravel formation upto a depth of 21m (below ground level) for the period of first five years and remaining quantity of 1,13,396.25 Ts of Rough Stone will be proposed for the period of second five years upto a depth of 31m (below ground level) by the open-cast mechanised mining method.

Cluster quarries production Thiru.G.Sathishkumar (3,96,055 Ts of Rough Stone, 20,952Ts of gravel), Tvl.VST Blue Metals (437013 m3 of Rough Stone, 38880 m3 of gravel), Tvl.VST Blue Metals (193225 m3 of Rough Stone, 22365 m3 of gravel)
The pollutants released into the atmosphere will disperse in the down wind direction and finally reach the ground at farther distance from the source. The concentration of ground level concentrations mainly depends upon the strength of the emission source and micrometeorology of the study area

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

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

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

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

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

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

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

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

Salient features of the AERMOD model are given hereunder:

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

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

4.3.5 Sources of Dust Emission

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

a. Area sources.
b. Line sources.

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

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

4.3.6 Emission Details

All the emissions discussed above are quantified for proposed maximum production of is 2,82,658.75 Ts of Rough stone and 20,952Ts of Gravel formation upto a depth of 21m (below ground level) for the period of first five years and remaining quantity of 1,13,396.25Ts of Rough Stone will be proposed for the period of second five years upto a depth of 31m (below ground level) by the open-cast mechanised mining method.

Cluster quarries production Thiru.G.Sathishkumar (3,96,055 Ts of Rough Stone, 20,952 Ts of gravel), Tvl.VST Blue Metals (437013 m3 of Rough Stone, 38880 m3 of gravel), Tvl.VST Blue Metals (193225 m3 of Rough Stone, 22365 m3 of gravel). The existing air quality levels are covered in the baseline scenario. Excavation, loading and transportation through tippers are the major sources, which are of significance. Therefore, the emissions considered for modeling are from drilling blasting, excavation & transportation rough stone and Gravel.

The emissions are computed based on AP-42 emission factors. Operational hours, activity rate, wind speed and moisture content have been considered for estimation of emissions from point and area sources. For line source, apart from operational hours, activity rate, moisture, silt content and vehicle weight have been considered. Predictions are carried out for the worst-case scenario of simultaneous operation of excavators (area sources) and tippers for transportation from mine pit to loading pit (line sources) over a distance of 500 m.

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

4.3.7 Meteorological Data

The meteorological data recorded continuously during the month of March 2025 – May 2025 on hourly basis on wind speed, wind direction and temperature has been

processed to extract the 24- hourly mean meteorological data as per the guidelines of IMD and MoEF for application of AERMOD model. Stability classes computed for the mean hours is based on guidelines issued by CPCB on modeling. Mixing heights representative of the region have been taken from the available published literature.

4.3.8 Summary of Predicted Ground Level Concentrations

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

The maximum ground level concentration is estimated to be about 1.97 µg/m^3 of PM 2.5 & 3.71 µg/m^3 of PM10 within the mine area and surrounding cluster area 2.46 µg/m^3 of PM 2.5 & 4.64 µg/m^3 of PM10, where mining operations are being carried out. The impact of mining operations would be negligible beyond 0.5 km.

Figure – 4.1 represents the spatial distribution of the predicted ground level concentrations of PM_{10} due to emissions from mine.

4.3.9 Emission sources & Quantification

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

Area Emissions – Total Material handling (Rough Stone& Gravel)

Quantity, TPA	Rough Stone: 2,82,658.75 Ts Gravel: 20,952 Ts (First Five Years) & Rough Stone: 1,13,396.25 Ts (Second Five Years)
Operational Hours Per Year	2400
Activity Rate, t/hr.	396.41362
Emission of dust, g/t.	0.19
Emission of dust, g /hr.	54.42854
Area of influence, m^2	629
Uncontrolled emission rate g/s/m^2	0.000041176

Controlled emission rate, PM10 g/s/m^2	0.000004117
Controlled emission rate, PM2.5 g/s/m^2	0.0000027451

Area Emissions – Total Material handling (Cluster Rough Stone & Gravel)

Quantity, m^3	**Existing Quarries:** Shri. Thiru.G.Sathishkumar (3,96,055 Ts of Rough Stone, 20,952 Ts of gravel) Tvl.VST Blue Metals (437013 m3 of Rough Stone, 38880 m3 of gravel), Tvl.VST Blue Metals (193225 m3 of Rough Stone, 22365 m3 of gravel
Operational Hours Per Year	2400
Activity Rate, t/hr.	392.4565
Emission of dust, g/t.	0.23
Emission of dust, g /hr.	61.4256
Area of influence, m^2	629
Uncontrolled emission rate g/s/m^2	0.000161483
Controlled emission rate, PM10 g/s/m^2	0.00016148
Controlled emission rate, PM2.5 g/s/m^2	0.000010765

(I) Line Source – Transport of Rough Stone & Gravel from Pit to Boundary

Quantity, TPA	Rough Stone: 2,82,658.75Ts Gravel: 20,952Ts (First Five Years) & Rough Stone: 1,13,396.25 Ts (Second Five Years)
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	166
Lead length/trip, Km	0.16
Total VKT/Year	35145
Emission Kg/VKT	0.21
Total emission Kg/Year	15342
Uncontrolled emission rate g/s/m	1.47561
Controlled emission rate, PM10 g/s/m	0.14756
Controlled emission rate, PM2.5 g/s/m	0.01041

Line Source – Transport of Rough Stone & Gravel (Cluster)

Quantity, m^3	Thiru.G.Sathishkumar (3,96,055 Ts of Rough Stone, 20,952 Ts of gravel)

	Tvl.VST Blue Metals(437013 m3 of Rough Stone, 38880 m3 of gravel), Tvl.VST Blue Metals(193225 m3 of Rough Stone, 22365 m3 of gravel
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	1214
Lead length/trip, Km	0.16
Total VKT/Year	671456
Emission Kg/VKT	0.26
Total emission Kg/Year	19452.12
Uncontrolled emission rate g/s/m	2.6913
Controlled emission rate, PM10 g/s/m	0. 26913
Controlled emission rate, PM2.5 g/s/m	0.107655

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

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

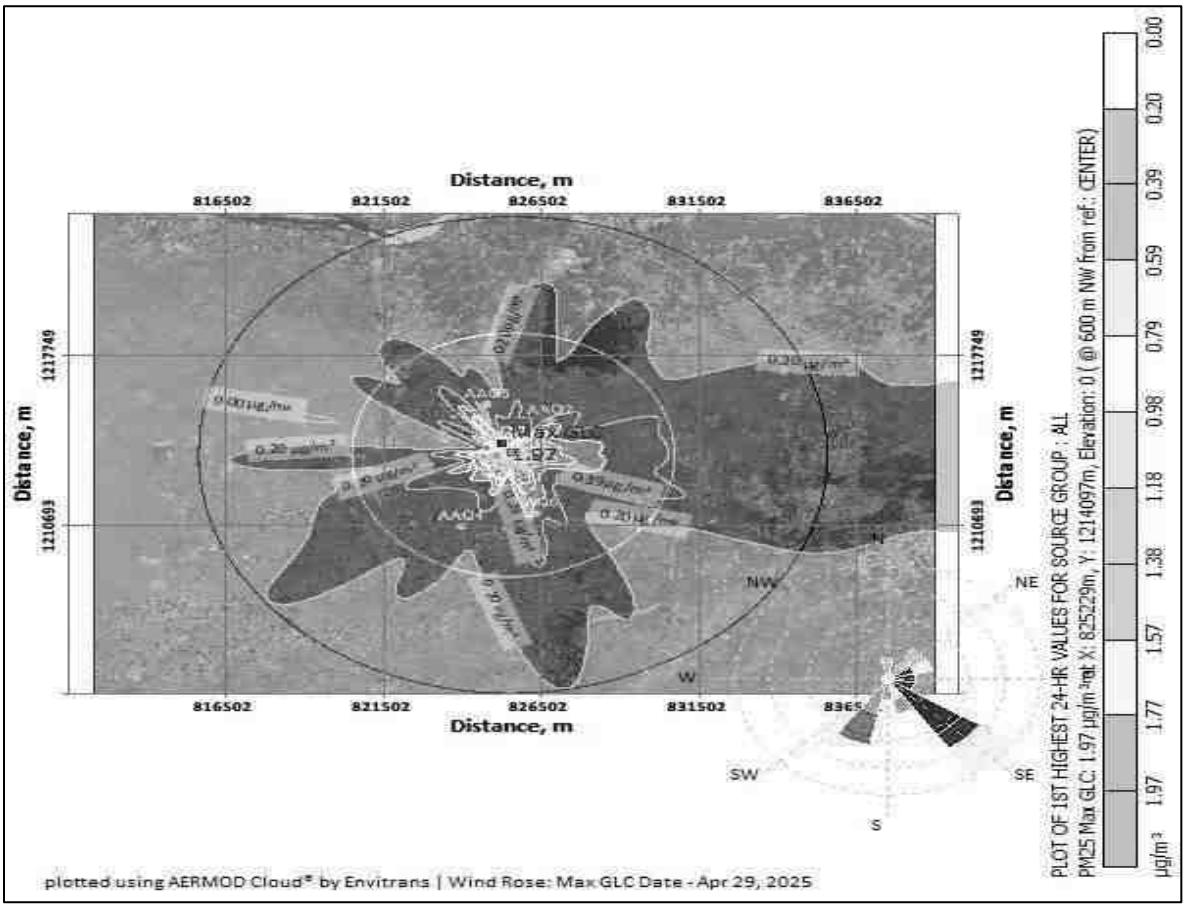


FIG 4.3 Isopleth of GLC Prediction for PM_{10}

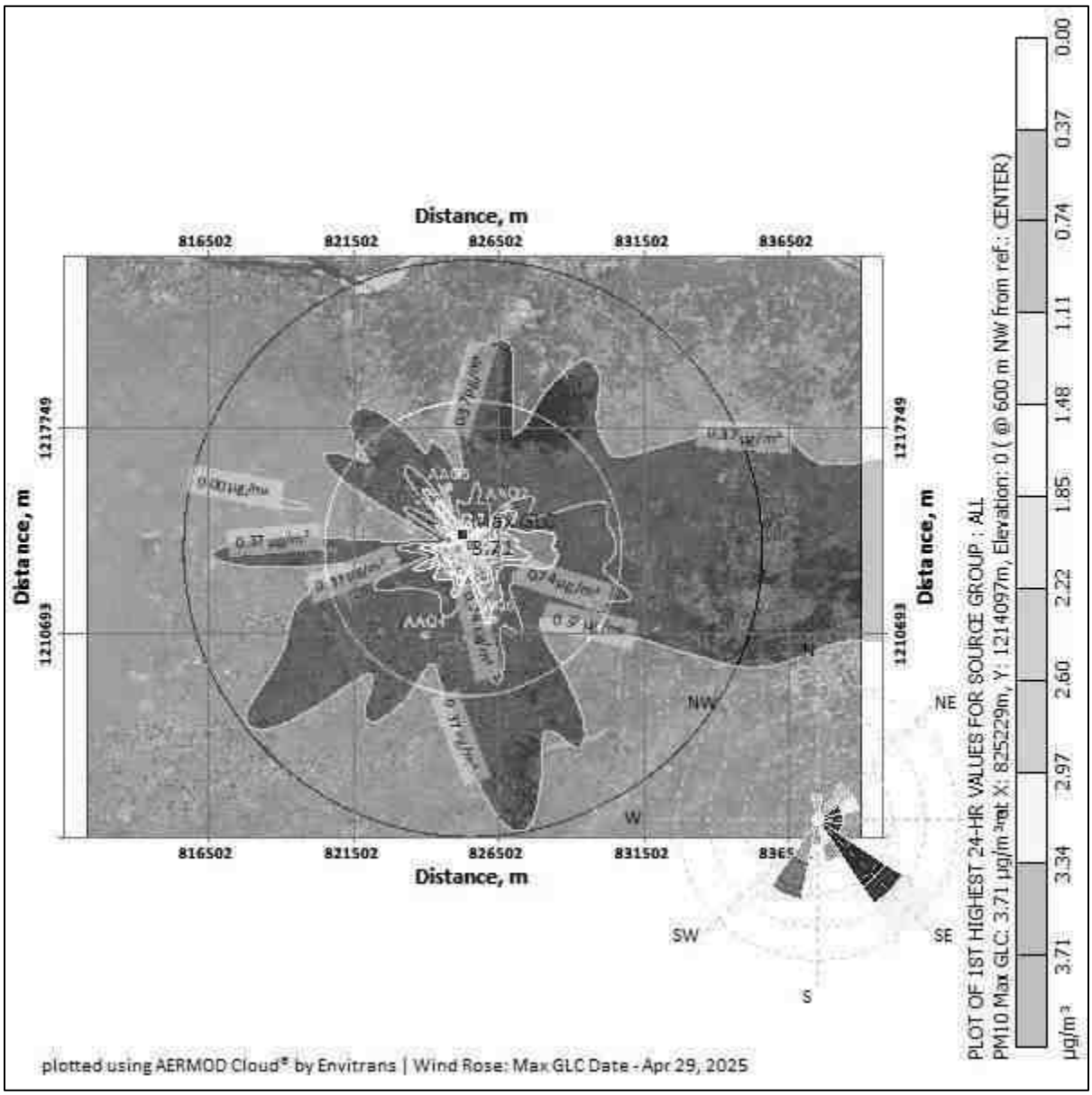


FIG 4.4 Isopleth of GLC Prediction –Cumulative for $PM_{2.5}$

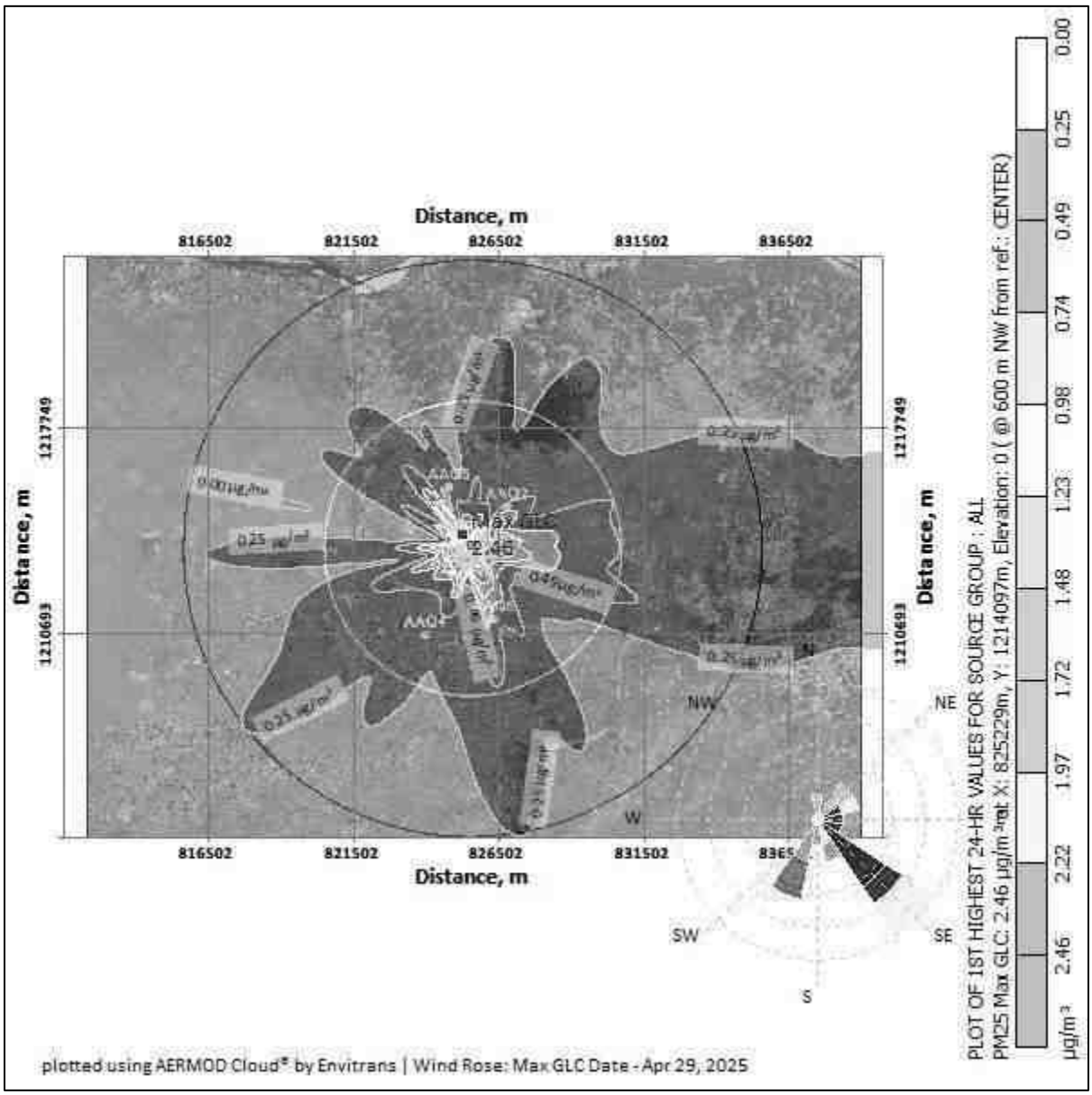
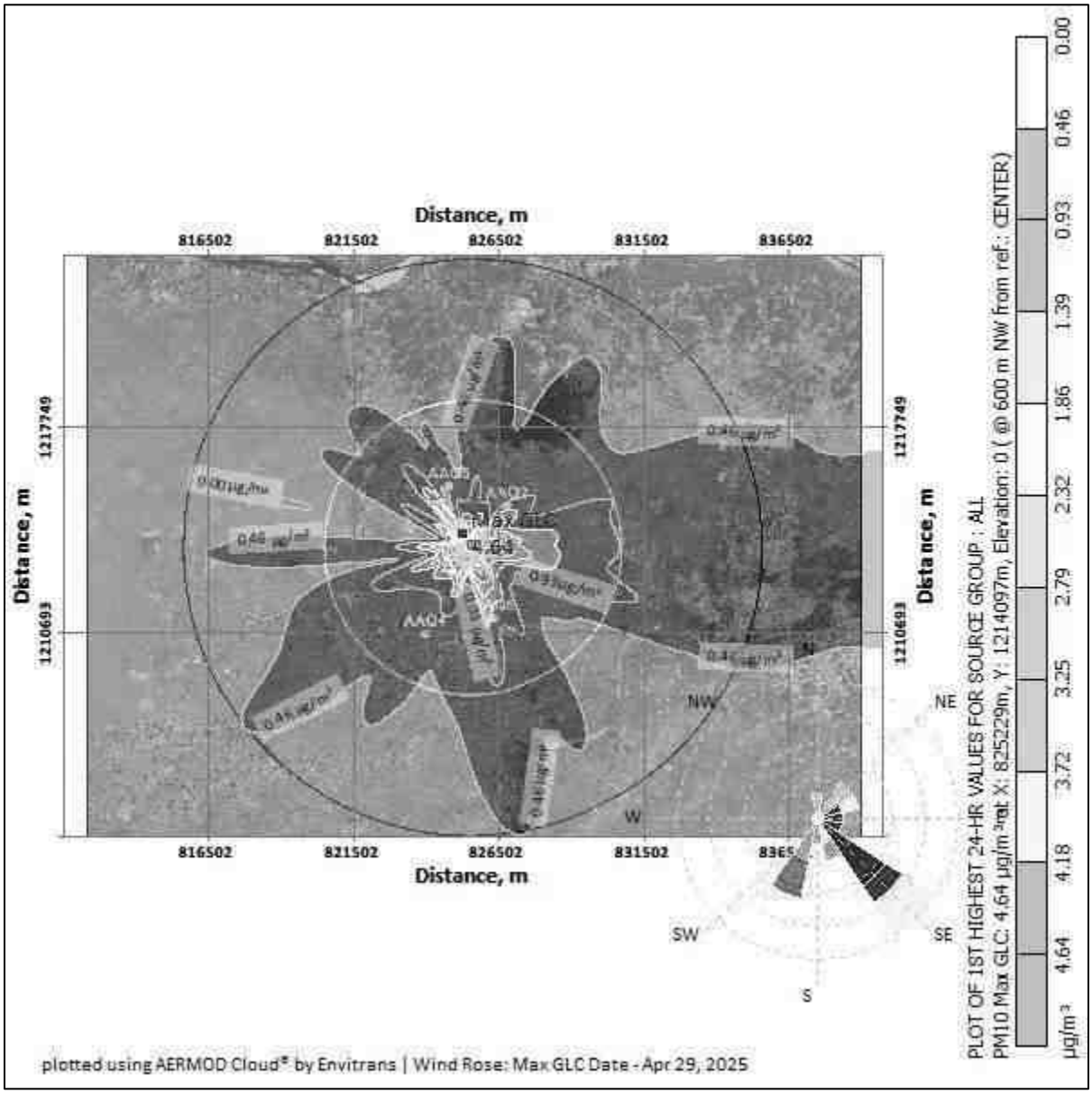


FIG 4.5 Isopleth of GLC Prediction –Cumulative for PM_{10}



PREDICTED AMBIENT AIR QUALITY:

The post project Concentrations of PM10, PM2.5, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 4.3 to 4.4.

Table 4.3 Concentrations of PM2.5 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Project site core zone	29.5	1.97	31.47	60
2	Punnanadupalayam village	22.8	1.77	24.57	
3	Near Govt school, Kurumpapatti	22.85	1.57	24.42	
4	Pudukkanali village	20.1	1.38	21.48	
5	Pullaiyampalayam village	19.85	1.18	21.03	
6	Pavitiramedu village	23.85	0.98	24.83	

Table 4.3a Cluster Concentrations of PM2.5 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Project site core zone	29.5	2.46	31.96	60
2	Punnanadupalayam village	22.8	2.22	25.02	
3	Near Govt school, Kurumpapatti	22.85	1.97	24.82	
4	Pudukkanali village	20.1	1.72	21.82	
5	Pullaiyampalayam village	19.85	1.48	21.33	
6	Pavitiramedu village	23.85	1.23	25.08	

Table 4.3b Concentrations of PM10 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Project site core zone	55.1	4.64	59.74	100
2	Punnanadupalayam village	42.9	4.18	47.08	
3	Near Govt school, Kurumpapatti	42.8	3.72	46.52	
4	Pudukkanali village	38.2	3.25	41.45	

5	Pullaiyampalayam village	36.1	2.79	38.89	
6	Pavitiramedu village	46.7	2.32	49.02	

Table 4.3c Cluster Concentrations of PM10 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Project site core zone	55.1	3.71	58.81	100
2	Punnanadupalayam village	42.9	3.34	46.24	
3	Near Govt school, Kurumpapatti	42.8	2.97	45.77	
4	Pudukkanali village	38.2	2.60	40.8	
5	Pullaiyampalayam village	36.1	2.22	38.32	
6	Pavitiramedu village	46.7	1.85	48.55	

The above report seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for PM_{10} are in the range of 38.89 µg/m^3 to 59.74 µg/m^3 and for $PM_{2.5}$ are in the range of 21.03 µg/m^3 24.83 µg/m^3 and PM_{10} are surrounding area range of 38.32 µg/m^3 to 58.81 µg/m^3 and for $PM_{2.5}$ are in the range of 21.33 µg/m^3 31.96 µg/m^3 which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below.

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

4.4 ASSESSMENT OF SIGNIFICANCE OF IMPACTS (CRITERIA FOR DETERMINING SIGNIFICANCE, ASSIGNING SIGNIFICANCE).

4.4.1 NOISE ENVIRONMENT

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

4.4.2 Likely Noise Levels in Lease Area due to mining activity

S.No.	Source Name	Noise Level in dB (A)
1	Diesel generator	90
2	Excavator Operation	86
3	Trucks movement	82
4	Drilling	96
5	Blasting	102

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

Noise levels were measured in the lease area and in the nearby villages Punnanadupalayam Village, Kurumpapatti Village, Pudukkanali Village, Pullaiyampalayam Village and Pavitiramedu Village, the values are given below.

TABLE 4.4 Noise Levels in Monitoring Locations

S. No.	Location	Distance and direction from Mine lease area	Day Equivalent (in dBA)	Night Equivalent (dBA)
1	Project site core zone	Core Zone	49.7	42.7

2	Punnanadupalayam village	1.89 km, NW	45.9	38.3
3	Near Govt school, Kurumpapatti	1.12 km, SW	48.4	38.7
4	Pudukkanali village	3.59 km, SW	47.2	39.6
5	Pullaiyampalayam village	2.44 Km, NW	46.1	38.1
6	Pavitiramedu village	2.46 Km, SE	49.7	39.3

The noise levels are within the MoEF & CC limits of 70 dB(A) in the working area and in the buffer areas, the values are below the limit of 75 dB(A). Since, the residential area norm has been considered for all six locations mentioned above, during mining operation mine lease area will be considered as industrial area/quarry area for which DGMS norms 85 dB(A)/CPCB guidelines 75 dB(A).

4.4.3 Impact of Noise due to mining

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

4.5 MITIGATION MEASURES

4.5.1 Noise level control.

- As the distance between the source and receptor increases, the noise level decreases. Hence, there will be a natural attenuation.
- The proponent has planned to develop green belt in the periphery of the lease area which diminishes sound volume by dampening them.

- All the equipment/machinery/tippers involved will be properly maintained to control noise generation.
- Conducting regular health checkups for employees involved.
- Employees will be made to work on shifts to reduce their exposure time.
- Providing earplugs to all employees.
- Providing green walls/nets wherever possible.

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

4.5.2 IMPACTS DUE TO VIBRATION

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

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

Impacts

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

Mitigation measures

- The DG set will be kept within the acoustic enclosure made by the stone blocks.
- Drills will be equipped with sharp bits and wet drilling will be adopted.
- A well-planned green belt is proposed for the mining to reduce noise level.
- Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.
- Regular maintenance of the machineries and vehicles to reduce the noise level.
- Use of ear muffs by the workers with occupational exposure to noise.

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

4.5.3 SOCIO ECONOMIC IMPACT

The lease area is Patta land. The proponent has planned to spend INR 3,00,000 for CER activities.

4.5.4 OCCUPATIONAL HEALTH

Impacts on humans due to various mining activities

The occupational risk due to proposed mining may be due to drilling, blasting, excavation and transportation. A total of 23 workers will be engaged in the mining activity. Mining activity may cause various health problems to the mines workers as follows:

- Dust generated during excavation, drilling, stone cutting, sizing and transportation may cause health problems like Silicosis, Asthma, Tuberculosis and other respiratory lungs disorders.
- Heavy weight lifting by the workers may cause injuries to arms, legs and back.
- Noise generated during the mining activity may cause Noise Induced Hearing Loss (NIHL).

Table 4.5 Impacts on humans due to various mining activities

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

Mitigation measures

- The mines worker will be provided with dust mask to minimize the inhalation of the dust.
- Water sprinkling twice in a day is in practice on the haul roads, near excavation and roads to reduce the fugitive dust emission.
- Wet drilling and drilling with dust extractor will be practiced.
- Ear muffs will be supplied to the workers working in the noise prone area
- The mining site will be supplied with first aid facilities and the entire mines worker will have access to that.
- The mines workers will be well trained about the safety practices in the mining activities.
- As per Mines Rules, 1955, medical examination of employees at the initial stage and periodically, shall be done by a team of qualified medical officers provided by the project proponent.
- Regular medical checkup camps shall also be arranged for detection of occupational diseases and minor disease in the nearby rural population.
- Free checkup and medicine for treatment for their acute and chronic illness shall be provided by the lessee. Conducting periodical Medical Examination as per DGMS.
- Making all first aid kits available in mines office
- Keeping fire extinguisher in place
- Educating the employees about how to handle unexpected happenings
- Posting information containing emergency contact numbers in mines office
- By adopting all these measures, the safety of the employees working in the quarry will be ensured.

4.5.5 WASTE MANAGEMENT

Solid Waste

Since the entire mined out material will be utilized there will not be any solid waste generation from this project. However, the Solid waste (MSW) generated from

administrative activities will be properly collected and disposed to Govt. Authorized yards / Re-cylers / Disposers.

Liquid Waste

There is no process effluent generation from this mine. Hence no liquid waste is generated. Domestic wastewater i.e 1.0 KLD will be discharged in soak pit via septic tank.

Hazardous Waste Management

In this project the following management practices will be followed:

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

Plastic Waste

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

RAINWATER HARVESTING PLAN

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

- Development of garland drain all around the quarry, connected to settling tank.
- Cleaning of drain periodically to prevent siltation

- Utilizing the rainwater harvested in the mine pit to meet the water requirement of the project.

The average annual rainfall of the area is 724mm. Taking into consideration of 0.35 as runoff co-efficient for mining area

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CHAPTER 5

ANALYSIS OF ALTERNATIVES

5.1 DESCRIPTION OF EACH ALTERNATIVE

Analysis of alternative site helps in selection of best possible site for the project. On one hand it helps to closeness to the existing infrastructure and on other hand it also helps to minimize the impact of project on environment.

5.2 SUMMARY OF ADVERSE IMPACTS OF EACH ALTERNATIVE

The project proponent has prepared mining plan under rule 19(1) 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Dept. of Geology & Mining, Karur vide Rc.No.582/Mines/2024 dated 12.03.2025.

- There is no forest land or other Eco-sensitive places.
- Proposed mine site is selected on the basis of occurrence of mineral for suitable end use.

Hence seeking alternative site is not required.

5.3 MITIGATION MEASURES PROPOSED FOR EACH ALTERNATIVE

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

5.4 SELECTION OF ALTERNATIVE

In case of Mining projects alternate site selection is not necessary as the mining is site specific and the area in which mining will be carried out has been adequately proved for presence of mineral. The deposit is also having good infrastructural facilities for access and development.

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

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CHAPTER 6

ENVIRONMENTAL MONITORING PROGRAMME

6.1 TECHNICAL ASPECTS OF THE MONITORING THE EFFECTIVENESS OF MITIGATION MEASURES (INCL MEASUREMENTS, METHODOLOGIES, FREQUENCY LOCATION DATA ANALYSIS, REPORTING SCHEDULES EMERGENCY PROCEDURES DETAILED BUDGET AND PROCUREMENT SCHEDULES)

6.1.1 ENVIRONMENTAL MONITORING

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

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

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

6.1.2 OBJECTIVES OF ENVIRONMENTAL MONITORING

The objectives of Environmental Monitoring are as follows.

- Monitoring and analysis of air and water samples
- Implementing the control and protective measures.

- Coordinating the environment related activities within the project as well as with outside agencies. Collecting statistics of health of workers and population of the surrounding villages. Green belt development etc.
- Monitoring the progress of implementation of Environmental Management Programme.
- Monitoring the noise generation in and around the project areas.
- Monitoring of wastewater treatment and disposal of solid waste.
- The laboratory will be suitably equipped for sampling/testing for various environmental pollutants.

6.1.3 ENVIRONMENTAL MONITORING SCHEDULE

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

Table 6.1 Environmental Monitoring Schedule

Sl.No.	Description of Parameters	Parameters	Frequency
1	Air	Air Quality for SPM, PM-10, PM-2.5, SO_2 and NO_x	24-hour average samples Once in a 3 month.
2	Water	General, Physical, and chemical parameters	Once per season
3	Noise	L_{eq}, L_{max}, L_{min}, L_{eq} Day & L_{eq} Night dB(A)	8-hour average samples Once in a 3 month.
4	Soil	Physical and Chemical characteristics.	Once per season

6.1.4 LOCATION

Monitoring of the above-mentioned environmental parameters would be done at appropriate and sensitive areas. The exact location of monitoring is given as Figure – 3.5, 3.12, 3.13 & 3.14.

6.1.5 MEASUREMENT METHODOLOGY

(a) Ambient Air Quality

Ambient air quality will be monitored for SO_2, NO_x, PM_{10} and $PM_{2.5}$. The instruments like high volume air samplers and Respirable dust samplers would be used for this purpose. These parameters will be monitored as mentioned in the monitoring schedule previously.

(b) Water Quality

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

(c) Noise Monitoring

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

(d) Green Belt and Afforested Areas

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

(e) Socio-Economics

Socio-economic of the core and buffer zone details elaborated in Chapter-3.

6.1.6 TECHNICAL ASPECTS OF MONITORING THE EFFECTIVENESS OF MITIGATION MEASURES

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

6.1.7 EMERGENCY PROCEDURES

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

6.1.8 REPORTS TO BE GENERATED

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

Table 6.2 Important Records to be maintained by PP

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

6.1.9 DETAILED BUDGET AND PROCUREMENT SCHEDULES

The budget planned for environmental monitoring is given below.

Table 6.3 - Environmental Management Plan Budget

Activities	Mitigation Measure	Capital cost	Recurring Cost per Annum
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	0.07	0.07
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	5.00	0.25
	Muffle blasting – To control fly rocks during blasting	0.00	0.05
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	0.20	0.04
	No overloading of trucks/tippers/tractors	0.00	0.05
	Stone carrying trucks will be covered by tarpaulin	0.00	0.10
	Enforcing speed limits of 20 km/hr within ML area	0.06	0.01
	Regular monitoring of exhaust fumes as per RTO norms	0.00	0.05
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	0.00	0.29
	Installing wheel wash system near gate of quarry	0.20	0.05
Sub-Total (A)		**5.53**	**0.96**
Noise Environment	Provision for Portable blaster shed	0.30	0.02
Sub-Total (B)		**0.30**	**0.02**
Waste Management	Provision for domestic waste collection and disposal through authorized agency	0.20	0.10
	Installation of dust bins	0.05	0.02
Sub-Total (C)		**0.25**	**0.12**

Mine Closure	Plantation inside ML area (340 Nos.)	0.34	0.07
Sub-Total (D)		**0.34**	**0.07**
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	0.05	0.01
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	0.00	0.50
	Workers will be provided with Personal Protective Equipment's	0.23	0.02
	Health checkup for workers will be provisioned	0.00	0.12
	First Aid facility Provision	0.00	0.01
	Signage & boards for safety precautions	0.05	0.01
	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	0.15	0.01
	Installation of CCTV cameras in the mines and mine entrance	0.15	0.02
Sub-Total (E)		**0.63**	**0.70**
Grant Total (A+B+C+D+E)		**7.05**	**1.87**
Total EMP Cost for 10 years is 30.61 lakhs i.e., Rs.7.05 Lakhs of Capital Cost + Rs.23.56 Lakhs of Recurring Cost **(For 10 Years)**			

The proposal for Corporate Environment Responsibility (CER) activities is given as follows;

S. No.	PROPOSED CER ACTIVITIES	COST IN LAKHS.
1	Plantations inside and outside the school premises	3.0
2	Providing A4 papers, Scanner cum printer and painting the school building	
Total		**3.0**

The above proposed CER cost will be spent on Government Adi Dravidar Welfare High School, Punnam Village and I assure you that the proposed CER activities will be completed before the commencement of quarrying operations.

The total project cost is as given below:

Fixed Cost		
Land Cost	:	Rs.8.775 Lakhs
First Aid Room	:	Rs.1.000 Lakh
Rest Shelter	:	Rs.1.000 Lakh
Sanitary Facility	:	Rs.1.000 Lakh
		Total (A)– Rs.11.775 Lakhs
Operational Cost		
Machineries	:	Rs.50.000 Lakhs
Fencing cost	:	Rs.1.500 Lakhs
		Total (B) – Rs. 51.500 Lakhs
EMP Cost		
Air Environment, Noise Environment, Mine Closure, Implementation of EC, Mining Plan & DGMS Condition	**:**	**Total(C)–Rs.30.61 Lakhs**
CER Cost		
Plantation, Providing A4 papers, Scanner cum printer and Painting the school building	:	**Total (F)– Rs.3.00 Lakhs**
Grand Total (A+B+C+D+E+F)	**:**	**R.96.885 Lakhs**

CHAPTER 7
ADDITIONAL STUDIES

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

- Public consultation
- Risk Assessment
- Social Impact Assessment, R&R Action Plans
- Cumulative Environmental Impact Assessment Study
- A detailed Hydrogeological Study
- Slope Stability plan

7.1 PUBLIC CONSULTATION

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

7.2 RISK ASSESSMENT & MANAGEMENT

(a) Objectives

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

- To identify the potentially hazardous areas so that necessary design safety measures can be adopted to minimize the probability of accidental events.

- To identify the potential areas of environmental disaster which can be prevented by proper design of the installations and its controlled operation.
- To manage the emergency situation or a disastrous event, if any, from the mining operation.

The major hazards related to the mining activities are as follows

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

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

Table 7.1 Hazards and Precautionary measures

S.No.	Hazard	Precautionary measures
1	Fire	Fire suppressants will be made available at mines office and explosive storage room.
2	Explosion	Controlled blasting will be done. DGMS norms will be strictly followed during blasting. Blasting will be done only by trained professionals.
3	Combustion of chemicals or hazardous substances	Combustible Substances are stored with all precautionary measures. Fire suppressant is made available at storage site
4	Landslide	Width, height and slope will be maintained as suggested by DGMS
5	Accidents during handlings	All vehicles will be properly maintained. Overloading will not be done. Only trained/certified people will be employed.
6	Accidental fall of people or animals	The lease area will be fenced properly. Only people working in the mines will be permitted to enter.

7.3 REHABILITATION AND RESETTLEMENT (R & R) PLAN

No land is acquired from people dwelling in the area. The lease area is an uninhabited

land. No R & R plan is proposed.

7.3.1 CUMULATIVE ENVIRONMENTAL IMPACT ASSESSMENT STUDY

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

Table 7.2 Cluster Mines Details

S.No	Name of the Quarry Owner	S.F. Nos, Taluk, Village & Extent (Ha)	Lease Period	Remarks
		Abandoned Quarry		
1.	K.Samyappan, S/o.Karuppana Gounder, Pungodai, Kulathupalayam, Vettamangalam, Karur District	1076/2 (P),Pugalur (T), Punnam (V),0.60.00 Ha	03.04.2007 to 02.04.2012	Abandoned Rough stone & Gravel Quarry
2.	K.M.Gurusamy, S/o.Marappan,2/90, Iyyanur, Punnam (Post), Aravakurichi Taluk, Karur District	1232/11 (P), 1232/1 (P), 1232/3, 1232/4 (P), 1232/5 (P), 1232/6 (P), 1232/7 (P), 1232/8 (P), 1232/9 (P), 1233/5 (P), 1233/6 (P), 1233/7 (P), 1238/8 (P), 1238/9 (P), Pugalur (T), Punnam (V), 2.00.50 Ha	03.12.2018 to 02.12.2023	Abandoned Rough stone & Gravel Quarry
3.	Tvl.VST Blue Metals, S.F.No.645/B1, Punnamchathiram, Erode Main Road, Aravakurichi Taluk, Karur District	1196/1A, 1196/1B (P), 1197/12A (P), Pugalur (T), Punnam (V), 3.61.0 Ha	23.10.2017 to 22.10.2022 Covid Extension 23.10.2022 to 22.04.2024	Abandoned Rough stone & Gravel Quarry

Existing Quarry				
1.	Tvl.VST Blue Metals, S.F.No.645/B1, Punnamchathiram, Erode Main Road, Aravakurichi Taluk, Karur District	1199/2, 1199/3, 1199/4, 1199/5, 1199/6, 1199/7, 1199/8, 1199/9, 1200/4, 1200/5, 1200/6, 1200/7, 1200/8, 1200/9, 1200/10, 1200/11, 1200/12, 1201 (P), Pugalur (T), Punnam (V), 3.82.50 Ha	15.11.2022 to 14.11.2028	Existing
2	Tvl.VST Blue Metals, S.F.No.645/B1, Punnamchathiram, Erode Main Road, Aravakurichi Taluk, Karur District	1197/1 (P), 1197/5, 1197/6, 1197/7, Pugalur (T), Punnam (V), 2.58.00 Ha	08.05.2023 to 07.05.2028	Existing
Proposed Quarry				
1	G.Sathishkumar S/o.Gurusamy, Door No.2/90, Punnam, Ayyanur, Pugalur Taluk, Karur District	1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B, 1233/4B, 1233/5B2, 1233/9B, 1233/10, 1223/1B, 1234/1A and 1234/2B, Pugalur (T), Punnam (V), 1.46.25 Ha	-	Proposed Quarry
Area of Cluster		**7.86.75 Ha**		

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

7.3.2 AIR QUALITY IMPACT PREDICTION FOR THE CLUSTER

The AERMOD atmospheric dispersion modeling (AERMOD Cloud remote version) is used for assessment of incremental Ground level concentration (GLC) for the cluster area. Area source model taken into consideration taking into consideration of wet drilling and loading of the cluster mines. Further line source model was taken into consideration for transportation through haul road. Baseline meteorological studies were conducted for the period of March to May 2025. The following sources are considered.

Emission sources & Quantification of the cluster area.

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

Area Emissions – Total Material handling (Rough Stone& Gravel)

Quantity, TPA	Rough Stone: 2,82,658.75 Ts Gravel: 20,952 Ts (First Five Years) & Rough Stone: 1,13,396.25 Ts (Second Five Years)
Operational Hours Per Year	2400
Activity Rate, t/hr.	396.41362
Emission of dust, g/t.	0.19
Emission of dust, g /hr.	54.42854
Area of influence, m^2	629
Uncontrolled emission rate g/s/m^2	0.000041176
Controlled emission rate, PM10 g/s/m^2	0.000004117
Controlled emission rate, PM2.5 g/s/m^2	0.0000027451

Area Emissions – Total Material handling (Cluster Rough Stone & Gravel)

Quantity, m^3	**Existing Quarries:** Shri. Thiru.G.Sathishkumar (3,96,055 Ts of Rough Stone, 20,952 Ts of gravel) Tvl.VST Blue Metals(437013 m3 of Rough Stone, 38880 m3 of gravel), Tvl.VST Blue Metals(193225 m3 of Rough Stone, 22365 m3 of gravel
Operational Hours Per Year	2400
Activity Rate, t/hr.	392.4565
Emission of dust, g/t.	0.23

Emission of dust, g /hr.	61.4256
Area of influence, m^2	629
Uncontrolled emission rate g/s/m^2	0.000161483
Controlled emission rate, PM10 g/s/m^2	0.00016148
Controlled emission rate, PM2.5 g/s/m^2	0.000010765

(II) Line Source – Transport of Rough Stone & Gravel from Pit to Boundary

Quantity, TPA	Rough Stone: 2,82,658.75Ts Gravel: 20,952Ts (First Five Years) & Rough Stone: 1,13,396.25 Ts (Second Five Years)
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	166
Lead length/trip, Km	0.16
Total VKT/Year	35145
Emission Kg/VKT	0.21
Total emission Kg/Year	15342
Uncontrolled emission rate g/s/m	1.47561
Controlled emission rate, PM10 g/s/m	0.14756
Controlled emission rate, PM2.5 g/s/m	0.01041

Line Source – Transport of Rough Stone & Gravel (Cluster)

Quantity, m^3	Shri. Thiru.G.Sathishkumar (3,96,055 Ts of Rough Stone, 20,952 Ts of gravel) Tvl.VST Blue Metals (437013 m3 of Rough Stone, 38880 m3 of gravel), Tvl.VST Blue Metals (193225 m3 of Rough Stone, 22365 m3 of gravel
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	1214
Lead length/trip, Km	0.16
Total VKT/Year	671456
Emission Kg/VKT	0.26
Total emission Kg/Year	19452.12
Uncontrolled emission rate g/s/m	2.6913

Controlled emission rate, PM10 g/s/m	0. 26913
Controlled emission rate, PM2.5 g/s/m	0.107655

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

FIG 7.1 Isopleth of GLC Prediction for $PM_{2.5}$

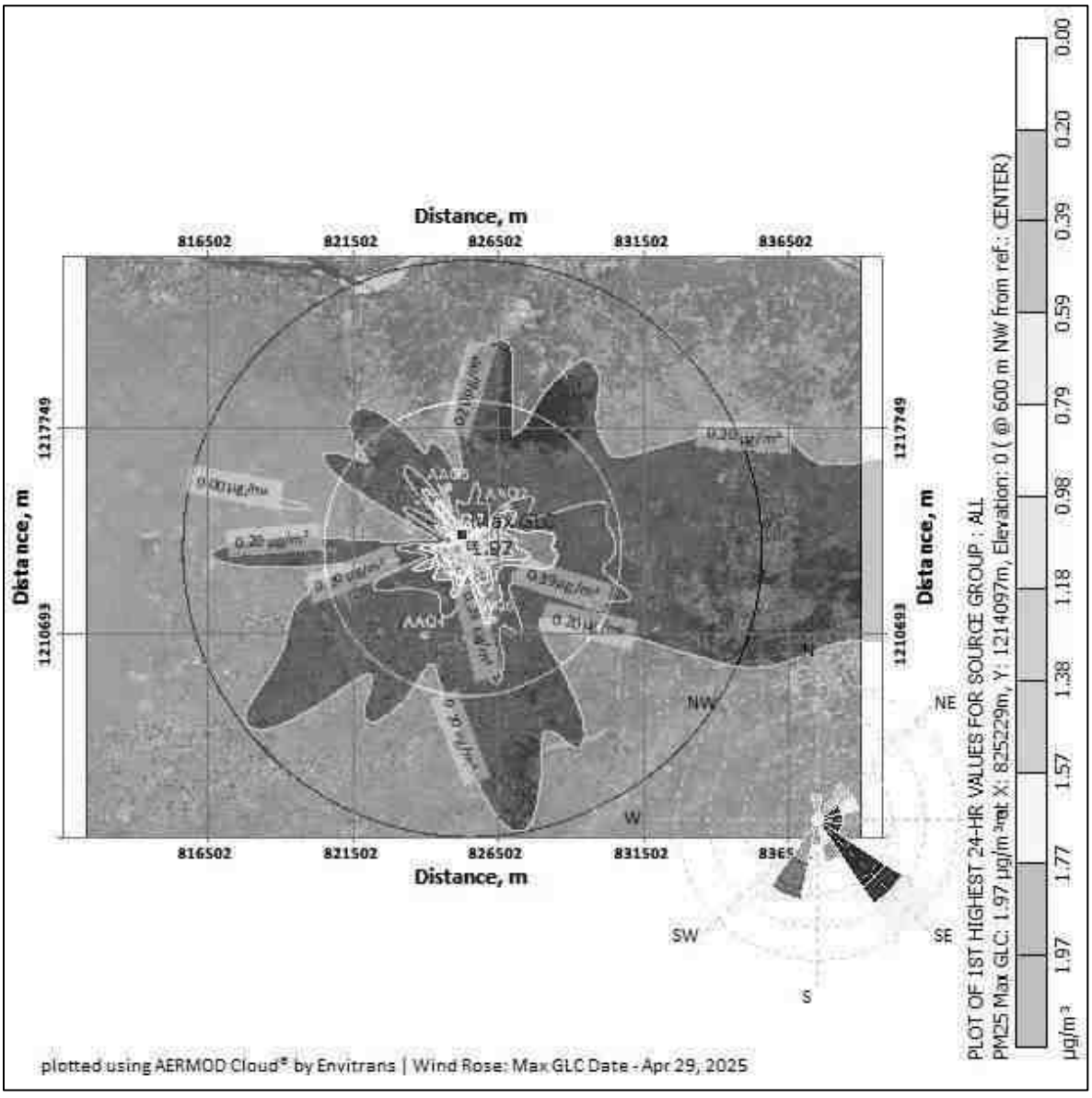


FIG 7.2 Isopleth of GLC Prediction for PM_{10}

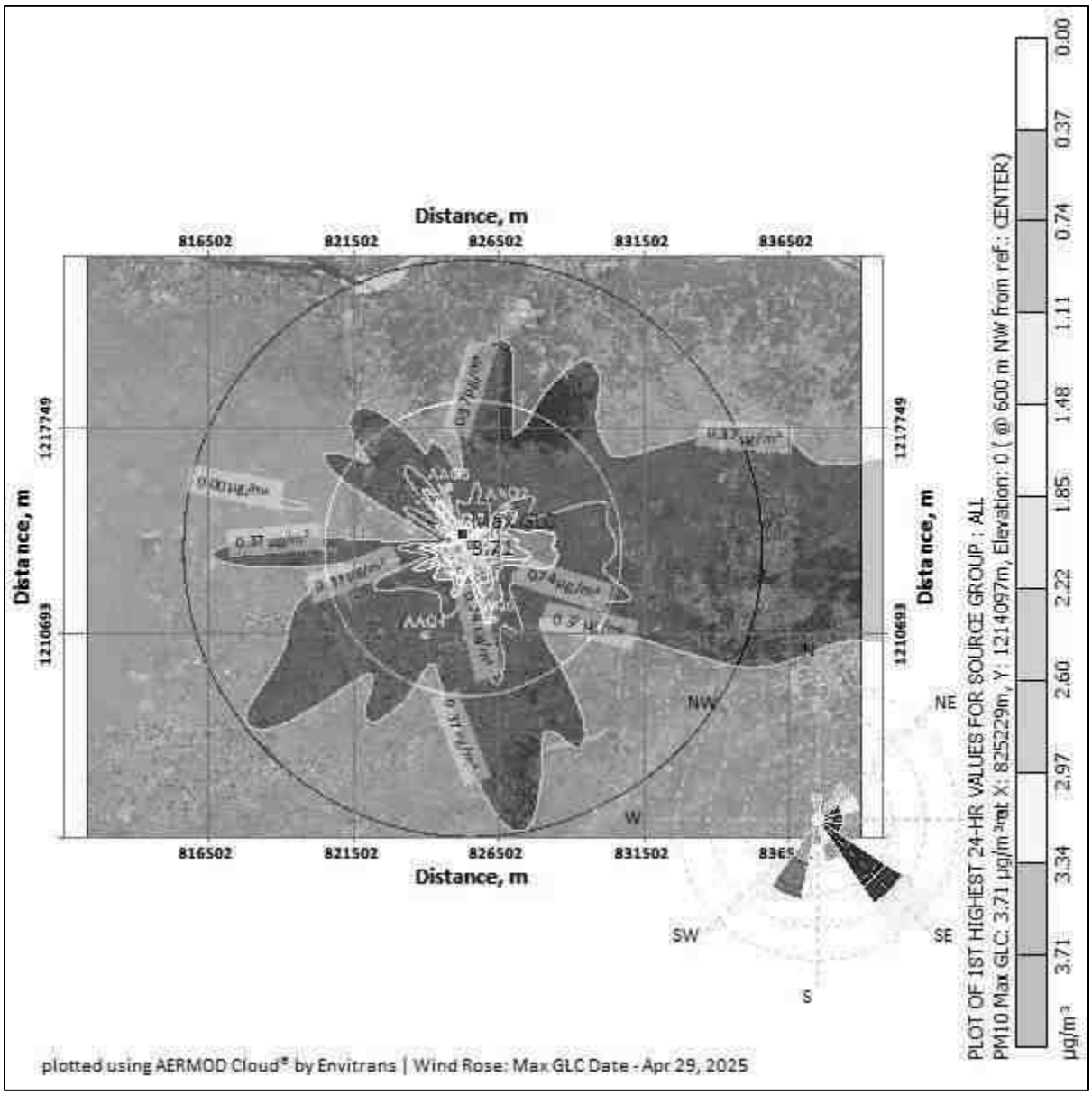


FIG 7.3 Isopleth of GLC Prediction –Cumulative for $PM_{2.5}$

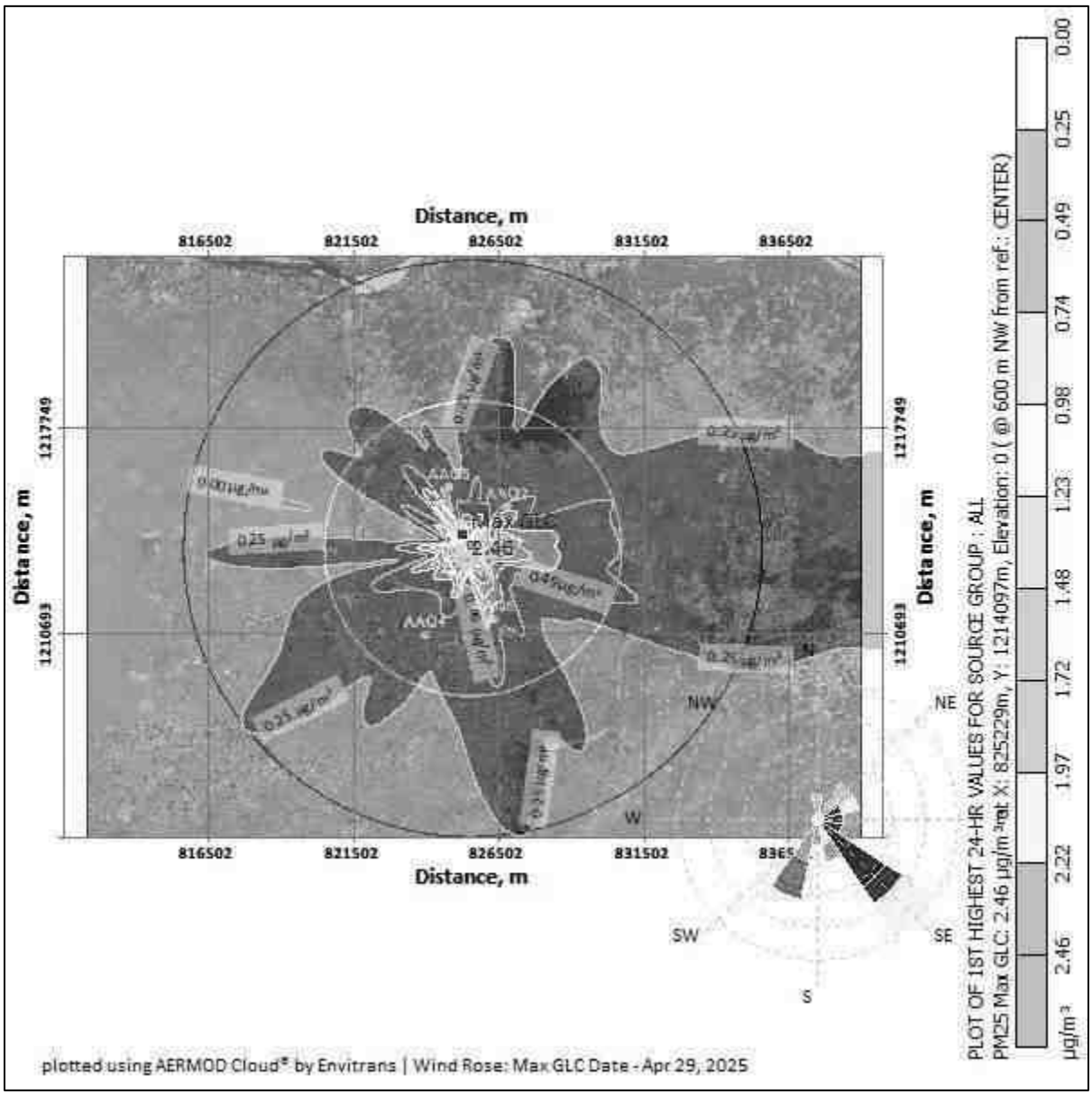
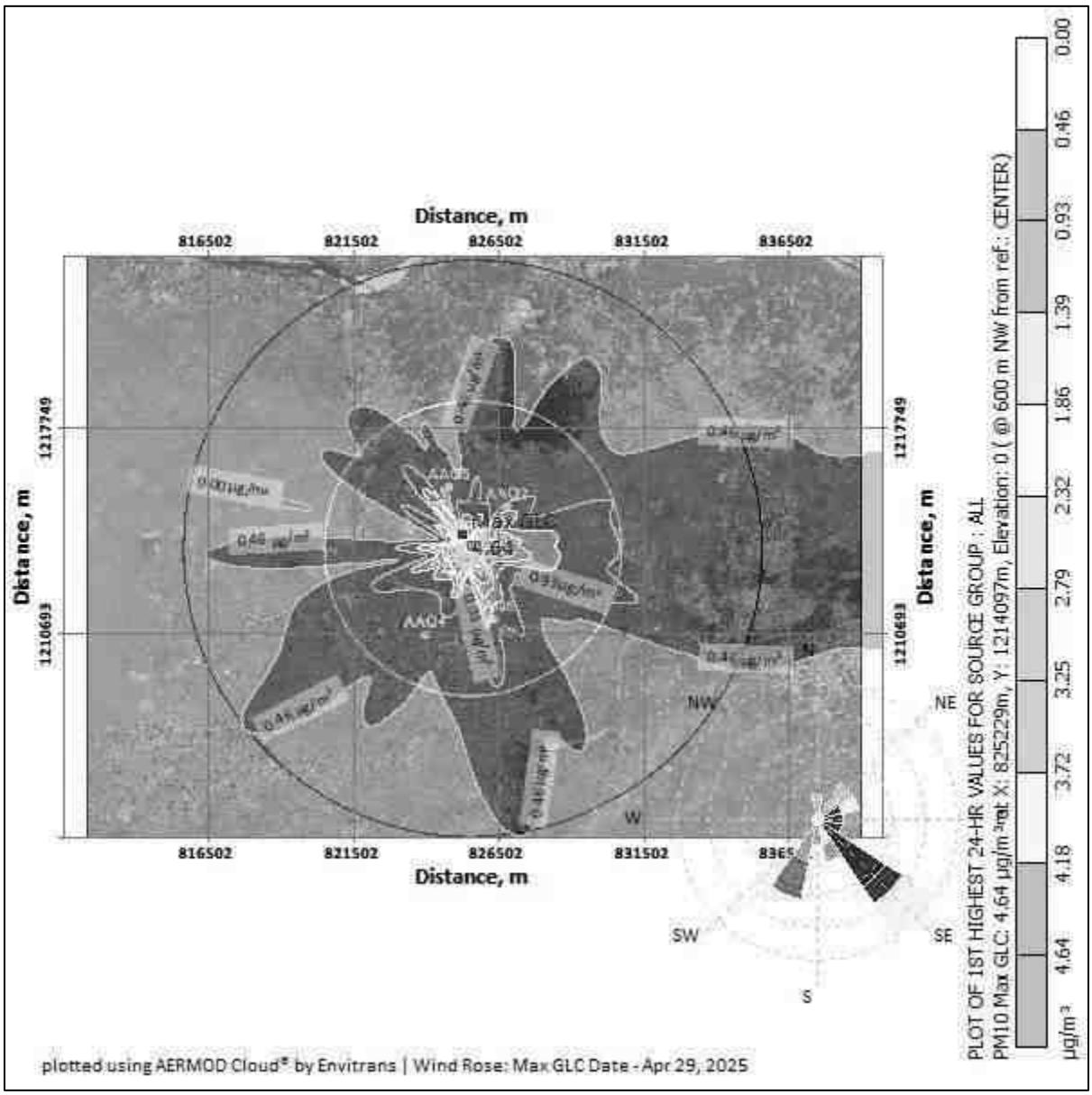


FIG 7.4 Isopleth of GLC Prediction –Cumulative for PM_{10}



PREDICTED AMBIENT AIR QUALITY:

The post project Concentrations of PM10, PM2.5, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 7.4 to 7.4.

Table 7.3 Concentrations of PM2.5 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Project site core zone	29.5	1.97	31.47	60
2	Punnanadupalayam village	22.8	1.77	24.57	
3	Near Govt school, Kurumpapatti	22.85	1.57	24.42	
4	Pudukkanali village	20.1	1.38	21.48	
5	Pullaiyampalayam village	19.85	1.18	21.03	
6	Pavitiramedu village	23.85	0.98	24.83	

Table 7.3a Cluster Concentrations of PM2.5 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Project site core zone	29.5	2.46	31.96	60
2	Punnanadupalayam village	22.8	2.22	25.02	
3	Near Govt school, Kurumpapatti	22.85	1.97	24.82	
4	Pudukkanali village	20.1	1.72	21.82	
5	Pullaiyampalayam village	19.85	1.48	21.33	
6	Pavitiramedu village	23.85	1.23	25.08	

Table 7.3b Concentrations of PM10 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Project site core zone	55.1	4.64	59.74	100
2	Punnanadupalayam village	42.9	4.18	47.08	
3	Near Govt school, Kurumpapatti	42.8	3.72	46.52	
4	Pudukkanali village	38.2	3.25	41.45	

5	Pullaiyampalayam village	36.1	2.79	38.89	
6	Pavitiramedu village	46.7	2.32	49.02	

Table 7.3c Cluster Concentrations of PM10 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Project site core zone	55.1	3.71	58.81	100
2	Punnanadupalayam village	42.9	3.34	46.24	
3	Near Govt school, Kurumpapatti	42.8	2.97	45.77	
4	Pudukkanali village	38.2	2.60	40.8	
5	Pullaiyampalayam village	36.1	2.22	38.32	
6	Pavitiramedu village	46.7	1.85	48.55	

The above report seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for PM_{10} are in the range of 38.89 µg/m^3 to 59.74 µg/m^3 and for $PM_{2.5}$ are in the range of 21.03 µg/m^3 24.83 µg/m^3 and PM_{10} are surrounding area range of 38.32 µg/m^3 to 58.81 µg/m^3 and for $PM_{2.5}$ are in the range of 21.33 µg/m^3 31.96 µg/m^3 which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below

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

Cumulative Impact on Traffic

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

Table 7. 4 – Impact on Traffic

TRAFFIC STUDY:						
ToR Condition		**Study Details**		**Study Outcome / Action Plan**		
Standard ToR		**Traffic Study**		**Follows**		
Total Proposed Mineral Transportation of the Cluster Quarries:						
Quarry		**Total Mineral Production in MT Per Day**		**No of Lorries per day**		
P1(G.Sathishkumar - Proposed)		**529**		**53**		
P2 (M/s.VST Blue metals- Existing)		**908**		**90.8**		
P3 (Tvl.VST Blue metals- Existing)		**356**		**35.6**		
Total		**1793**		**174.4**		
Since two quarries already exist, it is part of the current traffic. The proposed projects will add 53 trips per day.						
Summary of Traffic Volume for the Cluster Area						
Route	**Existing Traffic Survey in PCU**	**Incremental Traffic Survey due to project in PCU**	**Total Traffic Survey Volume**	**Hourly capacity in PCU as per IRC - 1960 guidelines**		
NH-81 Karur – Coimbatore 2.4km (S)	**530**	**19.87**	**549.87**	**3000**		
Modified Level of Service for the cluster area						
Sampling Location	**Existing Volume (PCU/hr)**	**Existing Capacity Volume/ city ratio**	**Additional Volume (PCU/hr)**	**Modified Volume (PCU/hr)**	**Modified Volume/ Capacity ratio**	**Modified LOS**

NH-81 Karur – Coimbatore 2.4km (S)	**530**	**0.17**	**24**	**0.18**	**0.35**	**B***
B* - Stable traffic Flow **Conclusion: The existing road capacity will be Stable traffic flow after adding dispatch of proposed cluster quarries.**						

The proposed projects will bring 53 trips per day including cluster quarries. The existing road can absorb this additional traffic due to this project. Various measures like proper maintenance of road, covering of the loaded truck with tarpaulin, water sprinkling will be carried out to ensure no adverse impact on the logistical front.

7.3.3 HYDROGEOLOGICAL STUDY

There is Amaravathi river is located at a distance of 6.2 km in SE direction of lease area. Due to the presence of these water bodies nearby, a detailed hydrogeological study has been done. As suggested in the Precise Area Communication letter, safety distances of 7.5m to adjacent Patta land.

7.3.4 SLOPE STABILITY STUDY

The proposed quarry is a very small quarry and the production is also less. Opencast mechanized mining with a bench height of 5m and bench width of 5m and 45° Slope is proposed. The depth of mining is proposed as 31m (BGL), which is the ultimate pit limit. Also, there is no overburden since the entire mined out material will be utilized.

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

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

7.3.5 DISASTER MANAGEMENT PLAN

Proper preventive mechanism exists already in the mines.

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

7.3.6 MINE CLOSURE PLAN

The quarrying operation is proposed up to a depth of 31m (BGL) only, which will be achieved in 5 years. The ultimate pit dimension will be length 186 m x Width 59 m x Depth 31 m. After completion of quarrying operation, the mined-out pit will be left as rain water harvesting pond. The quarry will be properly fenced with barbed wire.

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CHAPTER 8
PROJECT BENEFITS

INTRODUCTION

Thiru.G.Sathishkumar has proposed Rough stone and gravel quarry over an extent of 1.46.25 ha located at S.F.Nos. 1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B, 1233/4B, 1233/5B2, 1233/9B, 1233/10, 1223/1B, 1234/1A and 1234/2B of Punnam Village, Pugalur Taluk, Karur District Tamil Nadu State.

PROJECT BENEFITS

Project benefits are attributed in various ways as under:

- Environment Benefits
- Employment Potential: Skilled, Semi-skilled & Un-skilled
- Economic Benefits
- Social Benefits

8.1 IMPROVEMENTS IN THE PHYSICAL INFRASTRUCTURE

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

8.2 IMPROVEMENTS IN THE SOCIAL INFRASTRUCTURE

The proposed project will help in improving the socio-economic status of the near-by villages by generating direct or indirect employment opportunities. Substantial amount of indirect revenue will be generated by transportation activities along with employment e.g. labour, helper etc.

ECONOMIC BENEFITS:

The execution of proposed mine will boost the economy of the area by creating direct & indirect jobs for locals. There will be a positive cumulative impact of the project on the economy.

8.3 EMPLOYMENT POTENTIAL: SKILLED, SEMI-SKILLED & UN-SKILLED

The mining Thiru. G.Sathishkumar, will create direct employment opportunity for 23 local people. As per MOEF & CC Notification CER cost is arrived for an amount of 3 Lakhs, it will be utilized as per the CER letter received from the competent authority, enclosed as annexure no 13.

8.4 OTHER TANGIBLE BENIFITS

The mine management will recruit semi-skilled & unskilled eligible workers from the nearby villages depending upon requirement in the mines and the eligibility, qualification and experience of local persons.

The overall effect will result in higher standard of living viz. better education, improved health and sanitation facilities, housing and acquisition of consumer durables. Housing, transport, medical, educational and other civic amenities will get improved in the future. This is envisaged as a major positive benefit.

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CHAPTER 9

ENVIRONMENTAL COST BENEFIT ANALYSIS

As per EIA Notification dated 14th Sept., 2006, as amended from time to time, 'Environmental Cost Benefit Analysis' is applicable only if the same is recommended at the Scoping stage.

As per the ToR points issued by SEIAA-TN vide ToR Identification No. TO25B0108TN5958378N, dated 20.06.2025 for the proposed project, the 'Environmental Cost Benefit Analysis' is not prescribed.

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CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

10.1 DESCRIPTION OF THE ADMINISTRATIVE ASPECTS OF ENSURING OF ENSURING THAT MITIGATIVE MEASURES ARE IMPLEMENTED AND THEIR EFFECTIVENESS MONITORED AFTER APPROVAL OF THE EIA.

10.1.1 OBJECTIVES

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

10.1.2 BASIC OF EMP

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

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

EMP covers all phases of the project considering the impacts with mitigation

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

Table 10.1 Environmental Management Plan

Environmental Parameter	Mitigation Measures
Air	Wet drilling to suppress the dust emission from drill machine
	Regular water sprinkling on haulage road through fixed water sprinkler.
	4.0 KLD of water will be used for dust suppression.
	Avoiding blasting during high wind period, night times and temperature inversion periods.
	Regular grading of haul road to clear accumulation of loose material.
	It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements
	Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution
	Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted air pollution control measures.
	Afforestation for control of dust.
Surface water	There is Amaravathi River is located at a distance of 6.2km in south east direction. Adequate safety distance is left. No dumping of material or discharge will be done in or near the river or water body.
	Surface runoff management structures like garland drain of required length which is connected to a settling pond will be constructed around the quarry to collect the rain water. Monthly or after rainfall, inspection will do to ensure performance of water management structures and systems. There is no discharge of any effluent into nearby water bodies.

Ground Water	The quarrying operation is proposed upto a depth of 31 m above ground level, Water table is found at a depth of 58 m, hence the project will not intersect the Ground water table during entire quarry period.
Water Consumption and Wastewater generation	Water required for this project will be sourced from vendors.
	Domestic wastewater generation of 1.0 KLD will be treated in septic tank with soak pit.
	Conduct ground water and surface water monitoring for parameters specified by CPCB
Noise	The workers employed are provided with protection equipment, earmuffs and ear- plugs for the protection from high noise level generated at the mine site wherever required.
	Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
	Development of thick greenbelt all along the safety Zone (7.5 m) of the project area to attenuate the noise and the same will be maintained.
	Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation.
	Annual ambient noise level monitoring is carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring.
Ground Vibration and Fly Rock Control	Controlled blasting using delay detonators will be carried out to maintain the PPV value well within the prescribed standards of DGMS.
	Drilling and blasting will be carried under the supervision of qualified persons.
	Will be Ensured that blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material.
	To be Undertake noise or vibration monitoring.
Land Environment	At conceptual stage, the mining pits will be converted into Rain Water Harvesting pit. Remaining area will be converted into greenbelt area.
	No external dumping i.e., outside the project area. The entire material will be sold.

	Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.
	The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.
	Frequent Soil and ground water testing as per Environmental Monitoring Plan.
Top Soil / Overburden	There is no overburden anticipated during the quarrying operation.
Biological Environment	During mining, thick plantation will be carried out on the mentioned safety zone areas.
	The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
	Regular review on green belt development programme.
	Year wise greenbelt development plan mentioned in Chapter III will be monitored.

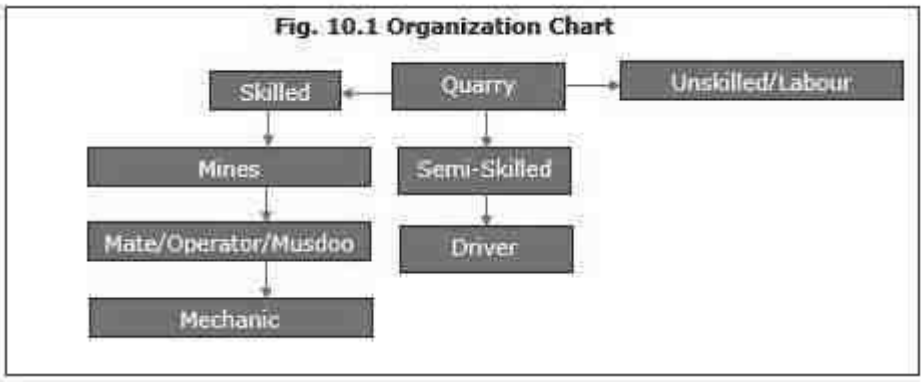
10.1.3 ADMINISTRATION AND TECHNICAL SETUP

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

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

- Collection of health statistics of the workers and population of the surrounding villages.
- Green belt development.
- Monitoring the progress of implementation of the environmental monitoring programme.
- Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

Fig. 10.1 Organization Chart



1	Skilled	Mines Manager(II Class)	1 No
		Foreman/Mine Mate	2Nos
		Operator	4 Nos
		Mechanic	1 No
2	Semi-Skilled	Diver	3 Nos
3	Un-skilled	Labours	12 Nos
		Total	**23 Nos**

10.1.4 ENVIRONMENTAL POLICY

- The Project Proponent has stipulated a well-defined Environmental policy by which the lessee is committed to conducting business with a strong environmental conscience towards the community, customers, and employees. The Environment policy is given as below.
- The Environment policy of "Rough Stone & Gravel Quarry of Thiru. G.Sathishkumar is that the rules and commitment are driven towards conservation of the environment.
- The lessee is committed to efficient use of natural resources based on the

reduce, recycle and reuse method.

- The project is committed to the identification of possible impacts and will take the necessary management steps to mitigate the impacts.
- Environment performance will be regularly monitored and reported for continual improvement of our environment and health performance.

10.1.5 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

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

10.1.6 COST OF ENVIRONMENTAL CONTROL MEASURES

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

Table 10.2 - Environmental Management Plan Budget

Activities	Mitigation Measure	Capital cost	Recurring Cost per Annum
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	0.07	0.07
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	5.00	0.25
	Muffle blasting – To control fly rocks during blasting	0.00	0.05
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	0.20	0.04
	No overloading of trucks/tippers/tractors	0.00	0.05
	Stone carrying trucks will be covered by tarpaulin	0.00	0.10
	Enforcing speed limits of 20 km/hr within ML area	0.06	0.01
	Regular monitoring of exhaust fumes as per RTO norms	0.00	0.05
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	0.00	0.29
	Installing wheel wash system near gate of quarry	0.20	0.05
Sub-Total (A)		**5.53**	**0.96**
Noise Environment	Provision for Portable blaster shed	0.30	0.02
Sub-Total (B)		**0.30**	**0.02**
Waste Management	Provision for domestic waste collection and disposal through authorized agency	0.20	0.10
	Installation of dust bins	0.05	0.02
Sub-Total (C)		**0.25**	**0.12**
Mine Closure	Plantation inside ML area (340 Nos.)	0.34	0.07
Sub-Total (D)		**0.34**	**0.07**

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	0.05	0.01
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	0.00	0.50
	Workers will be provided with Personal Protective Equipment's	0.23	0.02
	Health checkup for workers will be provisioned	0.00	0.12
	First Aid facility Provision	0.00	0.01
	Signage & boards for safety precautions	0.05	0.01
	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	0.15	0.01
	Installation of CCTV cameras in the mines and mine entrance	0.15	0.02
Sub-Total (E)		**0.63**	**0.70**
Grant Total (A+B+C+D+E)		**7.05**	**1.87**
Total EMP Cost for 10 years is 30.61 lakhs i.e., Rs.7.05 Lakhs of Capital Cost + Rs.23.56 Lakhs of Recurring Cost **(For 10 Years)**			

The proposal for Corporate Environment Responsibility (CER) activities is given as follows;

S. No.	PROPOSED CER ACTIVITIES	COST IN LAKHS.
1	Plantations inside and outside the school premises	3.0
2	Providing A4 papers, Scanner cum printer and Painting the school building	
Total		**3.0**

The above proposed CER cost will be spent on Government Adi Dravidar Welfare High School, Punnam Village and I assure you that the proposed CER activities will be completed before the commencement of quarrying operations.

The total project cost is as given below:

Fixed Cost		
Land Cost	:	Rs.8.775 Lakhs
First Aid Room	:	Rs.1.000 Lakh
Rest Shelter	:	Rs.1.000 Lakh
Sanitary Facility	:	Rs.1.000 Lakh
		Total (A)– Rs.11.775 Lakhs
Operational Cost		
Machineries	:	Rs.50.000 Lakhs
Fencing cost	:	Rs.1.500 Lakhs
		Total (B) – Rs. 51.500 Lakhs
EMP Cost		
Air Environment, Noise Environment, Mine Closure, Implementation of EC, Mining Plan & DGMS Condition	**:**	**Total(C)–Rs.30.61 Lakhs**
CER Cost		
Plantation, Providing A4 papers, Scanner cum printer and painting the school building	:	**Total (F)– Rs.3.00 Lakhs**
Grand Total (A+B+C+D+E+F)	**:**	**R.96.885 Lakhs**

10.1.7 CONCLUSION

Various aspects of mining activities were considered, and related impacts were evaluated. Considering all the possible ways to mitigate the Environmental concerns, an Environmental Management Plan was prepared, and INR 30.61 lakhs has been allocated for the same. The EMP is dynamic, flexible, and subjected to periodic review. For projects where major environmental impacts are associated, EMP will be under regular review. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP, and the project will have a positive impact on the study area.

CHAPTER 11

SUMMARY& CONCLUSION

11.1 OVER ALL JUSTIFICATION FOR IMPLEMENTATION OF THE PROJECT

INTRODUCTION

Thiru.G.Sathishkumar Lessee, has obtained Precise Area communication letter from the Assistant Director, Department of Geology and Mining, Karur to quarry out Mineable reserves of 3,96,055 Ts of Rough Stone and 20,952 Ts of Gravel up to 31 BGL. Proposed production quantity for first five years 282658.75 Ts of Rough Stone, 20,952 Ts of Gravel formation upto a depth of 21m (below ground level) for the period of first five years and remaining quantity of 1,13,396.25 Ts of Rough Stone will be proposed for the period of second five years upto a depth of 31m (below ground level) Over an extent of 1.46.25 ha., located at the Survey No. S.F.No. 1204/1 (Part), 1204/2, 1204/3, 1204/4 (Part), 1204/5 (Part), 1204/6 (Part), 1204/7 (Part), 1233/3B, 1233/4B, 1233/5B2, 1233/9B, 1233/10, 1223/1B, 1234/1A and 1234/2B of Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the proposed "Rough Stone and Gravel Quarry of Thiru.G.Sathishkumar mines cluster falls under Schedule 1(a) of EIA Notification and its subsequent amendments the project comes under Category B1. The ToR for preparation of EIA/EMP report of the project was approved vide ToR Identification No. TO25B0108TN5958378N, dated 20/06/2025 This report has been prepared in line with the approved TOR for production of maximum excavation of 3,96,055 Ts of Rough Stone and 20,952 Ts of Gravel.

Sl. No.	Description	Status/Remarks
1.	Sector	Non-coal mining
2.	Category of the project	B1
3.	Proposed mineral	Rough Stone and Gravel quarry
4.	Type of Lease	Fresh Quarry
5.	Extent of the lease	1.46.25 Ha
6.	Proposed depth of mining	31m BGL

7.	Method of mining	Opencast Semi-mechanized.
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years
10.	Mineable reserves (upto 31m BGL) (Quantity in Ts)	3,96,055 Ts of Rough Stone, 20,952 Ts of gravel
11.	Proposed production quantity for first five years (upto 21m BGL)	1,02,785 m3 (282658.75Ts) of Rough Stone, 10,476 m3 (20,952Ts) of gravel
12.	Proposed production quantity for second five years (upto 31m BGL)	113396.25 Ts of Rough Stone

The Lessee G.Sathishkumar is an individual with sound experience in the identification, quarrying and marketing of Rough Stone and Gravel. The proposed land is a Patta land and attached as **Annexure 6.**

1.1.1 LOCATION

The proposed project site is located in Punnam Village, Pugalur Taluk,Karur District, Tamil Nadu State and its Latitude: 10°58'49.10"N to 10°58'56.03"N and Longitude: 77°58'43.36"E to 77°58'47.79"E. with Survey of India Topo Sheet No. 58- F/13. To conduct the study, the proposed mine lease area (core zone) and an impact zone of 10 km radius (called buffer zone) around the proposed mine site were considered. The EIA report is based on three months baseline data (i.e. March 2025 to May 2025)

11.1.2 GEOLOGY

The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high-grade metamorphic rock. The strike of the Charnockite formation is $N45^0E$ –$S45^0W$ with dipping towards $SE80^0$.

11.1.3 PROJECT DESCRIPTION

This is a proposed Rough Stone quarry by Opencast Mechanized mining method with drilling and blasting. The quarrying is restricted up to a depth of 31m below ground level. The geological reserves are estimated to be 13,12,190 Ts of Rough

Stone and 29,288 Ts of gravel. The mineable reserve calculated by deducting 7.5m safety distance and bench loss. The mineable reserves are 3,96,055 Ts of Rough Stone and 20,952 Gravel which will be recovered at the rate of 100% recovery upto a depth of 31 m Below ground level for the period of ten years.

- It is proposed to quarry out rough stone with 5m bench height, 5m width with 45° slope using conventional Open cast Mechanized method. The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough Stone.
- There is no overburden anticipated during entire rough stone & Gravel quarrying operation.

S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	Proposed
3	Category	B1
4	Nature of mineral	Fresh Quarry
5	Life of the mine	10 years
6	Geological reserves (upto 31m BGL)	13,12,190 Ts of Rough stone, 29,288 Ts of gravel
	Mineable reserves (upto 31m BGL)	3,96,055 Ts of Rough Stone, 20,952 Ts of gravel
	Proposed production quantity for first five years (upto 21m BGL)	282658.75 Ts of Rough Stone, 20,952 Ts of gravel
	Proposed production quantity for second five years (upto 31m BGL)	113396.25 Ts of Rough Stone
7	Waste generation and management	Nil
8	Bench height and width	Proposed bench height & width is 5.0m respectively and number of proposed benches is 7 +1 Nos.
9	Ultimate pit depth	31 m BGL
10	End use	The excavated Rough Stone and Gravel is used for construction industries for Government & Public sector projects besides catering domestic housing and infrastructure projects in and around the district.

11.1.4 PROJECT REQUIREMENTS

The requirements of the project is given below.7

S.No.	Nature of requirement	Description
1	Water requirement	Total water requirement of 4.0 KLD which will be procured from the outside agencies. Out of 2.0 KLD drinking water requirement, Green belt development is 1.0 KLD and dust suppression is 4.0 KLD.
2	Power requirement	No electricity is needed for mining operations, for office demands, it will be met from the state grid. Total Fuel requirement is 1,16,962 L of HSD for entire life of the project**.**
3	Manpower requirement	This project will give employment opportunities to 23 people
4	Financial requirement	The total project cost as per PFR will be INR . Rs.98.885Lakhs including Operational cost, Fixed Asset cost and EMP cost
5	Funds for Socio economic development	INR 3 Lakhs is allocated. In addition, any demand raised by people during public hearing will also be met.

11.1.5 DESCRIPTION OF LEASE AREA

The features in the study area is given below.

Table 11.1 Description of the lease area		
S.No.	**Areas**	**Distance from project site**
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil within 15km radius
2	Areas which are important or sensitive for ecological reasons	

<table>
<tr><td>A</td><td>Wetlands, water courses or other water bodies,</td><td><table>
<tr><td>Water bodies</td><td>Distance</td><td>Direction</td></tr>
<tr><td>Uppar Odai</td><td>4.5 Km</td><td>S</td></tr>
<tr><td>Amaravathi River</td><td>6.2 Km</td><td>SE</td></tr>
<tr><td>Kaveri River</td><td>9.3 km</td><td>NW</td></tr>
<tr><td>Noyil River</td><td>9.6 km</td><td>NW</td></tr>
</table></td></tr>
<tr><td>B</td><td>Coastal zone, biospheres,</td><td>Nil within 10km radius</td></tr>
<tr><td>C</td><td>Mountains, forests</td><td>Saruvumalai R F – 25.7km (NE)</td></tr>
<tr><td>3</td><td>Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration</td><td>Nil within 15km radius</td></tr>
<tr><td>4</td><td>Inland, coastal, marine or underground waters</td><td>Nil within 15km radius</td></tr>
<tr><td>5</td><td>State, National boundaries</td><td>Nil within 15km radius</td></tr>
<tr><td>6</td><td>Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas</td><td>Nil within 15km radius</td></tr>
<tr><td>7</td><td>Defense installations</td><td>Nil within 15km radius</td></tr>
<tr><td>8</td><td>Densely populated or built-up area</td><td>Densely Populated Karur, 11.0km (E)</td></tr>
<tr><td>9</td><td>Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)</td><td>Densely Populated Karur, 11.0km (E)</td></tr>
<tr><td>10</td><td>Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)</td><td>Nil</td></tr>
<tr><td>11</td><td>Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)</td><td>Nil</td></tr>
<tr><td>12</td><td>Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or</td><td>No. The area is not prone to earthquakes, floods, etc.</td></tr>
</table>

	extreme or adverse climatic conditions) similar effects	

The baseline data collection for meteorology, air, water, noise and soil environments have been carried out during March to May 2025.

Air, water, noise and soil samples are collected and analyzed through NABL accredited lab.

11.2 EXPLANATION OF HOW ADVERSE EFFECTS HAVE BEEN MITIGATED

11.2.1 AIR ENVIRONMENT

The air monitoring have been carried out in 6 locations and the results are given below.

Table 11.2: Details Of Ambient Air Quality Monitoring Locations

S. No.	Station Code	Locations	Distance & Direction	Coordinates
1	AAQ 1	Project site	Core Zone	10°58'49.76"N 77°58'46.19"E
2	AAQ 2	Punnanadupalayam village	1.89 km, NW	10°59'37.39"N 77°59'24.85"E
3	AAQ 3	Near Govt school, Kurumpapatti	1.12 km, SW	10°58'22.40"N 77°58'22.83"E
4	AAQ 4	Pudukkanali village	3.59 km, SW	10°57'9.57"N 77°57'46.78"E
5	AAQ 5	Pullaiyampalayam village	2.44 Km, NW	10°57'9.57"N 77°58'16.38"E
6	AAQ6	Pavitiramedu village	2.46 Km, SE	10°57'31.64"N 77°59'8.98"E

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

Station ID	Min	Max	Avg.
Particulate matter PM-$_{2.5}$ (µg/m^3)			
AAQ-1	25.4	33.6	29.5
AAQ-2	20.1	25.5	22.8
AAQ-3	20.2	25.5	22.85
AAQ-4	17.6	22.6	20.1
AAQ-5	16.6	23.1	19.85
AAQ-6	21.7	26.0	23.85
CPCB NAAQS 2009 for PM $_{2.5}$ - 60 µg/m^3			

Station ID	Min	Max	Avg.
Particulate matter PM-$_{10}$ (µg/m^3)			
AAQ-1	55.1	72.9	64
AAQ-2	42.9	54.3	48.6
AAQ-3	42.8	54.4	48.6
AAQ-4	38.2	47.4	42.8
AAQ-5	36.1	49.9	43
AAQ-6	46.7	55.9	51.3
CPCB NAAQS 2009 for PM $_{10}$ - 100 µg/m^3			
Sulphur Di-oxide as SO_2 (µg/m^3)			
AAQ-1	4.7	6.5	5.6
AAQ-2	4.3	5.3	4.8
AAQ-3	3.9	5.5	4.7
AAQ-4	4.2	8.8	6.5
AAQ-5	3.4	5.6	4.5
AAQ-6	3.8	5.3	4.5
CPCB NAAQS 2009 for SO_2 – 80 µg/m^3			
Oxide of Nitrogen as NO_2 (µg/m^3)			
AAQ-1	7.7	13.0	10.3
AAQ-2	7.8	10.6	9.2
AAQ-3	7.6	10.8	9.2
AAQ-4	5.4	10.1	7.75
AAQ-5	6.2	8.5	7.35
AAQ-6	7.9	11.9	9.9
CPCB NAAQS 2009 for NO_2 – 80 µg/m^3			

11.2.2 WATER ENVIRONMENT

Table 11.3 Results of Ground Water sampling Analysis in 6 locations							IS:10500: 2012	
	W1	W2	W3	W4	W5	W6	Desirable	Permissible
Odour	AGREEABLE	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	<1	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	Agreeable	Agreeable
pH at 25 ˚C	7.36	<1.0	<1.0	<1	<1	<1	6.5 - 8.5	No Relaxation
Electrical Conductivity	1217	7.42	7.39	7.85	7.94	7.21	1	5
Total Dissolved Solids	736	1950	1189	1016	720.4	821.8	500	2000
Total hardness as CaCO3	492	1172	715	616	435	496	1	15
Calcium as Ca	106	345	326	142	216	276	200	600
Magnesium as Mg	54.5	79.6	66.8	27.4	48	69.6	200	600
Calcium as CaCO3	265	35.0	38.2	17.6	23	24.5	75	200

Magnesium as CaCO3	227	199	167	68.5	120	174		
Total alkalinity as CaCO3	284	146	159	73.5	96.0	102		
Chloride as Cl-	212	462	294	192	210	233	250	1000
Free Residual chlorine as Cl-	BDL (D.L - 0.2)	496	108	234	128	146	30	100
Sulphates as SO42-	115	BDL(DL -0.2)	BDL(DL -0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	45	No Relaxation
Iron as Fe	0.07	312	286	180	48.9	52.1	200	400
Nitrate as NO3	2.32	BDL(DL -0.01)	BDL(DL -0.01)	0.03	0.05	0.04	1	No Relaxation
Fluoride as F	0.57	4.26	3.34	2.67	1.28	1.96	0.1	0.3
Manganese as Mn	BDL (D.L - 0.05)	0.52	0.41	0.46	0.42	0.55	Not Specified	Not Specified

All the values were found to be within permissible limits

11.2.3 NOISE ENVIRONMENT

Noise levels were measured in 6 locations and the results are given below.

Table 11.4 Noise monitoring results

S. No	Location	Day equivalent	Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	Project site	49.7	42.7	75	70
2	Nalmukkal	45.9	38.3		
3	Senalur	48.4	38.7		
4	Kunnappakkam	47.2	39.6		
5	Endur	46.1	38.1		
6	Tennampundi	49.7	39.3		

11.2.4 SOIL ENVIRONMENT

Soil samples are collected from 6 locations and the results are given below.

Table 11.5 Results of Soil Sample Analysis

S.No	Parameter	Unit	S1	S2	S3	S4	S5	S6
1	pH at 25 °C	-	8.23	6.32	6.96	6.22	6.14	6.72
2	Electrical Conductivity	µmhos/cm	92.77	46.72	181.2	79.25	21.94	92.21

3	Dry matter content	%	88.50	96.98	95.82	96.47	96.58	95.24
4	Water Content	%	11.50	3.02	4.18	3.53	3.42	4.76
5	Organic Matter	%	0.31	1.1	0.98	0.58	0.79	1.3
6	Soil texture	-	SILT LOAM	silty clay	silty clay loam	silt loam	silt loam	loam
7	Grain Size Distribution i. Sand	%	25.67	8.82	13.29	24.17	28.42	32.88
8	ii. Silt	%	58.62	46.57	47.55	67.77	52.72	48.93
9	iii. Clay	%	15.71	44.61	39.16	8.06	18.86	18.19
10	Phosphorous as P	mg/kg	0.57	1.9	2.4	1.2	3.1	2.5
11	Sodium as Na	mg/kg	787	420	1055	598	356	404
12	Potassium as K	mg/kg	533	670	876	764	737	646
13	Nitrogen and Nitregenous Compounds	mg/kg	352	270	296	644	230	452
14	Total Soluble Sulphate	%	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)
15	Porosity	%	19.2	18.4	19.1	16.7	18.9	19.5
16	Water Holding Cabacity	Inches/foot	42	36	40	42	38	40

11.2.5 BIOLOGICAL ENVIRONMENT

FLORA

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

FAUNA

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

11.2.6 LAND USE

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

Table No. 11.5: Major Land Use Units of the Study Area in Percentage

Sl.No.	Land Use / Land Cover	Area in Sq.Km	Area in Percentage
1	Built-up land	5.35	1.65
2	Crop land	241.5	75.10
3	Fallow land	8.36	2.59
4	Land with scrub	29.63	9.18
5	Land without scrub	0.76	0.23
6	Existing Quarry	1.7	0.52
7	Plantations	30.21	9.38
10	Water bodies	4.94	1.35
	Total Area	**322.45**	**100**

11.2.7 SOCIO ECONOMIC ENVIRONMENT

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

The following data area collected from secondary data.

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

The expert visited 5 villages in the study area namely Punnanadupalayam village, Near Govt school, Kurumpapatti, Pudukkanali village, Pullaiyampalayam village and Pavitiramedu village. Discussions were held with the people from nearby locality to study the social and economic conditions prevailing in the area. The expert also visited nearby hospitals, primary health centres and Nalmukkal. The following observations were made

The following observations were made.

Primary schools are available in many villages. For hospital facilities, people in the locality have to go to hospital in Punnanadupalayam which is about 1.89 Km from the lease area. Major schools with higher secondary and senior secondary schools are located in Kurupapatti . The major Punnam Union located in the area is KARUR. Facilities like petrol pump stations, ATM facility are available in Punnam.

11.2.8 HYDROGEOLOGY OF THE LEASE AREA

There is Amaravathi River is located at a distance of 6.2 km in Southeast direction of lease area, the hydrological and hydrogeological pattern of the study area is studied in detail using satellite imagery.

There is Amaravathi River is located at a distance of 6.2 km in Southeast direction of lease area. But there is no running water currently in the river. Only during monsoons, water gets stagnated at a few places.

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

11.2.9 GROUND WATER STUDY

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

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

As far as the mining lease area is considered, the area is rocky and no major seepage is envisaged. The production quantity is very less and the depth proposed is 31 m BGL. Hence, there will not be any major impact due to mining on water levels or ground water levels in the area.

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Environmental impacts on the following environments are identified.

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

11.2.10 LAND ENVIRONMENT: IMPACT AND MITIGATION MEASURES

The major impact due to this project on land environment is the change in land use. Since this quarry is a small one and the production is less, mining activity will be carried out upto 31 m BGL. Other than quarrying of minerals, no other change will be done since there is no dumping. To prevent soil erosion during monsoon season, garland drain will be constructed with silt traps. At the mine closure stage, 1.10.00 Ha of lease area will be left as rain water harvesting pond. 0.34.25 Ha will be developed with green belt. For this, plants like Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indiaca are selected. A total of 2400 trees are planned to be planted. Spacing will be 3m x 3m.

11.2.11 WATER ENVIRONMENT: IMPACT AND MITIGATION MEASURES

There is no water body present inside the lease area. The entire water requirement for the project is 4.0 KLD which will be sourced from outside agencies. Negligible sewage will be generated, for which a septic tank with soak pit will be set up.

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

Since the mining operation will be limited upto depth of 31m (BGL), there will not be any seepage. However, the rain water percolation and collection of water from seepage shall be less than 300lpm and it shall be pumped out periodically by a

stand by diesel powered Centrifugal pump motivated with 7.5HP Motor. The quality of water is expected to be potable. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water can also be used for plantation purposes

The major water bodies found in the buffer zone are.

Water bodies	Distance	Direction
Uppar Odai	4.5 Km	S
Amaravathi River	6.2 Km	SE
Kaveri River	9.3 km	NW
Noyil River	9.6 km	NW

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

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

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

11.2.12 BIOLOGICAL ENVIRONMENT: IMPACT AND MITIGATION MEASURES

Impacts

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

Mitigation measures

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

11.2.13 AIR ENVIRONMENT: IMPACT AND MITIGATION MEASURES

The major air pollutants due to mining operations are fugitive emissions like PM_{10}, $PM_{2.5}$. Other than these pollutants, gaseous emissions of sulfur dioxide (SO_2) and oxides of nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

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

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

11.2.14 NOISE ENVIRONMENT: IMPACT AND MITIGATION MEASURES

Impacts

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

Mitigation measures

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

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

11.2.15 VIBRATION: IMPACT AND MITIGATION MEASURES

Impacts

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

Mitigation measures

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

11.2.16 SOCIO ECONOMIC ENVIRONMENT

Impact and Mitigation measures

No land is acquired from anyone. No rehabilitation is needed. Hence, there is no negative impact. The proponent has planned to spend INR 3,00,000 for CER activities. This amount will be subjected to change after public hearing.

11.2.17 OCCUPATIONAL HEALTH

Impacts

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

Mitigation measures

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

11.2.18 ENVIRONMENTAL MONITORING PROGRAMME

Monitoring is done to measure the efficiency of control measures implemented. Regular monitoring of various environmental parameters like air, water, noise and soil environments is needed to assess the status of environment during the project operation. A schedule is framed with timeline to monitor various parameters during the operation of the project. To evaluate the effectiveness of environmental management programme, regular monitoring of the important environmental parameters will be taken up. Air monitoring will be carried out once in 3 months, water sample will be collected once in a season, noise will be monitored once in 3 months, soil samples will be analyzed once per season. For EMP, a budget of INR 30.61 Lakhs is allocated.

11.2.19 PROJECT BENEFITS

Financial benefits

- This project will contribute financially through payment of taxes like royalty, GST, etc

- The project will also contribute via CSR.
- The demands of people during public hearing will also be considered by the project proponent

Social benefits

- This project provides employment to 23 people directly. Local people will be hired for unskilled labour.
- Through CSR, nearby schools, hospitals will be benefitted.
- For CSR, INR 3,00,000 is allocated.
- Based on the demand of the people during public hearing, further funds will be allocated, if necessary.

Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared an30.61 lakhs for the 10 years has been allocated as EMP cost. The EMP is dynamic, flexible and subjected to periodic review. For project where the major environmental impacts are associated, EMP will be under regular review. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

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CHAPTER 12

DISCLOSURE OF CONSULTANTS

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

Declaration by Experts contributing to the proposed Rough Stone and Gravel Quarry over an extent 1.46.25 Ha, while total cluster area of 7.86.75 Ha at Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu State.

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

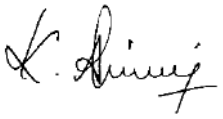
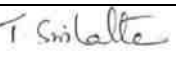
EIA Coordinator Name: M. Manikandan

Signature & Date

Period of involvement: March 2025 to May 2025.

Contact information:

M/s Global Mining Solutions
Plot No.6, SF No. 13/2, A2, VS City, RC Chettypatty,
Kottamettupatty, Omalur,
Salem, Tamil Nadu – 636 455

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and Date
1	AP	Dhanalakshmi Ramanathan	Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation measures for air pollution. Period: March 2025 to May 2025.	
2	WP	Abirami Kaliaperumal	Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact. Period: March 2025 to May 2025	
3	SHW	Ramadoss N	Assessment of waste generated from the project, suggested waste management practices. Period: March 2025 to May 2025	
4	SE	Sarasvathy K	Baseline SE studies. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan. Period: March 2025 to May 2025	
5	EB	Saravanan S	Baseline data collection of related to ecology of the area. Period: March 2025 to May 2025	
6	HG	Ravinthiran N	Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area. Period: March 2025 to May 2025	
7	AQ	Srilatha Thiruveedhula	Air quality modeling utilizing the area source	

			model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures. <u>*Period: March 2025 to May 2025*</u>	
8	*NV*	*Dhanalakshmi Ramanathan*	*Ambient noise study of the area. Incremental noise generation due to quarry operation and impact of the noise due to the project.* <u>*Period: March 2025 to May 2025*</u>	
9	*LU*	*Dhanalakshmi Ramanathan*	*Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment.* <u>*Period: March 2025 to May 2025*</u>	
10	*RH*	*S.V. Prashant*	*Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker.* <u>*Period: March 2025 to May 2025*</u>	
11	*SC*	*Shisupal Sing*	*Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil.* <u>*Period: March 2025 to May 2025*</u>	
12	*GEO*	*Valliappan Meyyappan*	*Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area.* <u>*Period: March 2025 to May 2025*</u>	

TM-FAE:

S.No	Name of TM (FAE)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	M.Prabu	LU	T.Srilatha	*March 2025 to May 2025*	Associated with FAE in preparing Land use map based on satellite imagery, Land use classification and analysis, Impact prediction on surrounding land environment	
		HG	Ashok Kumar		Associated with FAE in studying hydrogeological pattern of study area, Studying ground water and the impact of the project on ground water	
2	M. Manikandan	EB	S.Saravanan	*March 2025 to May 2025*	Associated with the expert in baseline data collection related to ecology of the study area	
		SC	Shishupal Singh		Associated with the expert in Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	

TM-FAA:

S. No	Name of TM (FAA)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	Suresh	WP	*Abirami Kaliaperumal*	*March 2025 to May 2025*	Associated with the expert in assessing existing water quality, studying impact of the project on surface and ground water quality, suggesting mitigation measures for minimizing impact	M.Suresh
		AP	*Dhanalakshmi Ramanathan*		Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	
2	S. Kamaraj	SC	Shishupal Singh	*March 2025 to May 2025*	Associated with the expert in Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	S.Kamaraj
		RH	S.V.Prashant		Associated with the expert in Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the workers	
3.	S. Asan Ali	WP	*Abirami Kaliaperumal*	*March 2025 to May 2025*	Associated with the expert in assessing existing water	

					quality, studying impact of the project on surface and ground water quality, suggesting mitigation measures for minimizing impact	
		GEO	*Valliappan Meyyappan*		Associated with the expert in preparing Geological map, assessing stability of quarry slope faces and dump, management plan for mine stability, after use of mining quarry and geological features of the area	
		AP	Dhanalakshmi Ramanathan		Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	
		NV	Dhanalakshmi Ramanathan		Associated with the expert in monitoring and analysis of blast induced ground vibration in order to develop the site-specific equation for its prediction, monitoring of fly rocks & air blast (noise), preparation of SOP's for the safety blasting practice in the mines.	
4.	Mownica. B	AP	Dhanalakshmi Ramanathan	*March 2025 to May 2025*	Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting	

					mitigation measures for air pollution	
		NV	Dhanalakshmi Ramanathan		Associated with the expert in monitoring and analysis of blast induced ground vibration in order to develop the site-specific equation for its prediction, monitoring of fly rocks & air blast (noise), preparation of SOP's for the safety blasting practice in the mines.	Mounica
5.	G.Balasubramani	GEO	*Valliappan Meyyappan*	*March 2025 to May 2025*	with the expert in preparing Geological map, assessing stability of quarry slope faces and dump, management plan for mine stability, after use of mining quarry and geological features of the area	
			Dhanalakshmi Ramanathan		Associated with the expert in monitoring and analysis of blast induced ground vibration in order to develop the site-specific equation for its prediction, monitoring of fly rocks & air blast (noise), preparation of SOP's for the safety blasting practice in the mines.	